BLONDER TONGUE
LABORATORIES

IPTV Troubleshooting Tools

CMD Line – Wireshark – TS Reader Lite
MTSA-PRO – VLC Media Player

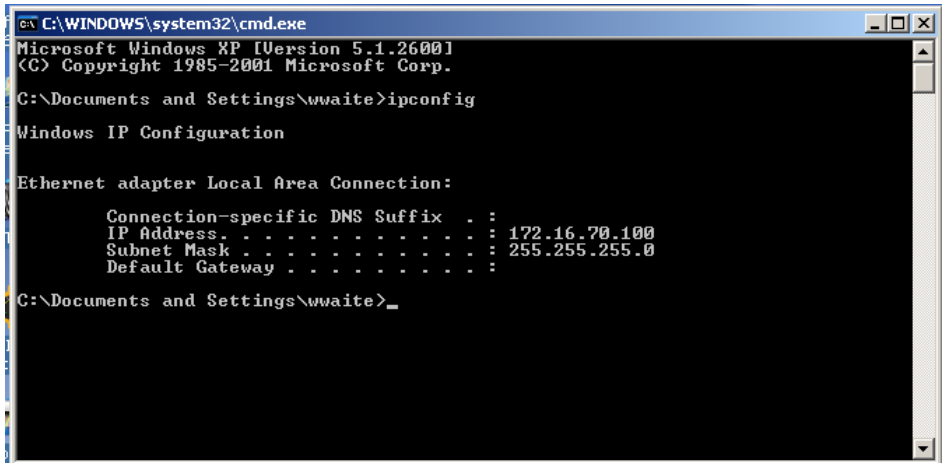
ONE JAKE BROWN ROAD, OLD BRIDGE, NJ 08857
800-523-6049 | FAX 732-679-6049

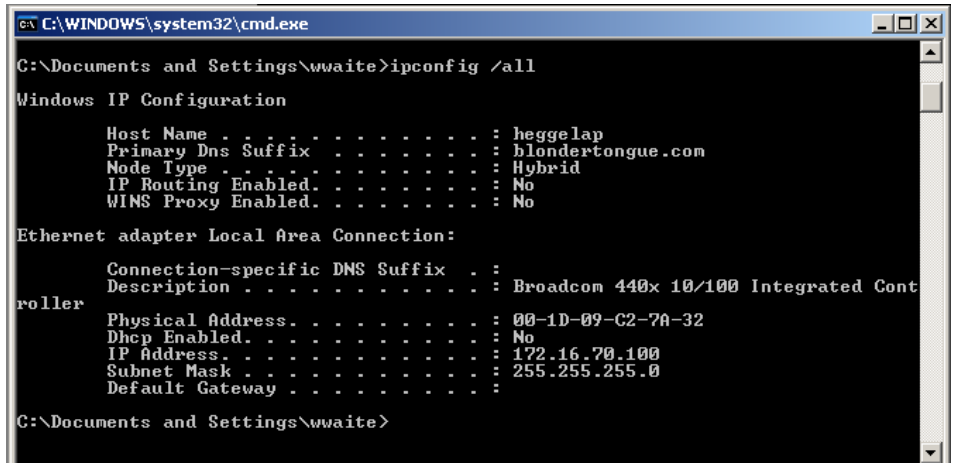
IP Troubleshooting Tools

- CMD (Command) Line
  - On all Laptops/computers
  - Good first tool for verifying Network connectivity
- Wireshark (IP Stream Analyzer) – FREEWARE
  - Can capture/record IP streams, send them for evaluation
  - Powerful tool with many filters and settings
- TSReader Pro / Lite (RF/ASI/IP Transport Stream Analyzer)
  - For RF and ASI, requires additional hardware
  - Pro – pay version; Lite – limited free version
- MTSA-PRO (RF/ASI/IP – Transport Stream Analyzer)
  - Good for evaluating the TS once all transport issues have been resolved, if there are still issues
  - MTSA-PRO hardware required to be connected, for software key to work

CMD Commands - IPCONFIG

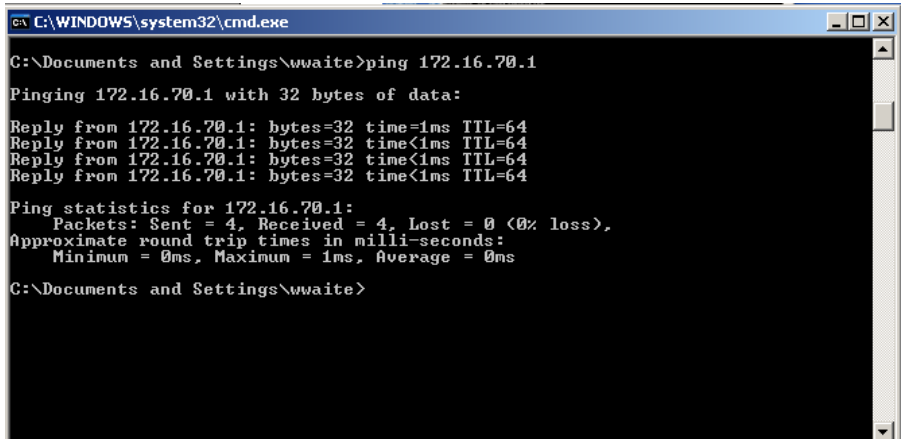
- Command Line troubleshooting is the basic (first line) troubleshooting for IT networks
- START>RUN, CMD (Windows XP); START, CMD in search box (Windows 7); CMD in search box (Windows 10) opens the command line box
- IPCONFIG command tells us about our computer
- IPCONFIG / ALL tells us more info about our computer

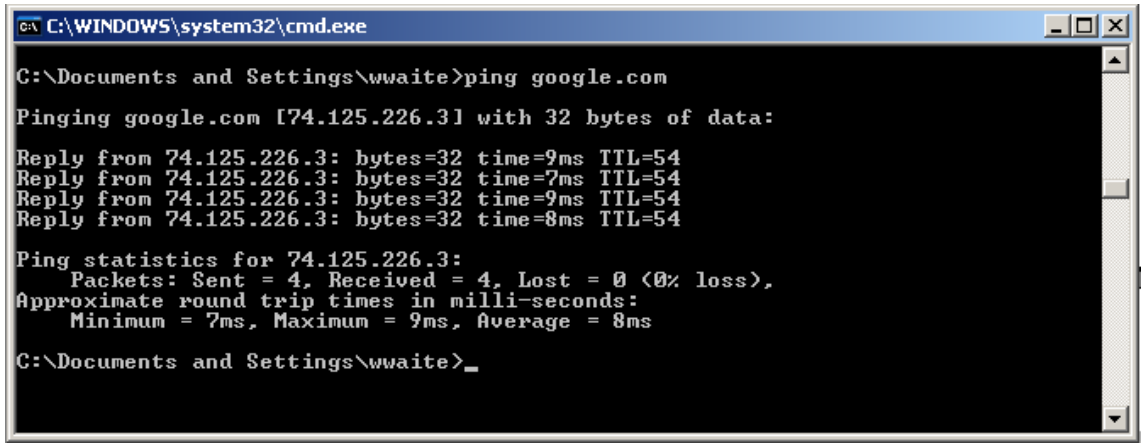




Packet Internet Groper (PING)

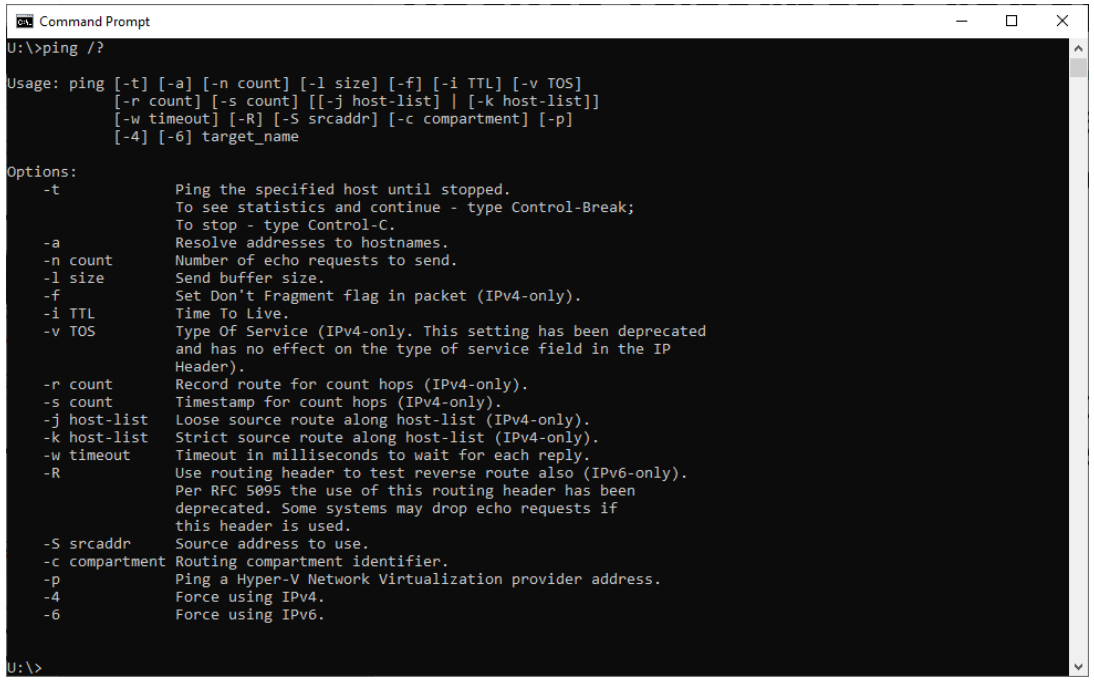
- PING command tells us if we can reach intended target
- PING 1 is with crossover cable direct to HDE-CHV-QAM
- PING 2 is via wireless card to Google.com
  - Also tells us DNS is working
- 'ping 127.0.0.1' is loop back of your LAN card
- Remember to PING the Actual address of equipment, not the Streaming Destination IP Address





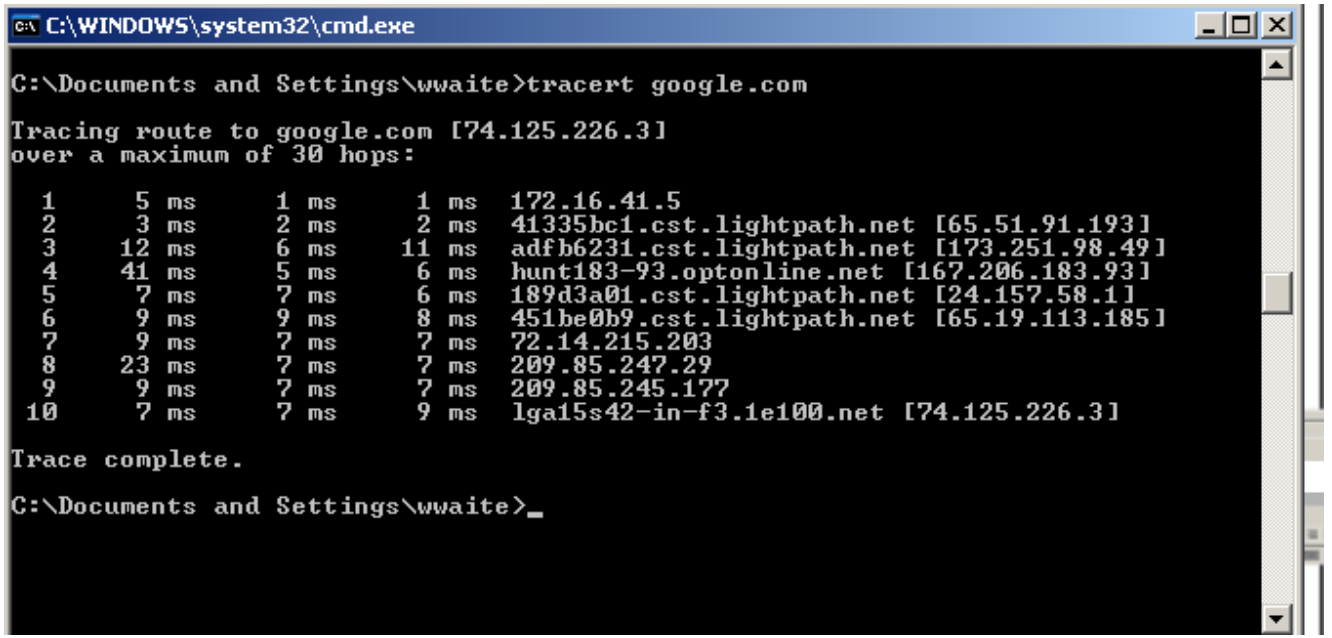
Packet Internet Groper (PING Options)

- PING options
  - "-t" – indefinite ping – until user stops
  - "-n {count}" – specify number of pings to send (default = 4)
  - "-l {size}" – specify size of ping packets. Max 65,527; default 32



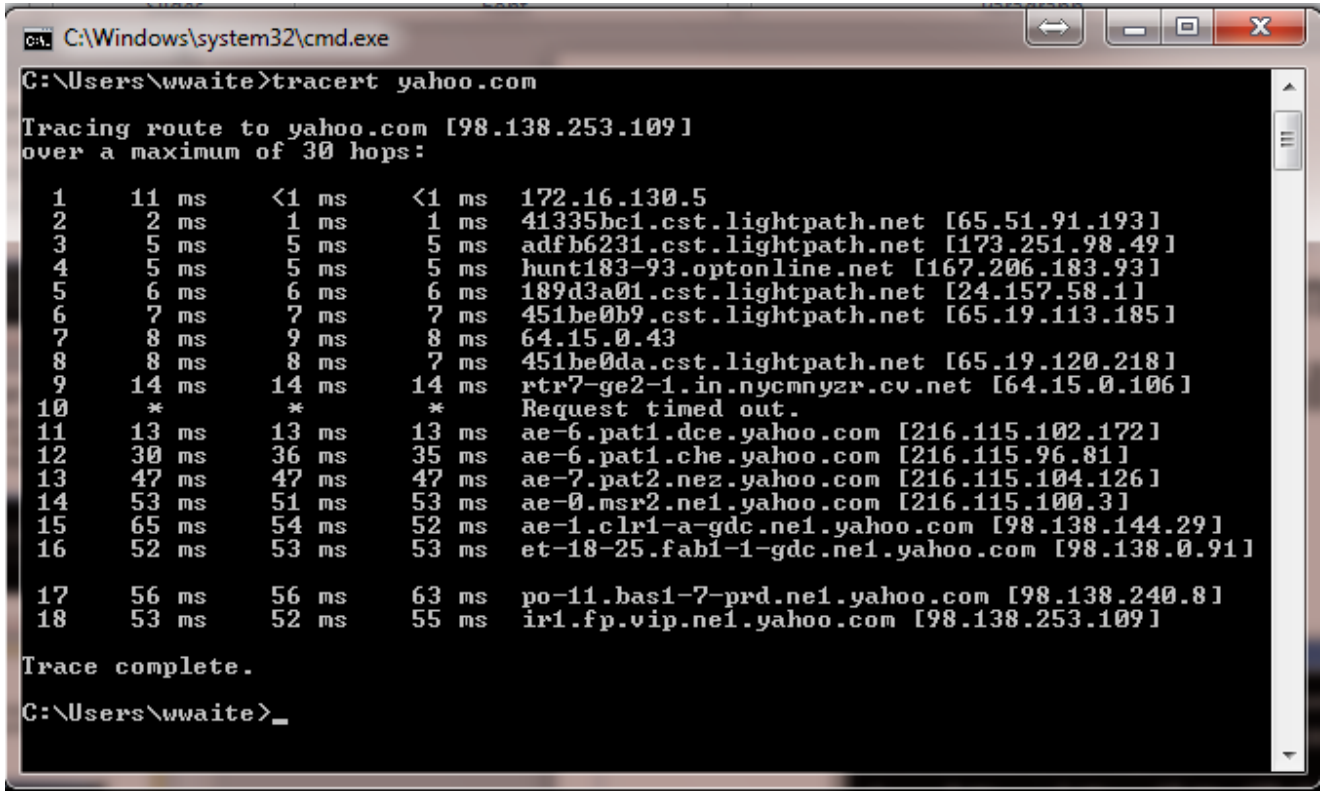
Trace Route (TRACERT)

- Can enter IP Address or host name of destination
- Typing only ‘tracert’ gives a list of options available
- Each “hop” is queried 3x, ping times listed
- Must put ACTUAL IP address of encoder, not streaming IP address



Tracert

- Asterisks on ping columns indicates time out
- 3x time out, tracert will look for another path



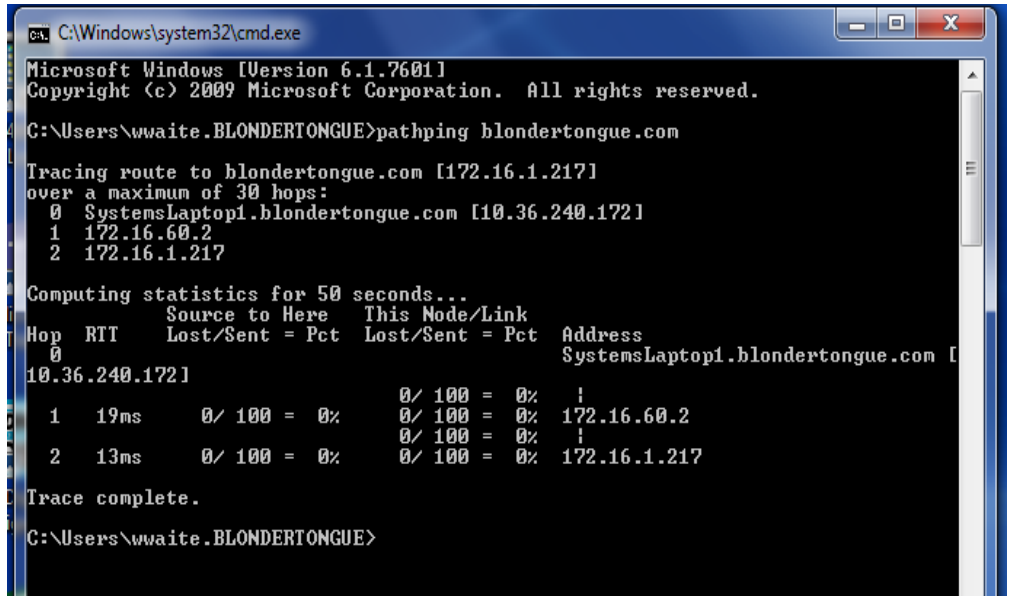
Tracert Options

- Tracert Options
  - "-d" may speed up tracert
  - "-h" defines max hops
  - "-w" wait timeout – default 4000 ms (4 sec)

```
U:\>tracert /?

Usage: tracert [-d] [-h maximum_hops] [-j host-list] [-w timeout]
               [-R] [-S srcaddr] [-4] [-6] target_name

Options:
    -d                 Do not resolve addresses to hostnames.
    -h maximum_hops    Maximum number of hops to search for target.
    -j host-list       Loose source route along host-list (IPv4-only).
    -w timeout         Wait timeout milliseconds for each reply.
    -R                 Trace round-trip path (IPv6-only).
    -S srcaddr         Source address to use (IPv6-only).
    -4                 Force using IPv4.
    -6                 Force using IPv6.

U:\>_
```

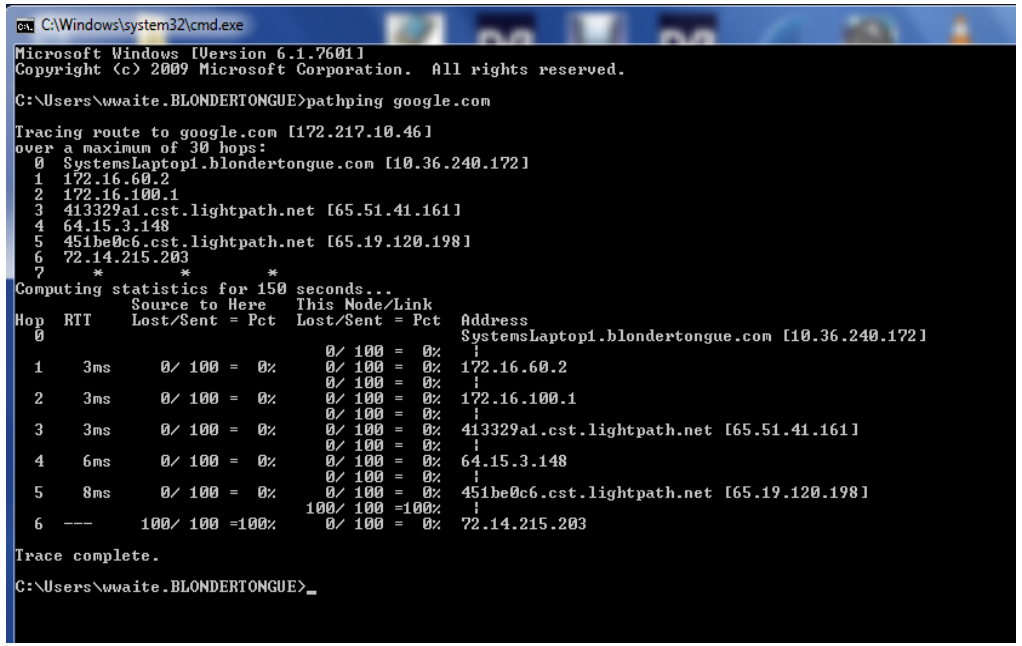
Path Ping (PATHPING)

- Combination of PING and TRACERT commands
- Can take a few minutes to perform
  - PINGs every hop from source to destination 100x (default)
  - Records and displays results
  - Can help us determine if there is a problem on the network



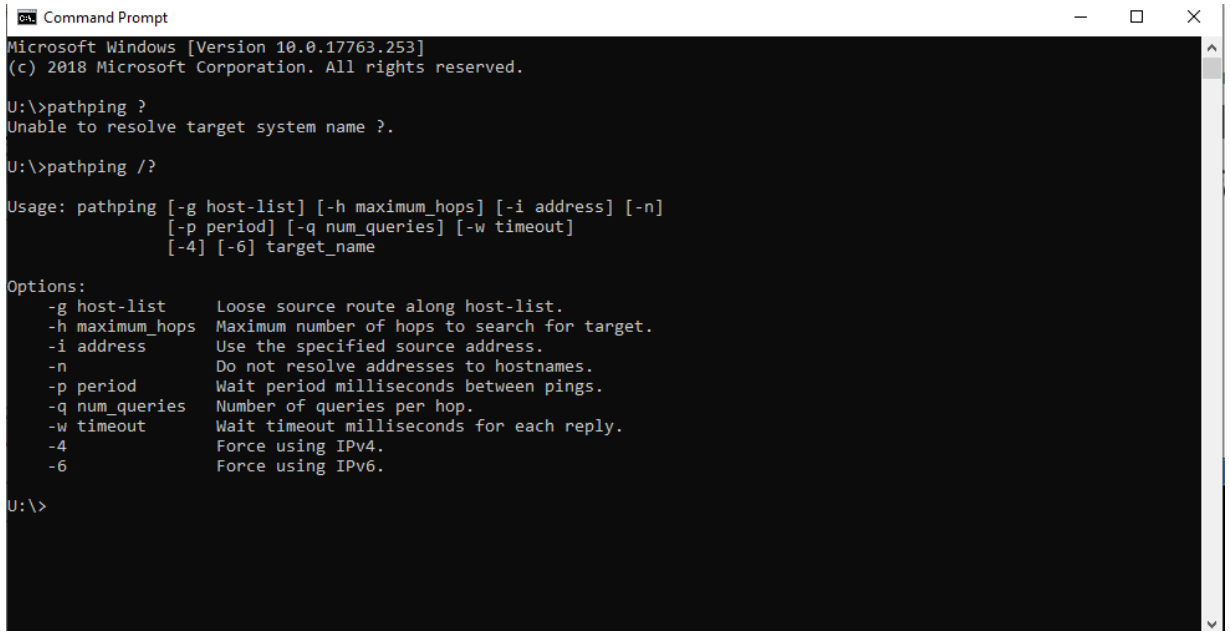
Path Ping (PATHPING)

- PATHPING to Google.com from Blonder Tongue
- Note 100% loss between hop 5 and 6 – then found a different path
- Note higher RTT (route trace time) times deeper in the network
- 100% loss on hop 6 – may not allow PINGs



Path Ping (PATHPING) Options

- PATHPING options list
  - "-n" option may speed up process – does not DNS resolve all addresses
  - "-p" default 250 ms
  - "-q" default 100
  - "-w" default 3000 ms (3 sec)



WIRESHARK

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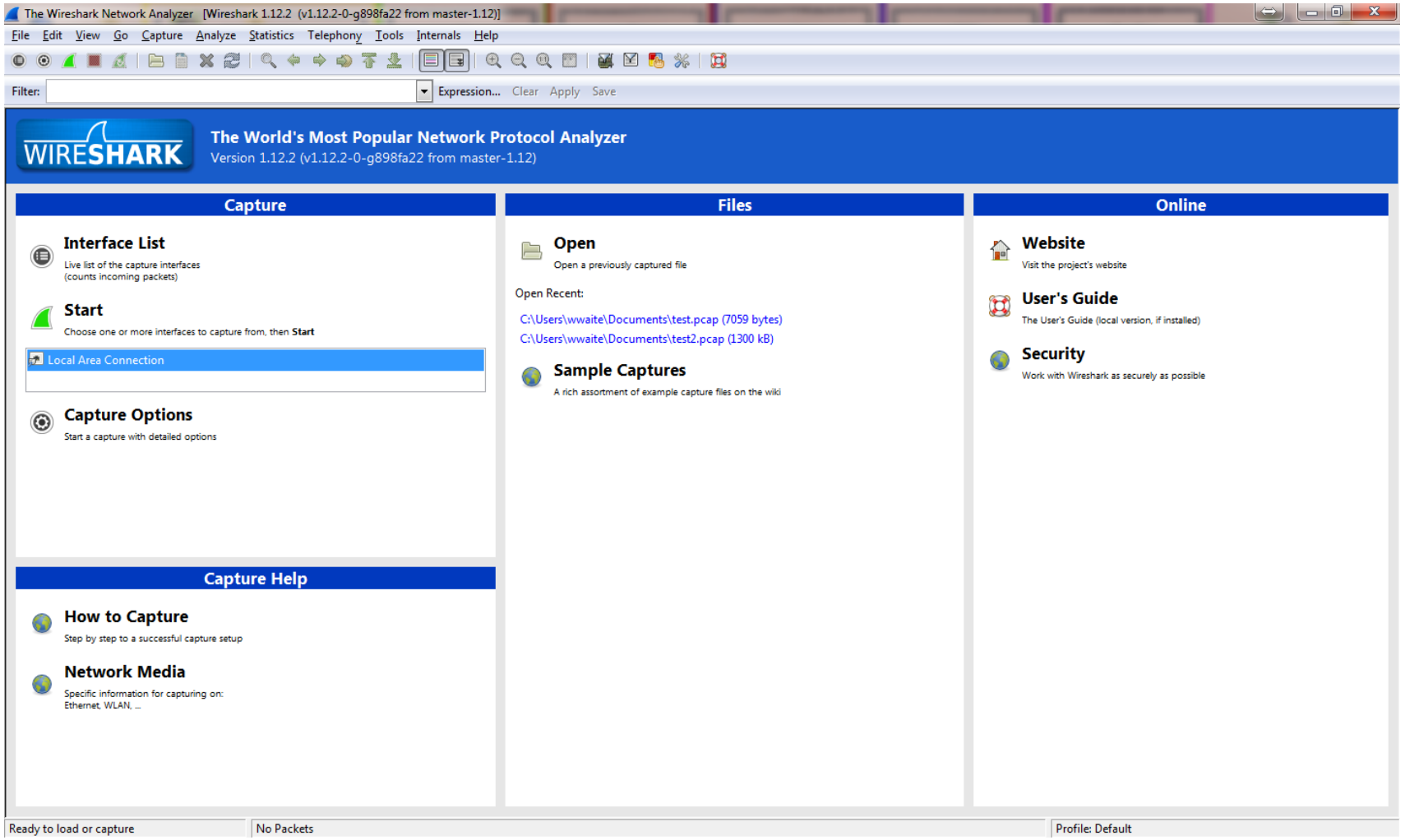
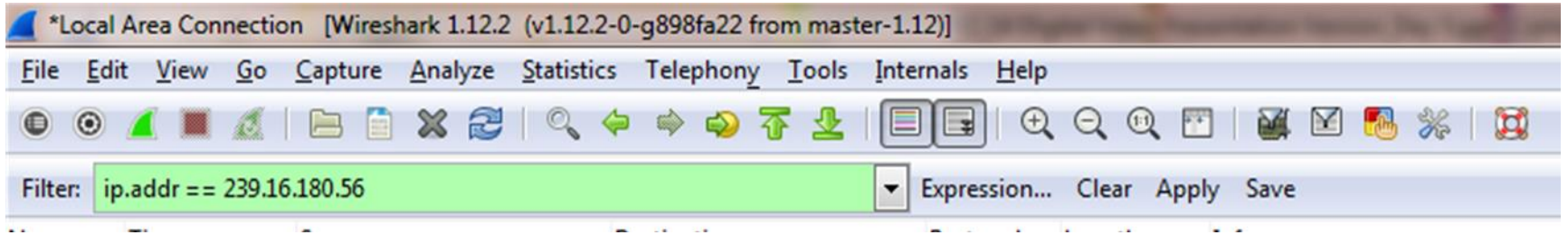
WIRESHARK


The Wireshark Network Analyzer [Wireshark 1.12.2 (v1.12.2-0-g898fa22 from master-1.12)]
File Edit View Go Capture Analyze Statistics Telephony Tools Internals Help
Filter: Expression... Clear Apply Save
WIRESHARK
The World's Most Popular Network Protocol Analyzer
Version 1.12.2 (v1.12.2-0-g898fa22 from master-1.12)
Capture
Interface List
Live list of the capture interfaces
(counts incoming packets)
Start
Choose one or more interfaces to capture from, then Start
Local Area Connection
Capture Options
Start a capture with detailed options
Files
Open
Open a previously captured file
Open Recent:
C:\Users\wwaite\Documents\test.pcap (7059 bytes)
C:\Users\wwaite\Documents\test2.pcap (1300 kB)
Sample Captures
A rich assortment of example capture files on the wiki
Online
Website
Visit the project's website
User's Guide
The User's Guide (local version, if installed)
Security
Work with Wireshark as securely as possible
Capture Help
How to Capture
Step by step to a successful capture setup
Network Media
Specific information for capturing on:
Ethernet, WLAN, ...
Ready to load or capture
No Packets
Profile: Default

WIRESHARK



- Set up a Capture Filter prior to capturing data
  - Will Only display/save packets passed by filter
  - Cannot go back and see other packets
  - Smaller file size
  - NOT recommend to set up Capture Filter when sending an evaluation file to engineers, unless specified

WIRESHARK Filter Syntax

- Most common filters when evaluating IP Video traffic
  - ip.addr [specific source or destination IP address]
  - ip.dst [specific IP address of destination]
  - ip.src [specific IP address of source]
  - udp.port [specific source or destination port}
  - udp.dstport [specific destination port]
  - Udp.srcport [specific source port}
- Example:
  - ip.addr = = 172.16.70.1

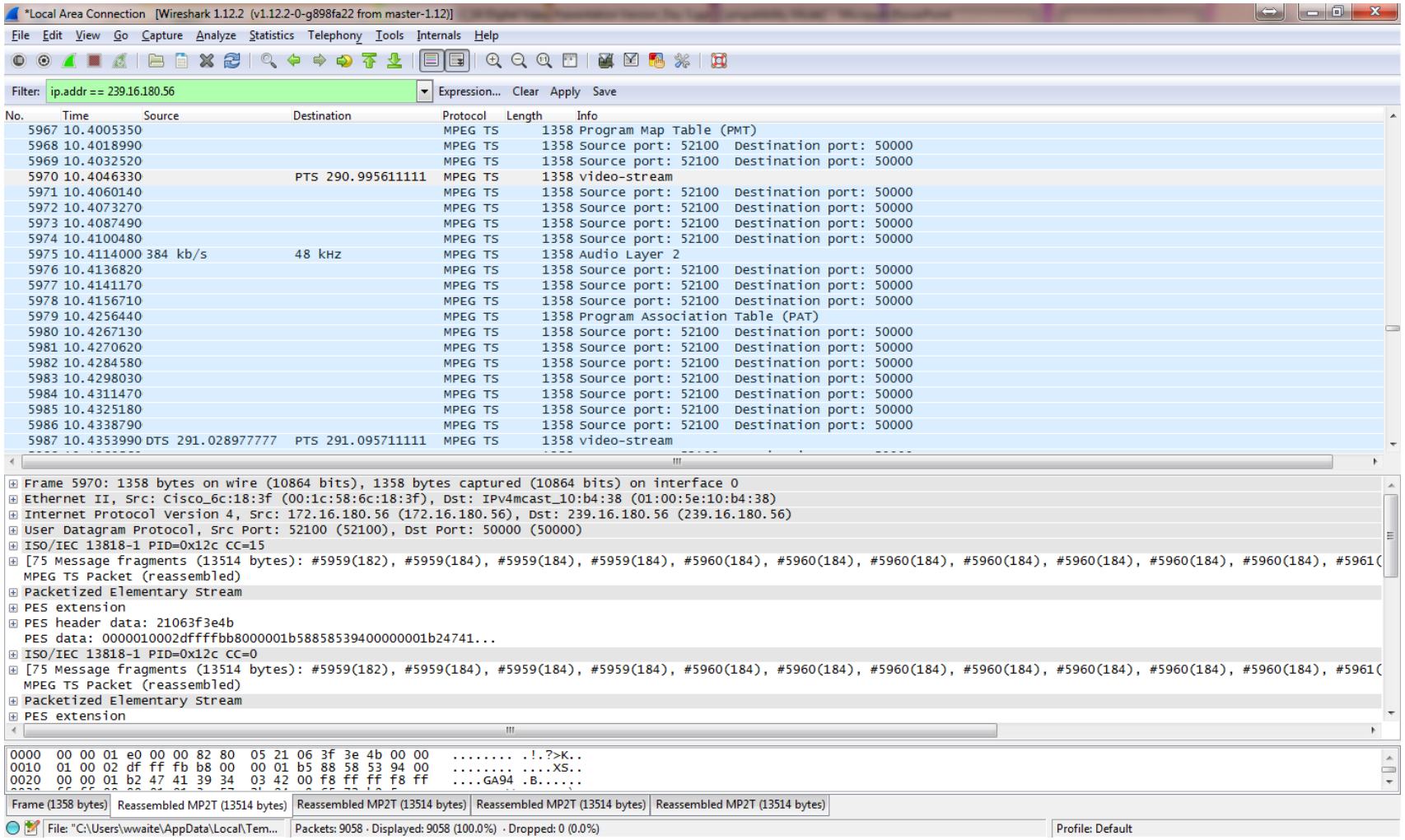
WIRESHARK Filter Syntax

- Operators in filter stream
  - ‘eq’ or ‘==‘ [is equal to]
  - ‘ne’ or ‘!=‘ [is NOT equal to]
  - ‘gt’ or ‘>’ [greater than]
  - ‘lt’ or ‘<‘ [less than]
  - ‘ge’ or ‘>=‘ [greater than or equal to]
  - ‘le’ or ‘<=‘ [less than or equal to]
- Example:
  - ip.addr eq 172.16.70.1
  - ip.dst eq 225.10.10.10

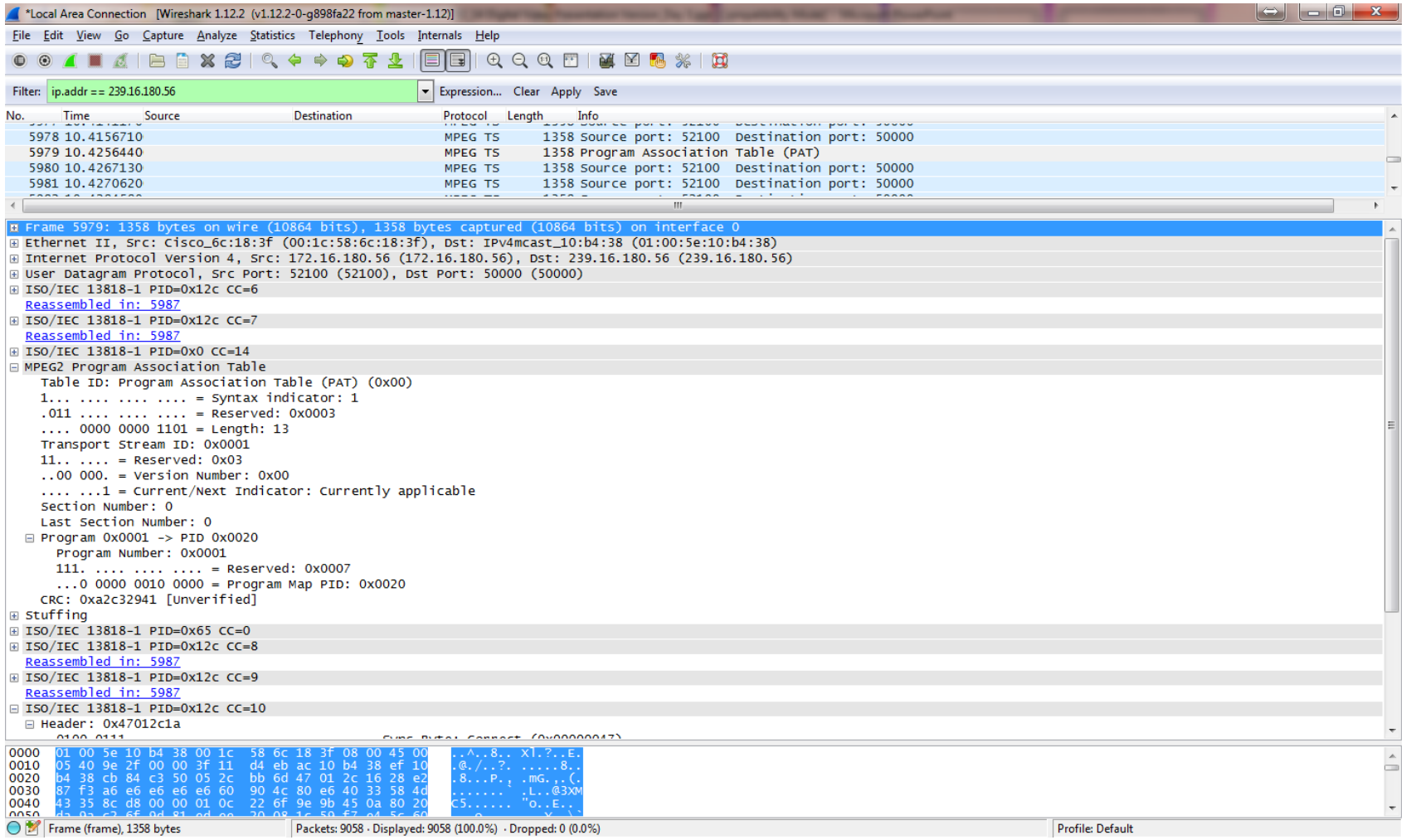
WIRESHARK Filter Syntax

- Multiple filter strings can be put together
- Logic in filter strings
  - ‘and’ or ‘&&’ [both strings are true]
  - ‘or’ or ‘||’ [at least one string is true]
  - ‘xor’ or ‘^^’ [one or the other is true but not both]
  - ‘not’ or ‘!’ [to make string not true]
- Example:
  - ip.addr == 172.16.70.1 xor ip.addr ==239.25.25.25
  - ip.addr == 172.16.70.20 and udp.oirt == 5000

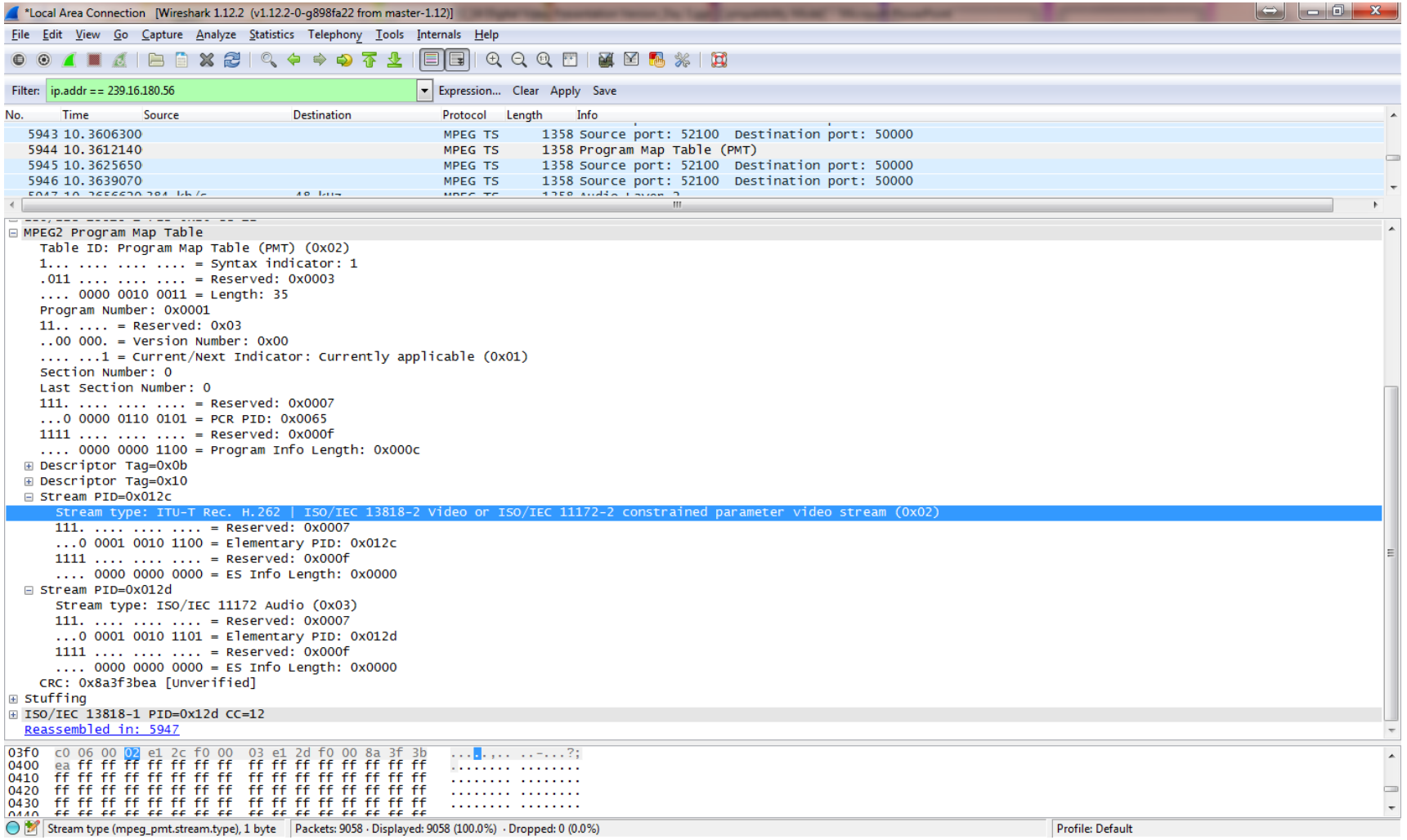
WIRESHARK Capture



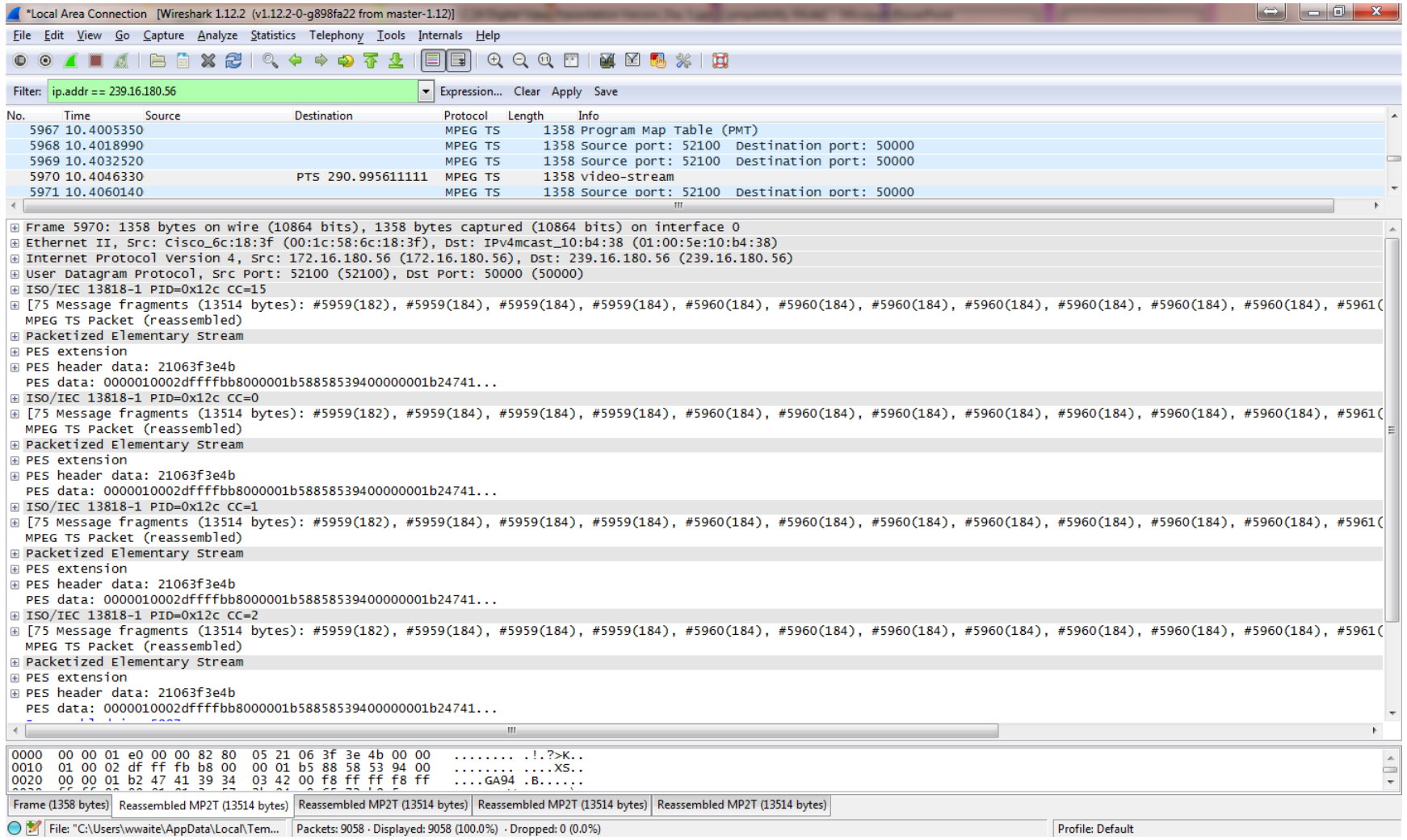
PAT Details


*Local Area Connection [Wireshark 1.12.2 (v1.12.2-0-g898fa22 from master-1.12)]
File Edit View Go Capture Analyze Statistics Telephony Tools Internals Help
Filter: ip.addr == 239.16.180.56
Expression... Clear Apply Save
No. Time Source Destination Protocol Length Info
5978 10.4156710 MPEG TS 1358 Source port: 52100 Destination port: 50000
5979 10.4256440 MPEG TS 1358 Program Association Table (PAT)
5980 10.4267130 MPEG TS 1358 Source port: 52100 Destination port: 50000
5981 10.4270620 MPEG TS 1358 Source port: 52100 Destination port: 50000
Frame 5979: 1358 bytes on wire (10864 bits), 1358 bytes captured (10864 bits) on interface 0
Ethernet II, Src: Cisco_6c:18:3f (00:1c:58:6c:18:3f), Dst: IPv4mcast_10:b4:38 (01:00:5e:10:b4:38)
Internet Protocol Version 4, Src: 172.16.180.56 (172.16.180.56), Dst: 239.16.180.56 (239.16.180.56)
User Datagram Protocol, Src Port: 52100 (52100), Dst Port: 50000 (50000)
ISO/IEC 13818-1 PID=0x12c CC=6
Reassembled in: 5987
ISO/IEC 13818-1 PID=0x12c CC=7
Reassembled in: 5987
ISO/IEC 13818-1 PID=0x0 CC=14
MPEG2 Program Association Table
Table ID: Program Association Table (PAT) (0x00)
1... .... = Syntax indicator: 1
.011 .... = Reserved: 0x0003
.... 0000 0000 1101 = Length: 13
Transport Stream ID: 0x0001
11.. .... = Reserved: 0x03
..00 000. = Version Number: 0x00
....1 = Current/Next Indicator: Currently applicable
Section Number: 0
Last Section Number: 0
Program 0x0001 -> PID 0x0020
Program Number: 0x0001
111. .... = Reserved: 0x0007
...0 0000 0010 0000 = Program Map PID: 0x0020
CRC: 0xa2c32941 [Unverified]
Stuffing
ISO/IEC 13818-1 PID=0x65 CC=0
ISO/IEC 13818-1 PID=0x12c CC=8
Reassembled in: 5987
ISO/IEC 13818-1 PID=0x12c CC=9
Reassembled in: 5987
ISO/IEC 13818-1 PID=0x12c CC=10
Header: 0x47012c1a
0000 01 00 5e 10 b4 38 00 1c 58 6c 18 3f 08 00 45 00
0010 05 40 9e 2f 00 00 3f 11 d4 eb ac 10 b4 38 ef 10
0020 b4 38 cb 84 c3 50 05 2c bb 6d 47 01 2c 16 28 e2
0030 87 f3 a6 e6 e6 e6 e6 60 90 4c 80 e6 40 33 58 4d
0040 43 35 8c d8 00 00 01 0c 22 6f 9e 9b 45 0a 80 20
Frame (frame), 1358 bytes
Packets: 9058 · Displayed: 9058 (100.0%) · Dropped: 0 (0.0%)
Profile: Default

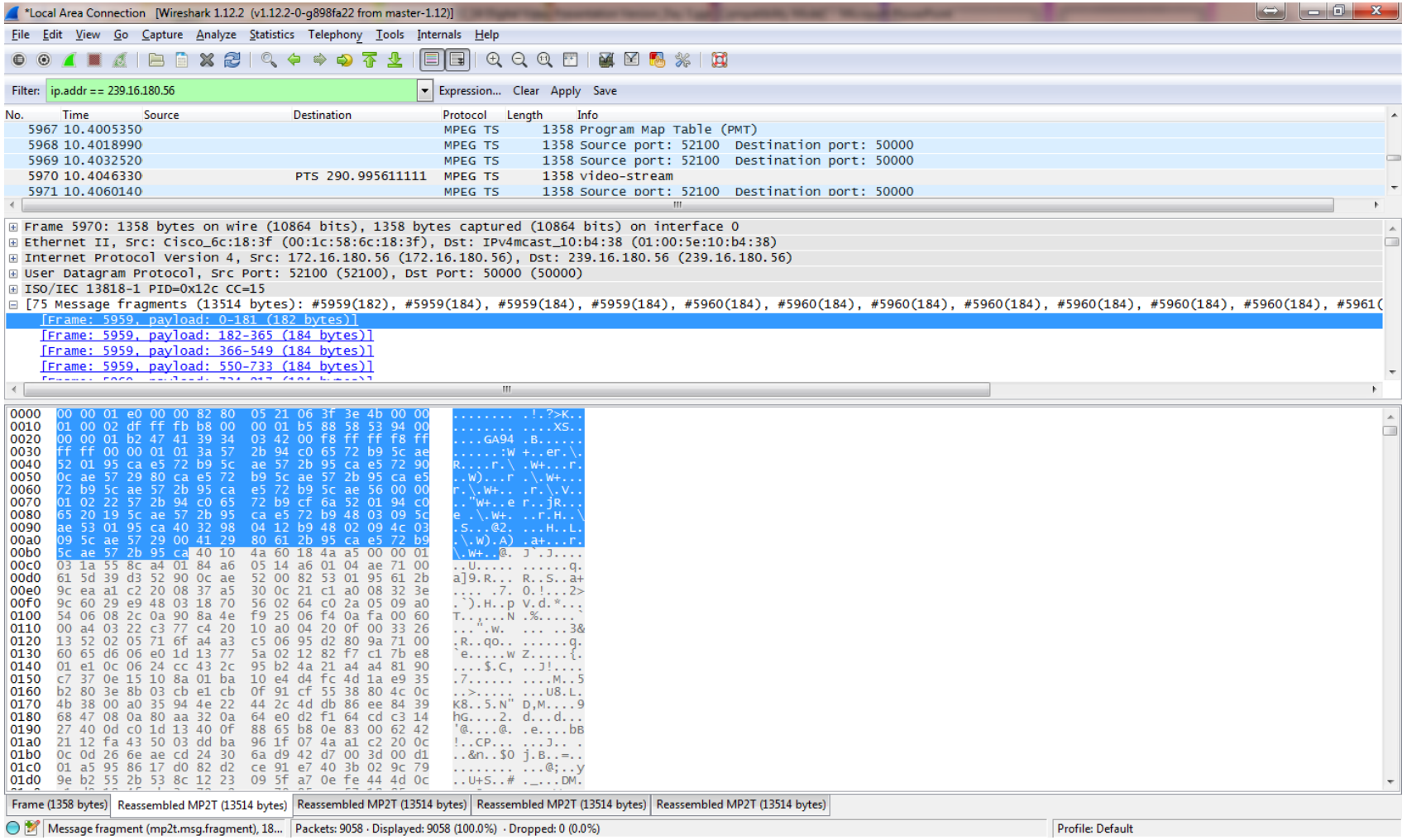
PMT Details


*Local Area Connection [Wireshark 1.12.2 (v1.12.2-0-g898fa22 from master-1.12)]
File Edit View Go Capture Analyze Statistics Telephony Tools Internals Help
Filter: ip.addr == 239.16.180.56
Expression... Clear Apply Save
No. Time Source Destination Protocol Length Info
5943 10.3606300 MPEG TS 1358 Source port: 52100 Destination port: 50000
5944 10.3612140 MPEG TS 1358 Program Map Table (PMT)
5945 10.3625650 MPEG TS 1358 Source port: 52100 Destination port: 50000
5946 10.3639070 MPEG TS 1358 Source port: 52100 Destination port: 50000
MPEG2 Program Map Table
Table ID: Program Map Table (PMT) (0x02)
1... .... = Syntax indicator: 1
.011 .... = Reserved: 0x0003
.... 0000 0010 0011 = Length: 35
Program Number: 0x0001
11.. .... = Reserved: 0x03
..00 000. = Version Number: 0x00
....1 = Current/Next Indicator: Currently applicable (0x01)
Section Number: 0
Last Section Number: 0
111. .... = Reserved: 0x0007
...0 0000 0110 0101 = PCR PID: 0x0065
1111 .... = Reserved: 0x000f
.... 0000 0000 1100 = Program Info Length: 0x000c
Descriptor Tag=0x0b
Descriptor Tag=0x10
Stream PID=0x012c
Stream type: ITU-T Rec. H.262 | ISO/IEC 13818-2 Video or ISO/IEC 11172-2 constrained parameter video stream (0x02)
111. .... = Reserved: 0x0007
...0 0001 0010 1100 = Elementary PID: 0x012c
1111 .... = Reserved: 0x000f
.... 0000 0000 0000 = ES Info Length: 0x0000
Stream PID=0x012d
Stream type: ISO/IEC 11172 Audio (0x03)
111. .... = Reserved: 0x0007
...0 0001 0010 1101 = Elementary PID: 0x012d
1111 .... = Reserved: 0x000f
.... 0000 0000 0000 = ES Info Length: 0x0000
CRC: 0x8a3f3bea [Unverified]
Stuffing
ISO/IEC 13818-1 PID=0x12d CC=12
Reassembled in: 5947
03f0 c0 06 00 02 e1 2c f0 00 03 e1 2d f0 00 8a 3f 3b
0400 ea ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
0410 ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
0420 ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
0430 ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff ff
Stream type (mpeg_pmt.stream.type), 1 byte
Packets: 9058 · Displayed: 9058 (100.0%) · Dropped: 0 (0.0%)
Profile: Default

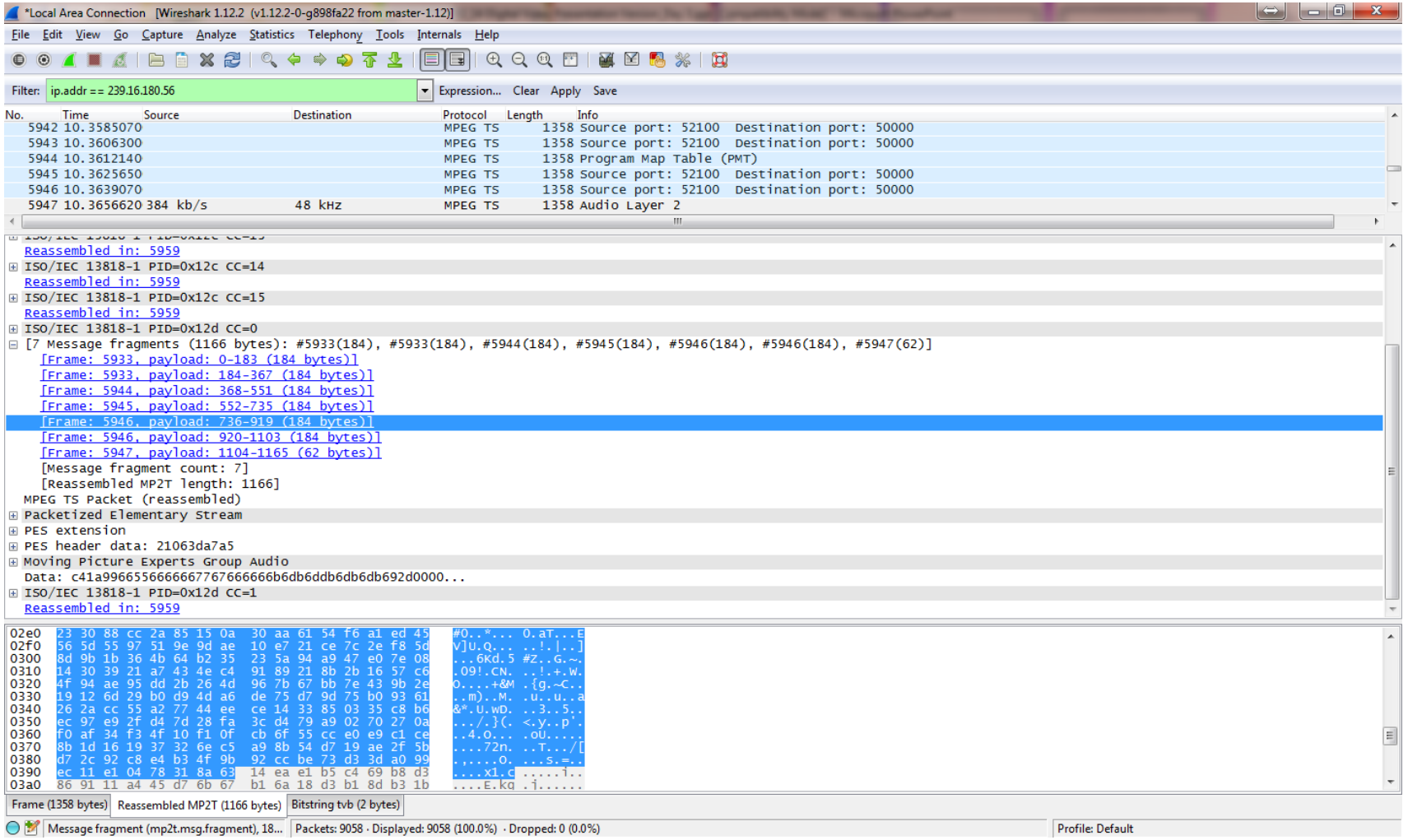
Video Stream Details



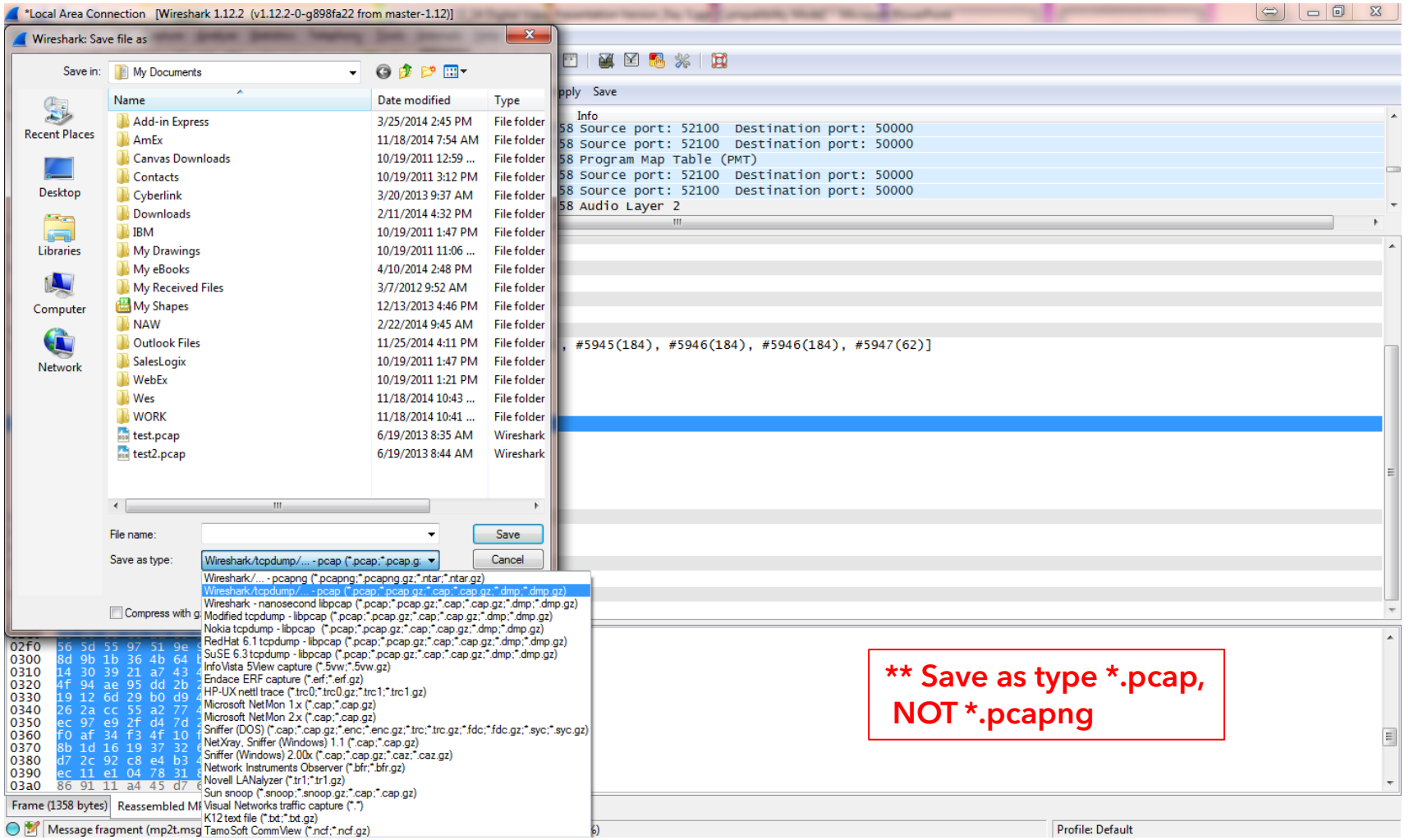
Video Stream Raw Data



Audio Stream Raw Data



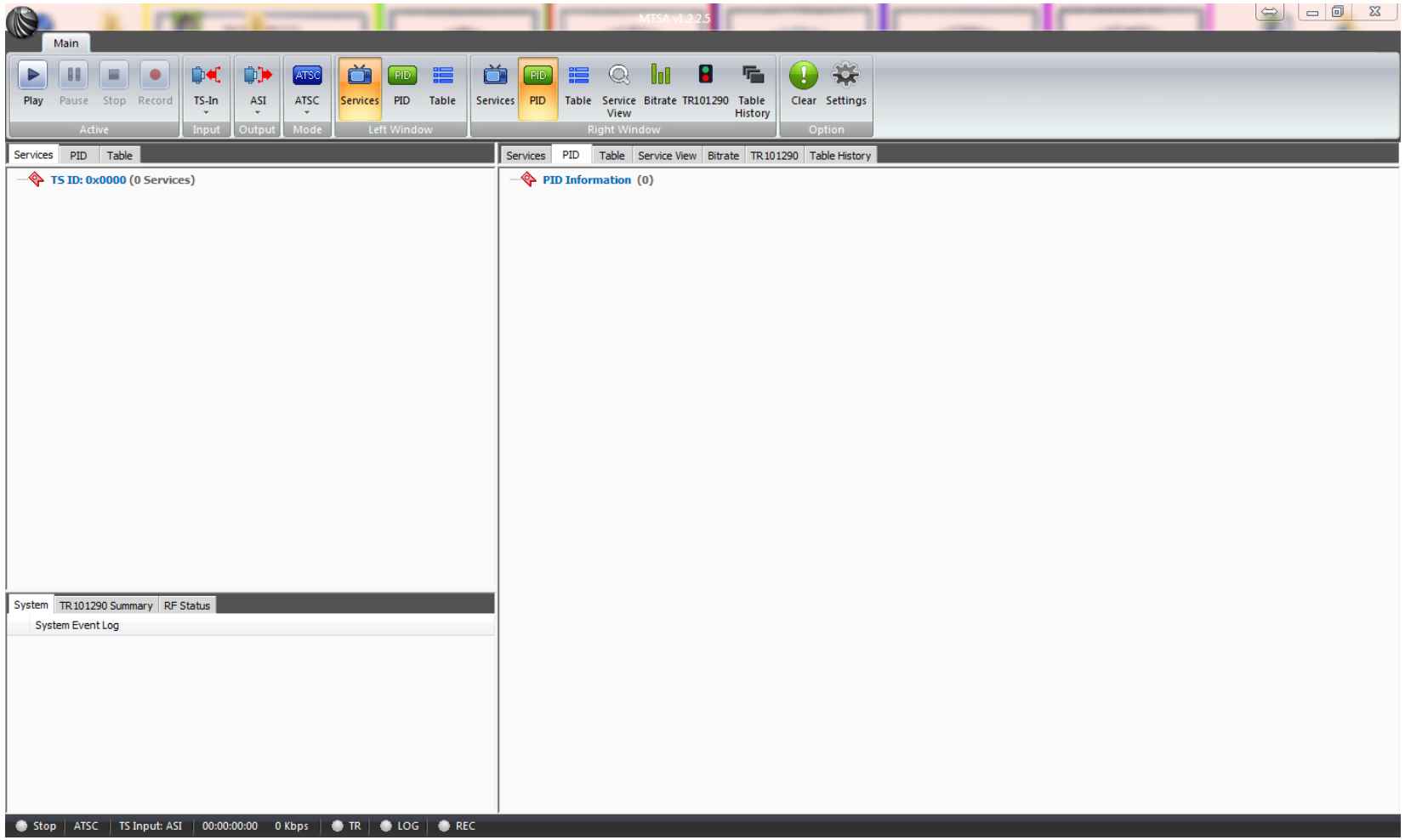
Saving TS for Engineering Evaluation



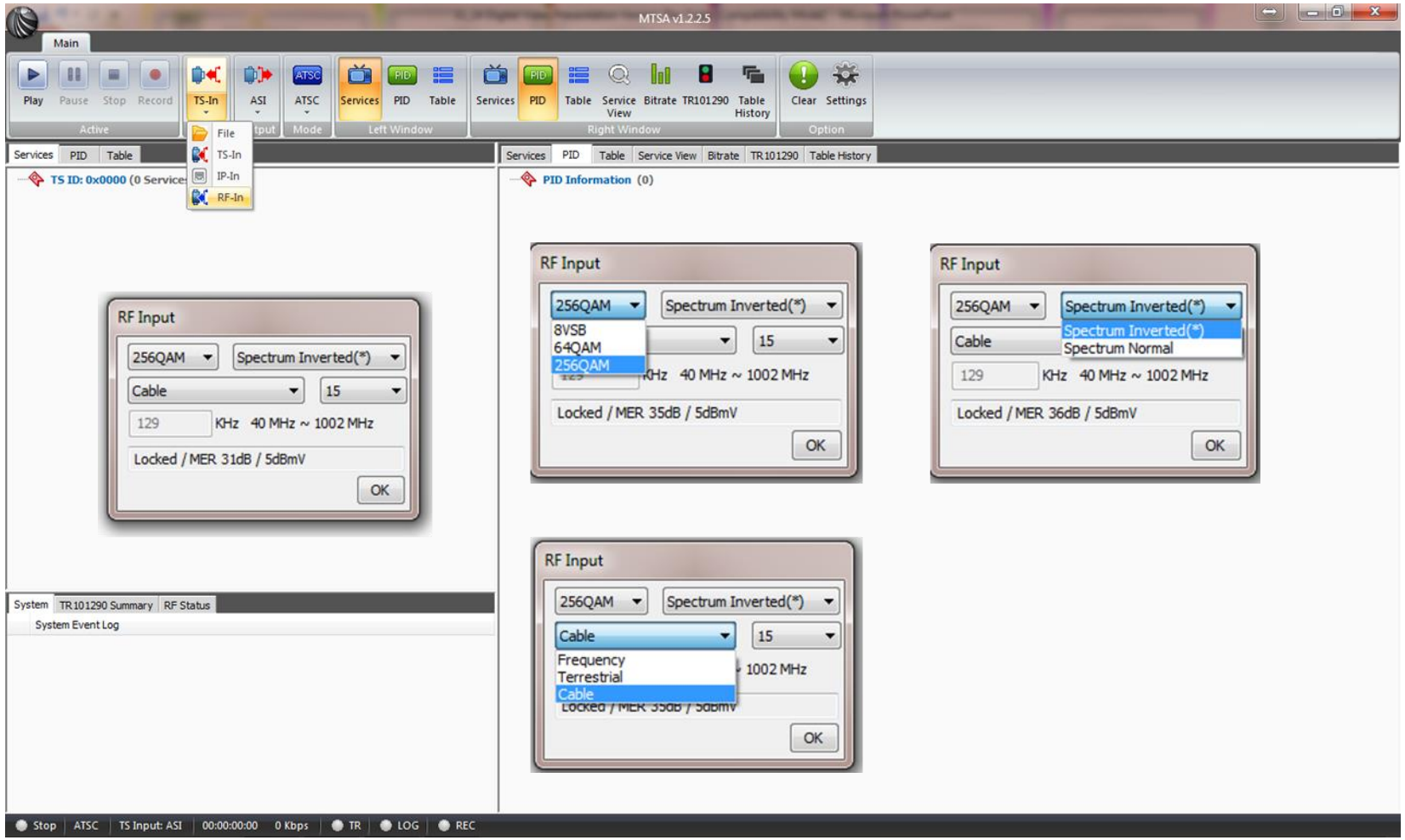
MTSA-PRO


QAM/8VSB RF
BLONDER TONGUE
LABORATORIES, INC
RF In
ASI In
ASI Out
RF In
USB
MTSA-PRO
Stk. No. 3726
MPEG TS Analyzer
ASI/RF/IP to USB
ASI In
(SMPTE 310M)
ASI Out
USB 2.0
ASI
ASI
USB

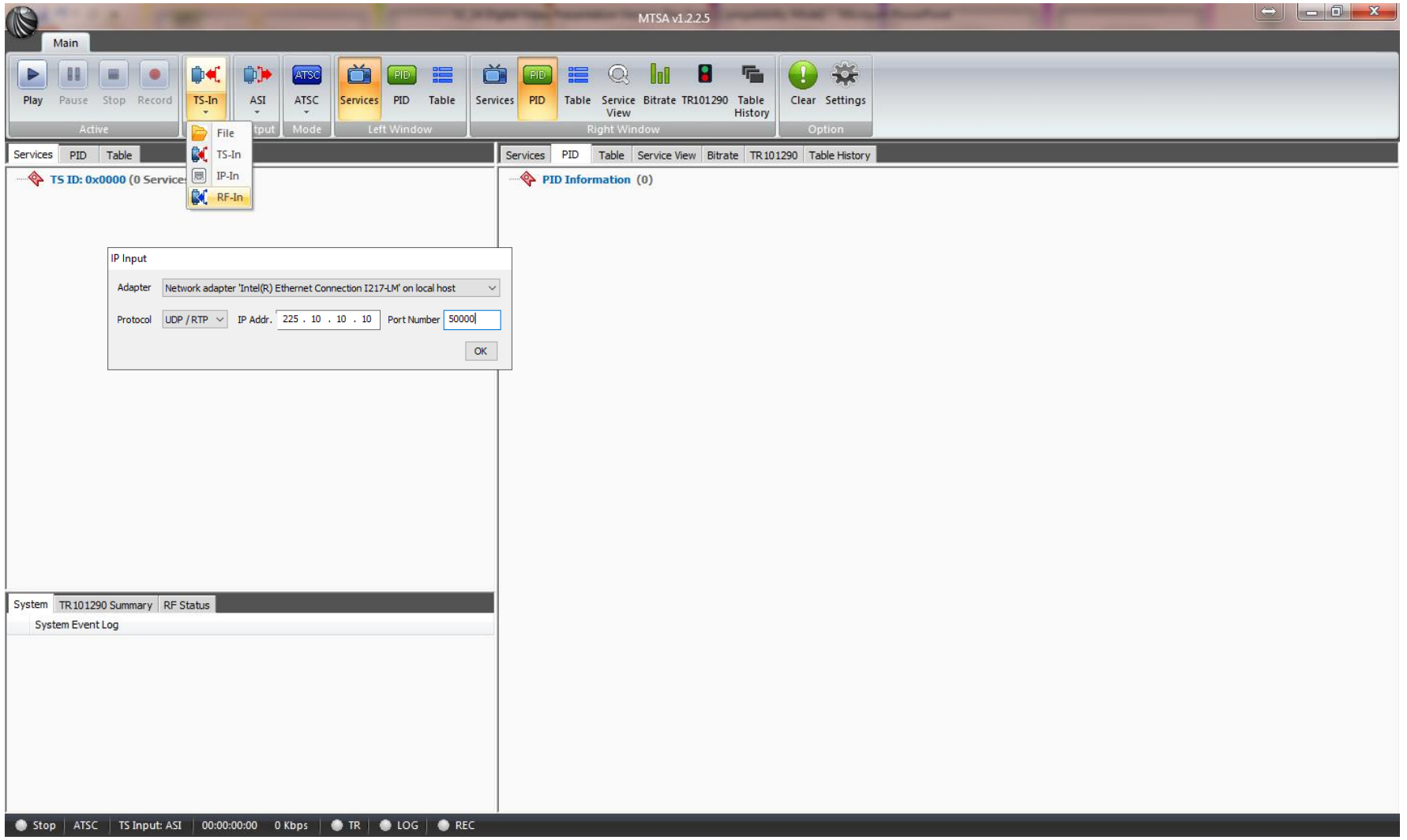
MTSA-PRO Software



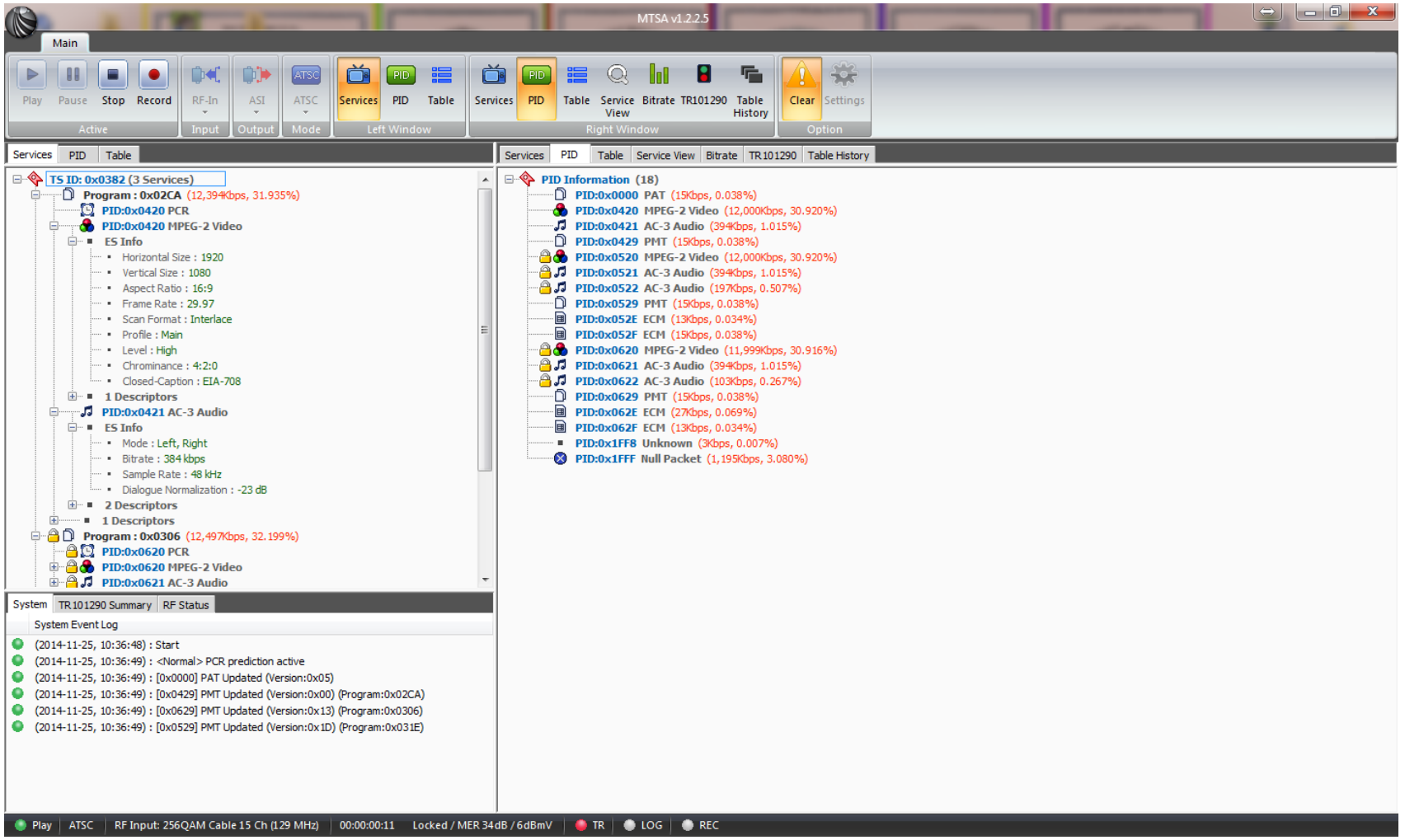
MTSA-PRO Software Setup RF Input



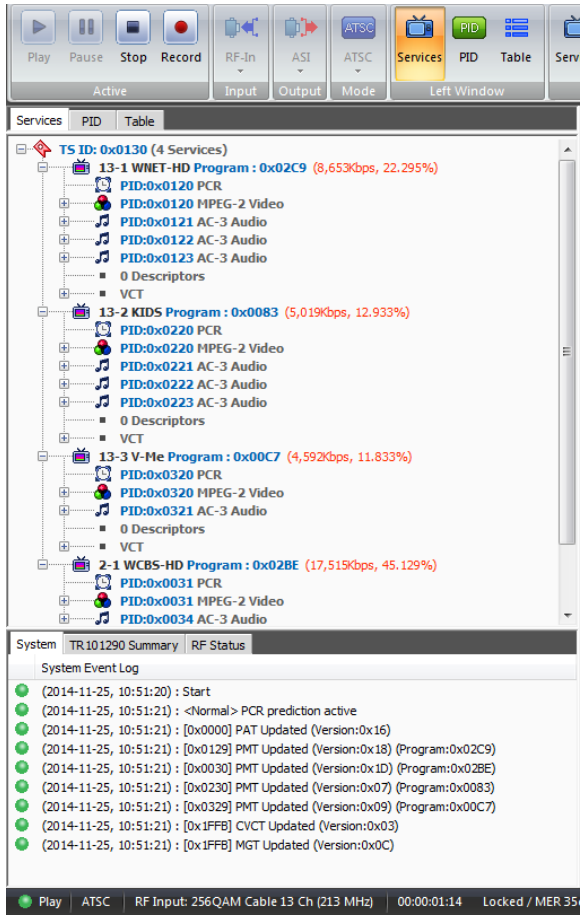
MTSA-PRO Software Setup IP Input



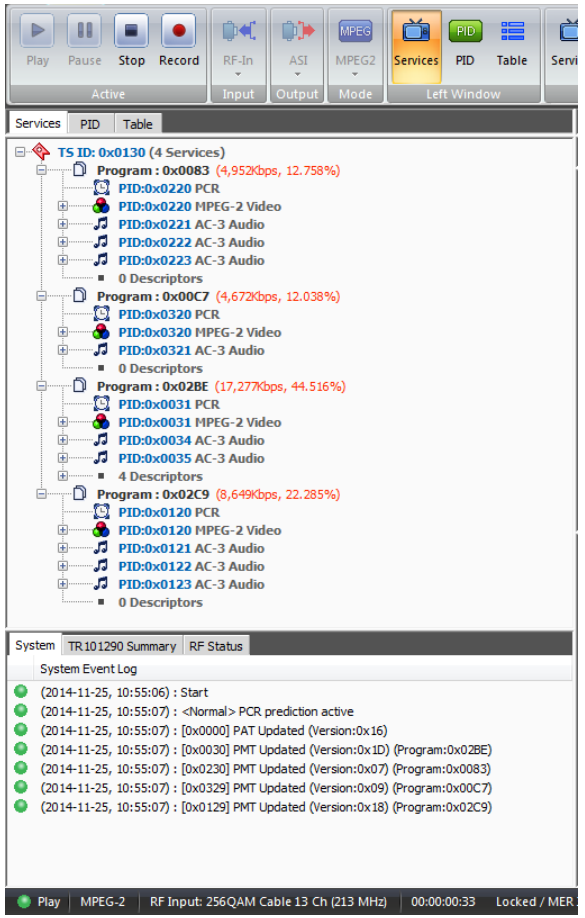
Playing the Stream



ATSC vs. MPEG-2 Mode



ATSC Mode adds PSIP tables (MGT, VCT, etc.) Including channel number and name.



MPEG-2 mode re-orders the programs by Hex number of PIDs

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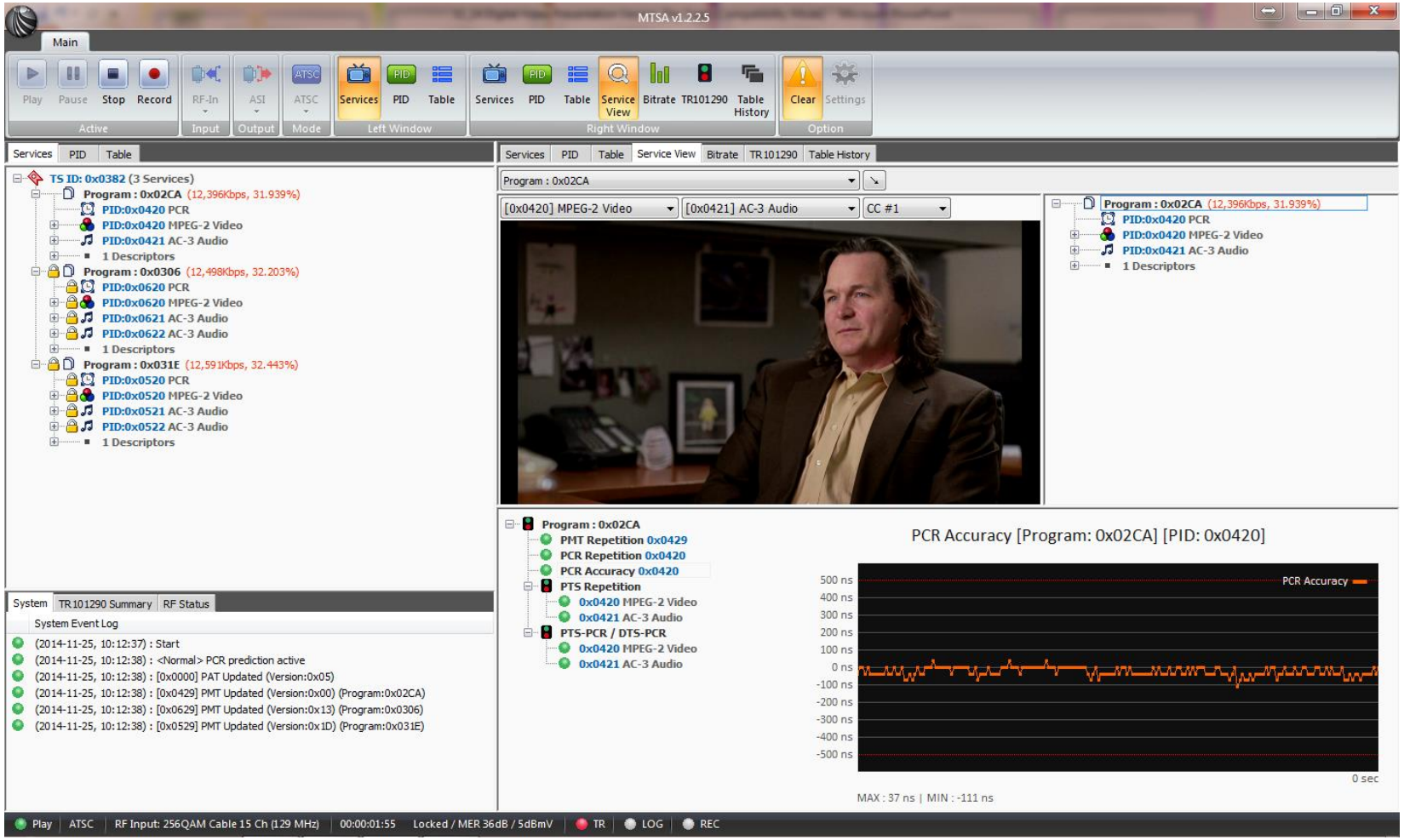
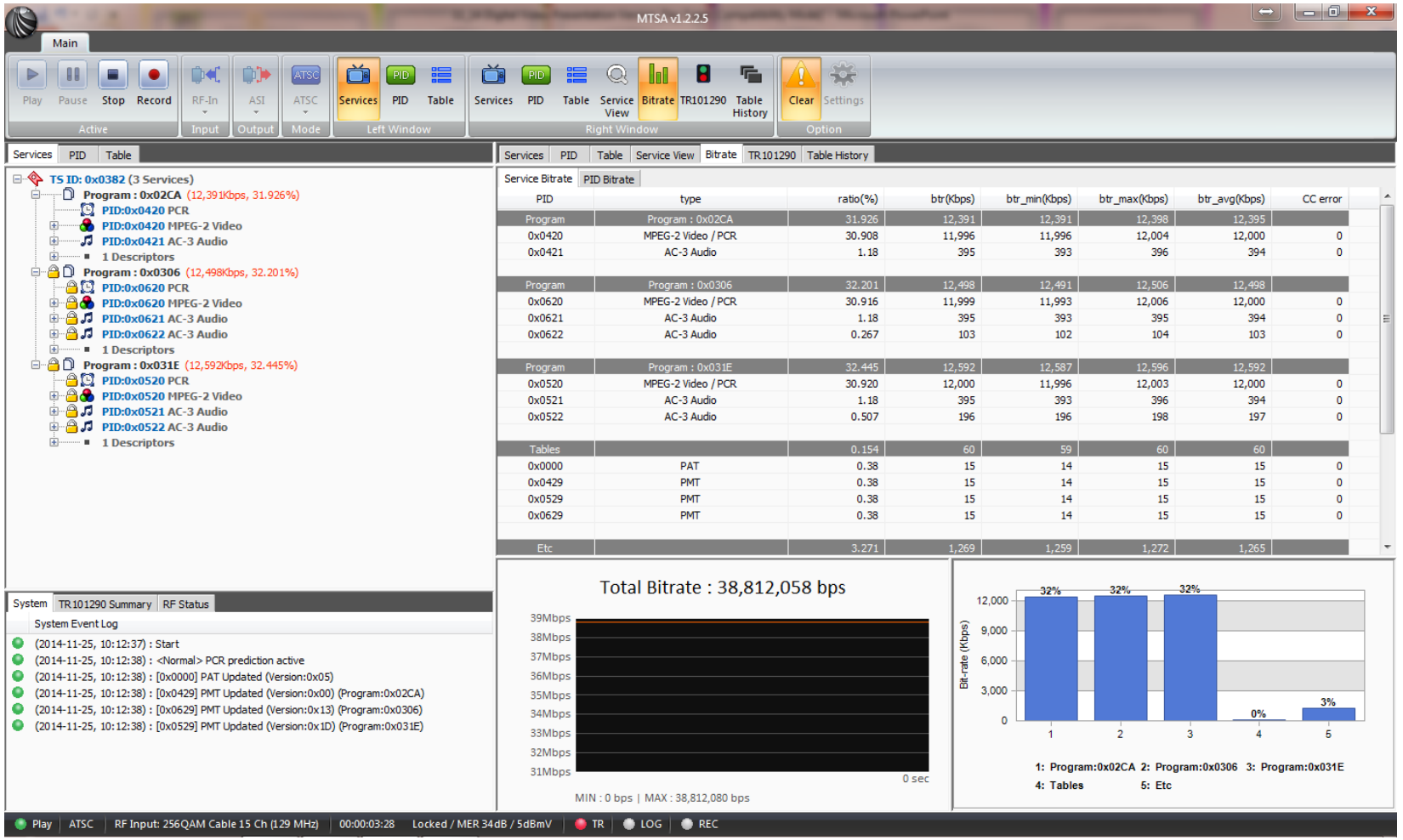
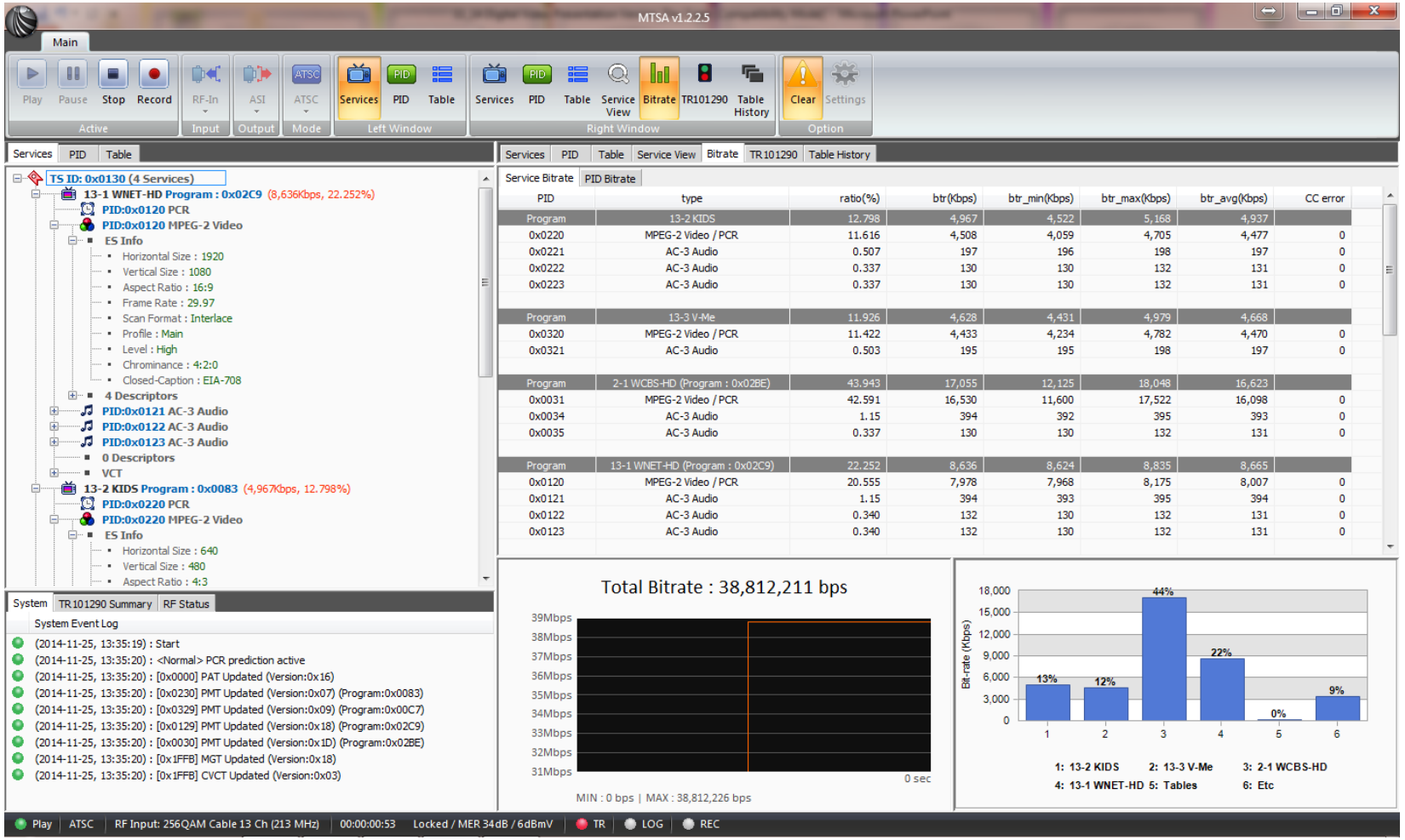
Service View



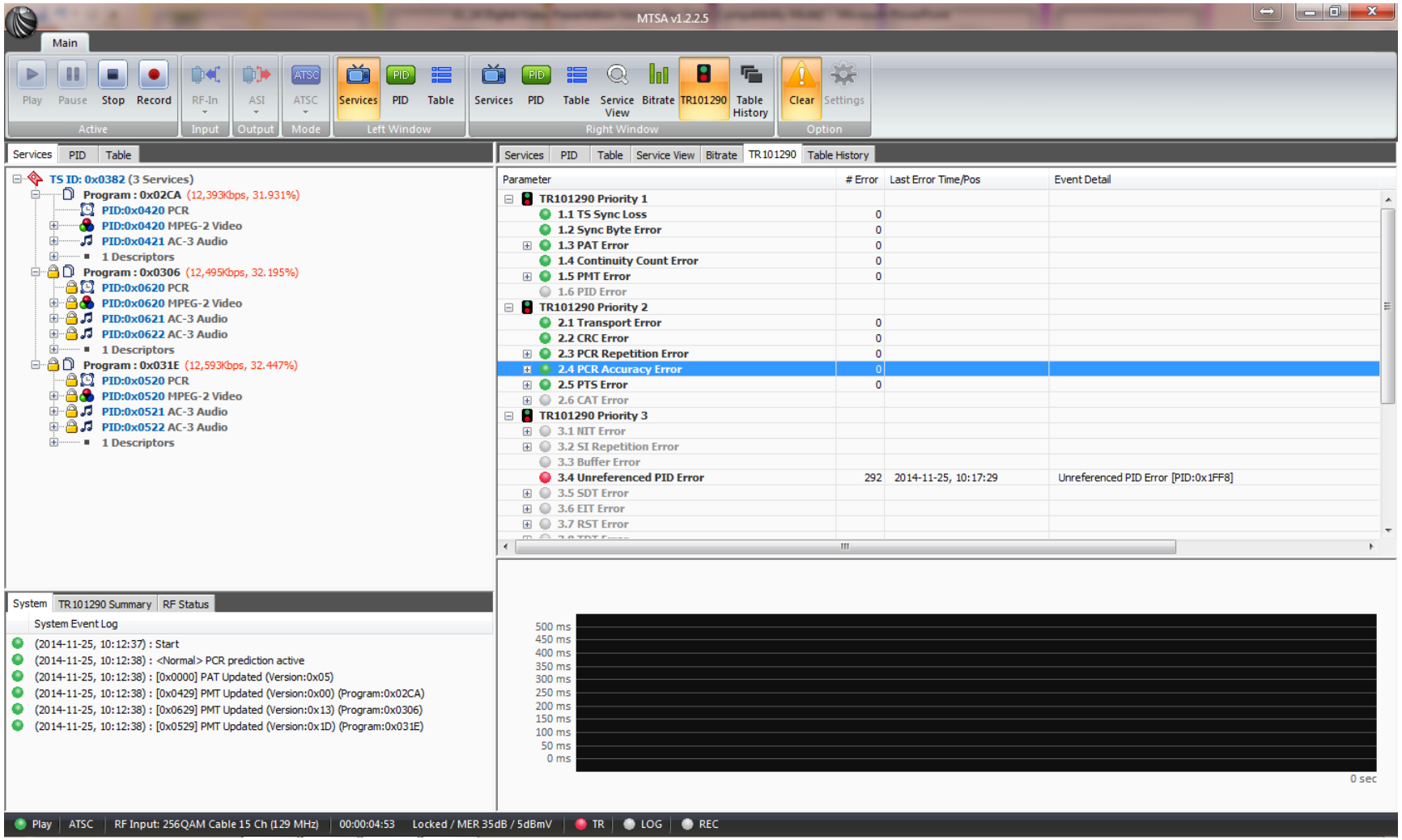
Bitrate


MTSA v1.2.2.5
Main
Play
Pause
Stop
Record
RF-In
ASI
ATSC
Services
PID
Table
Service View
Bitrate
TR101290
Table History
Clear
Settings
Active
Input
Output
Mode
Left Window
Right Window
Option
TS ID: 0x0382 (3 Services)
Program : 0x02CA (12,391Kbps, 31.926%)
PID:0x0420 PCR
PID:0x0420 MPEG-2 Video
PID:0x0421 AC-3 Audio
1 Descriptors
Program : 0x0306 (12,498Kbps, 32.201%)
PID:0x0620 PCR
PID:0x0620 MPEG-2 Video
PID:0x0621 AC-3 Audio
PID:0x0622 AC-3 Audio
1 Descriptors
Program : 0x031E (12,592Kbps, 32.445%)
PID:0x0520 PCR
PID:0x0520 MPEG-2 Video
PID:0x0521 AC-3 Audio
PID:0x0522 AC-3 Audio
1 Descriptors
Service Bitrate
PID Bitrate
PID | type | ratio(%) | btr(Kbps) | btr_min(Kbps) | btr_max(Kbps) | btr_avg(Kbps) | CC error
Program | Program : 0x02CA | 31.926 | 12,391 | 12,391 | 12,398 | 12,395
0x0420 | MPEG-2 Video / PCR | 30.908 | 11,996 | 11,996 | 12,004 | 12,000 | 0
0x0421 | AC-3 Audio | 1.18 | 395 | 393 | 396 | 394 | 0
Program | Program : 0x0306 | 32.201 | 12,498 | 12,491 | 12,506 | 12,498
0x0620 | MPEG-2 Video / PCR | 30.916 | 11,999 | 11,993 | 12,006 | 12,000 | 0
0x0621 | AC-3 Audio | 1.18 | 395 | 393 | 395 | 394 | 0
0x0622 | AC-3 Audio | 0.267 | 103 | 102 | 104 | 103 | 0
Program | Program : 0x031E | 32.445 | 12,592 | 12,587 | 12,596 | 12,592
0x0520 | MPEG-2 Video / PCR | 30.920 | 12,000 | 11,996 | 12,003 | 12,000 | 0
0x0521 | AC-3 Audio | 1.18 | 395 | 393 | 396 | 394 | 0
0x0522 | AC-3 Audio | 0.507 | 196 | 196 | 198 | 197 | 0
Tables | | 0.154 | 60 | 59 | 60 | 60
0x0000 | PAT | 0.38 | 15 | 14 | 15 | 15 | 0
0x0429 | PMT | 0.38 | 15 | 14 | 15 | 15 | 0
0x0529 | PMT | 0.38 | 15 | 14 | 15 | 15 | 0
0x0629 | PMT | 0.38 | 15 | 14 | 15 | 15 | 0
Etc | | 3.271 | 1,269 | 1,259 | 1,272 | 1,265
System
TR101290 Summary
RF Status
System Event Log
(2014-11-25, 10:12:37) : Start
(2014-11-25, 10:12:38) : <Normal> PCR prediction active
(2014-11-25, 10:12:38) : [0x0000] PAT Updated (Version:0x05)
(2014-11-25, 10:12:38) : [0x0429] PMT Updated (Version:0x00) (Program:0x02CA)
(2014-11-25, 10:12:38) : [0x0629] PMT Updated (Version:0x13) (Program:0x0306)
(2014-11-25, 10:12:38) : [0x0529] PMT Updated (Version:0x1D) (Program:0x031E)
Total Bitrate : 38,812,058 bps
39Mbps
38Mbps
37Mbps
36Mbps
35Mbps
34Mbps
33Mbps
32Mbps
31Mbps
0 sec
MIN : 0 bps | MAX : 38,812,080 bps
Bit-rate (Kbps)
12,000
9,000
6,000
3,000
0
32%
32%
32%
0%
3%
1
2
3
4
5
1: Program:0x02CA 2: Program:0x0306 3: Program:0x031E
4: Tables 5: Etc
Play | ATSC | RF Input: 256QAM Cable 15 Ch (129 MHz) | 00:00:03:28 | Locked / MER 34dB / 5dBmV | TR | LOG | REC

Bitrate 2


MTSA v1.2.2.5
Main
Play
Pause
Stop
Record
RF-In
ASI
ATSC
Services
PID
Table
Service View
Bitrate
TR101290
Table History
Clear
Settings
Active
Input
Output
Mode
Left Window
Right Window
Option
TS ID: 0x0130 (4 Services)
13-1 WNET-HD Program : 0x02C9 (8,636Kbps, 22.252%)
PID:0x0120 PCR
PID:0x0120 MPEG-2 Video
ES Info
Horizontal Size : 1920
Vertical Size : 1080
Aspect Ratio : 16:9
Frame Rate : 29.97
Scan Format : Interlace
Profile : Main
Level : High
Chrominance : 4:2:0
Closed-Caption : EIA-708
4 Descriptors
PID:0x0121 AC-3 Audio
PID:0x0122 AC-3 Audio
PID:0x0123 AC-3 Audio
0 Descriptors
VCT
13-2 KIDS Program : 0x0083 (4,967Kbps, 12.798%)
PID:0x0220 PCR
PID:0x0220 MPEG-2 Video
ES Info
Horizontal Size : 640
Vertical Size : 480
Aspect Ratio : 4:3
Service Bitrate
PID Bitrate
PID type ratio(%) btr(Kbps) btr_min(Kbps) btr_max(Kbps) btr_avg(Kbps) CC error
Program 13-2 KIDS 12.798 4,967 4,522 5,168 4,937
0x0220 MPEG-2 Video / PCR 11.616 4,508 4,059 4,705 4,477 0
0x0221 AC-3 Audio 0.507 197 196 198 197 0
0x0222 AC-3 Audio 0.337 130 130 132 131 0
0x0223 AC-3 Audio 0.337 130 130 132 131 0
Program 13-3 V-Me 11.926 4,628 4,431 4,979 4,668
0x0320 MPEG-2 Video / PCR 11.422 4,433 4,234 4,782 4,470 0
0x0321 AC-3 Audio 0.503 195 195 198 197 0
Program 2-1 WCBS-HD (Program : 0x02BE) 43.943 17,055 12,125 18,048 16,623
0x0031 MPEG-2 Video / PCR 42.591 16,530 11,600 17,522 16,098 0
0x0034 AC-3 Audio 1.15 394 392 395 393 0
0x0035 AC-3 Audio 0.337 130 130 132 131 0
Program 13-1 WNET-HD (Program : 0x02C9) 22.252 8,636 8,624 8,835 8,665
0x0120 MPEG-2 Video / PCR 20.555 7,978 7,968 8,175 8,007 0
0x0121 AC-3 Audio 1.15 394 393 395 394 0
0x0122 AC-3 Audio 0.340 132 130 132 131 0
0x0123 AC-3 Audio 0.340 132 130 132 131 0
System
TR101290 Summary
RF Status
System Event Log
(2014-11-25, 13:35:19) : Start
(2014-11-25, 13:35:20) : <Normal> PCR prediction active
(2014-11-25, 13:35:20) : [0x0000] PAT Updated (Version:0x16)
(2014-11-25, 13:35:20) : [0x0230] PMT Updated (Version:0x07) (Program:0x0083)
(2014-11-25, 13:35:20) : [0x0329] PMT Updated (Version:0x09) (Program:0x00C7)
(2014-11-25, 13:35:20) : [0x0129] PMT Updated (Version:0x18) (Program:0x02C9)
(2014-11-25, 13:35:20) : [0x0030] PMT Updated (Version:0x1D) (Program:0x02BE)
(2014-11-25, 13:35:20) : [0x1FFB] MGT Updated (Version:0x18)
(2014-11-25, 13:35:20) : [0x1FFB] CVCT Updated (Version:0x03)
Total Bitrate : 38,812,211 bps
39Mbps
38Mbps
37Mbps
36Mbps
35Mbps
34Mbps
33Mbps
32Mbps
31Mbps
0 sec
MIN : 0 bps | MAX : 38,812,226 bps
Bit-rate (Kbps)
18,000
15,000
12,000
9,000
6,000
3,000
0
13%
12%
44%
22%
0%
9%
1: 13-2 KIDS
2: 13-3 V-Me
3: 2-1 WCBS-HD
4: 13-1 WNET-HD
5: Tables
6: Etc
Play
ATSC
RF Input: 256QAM Cable 13 Ch (213 MHz)
00:00:00:53
Locked / MER 34dB / 6dBmV
TR
LOG
REC

TR 101 290 Errors



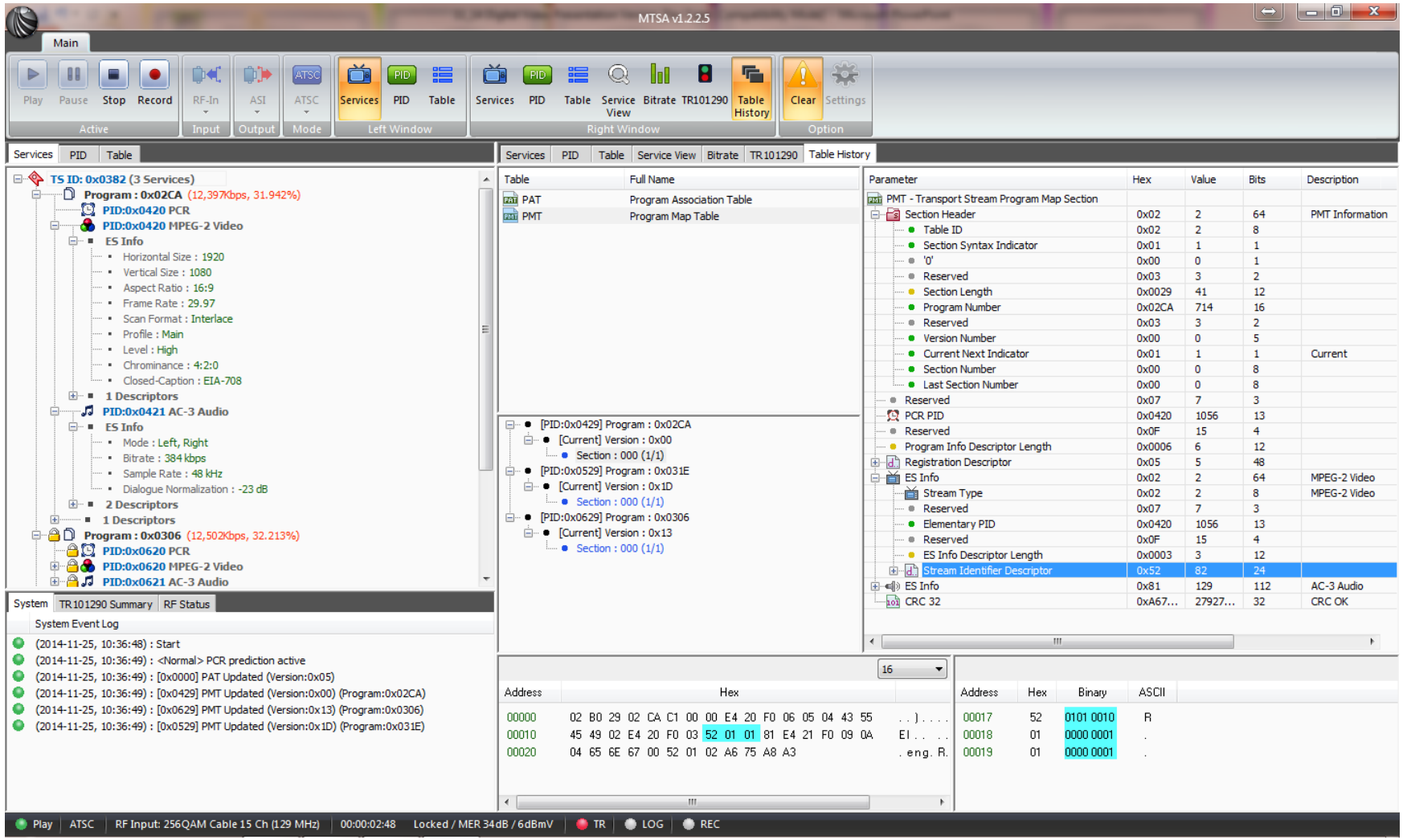
TR 101 290 Errors

No.	Indicator	Comment
1.1	TS_sync_loss	Essential for access to TS data
1.2	Sync_byte_error	May not necessarily prevent decoding of content
1.3	PAT_error	Essential for access to TS data
1.3.a	PAT_error_2	Essential for access to TS data
1.4	Continuity_ count_error	May not necessarily prevent decoding of content
1.5	PMT_error	Essential for access to TS data
1.5.a	PMT_error_2	Essential for access to TS data
1.6	PID_error	May not necessarily prevent decoding of content

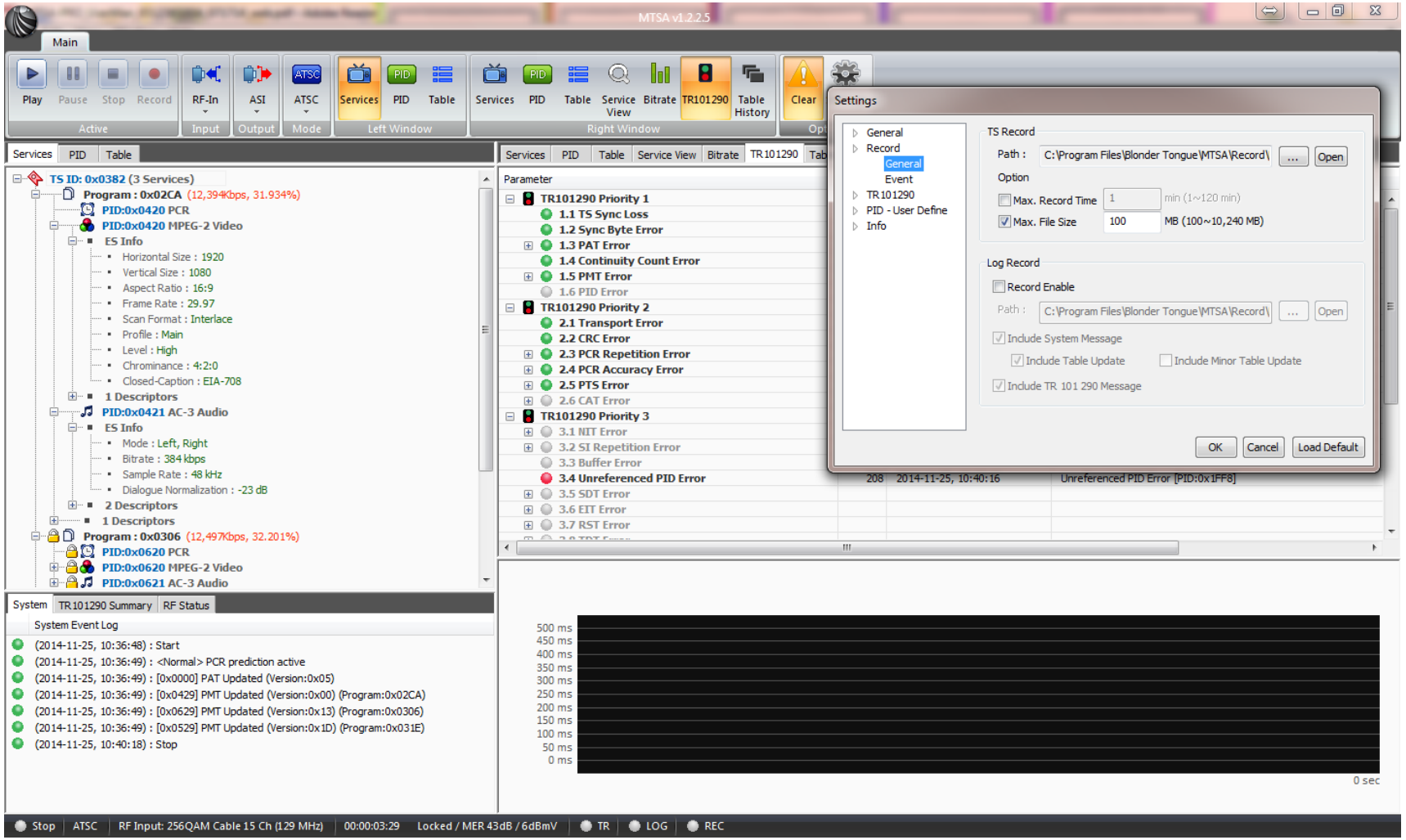
No.	Indicator	Comment
2.1	Transport_error	
2.2	CRC_error	Applies to PAT and PMT only
2.3	PCR_error	
2.3a	PCR_repetition_error	
2.3b	PCR_discontinuity_indicator_error	
2.4	PCR_accuracy_error	
2.5	PTS_error	
2.6	CAT_error	

No.	Indicator	Comment
3.3	Buffer_error	
3.4	Unreferenced_PID	
3.4.a	Unreferenced_PID	
3.9	Empty_buffer_error	
3.10	Data_delay_error	

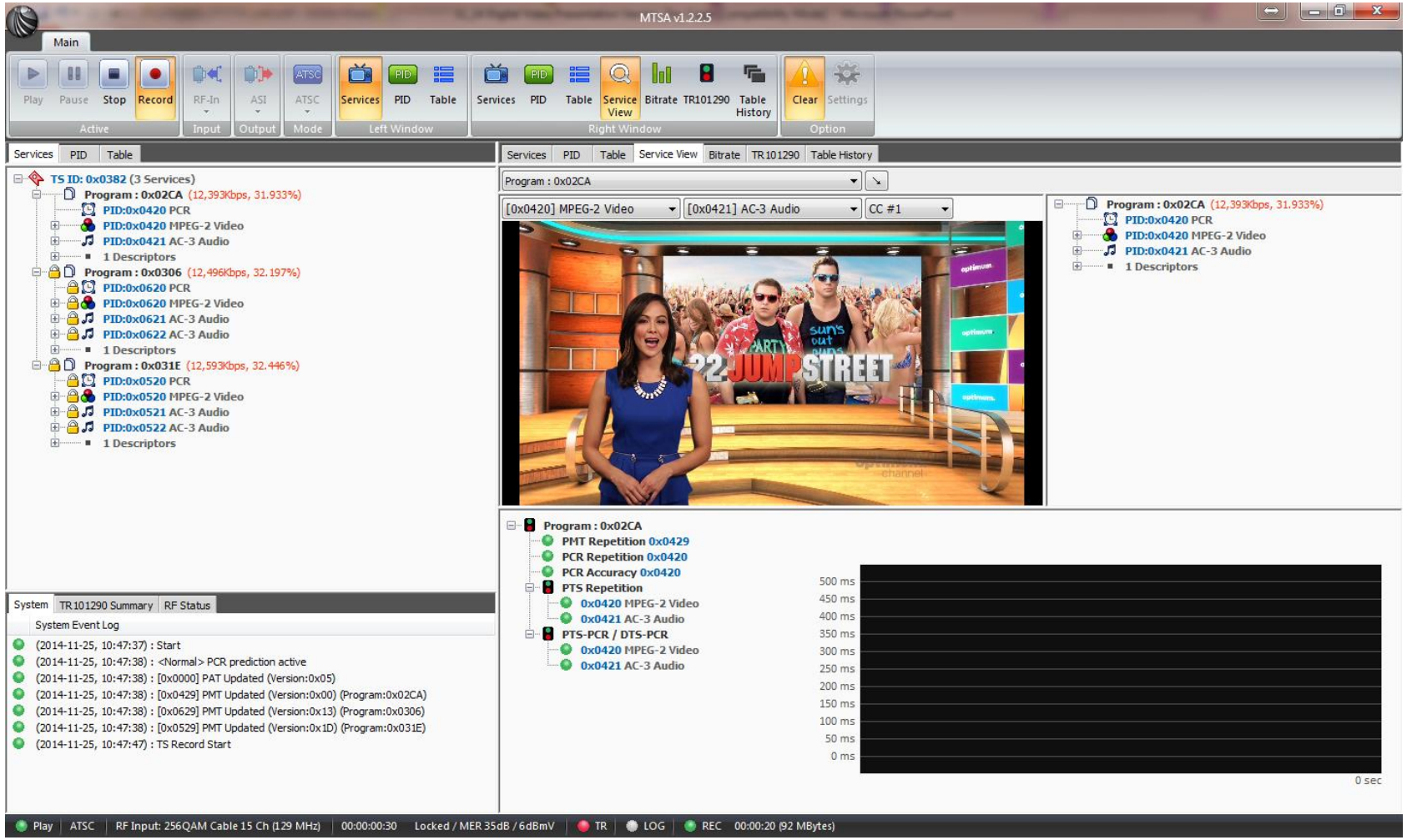
Table History



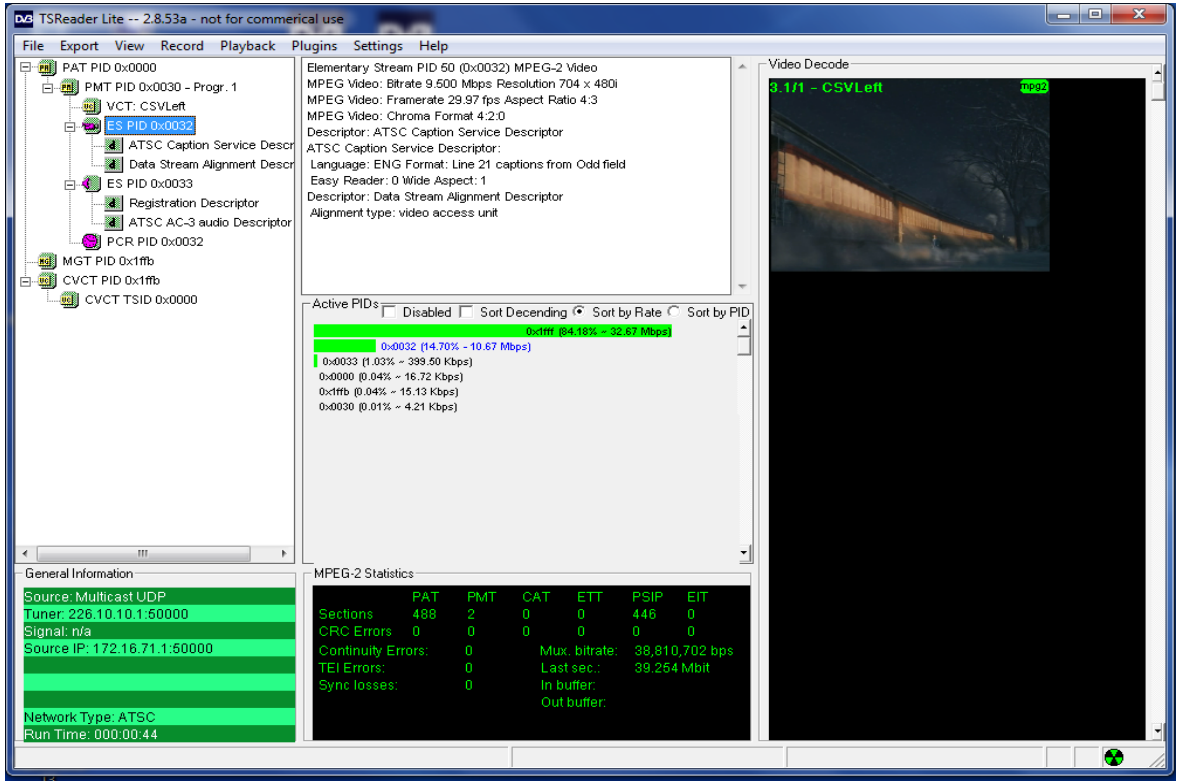
Setup Recording



Record a Stream

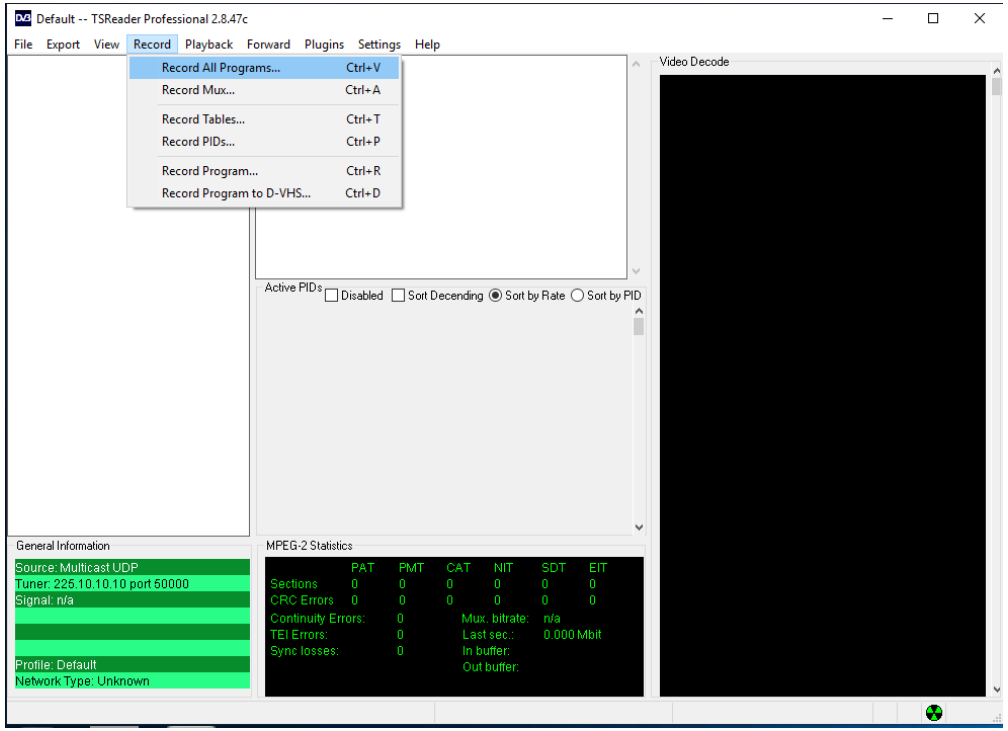


TSReader



- TSReader will show all PID data, tables, etc.
- You can record and playback streams
- Clicking the Video Decode sample of the video stream will open VLC for viewing (limited to 2 minutes on Lite version)
- Having a QAM/8VSB tuner, can use that as well as TS Reader
- Shows Continuity Errors, Sync Loss, etc.
- Recording in TSReader Lite version limited to 2 minutes

TSReader – Record a stream



- Record 2-3 minute stream
- Send to Blonder Tongue for evaluation

Sending TSRecordings to BT

- Wireshark recordings must be saved as .pcap
- **Do not** add any filters to Wireshark recording, unless specifically instructed
- Wireshark, MTSA-PRO or TSReader recordings should be 2-3 minutes long
- Required Information
  - What equipment is generating TS (Model/Brand)
  - Diagram of network, including switches and routers
  - Where in network each capture is made
  - What is the issue
- BT will only evaluate BT/Drake product-produced TS at no charge. Any non-BT/Drake product-produced streams will be charged a fee to evaluate and suggest how to correct the issue
- Contact for sending in TS captures : techsupport@blondertongue.com
- Someone from BT Support will provide FTP link to upload capture (**Do not** ty and send captures via e-mail – too large!)

Blonder Tongue Technical Support

- Blonder Tongue can also remotely assist in Encoder setup and troubleshooting of network issues
- We use TeamViewer 12 or GoToMeeting
  - For TeamViewer 12, search 'teamviewer 12' and find older versions, or contact BT Tech Support for Quick Start Setup
  - For GoToMeeting – contact Tech Support – they will provide a link
- Remote computer must have internet access and local access to encoders
- Tech Support needs network diagram of how all components are connected
- **No** fee for Blonder Tongue products
- Fees will apply if non-Blonder Tongue products
- All support (phone and remote log-in) Monday – Friday 8:30 – 4:30pm ET

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