

Rules of Operations for System Software Updates DTT Norway

Version 1.7

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1 Scope

The Norwegian DTT platform will support the SSU enhanced profile based on the ETSI TS 102 006 V1.3.1 specification. Only parts of the enhanced profile functionality will be exploited. This document outlines how the SSU signalling is configured in the Norwegian DTT network.

2 References

[1] ETSI TS 102 006 V1.3.1

[2] Norwegian DTT Basic IRD specification v2.0

3 Change log

Date	Vers.	Change	Name
22.11.07	1.0	Initial document	KJF
22.11.07	1.1	Minor changes	KJF
21.11.07	1.2	Removed PAT, changed text in Data Carriage chapter.	KJF
05.12.07	1.3	- Changed SSU_location descriptor from mandatory to optional in the common descriptor loop. - Changed SSU_location descriptor from optional to mandatory in the operational descriptor loop.	KJF
18.12.07	1.4	- Removed Linkage_descriptor 0x0A - Changed comment in hardware and software descr. loop - Removed target_smartcard, private_data_specifier and user_private descriptors - Added explaining text to the schedule, update, SSU_location and target_serial_number descriptors. - Added some explaining text to the data carriage chapter	KJF
03.04.08	1.5	- Added Change log - Changed ONID from TBD to 0x2242 - Correction of errors in bytes in target_serial_number descriptor	KJF
24.10.08	1.6	- Removed common_descriptor loop. All descriptors are mandatory signalled in	KJF

		<p>the operational_descriptor loop.</p> <ul style="list-style-type: none">- Removed update_descriptor- Added note about support for several scheduling descriptors.- Specified association in the SSU_location_descriptor- Added chapter 6, Data delivery to the Norwegian DTT platform	
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4 Signalling

4.1 Network Information Table (NIT)

4.1.1 Linkage_descriptor 0x09

The linkage_descriptor 0x09 is located in the first loop of the NIT where the system software update service is located. It points to the location of the system software update service.

The linkage descriptor 0x09 will contain the following information:

Linkage_descriptor 0x09		
Field	Value	Comment
transport_stream	TBD	Differs from region to region
original_network_id	0x2242	
service_id	TBD	Is unique
linkage_type	0x09	
OUI	0x00015A	

4.2 Program Map Table (PMT)

The different streams with data and the stream where the UNT is located are listed in the PMT. The data_broadcast_id descriptor (0x000A) is associated with the UNT stream. The data_broadcast_id descriptor contains the following values:

Data_broadcast_id descriptor		
Field	Value	Comment
OUI	0x00015A	DVB reserved OUI
update_type	2	SSU with UNT via broadcast
update_versioning_flag	0	Further description of update found in UNT

Hence the data_broadcast_id descriptor does not signal any specific OUI. Further selection information is carried in the UNT.

4.3 Update Notification Table (UNT)

The UNT is divided into sub-tables using standard DVB table syntax. There is one UNT sub-table for each OUI. The following specific data is signalled in each UNT sub-table:

UNT table field values		
Field	Value	Comment
action_type	0x01	SSU
OUI	0x??????	Manufacturer specific OUI
processing_order	0xFF	No ordering implied

4.3.1 compatibilityDescriptor()

The system_software_descriptor and system_hardware_descriptor with the accompanying fields/values will be available in the CompatibilityDescriptor():

system_hardware_descriptor		
Field	Value	Comment
descriptorType	0x01	HW descriptor
specifierType	0x01	IEEE OUI
specifierData	0x??????	Manufacturer specific OUI
model	??	Manufacturer specific model
version	??	Manufacturer specific version

system_software_descriptor		
Field	Value	Comment
descriptorType	0x02	SW descriptor
specifierType	0x01	IEEE OUI

specifierData	0x??????	Manufacturer specific OUI
model	??	Manufacturer specific model
version	??	Manufacturer specific version

4.3.2 Target() and Operational() loop.

The following UNT descriptors are located in the different UNT loops as follows:

Descriptor	Tag value	Present in loop	
		Target	Operational
scheduling	0x01		X
ssu_location	0x03		X
target_serial_number	0x08	(X)	

The above defined descriptors marked as X is mandatory signalled. The above defined descriptors marked as (X) is optionally signalled.

4.3.2.1 Scheduling_descriptor

The scheduling descriptor will be used as specified in [1].

Example:

Start / End time will be used to signal the duration of the SSU campaign (e.g. 2 months)

Period will be used to signal the repetition between period (e.g. 5-6 hours)

Duration will be used to signal the duration of a period (e.g. 1-2 hours)

In the example above, the SW is played out for 1-2 hours every 5-6 hours in 2 months before it is removed from the carousel.

Note: Please note that if the software is scheduled at several different time slots during 24 hours, several scheduling_descriptors will be present in the operational_descriptor_loop. The IRD must therefore calculate which of the available scheduling descriptors to use dependent of the present time.

4.3.2.2 SSU_location descriptor

To find out what stream to use in the PMT the association is given using the `association_tag` of the `ssu_location_descriptor` in the `operational_descriptor_loop` of the UNT and the `component_tag` of the `stream_identifier_descriptor` in the PMT.

4.3.2.3 Target_serial_number_descriptor

The serial numbers will be represented either as a list or in a range in the `serial_data_byte` of the `target_serial_number_descriptor`. There can only be either a list or a range of serial numbers in the descriptor. 01 as the first two bytes in the `serial_data_byte` defines a list and 02 define a range.

List: 01<serial number #1><serial number #2><serial number #3>....<serial number #n>

Range: 02<serial number #1><serial number #n>

Example of list of serial numbers:

5001074312345671 5001074312345682 5001074312345693 (dec)

01 32 01 07 2B 0C 22 38 47 32 01 07 2B 0C 22 38 52 32 01 07 2B 0C 22 38 5D (hex)

The first byte (01) indicates that a list of serial numbers will follow. The next 8 bytes represent the first serial number, the next 8 bytes the next and so on.

Example of range of serial numbers:

5001074312345671 5001074312345693 (dec)

02 32 01 07 2B 0C 22 38 47 32 01 07 2B 0C 22 38 5D (hex)

The first byte (02) indicates that a range of serial numbers will follow. Two serial numbers is then defined (8 bytes each). The first serial number is the first in the range and the second is the last in the range. The serial number is represented with 16 digits. The last digit is the checksum and is included for security reasons but shall not be included when finding the range.

5 Data carriage

The SW update is either played out on the shared elementary stream or on a specific PID. The volumes are scheduled for playout using the scheduling_descriptor signalled in the operational_descriptor loop.

A set of PID's are defined to be used on the platform. The IRD implementation shall not be restricted to the use of these PID's as they may be changed.

Location of streams/tables:

PID	Streams/tables
8000	UNT
8001	SSU carousel
8002-8100	Proprietary streams and simple profile streams

6 Data delivery to the Norwegian DTT platform.

In order for the software to be correctly imported to the server the software must be delivered in either of the following ways:

For simple profile:

- TS stream with image encapsulated as dsm-cc data carousel (preferably with PMT)
- or TS stream with proprietary data (preferably with PMT).

For enhanced profile:

- Signed binary image
- or TS stream with image encapsulated in dsm-cc data carousel (preferably with UNT).