# SSP100 DVB Scheduled Service Player

- Play-out of audio and video fragments and still video frames
  - Continuing timestamps for smooth file transitions
    - Looping play-out of transport stream files •
  - Combination of channel switch and video player
    - Built-in video-encoder and PSI/SI-generator
    - Automatic (CBR/VBR) bit rate per source file
      - SNMP ASI and GbE •



## ITNM Systems SSP100 DVB Transport Stream Player

#### Functionality of digital television

Digital television distribution systems make use of signals coming from program suppliers all over the world. A network operator combines these signals to one complete and varied bouquet. These signals cannot always be distributed directly, continuously and unabridged to the customer. Some channels are only available during a certain period of time on a day. Other ones have to share the distribution channel with another service that possibly could not be allowed to distribute. The service than has to be switched. This looks to be an easy job. In practice however, switching functionality inside DVB multiplexers seems to be quite sensitive to failures. With maximum customer satisfaction, ITNM Systems develops applications that offer problem free solutions for this kind of situations.

#### SSP100 DVB Scheduled Service Player

The SSP100 DVB Scheduled Service Player is a combination of a channel switch and a play-out system for still video pictures and audio fragments. The local generated audio and video signal serves to announce services in case of scheduled programming. It can also be an excellent tool to publish other announcements, for example to introduce a new, or to declare off a removed service. The SSP100 generates a transport stream containing all required components in order to successfully import the services into the multiplexer equipment.



### **SSP100**

### **Product description**

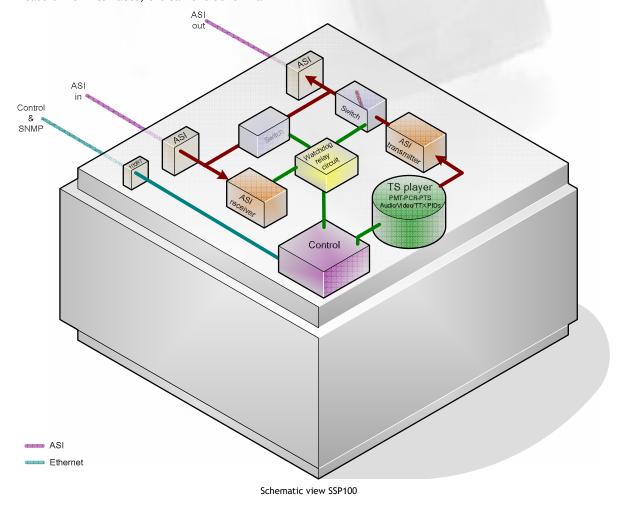
#### The solution

The SSP100 Transport Stream Player is a standalone system designed to generate a carousel containing video and audio fragments, switched with a service that serves as main programming. It can simply be inserted in the connection between the receiver and the multiplexer for digital television.

#### **Basics**

Signal coming from a source like a DVB receiver or encoder is fed into the SSP100. During normal operation this signal is connected to the output. In case of ASI interfaces, the same is done in a

switched-off condition or in case of a failure. In those cases the main service will always get priority. On command, the SSP100 switches off the input and connects the output to the internal transport stream player. This command can be sent by an integrated agenda - that can be programmed by means of a user interface with additional automatic detection features or forced on any moment controlled by the network operator. In case of signal loss on the input, there also is an option for switching to the local source. The player gets its source information from the local hard disk. Data that has to be played-out can simply be transported to a dedicated folder, by means of a network connection.





## SSP100 Product description

#### Implementation

In most cases, the SSP100 will be implemented in the link coming from the source towards the multiplexer. In order to avoid problems caused by the switch-over, the intention is to burden the multiplexer as little as possible with differences between the original and substitute signal. That's why the original composition of the multiplex signal is maintained as close a possible when switching over to the internal audio and video player. A setting with the smallest possible bandwidth to reserve space for other services within the multiplex is possible as well of course. Once the input signal is chosen, the output is an exact copy of it.

#### Video and audio encoder

Besides playing-out already encoded video and audio files, the SSP100 can be equipped with a built-in video encoder, so that pictures can be processed directly out of bitmap format. An audio encoder can be added as well to be able to convert spoken messages out of wav-format based files.

#### Active detection

For increased intelligence in the switching process some options are available. There is an option to switch automatically based on scrambling detection of the input signal. In case the receiver is only authorised to descramble the main service, switching will be performed automatically. As an extension to this, the DVB System Information tables can be analysed through which - in case the service is suitable to do this - programmes slightly running out of schedule can still be kept on to be distributed in stead of roughly being switched off. Automatic detection can be performed - on user preference - with or without scheduling based on the agenda.



## SSP100 Product description

#### Substitute signal

In case of signal loss within the time window of the main service, a separate still video can be played-out indicating that the service is interrupted. The picture below shows an example of that



Video interruption message controlled by SSP100

#### **Dual edition**

The SSP100 can be equipped with the functionality for two channels as well, working fully independent of each other (SSP100D).

#### Integration

The SSP100 supplies all by the multiplexer required components like PMT (Programme Map Table), PTS (Presentation Time Stamp) and PCR (Programme Clock Reference) for a successful integration in existing systems. An SNMP-generator - suitable to display the status of the system - is standard. The system is preconfigured and ready to install. Adaptation according to customer demands is possible as well.



Video announcement controlled by SSP100



### SSP100 Networks

#### Integration in networks

The SSP100 is applicable in several kinds of network architecture.

#### Implementation

Normally the system is placed at the location where centralised processing of digital radio and television services is performed; the head-end or digital play-out centre

#### **Connections**

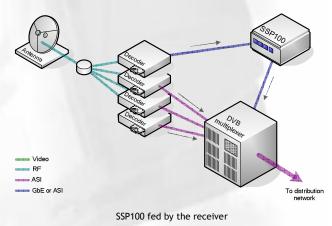
In the standard set-up, all DVB transmission is done through ASI interfaces. The advantage of it is the automatic loop-through possibility. Optional it is also possible to choose for Ethernet instead of ASI (Asynchronous Serial Interface). The output of the SSP100 supplies a complete transport stream. Communications with the SSP100 for maintenance and SNMP is done by common Ethernet.

#### **Examples**

The following drawings show examples of implementation of the SSP100 in several kinds of network design. However, the possibilities are not limited to these examples.

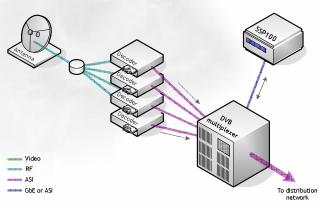
#### Application fed by the receivers

The signal flow to and from the SSP100 normally comes from the source like a receiver or encoder. The composed output signal runs over one connection to the multiplexer where the channel can be added. To the SSP100D, two sources can be connected.



#### Application fed by the multiplexer

The supply of signal towards the SSP100 can also be done by the multiplexer, for example in case the receiving equipment is installed at a separated location. The functionality remains completely the same.



SSP100 fed by the multiplexer



## SSP100 Specifications

#### Capacity

- Up to 2 supplied transport stream files (audio and video) per channel
- Total bit rate up to 40 Mbit/sec
- Up to 10 PCR PIDs per channel
- One video PID per channel wherein actual PTS is applied

#### **Functionality**

- Combination of channel switch and video player
- Internal programming by means of an agenda
- Play-out of audio and video fragments and still video frames
- Insertion of PCR and restamping of the PTS for video
- Restamping of PCR for jitter correction
- Continuing timestamps for smooth file transitions
- Adjustable bit rate per source file
- SNMP
- ASI connections (with automatic built-in loopthrough switch)

#### **Options**

- Video encoder
- Audio encoder
- Automatic detection based on scrambling status
- Automatic detection based on SDT running status
- Automatic detection for switching to substitute signal
- Dual channel edition (SSP100D)
- System dependent adaptations
- · Gigabit Ethernet input and output
- Redundant design
- User specific demands

 $\ensuremath{\mathsf{ITNM}}$  Systems reserves the right to change the specifications.



### SSP100 Foundation

#### Construction

The foundation of the SSP100 is a Supermicro industrial server controlled by Linux operation system. The power supply and hard disk can be swapped from the outside. A watchdog circuit is monitoring the availability continuously. Communications for maintenance and SNMP can be done by means of common Ethernet. The foundation can optionally be equipped with redundant power supplies and ditto hard disks. Delivery based on a HP Proliant server is also an option.





Front and rear panel of the industrial server

#### Standard configuration

Industrial server
Watchdog circuit
Swappable power supply and hard disk
No keyboard or mouse needed to start up
Mains 230 V 50 Hz (other available on request)
Used power 150-250 W\*
Colours beige and black

### Dimensions (width x depth x height):

 $1 RU = 438 \times 681 \times 43 mm$ 

#### **Environmental conditions:**

Temperature range storage 0 - 50  $^{\circ}$ C Temperature range operating 10 - 35  $^{\circ}$ C Humidity 8%-90% non-condensing

#### Safety and EMC:

CE compliant (EN 60950/IEC 60950)

#### Connections:

1 x MPTS input (ASI)

1 x MPTS/SPTS output (ASI)

1 x Control/SNMP (10/100/1000 Base-T)

#### **Connection options:**

2 x MPTS input (ASI)

2 x MPTS/SPTS output (ASI)

2 x MPTS/SPTS input/output (GbE 1000Base-SX, LC duplex connector)

\* Dependent on the configuration.

 $\ensuremath{\mathsf{ITNM}}$  Systems reserves the right to change the specifications of the configuration.



### **SSP100**

### Management

Purpose Contact

Besides powerful and advanced functionality and cost-effective design durability of a part in a digital television broadcast system is of course of vital importance. A service level agreement is the appropriated means for a user defined improved or continuous availability.

#### Service level agreement

A service level agreement covers preventive as well as corrective maintenance of the whole system as well as possible bugs in the applications. The standard rate is 7 % of the installed base per year. The standard coverage in the Netherlands implies a maximum response time of one hour during seven days a week between 9 o'clock in the morning and 11 o'clock in the evening. The response time at the location is four hours maximum. Spare material can be included on customer's demand as part of the delivery.

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