Contents

Using TSRoute user’s guide

TSROUTE application has been developed to stream MPEG2-TS transport stream files towards the video components. With this tool running on Windows, it’s now possible to show:

- MPEG2-TS spooled Live TV channels over Internet,

TSROUTE is not only a MPEG2-TS streamer, with TSROUTE you can:

- Capture MPEG2 Transport Stream on network
- Parse MPEG2 Transport Stream files
- Route MPEG2 Transport Stream streams

Installing TSRoute

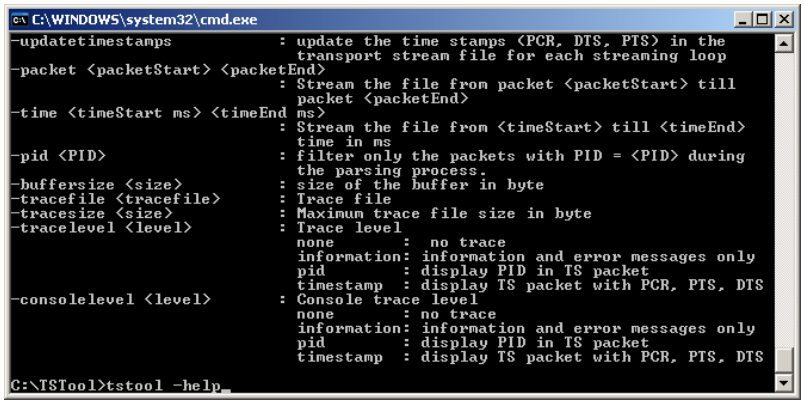
Copying TSRoute files

Copy all the files listed below to the destination folder on your machine running Windows.

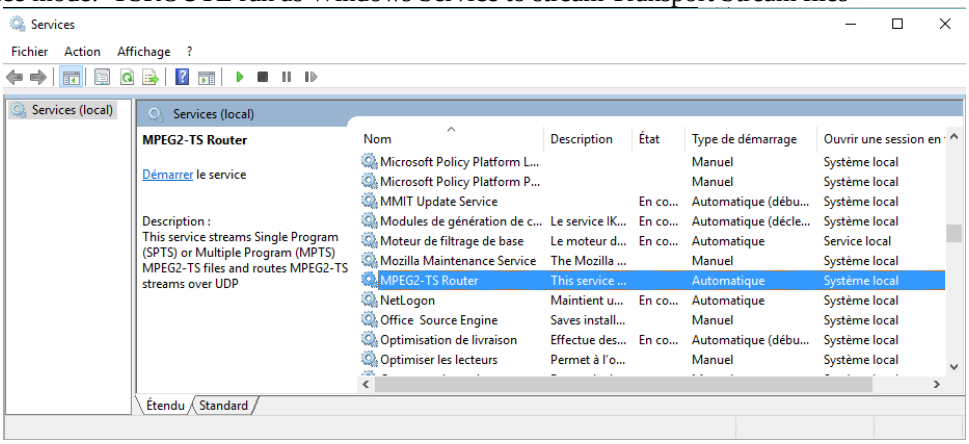
Description	DVD Folder	Internet link	Destination
Latest TSRoute build without TS files	\IPTV_Edition_Tools\TSRoute	https://github.com/flecoqui/Win32/blob/master/TSRoute/Releases/ReleasesWithTSFiles.zip	C:\TSROUTE
Latest TSRoute build with TS files.	\IPTV_Edition_Tools\TSRoute\TS	https://github.com/flecoqui/Win32/blob/master/TSRoute/Releases/Releases.zip	C:\TSROUTE

Installing TSRoute

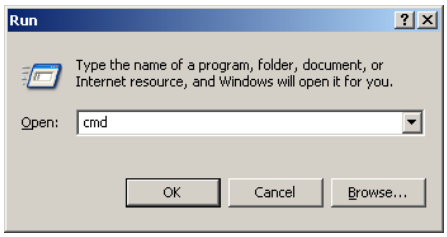
1. TSRoute is a command line application which can run on Windows. This tool supports two modes:
   - Command mode: TSROUTE runs in a Command Shell window



   - Service mode: TSROUTE run as Windows Service to stream Transport Stream files

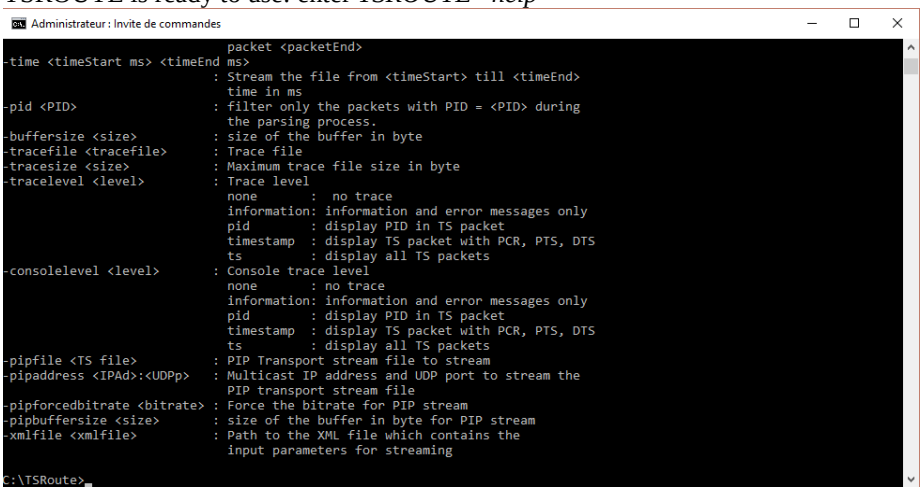


2. When the file TSROUTE.EXE is copied on your machine, the application is ready to be used in command mode. To use TSROUTE application, selectthe menu *Start -> Run* , the dialog box Run appears enter *cmd* in the Open field and click on the OK button.



3. The *Command Shell window* appears, enter the command: *cd c:\TSROUTE* to change directory

4. TSROUTE is ready to use: enter *TSROUTE –help*

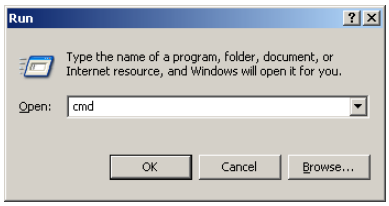


TSRoute: Parsing Transport Stream files

TSROUTE supports a mini-parser to analyze the Transport Stream files before a broadcast.

Parsing a MPEG2 TS file

1. Select the menu *Start -> Run* , the dialog box Run appears enter *cmd* in the Open field and click on the OK button.

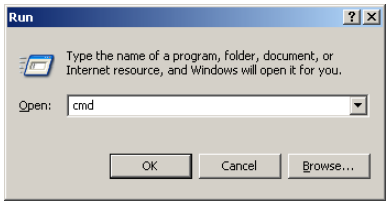


2. The *Command Shell window* appears, enter the command: *cd c:\TSROUTE* to change directory. Enter the following command line:
TSROUTE –parse –file <file> [option]
The options are described in the table below:

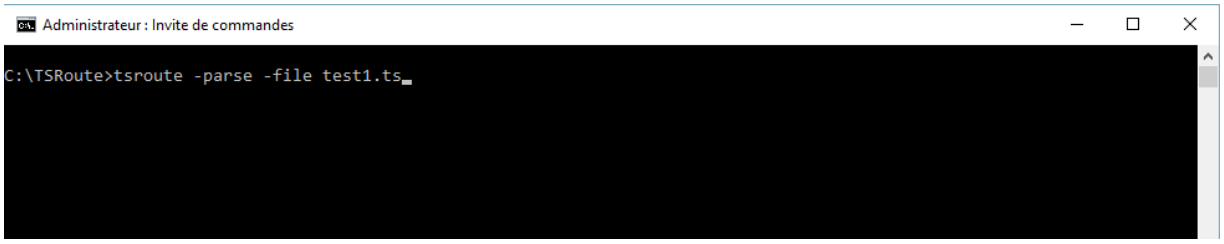
Parse option	Mandatory	Description
-parse	Yes	Activate Parsing
-file <TS file>	Yes	Path of the transport stream file to parse
-packet <first> <last>	No	Define the range of packets to parse For instance: -packet 12 14 : parse from packet 12 till 14 -packet 12 : parse from packet 12 till the last packet of the file
-pid <PID>	No	Parse only the packets with pid = <PID>
-consolelevel <level>	No	Define the trace level on the screen: <level> = none : No trace <level> = information : Information <level> = pid : Display packet with the PID filter <level> = timestamp : Display packet with the timestamp filter <level> = ts : Display all the packet
-tracefile <file>	No	Path of the trace file
-tracesize <size>	No	Maximum size of the trace file.
-tracelevel <level>	No	Define the trace level in the trace file: <level> = none : No trace <level> = information : Information <level> = pid : Display packet with the PID filter <level> = timestamp : Display packet with the timestamp filter <level> = ts : Display all the packet
-buffersize <size>	No	Define the size of the memory buffer used to read the transport stream file. Default value: 4194304 (4096*1024) if size = 0, the file is completely loaded in memory

Parsing programs of a MPEG2 TS file

1. Select the menu *Start -> Run* , the dialog box Run appears enter *cmd* in the Open field and click on the OK button.



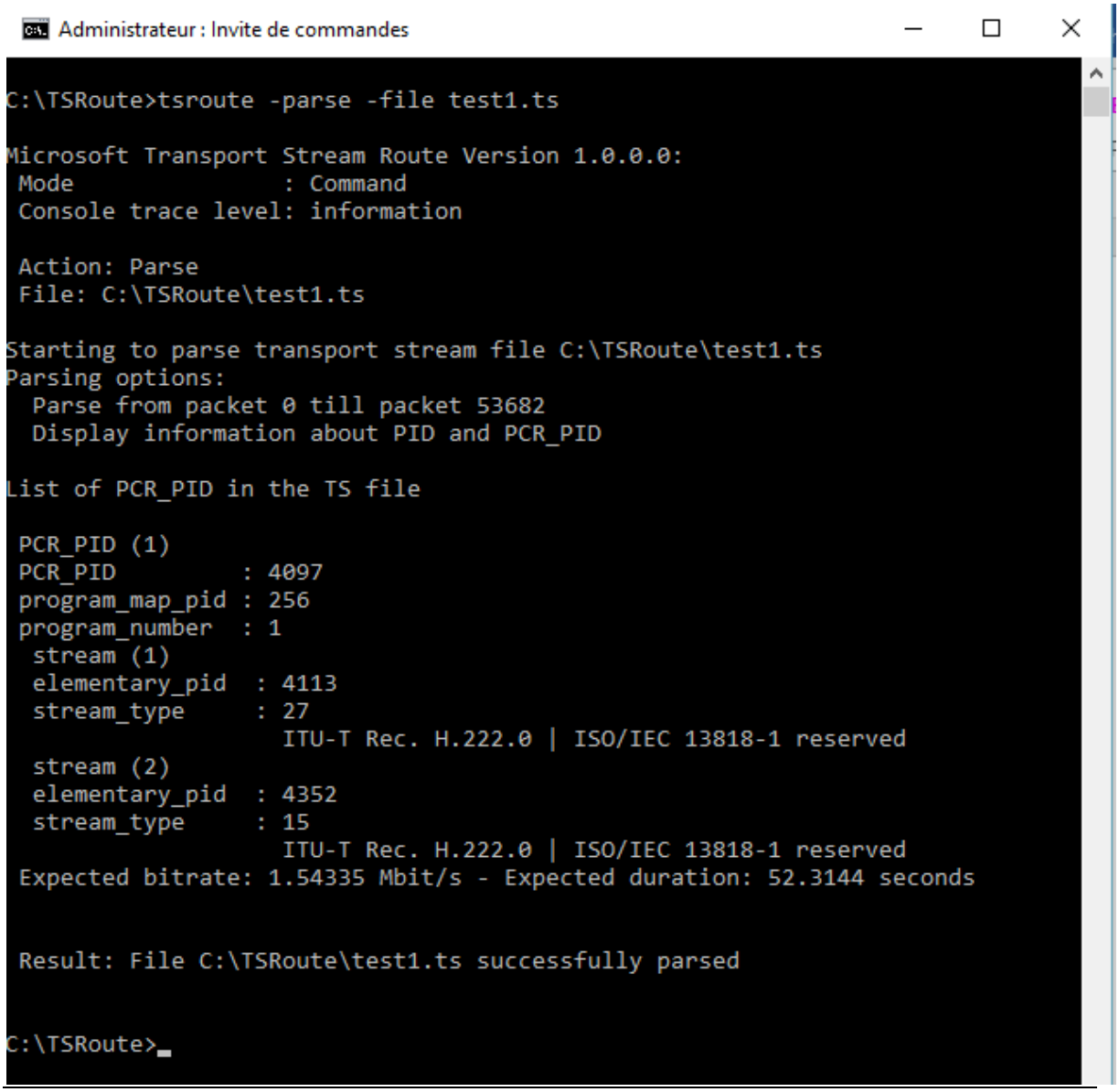
2. The *Command Shell window* appears, enter the command: *cd c:\TSROUTE* to change directory. Enter the following command line:
TSROUTE –parse –file TEST1.TS



3. The result of the parsing is immediately displayed, and provide the following information regarding the Transport Stream file:

   - the number of packets
   - the PCR_PID present in the transport stream file
     one PCR_PID for Single program Transport Stream (SPTS)
     two PCR_PID for Multiple program Transport Stream (MPTS)
   - the program_map_pid
   - the program_number
   - the pid and the stream type for each component of the program
   - the expected bitrate of the stream
   - the expected duration of the stream

Sample:
Parsing of a Multiple Program Transport Stream file:



Parsing of MPEG2 TS files with packet filter

1. Select the menu *Start -> Run* , the dialog box Run appears enter *cmd* in the Open field and click on the OK button.
2. The *Command Shell window* appears, enter the command: *cd c:\TSROUTE* to change directory. Enter the following command line:
   TSRoute -file TS\TEST1.TS -parse -consolelevel ts -packet 0 100

   TSROUTE parses the packets from 0 till 100 and display the packet in hexadecimal format.

3. The result of the parsing is immediately displayed, and provide the following information regarding the Transport Stream file:

    - the number of packets
    - the PCR_PID present in the transport stream file
      one PCR_PID for Single program Transport Stream (SPTS)
      two PCR_PID for Multiple program Transport Stream (MPTS)
    - the program_map_pid
    - the program_number
    - the pid and the stream type for each component of the program
    - the expected bitrate of the stream
    - the expected duration of the stream (from packet 0 till 100)
    - the packets from packet 0 till 100

Parsing of MPEG2 TS files with PID and packet filters

1. Select the menu *Start -> Run* , the dialog box Run appears enter *cmd* in the Open field and click on the OK button.

2. The *Command Shell window* appears, enter the command: *cd c:\TSROUTE* to change directory. Enter the following command line:
TSRoute -file TS\TEST1.TS -parse -consolelevel ts -pid 2048 -packet 0 100

   TSROUTE parses the packets from 0 till 100 with PID = 2048 and display the packet in hexadecimal format.

3. The result of the parsing is immediately displayed, and provide the following information regarding the Transport Stream file:

    - the number of packets
    - the PCR_PID present in the transport stream file
      one PCR_PID for Single program Transport Stream (SPTS)
      two PCR_PID for Multiple program Transport Stream (MPTS)
    - the program_map_pid
    - the program_number
    - the pid and the stream type for each component of the program
    - the expected bitrate of the stream
    - the expected duration of the stream (from packet 0 till 100)
    - the packets associated with the specific PID

Parsing of MPEG2 TS files with timestamp and packet filter

1. Select the menu *Start -> Run* , the dialog box Run appears enter *cmd* in the Open field and click on the OK button.

2. The *Command Shell window* appears, enter the command: *cd c:\TSROUTE* to change directory. Enter the following command line:
   TSRoute -file TEST1.TS -parse -consolelevel timestamp -packet 0 100

   TSROUTE parses the packets from 0 till 100 containing PCR, DTS or PTS information.

3. The result of the parsing is immediately displayed, and provide the following information regarding the Transport Stream file:

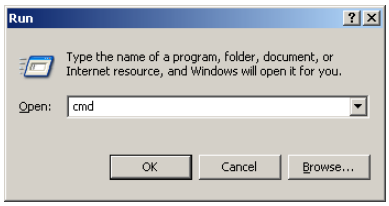
   - the number of packets
   - the PCR_PID present in the transport stream file
     one PCR_PID for Single program Transport Stream (SPTS)
     two PCR_PID for Multiple program Transport Stream (MPTS)
   - the program_map_pid
   - the program_number
   - the pid and the stream type for each component of the program
   - the expected bitrate of the stream
   - the expected duration of the stream (from packet 0 till 100)
   - the packets containing timestamps

TSRoute: Capturing Transport Stream files

You can use TSROUTE to capture Transport Stream “multicasted” on a network.

Capturing a MPEG2 TS file

1. Select the menu *Start -> Run* , the dialog box Run appears enter *cmd* in the Open field and click on the OK button.

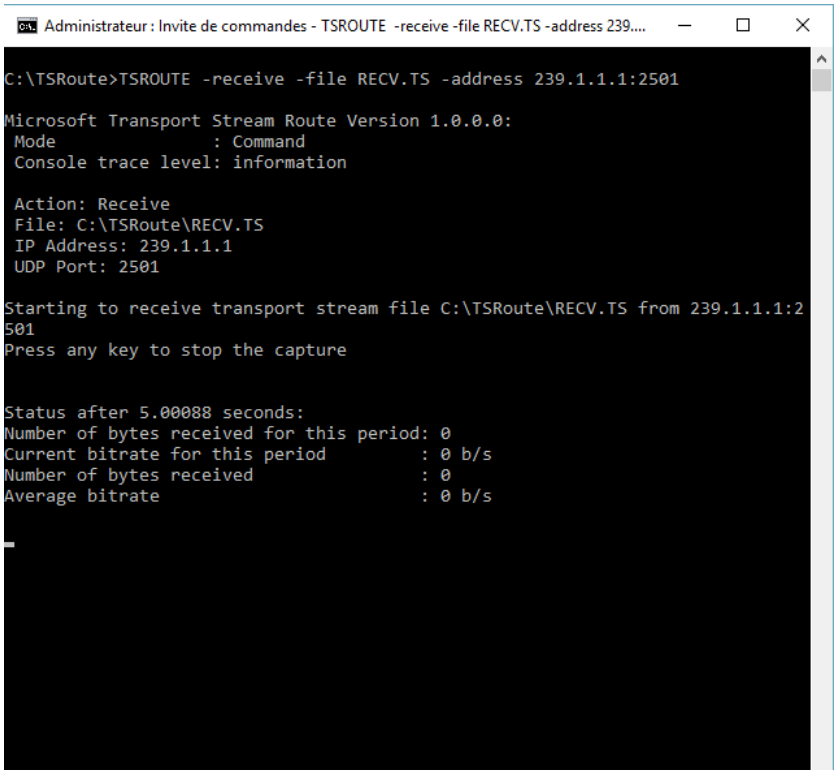


2. The *Command Shell window* appears, enter the command: *cd c:\TSROUTE* to change directory. Enter the following command line:
   TSROUTE –receive –file <file> [option]
   The options are described in the table below:

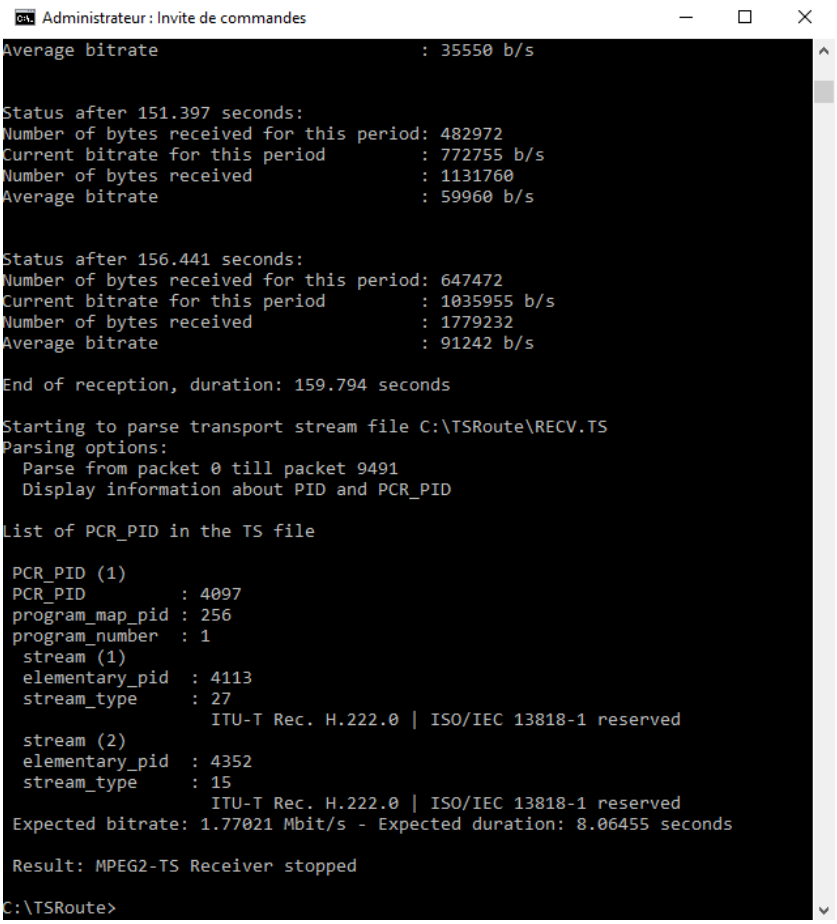
Receive option	Mandatory	Description
-receive	Yes	Activate Capture
-file <TS file>	Yes	Path of the transport stream file to capture
-address <IP Address>:<UDP port>	Yes	Define the multicast IP address and UDP port to listen to capture the transport stream file.
[-interfaceaddress <IP Address>]	Yes	Define the IP address of the Ethernet card connected to the network where the transport stream is multicasted.
-consolelevel <level>	No	Define the trace level on the screen: <level> = none : No trace <level> = information : Information <level> = pid : Display packet with the PID filter <level> = timestamp : Display packet with the timestamp filter <level> = ts : Display all the packet
-tracefile <file>	No	Path of the trace file
-tracesize <size>	No	Maximum size of the trace file.
-tracelevel <level>	No	Define the trace level in the trace file: <level> = none : No trace <level> = information : Information <level> = pid : Display packet with the PID filter <level> = timestamp : Display packet with the timestamp filter <level> = ts : Display all the packet

For instance enter the following command line:

TSROUTE –receive –file RECV.TS –address 239.1.1.1:2501 –interfaceaddress 192.168.10.1



3. TSROUTE is capturing the transport stream, press on any key on the PC keyboard to stop the capture. TSROUTE automatically parses the captured file and displays the program information.


Administrateur : Invite de commandes
Average bitrate : 35550 b/s
Status after 151.397 seconds:
Number of bytes received for this period: 482972
Current bitrate for this period : 772755 b/s
Number of bytes received : 1131760
Average bitrate : 59960 b/s
Status after 156.441 seconds:
Number of bytes received for this period: 647472
Current bitrate for this period : 1035955 b/s
Number of bytes received : 1779232
Average bitrate : 91242 b/s
End of reception, duration: 159.794 seconds
Starting to parse transport stream file C:\TSRoute\RECV.TS
Parsing options:
Parse from packet 0 till packet 9491
Display information about PID and PCR_PID
List of PCR_PID in the TS file
PCR_PID (1)
PCR_PID : 4097
program_map_pid : 256
program_number : 1
stream (1)
elementary_pid : 4113
stream_type : 27
ITU-T Rec. H.222.0 | ISO/IEC 13818-1 reserved
stream (2)
elementary_pid : 4352
stream_type : 15
ITU-T Rec. H.222.0 | ISO/IEC 13818-1 reserved
Expected bitrate: 1.77021 Mbit/s - Expected duration: 8.06455 seconds
Result: MPEG2-TS Receiver stopped
C:\TSRoute>

TSRoute: Streaming Transport Stream files

With TSROUTE you can stream Transport Stream file either in command mode or service mode.
In command mode, the input parameters are the arguments of a command line.
In service mode, the input parameters are defined in a XML file.

Streaming a MPEG2 TS file in command mode

1. Select the menu *Start -> Run* , the dialog box Run appears enter *cmd* in the Open field and click on the OK button.
2. The *Command Shell window* appears, enter the command: *cd c:\TSROUTE* to change directory. Enter the following command line:
   TSROUTE –stream –file <file> [option]
   The options are described in the table below:

Parse option	Mandatory	Description
-stream	Yes	Activate Streaming
-file <TS file>	Yes	Path of the transport stream file to stream
-address <IP Address>:<UDP port>	Yes	Define the multicast IP address and UDP port used to stream the transport stream file.
-interfaceaddress <IP Address>	Yes	Define the IP address of the Ethernet card connected to the network where the transport stream will be streamed.
-loop [<number>]	No	Define the number of loop Default value -1, infinite loop
-updatetimestamps	No	When this option is set, TSROUTE will update the following timestamps in the transport stream PCR, DTS and PTS to avoid any time discontinuity in the stream.
-packet <first> <last>	No	Define the range of packets to stream For instance: -packet 100 20000 : parse from packet 100 till 20000 -packet 100 : parse from packet 100 till the last packet of the file
-time <start> <end>	No	Define the part of the transport stream file to stream in milliseconds For instance: -packet 100 20000 : stream from 100 ms till 20000 ms -packet 100 : stream from 100 ms till the last packet of the file
-forcedbitrate <bitrate>	No	With this parameter it's possible to force the bitrate of this transport stream file. The bitrate unit is bit/second.
-ttl <n>	No	Time To Live parameter
-consolelevel <level>	No	Define the trace level on the screen: <level> = none : No trace <level> = information : Information
-tracefile <file>	No	Path of the trace file
-tracesize <size>	No	Maximum size of the trace file (byte).

Parse option	Mandatory	Description
-tracelevel <level>	No	Define the trace level in the trace file: <level> = none : No trace <level> = information : Information
-buffersize <size>	No	Define the size of the memory buffer to read the transport stream file. Default value: 4194304 (4096*1024) if size = 0, the file is completely loaded in memory
-pipfile <TS file>	Yes	Path of the PIP transport stream file to stream
-pipaddress <IP Address>:<UDP port>	Yes	Define the PIP multicast IP address and PIP UDP port used to stream the PIP transport stream file.
-pipbuffersize <size>	No	Define the size of the memory buffer to read the PIP transport stream file. Default value: 4194304 (4096*1024) if size = 0, the file is completely loaded in memory
-pipforcedbitrate <bitrate>	No	With this parameter it's possible to force the bitrate of the PIP transport stream file. The bitrate unit is bit/second.
-xmlfile <xmlfile>	No	Path to the xml file which contains all the input parameters for streaming. The content of the xml file is described in the subsequent chapter.

Input XML file format

The input XML file allows TSROUTE to stream several streams simultaneously either in command mode or in service mode. The content of the XML file is defined below

Path	Field	Range/ Size	Description	Examples
TSROUTE.InputParameters	TraceFile	Char	Path of the trace file	TSROUTE.LOG
TSROUTE.InputParameters	TraceSize	DWORD	Maximum size of the trace file (byte).	300000
TSROUTE.InputParameters	TraceLevel	ENUM none information	Define the trace level in the trace file: <level> = none : No trace <level> = information : Information	information
TSROUTE.InputParameters	ConsoleLevel	ENUM none information	Define the trace level on the screen: <level> = none : No trace <level> = information : Information	none
TSROUTE.InputParameters /Stream	Name	Char	Name of the stream	Stream1
TSROUTE.InputParameters /Stream	OutputFile	Char	Path of the Output XML file This file contains the counters associated with the stream of the transport stream file. The content of this XML file is refreshed periodically. For instance <TSROUTE.Counters> <Name>Stream7</Name> <File>D:\\TSROUTE\TS\TS.VC1.PAL.SPTS.2.TS</File> <Date>15/12/2006 08:23:19 475</Date>	Stream1.xml

Path	Field	Range/ Size	Description	Examples
			<PacketTransmit>5696</PacketTransmit> <Duration>25.9925</Duration> <Bitrate>2.24453e+006</Bitrate> <ExpectedDuration>37.6341</ExpectedDuration> <ExpectedBitrate>2.25e+006</ExpectedBitrate> <PIPFile>D:\TSROUTE\TS\TS.VC1.PIP.SPTS.2.TS</PIPFile> <PIPPacketTransmit>777</PIPPacketTransmit> <PIPDuration>25.1562</PIPDuration> <PIPBitrate>366724</PIPBitrate> <PIPExpectedDuration>46.4012</PIPExpectedDuration> <PIPExpectedBitrate>270000</PIPExpectedBitrate> </TSROUTE.Counters>	
TSROUTE.InputParameters/Stream	RefreshPeriod	DWORD	Refresh period of the Output XML file in second	5
TSROUTE.InputParameters/Stream	TSFile	Char	Path of the transport stream file to stream	MPEG2.TS
TSROUTE.InputParameters/Stream	UdpIpAddress	Char	Define the multicast IP address used to stream the transport stream file.	239.1.1.1
TSROUTE.InputParameters/Stream	UdpPort	WORD	Define the UDP port used to stream the transport stream file.	2501
TSROUTE.InputParameters/Stream	UdpIpAddressInterface	Char	Define the IP address of the Ethernet card connected to the network where the transport stream will be streamed.	192.168.10.1
TSROUTE.InputParameters/Stream	ForcedBitrate	DWORD	With this parameter it's possible to force the bitrate of this transport stream file. The bitrate unit is bit/second	2300000
TSROUTE.InputParameters/Stream	BufferSize	DWORD	Define the size of the memory buffer to read the transport stream file. Default value: 4194304 (4096*1024) if size = 0, the file is completely loaded in memory	4194304
TSROUTE.InputParameters/Stream	PIPTSFile	Char	Path of the PIP transport stream file to stream	MPEG2..PIP.TS
TSROUTE.InputParameters/Stream	PIPUdpIpAddress	Char	Define the multicast IP address used to stream the PIP transport stream file.	239.1.1.2
TSROUTE.InputParameters/Stream	PIPUdpPort	WORD	Define the UDP port used to stream the PIP transport stream file.	2502
TSROUTE.InputParameters/Stream	PIPForcedBitrate	DWORD	With this parameter it's possible to force the bitrate of the PIP transport stream file. The bitrate unit is bit/second	230000
TSROUTE.InputParameters/Stream	PIPBufferSize	DWORD	Define the size of the memory buffer to read the PIP transport stream file. Default value: 4194304 (4096*1024) if size = 0, the file is completely loaded in memory	4194304
TSROUTE.InputParameters/Stream	TTL	WORD	Time To Live parameter	2

Path	Field	Range/ Size	Description	Examples
TSROUTE.InputParameters /Stream	Loop	Integer	Define the number of loop Default value -1, infinite loop	-1
TSROUTE.InputParameters /Stream	UpdateTimeStamp	ENUM 1 0	When the value of this field is 1, TSROUTE will update the following timestamps in the transport stream PCR, DTS and PTS to avoid any time discontinuity in the stream.	1
TSROUTE.InputParameters /Stream	PacketStart	DWORD	Define the range of the first packet in the transport stream file to stream Default value: 0	100
TSROUTE.InputParameters /Stream	PacketEnd	DWORD	Define the range of the last packet in the transport stream file to stream. If the value is 4294967295 (-1), TSROUTE stream the transport stream file till the end Default value: 4294967295 (-1)	1345
TSROUTE.InputParameters /Stream	TimeStart	DWORD	Define the timecode in millisecond of the first packet in the transport stream file to stream (unit: millisecond) Default value: 0	1000
TSROUTE.InputParameters /Stream	TimeEnd	DWORD	Define the timecode in millisecond of the last packet in the transport stream file to stream. If the value is 4294967295 (-1), TSROUTE stream the transport stream file till the end Default value: 4294967295 (-1)	13000

Streaming a MPEG2 TS file

1. Select the menu *Start -> Run* , the dialog box Run appears enter *cmd* in the Open field and click on the OK button.
2. The *Command Shell window* appears, enter the command: *cd c:\TSROUTE* to change directory. Enter the following command line:
   TSRoute -file TEST1.TS -stream -address 239.1.1.1:2501 –interfaceaddress 192.168.10.1
3. TSROUTE stream the transport stream file towards the IP address 239.1.1.1 UDP port 2501.

Streaming a MPEG2 TS file continuously

1. Select the menu *Start -> Run* , the dialog box Run appears enter *cmd* in the Open field and click on the OK button.
2. The *Command Shell window* appears, enter the command: *cd c:\TSROUTE* to change directory. Enter the following command line:
   TSRoute -file TEST1.TS -stream -address 239.1.1.1:2501 –interfaceaddress 192.168.10.1 -loop –updatetimestamps

   After each loop, TSROUTE updates the value of PCR, DTS and PTS fields.
3. TSROUTE stream continuously the transport stream file towards the IP address 239.1.1.1 UDP port 2501.

Streaming several MPEG2 TS files simultaneously

1. Select the menu *Start -> Run* , the dialog box Run appears enter *cmd* in the Open field and click on the OK button.
2. The *Command Shell window* appears, enter the command: *cd c:\TSROUTE* to change directory. Enter the following command line:
   TSRoute -stream –xmlfile TSROUTE.SAMPLE.XML
3. TSROUTE streams the list of transport stream files defined in the xml file. With the XML file TSROUTE can stream several streams simultaneously.

Sample of xml file:

```
<TSROUTE.InputParameters>
  <!-- Global parameters -->
  <TraceFile>TSROUTE.log</TraceFile>
  <TraceMaxSize>300000</TraceMaxSize>
  <TraceLevel>information</TraceLevel>
  <ConsoleTraceLevel>information</ConsoleTraceLevel>
  <!-- Stream 1 parameters -->
  <!-- MPEG4 SPTS -->
  <Stream>
    <Name>Stream1</Name>
    <OutputFile>Stream1.xml</OutputFile>
    <RefreshPeriod>5</RefreshPeriod>
    <TSFile>TEST1.TS</TSFile>
    <UdpIpAddress>239.1.1.1</UdpIpAddress>
    <UdpPort>2501</UdpPort>
    <TTL>2</TTL>
    <Loop>-1</Loop>
    <UpdateTimeStamp>1</UpdateTimeStamp>
  </Stream>
  <!-- Stream 2 parameters -->
  <!-- VC1 SPTS -->
  <Stream>
    <Name>Stream2</Name>
    <OutputFile>Stream2.xml</OutputFile>
    <RefreshPeriod>5</RefreshPeriod>
    <TSFile>TEST2.TS</TSFile>
    <UdpIpAddress>239.1.1.2</UdpIpAddress>
    <UdpPort>2506</UdpPort>
    <TTL>2</TTL>
    <Loop>-1</Loop>
  </Stream>
</TSROUTE.InputParameters>
```

Streaming several MPEG2 TS files simultaneously in service mode

Before streaming several files simultaneously in service mode, you need to :
- Define the list of files to stream
- Install TSROUTE as a Win32 service

Defining the list of transport stream files to stream

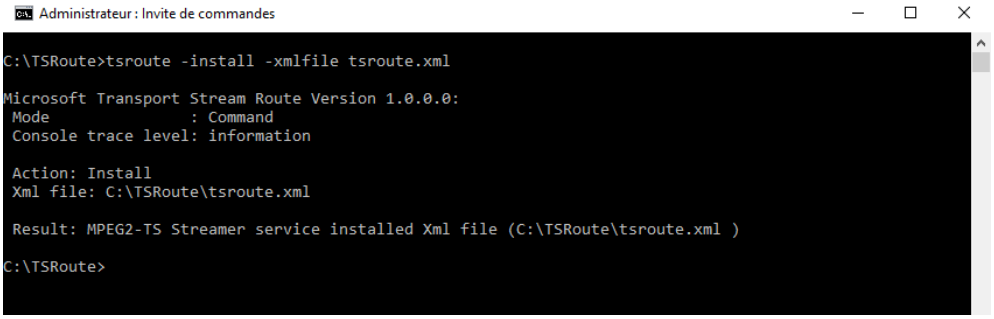
Edit the XML file you want to use as input parameters. Add the definition of each streams and save the XML file.

Sample of xml file:

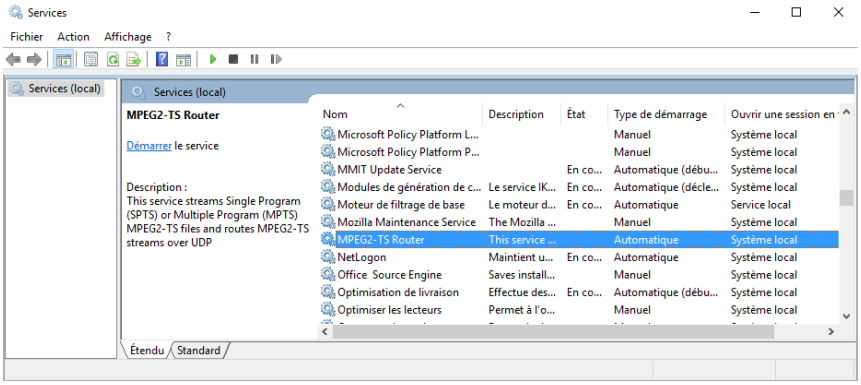
```
<TSROUTE.InputParameters>
  <!-- Global parameters -->
  <TraceFile>TSROUTE.log</TraceFile>
  <TraceMaxSize>300000</TraceMaxSize>
  <TraceLevel>information</TraceLevel>
  <ConsoleTraceLevel>information</ConsoleTraceLevel>
  <!-- Stream 1 parameters -->
  <!-- MPEG4 SPTS -->
  <Stream>
    <Name>Stream1</Name>
    <OutputFile>Stream1.xml</OutputFile>
    <RefreshPeriod>5</RefreshPeriod>
    <TSFile>TEST1.TS</TSFile>
    <UdpIpAddress>239.1.1.1</UdpIpAddress>
    <UdpPort>2501</UdpPort>
    <TTL>2</TTL>
    <Loop>-1</Loop>
    <UpdateTimeStamp>1</UpdateTimeStamp>
  </Stream>
  <!-- Stream 2 parameters -->
  <!-- VC1 SPTS -->
  <Stream>
    <Name>Stream2</Name>
    <OutputFile>Stream2.xml</OutputFile>
    <RefreshPeriod>5</RefreshPeriod>
    <TSFile>TEST2.TS</TSFile>
    <UdpIpAddress>239.1.1.2</UdpIpAddress>
    <UdpPort>2506</UdpPort>
    <TTL>2</TTL>
    <Loop>-1</Loop>
  </Stream>
</TSROUTE.InputParameters>
```

Installing TSRoute service

1. Select the menu *Start -> Run* , the dialog box Run appears enter *cmd* in the Open field and click on the OK button.
2. The *Command Shell window* appears, enter the command: *cd c:\TSROUTE* to change directory
3. Enter the command line: *TSROUTE –install –xmlfile <path of the XML file>*
   TSROUTE is now installed as a WIN32 service on your machine.



4. You can check that the IPTV Edition MPEG2-TS Streamer has been installed as a WIN32 service.



Starting TSRoute service

1. To start the WIN32 Service, Enter the command line: *TSROUTE –star*t

Stopping TSRoute service

1. To stop the WIN32 Service, Enter the command line: *TSROUTE –stop*

Uninstalling TSRoute service

1. To uninstall the WIN32 Service, Enter the command line: *TSROUTE –uninstall*

TSRoute: Converting Transport Stream files

With TSROUTE you can convert Transport Stream files which contain 204 bytes packets into Transport Stream files which contain 188 bytes packets.

Converting a MPEG2 TS file in command mode

1. Select the menu *Start -> Run* , the dialog box Run appears enter *cmd* in the Open field and click on the OK button.
2. The *Command Shell window* appears, enter the command: *cd c:\TSROUTE* to change directory. Enter the following command line:
   TSROUTE –convert <input_file> <output_file>
   The options are described in the table below:

Parse option	Mandatory	Description
-convert	Yes	Activate Convert
<input_file>	Yes	Path of the transport stream file to convert
<output_file>	Yes	Path of the transport stream file which contains 188 bytes packets

TSRoute: Filtering Transport Stream files

With TSROUTE you can filter a Transport Stream file and select only the packets associated with a program number.

Warning:
By default the filter remove the null packets from the final transport file.

Filtering a MPEG2 TS file in command mode

1. Select the menu *Start -> Run* , the dialog box Run appears enter *cmd* in the Open field and click on the OK button.
2. The *Command Shell window* appears, enter the command: *cd c:\TSROUTE* to change directory. Enter the following command line:
   TSROUTE –filter <input_file> <output_file> <program_number>
   The options are described in the table below:

Parse option	Mandatory	Description
-filter	Yes	Activate Convert
<input_file>	Yes	Path of the transport stream file to filter
<output_file>	Yes	Path of the result transport stream file
<program_number>	Yes	The program number you want to keep in the transport stream file.

TSRoute: Routing Streams over UDP

With TSROUTE you can route Transport Stream streams over UDP.

Routing a MPEG2 TS stream in command mode

1. Select the menu *Start -> Run* , the dialog box Run appears enter *cmd* in the Open field and click on the OK button.
2. The *Command Shell window* appears, enter the command: *cd c:\TSROUTE* to change directory. Enter the following command line:
   TSROUTE –stream -inputaddress <IPAddress>:<UDP Port> [options]
   The options are described in the table below:

Parse option	Mandatory	Description
-stream	Yes	Activate Streaming/Routing
-inputaddress <IP Address>:<UDP port>	Yes	Define the input IP Address (unicast or multicast) and UDP port
-address <IP Address>:<UDP port>	Yes	Define the IP address (unicast or multicast) and UDP port used to stream the transport stream file.
-interfaceaddress <IP Address>	Yes	Define the IP address of the Ethernet card connected to the network where the transport stream will be streamed.
-ttl <n>	No	Time To Live parameter
-consolelevel <level>	No	Define the trace level on the screen: <level> = none : No trace <level> = information : Information
-tracefile <file>	No	Path of the trace file
-tracesize <size>	No	Maximum size of the trace file (byte).
-tracelevel <level>	No	Define the trace level in the trace file: <level> = none : No trace <level> = information : Information
-buffersize <size>	No	Define the size of the memory buffer to read the transport stream file. Default value: 4194304 (4096*1024) if size = 0, the file is completely loaded in memory