TSDuck

A toolbox for MPEG/DVB transport streams

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What is TSDuck ?

A general-purpose toolbox for digital television engineers

- for MPEG transport streams (broadcast, IP-TV)
- flexible and extensible

Tools and plugins to be combined

- command line
- made for scripting

Linux, Windows, macOS

TSDuck use cases

Digital television systems

- demo
- network monitoring
- system integration
- test
- debug
- lab

TSDuck sample usages

- TS acquisition or transmodulation : satellite, terrestrial, IP …
- analysis : TS, PSI/SI, bitrates, timestamps …
- monitoring : bitrates, A/V properties, signalization, crypto …
- on-the-fly transformation or injection : content, PSI/SI …
- using and editing PSI/SI in XML or binary format
- modify, remove, rename, extract services
- inject or extract MPE, SCTE 35 splicing info
- extract T2-MI, teletext subtitles
- test bed for CAS or STB, scrambling and DVB SimulCrypt

TSDuck input / output

Offline transport stream files

Live transport streams

- UDP/IP, HTTP
- Specialized hardware
  - cheap DVB tuners
  - professional Dektec devices
  - cheap HiDes modulators

Re-route transport streams to / from other applications

TSP – the transport stream processor

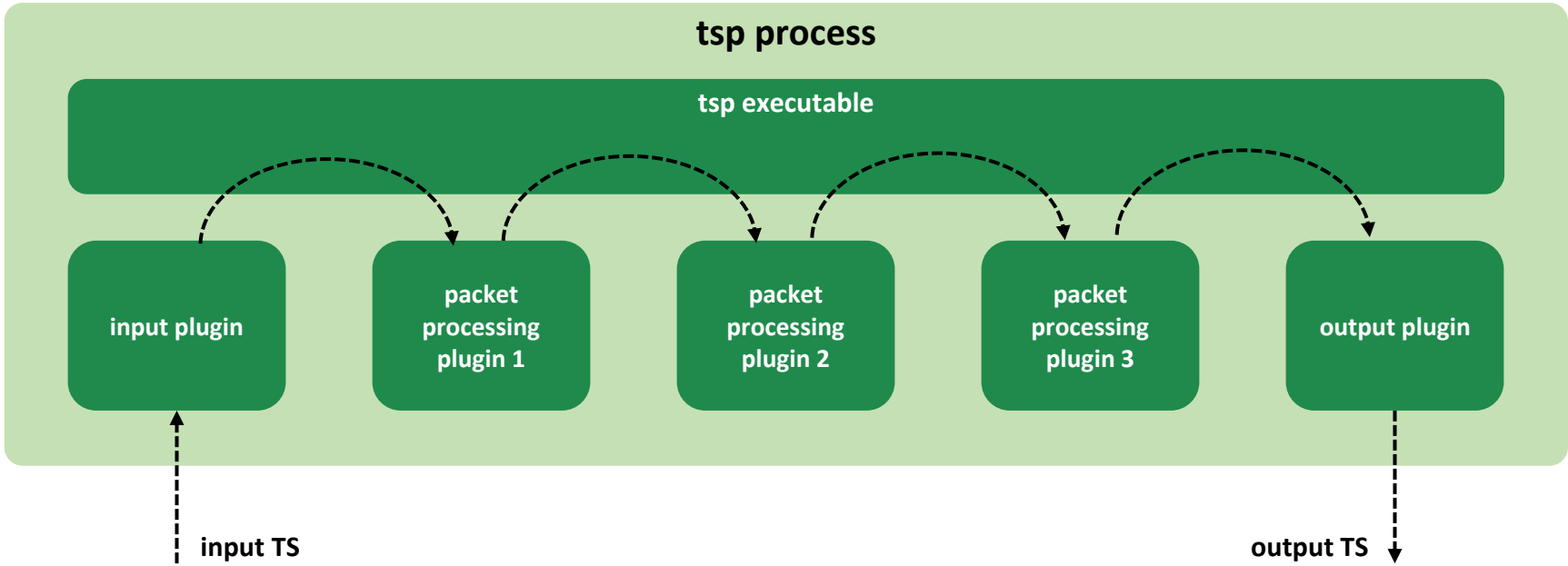
Transport stream processing framework

- combination of elementary processing using plugins
  - 60+ standard plugins available

Using TSP

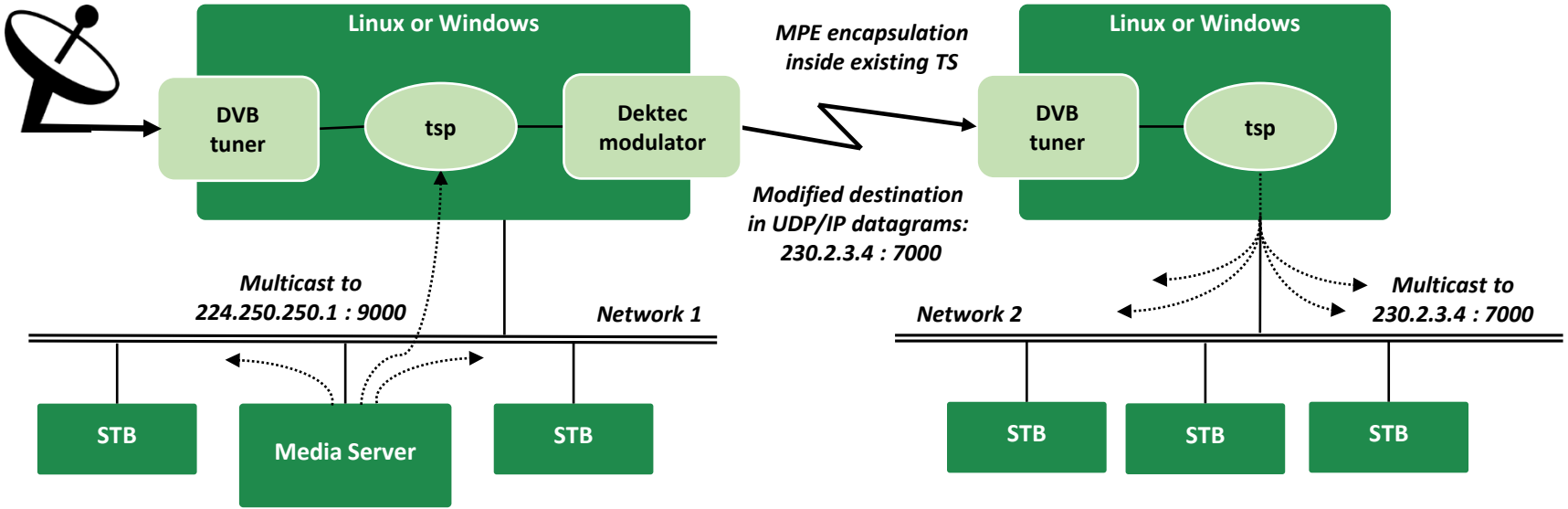
- one input plugin
  - receive a TS from various sources
- any number of packet processing plugins
  - perform transformations on TS packets
- one output plugin
  - send the resulting TS to various destinations

TSP processing overview



Sample MPE injection and extraction

MPE : Multi-Protocol Encapsulation

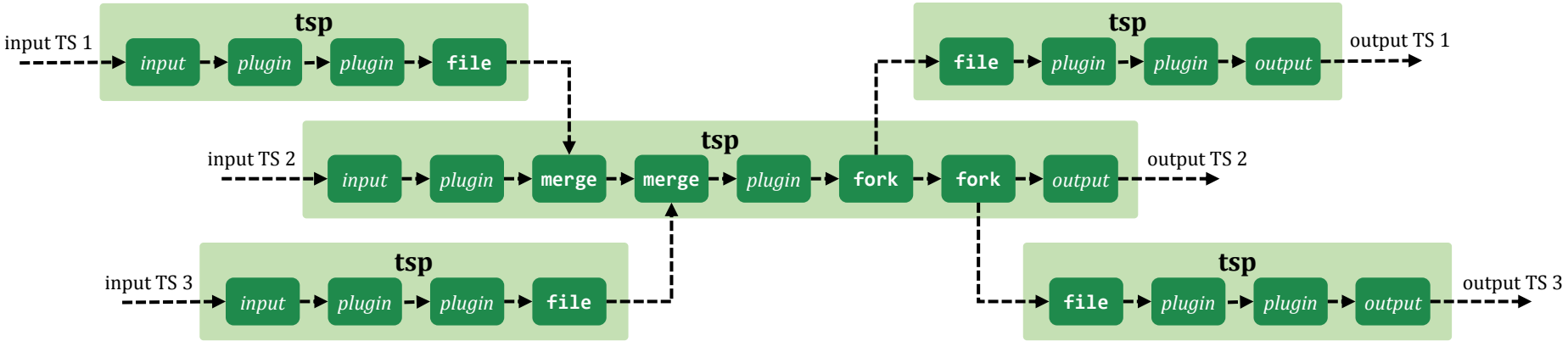


Multiple TSP using merge and fork plugins

Merge with a TS coming from another application

- and merge signalization

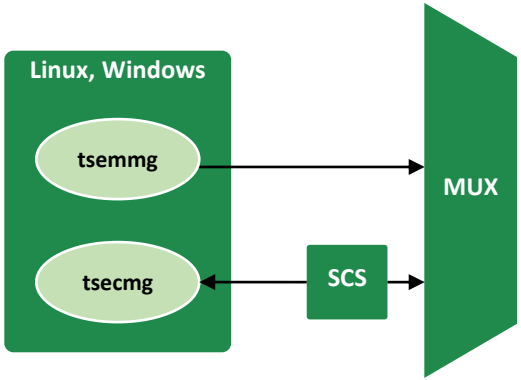
Duplicate the TS to another application

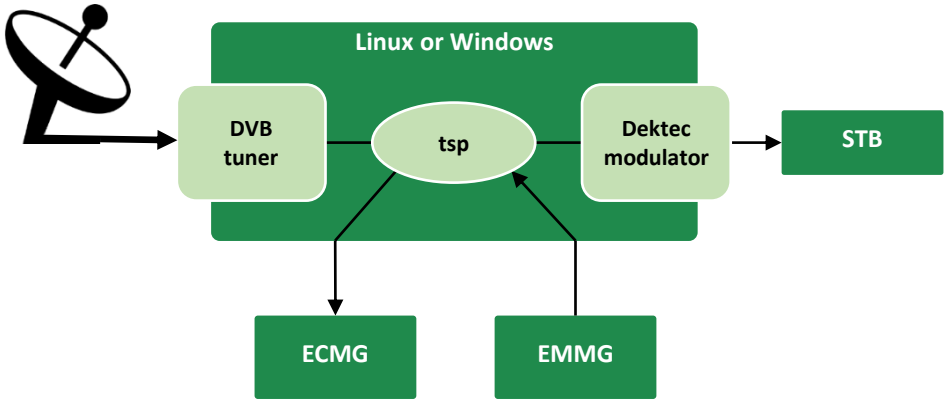


Conditional Access System test bed

DVB SimulCrypt interface

- emulate CAS, test actual MUX
- emulate MUX, test actual CAS





Simple TSP examples

Transmodulation of a service over IP multicast

```
tsp -I dvb --uhf 35
    -P zap france2 --audio fra
    -O ip 224.10.11.12:1000
```

extract service « France 2 », keeping only one audio track

broadcast resulting SPTS to multicast IP address:port

On-the-fly signalization replacement

```
tsp -I dvb --uhf 24
    -P inject nit.xml --pid 16 --replace --stuffing
    -O dektec --uhf 24 --convolution 2/3 --guard 1/32
```

replace content of PID 16 with table from XML file

send modified TS to a Dektec DVB-T modulator on same frequency

TSDuck is extensible

Open source

`https://github.com/tsduck/tsduck`

Design based on a large TSDuck library

- generic MPEG/DVB C++ library (400+ classes)
- common API for Linux, Windows, macOS
- programmer's guide online

You may use this library to

- develop new plugins
- use in your own applications outside TSDuck

https://tsduck.io/