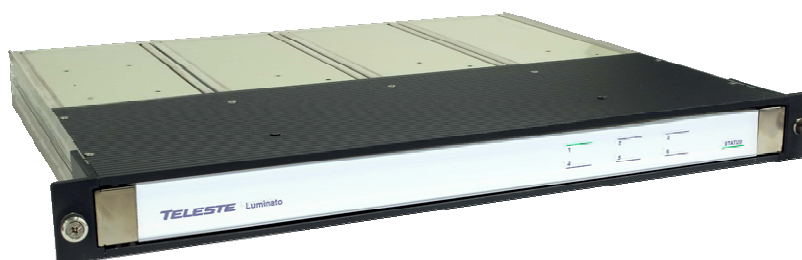


Application Note

Teleste Corporation



Luminato Luminato ASI to IP streaming

SW version 1.1.2

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Introduction

This application note gives step-by-step instruction how to use Luminato in ASI to IP streaming application.

Followed typical configuration scenarios are described:

- » SPTS streaming from ASI port to multicast ip stream.
- » How to remove transport stream components or PID.
- » How to configure MPTS pass-through.

Preparations

It is assumed that followed tasks are performed before start to configure streaming.

1. The Luminato unit is already installed into a rack. The sub modules are installed into their slots and SFP modules into GE1 and/or GE2 slots. Refer to installation manuals.
2. All cables are connected and the Luminato is powered up.
3. Quick start guide procedures are done. Refer to Luminato Quick Start Manual.
4. Signals are available.

Compability

This application note is done for software release 1.1.2.

Hardware version:

LCH rev A12 – A15

LPS rev A12 - A13

LAS rev B10

SFP-MODULE Electrical RJ-45 APAC 10/100/1000B-TX (Teleste code 51670126)

If a newer software version is in use, appearance and functionality may be different as described in this application manual.

Scenario 1

SPTS streaming from ASI to multicast ip stream

This scenario creates a transport stream configuration for one service from ASI input to multicast ip stream output.

Device setup

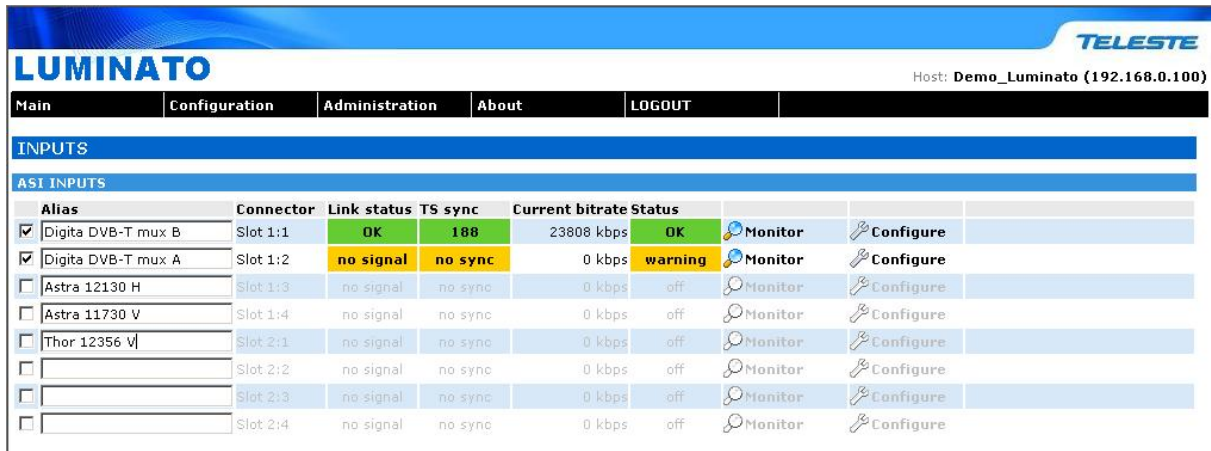
You need at least one active quad ASI module (LAS1) installed and also at least one SFP module installed to GE1 port.

Configuration steps

1. Configure ASI input port.
2. Check service availability on ASI input.
3. Create output - multicast ip streaming.
4. Select adaptive mode – service oriented configuration.
5. Configure Service for streaming.
6. Verify streaming results.

Step 1: Configure ASI input port

To configure ASI input port, select Configure -> Inputs.



The screenshot shows the LUMINATO web interface. At the top, there is a navigation bar with 'Main', 'Configuration', 'Administration', 'About', and 'LOGOUT'. Below this is a header for 'INPUTS'. The main content area is titled 'ASI INPUTS' and contains a table with the following columns: Alias, Connector, Link status, TS sync, Current bitrate, Status, Monitor, and Configure. The table lists several input slots, some of which are checked to be enabled.

Alias	Connector	Link status	TS sync	Current bitrate	Status	Monitor	Configure
<input checked="" type="checkbox"/> Digita DVB-T mux B	Slot 1:1	OK	188	23808 kbps	OK	Monitor	Configure
<input checked="" type="checkbox"/> Digita DVB-T mux A	Slot 1:2	no signal	no sync	0 kbps	warning	Monitor	Configure
<input type="checkbox"/> Astra 12130 H	Slot 1:3	no signal	no sync	0 kbps	off	Monitor	Configure
<input type="checkbox"/> Astra 11730 V	Slot 1:4	no signal	no sync	0 kbps	off	Monitor	Configure
<input type="checkbox"/> Thor 12356 V	Slot 2:1	no signal	no sync	0 kbps	off	Monitor	Configure
<input type="checkbox"/>	Slot 2:2	no signal	no sync	0 kbps	off	Monitor	Configure
<input type="checkbox"/>	Slot 2:3	no signal	no sync	0 kbps	off	Monitor	Configure
<input type="checkbox"/>	Slot 2:4	no signal	no sync	0 kbps	off	Monitor	Configure

1. Enter a alias name for all Inputs.
2. Mark the check box to enable inputs you want to receive services from.

Note! If the input has proper signal, the “Link status”, “TS sync” and “Status” shown “OK” (green). You should also see current bitrate.

Note! Enabled input without ASI connection asserts warning for link status as also status indicator. Check ASI connection.

Step 2: Check service availability on ASI input

To check service availability on ASI input, select Configure -> Inputs.

Click the Monitor link and you will see the monitoring page for the ASI input.

The screenshot shows the LUMINATO web interface. At the top, there is a navigation bar with 'Main', 'Configuration', 'Administration', 'About', and 'LOGOUT'. Below this, the page title is 'MONITOR ASI INPUT'. Underneath, it says 'DIGITA DVB-T MUX B'. There is a 'SERVICES (8)' section with a 'Reload tree' button and a tree view of services: MTV3 (#49), Nelonen (#65), Sub (#97), JIM (#177), MTV3 MAX (#209), Sub Leffa (#241), Sub Juniori (#257), and Ohjelmistopäivitykset (#3346). Below the services is a 'PIDS (35)' section with a table. The table has columns for PID, Monitor, Current bitrate, Peak bitrate, and CC Errors. The table contains 15 rows of data, with PID 0 and PID 256 having a green 'OK' status in the Monitor column. Each row has a 'Reset' button for the Peak bitrate and a 'Reset' button for the CC Errors.

PID	Monitor	Current bitrate	Peak bitrate	CC Errors
0	<input checked="" type="checkbox"/> OK	16 kbps	29 kbps	0
1	<input type="checkbox"/>	16 kbps	29 kbps	0
16	<input type="checkbox"/>	0 kbps	14 kbps	0
17	<input type="checkbox"/>	26 kbps	58 kbps	0
18	<input type="checkbox"/>	429 kbps	485 kbps	0
20	<input type="checkbox"/>	0 kbps	14 kbps	0
192	<input type="checkbox"/>	51 kbps	58 kbps	0
256	<input checked="" type="checkbox"/> OK	16 kbps	29 kbps	0
257	<input type="checkbox"/>	16 kbps	29 kbps	0
258	<input type="checkbox"/>	16 kbps	29 kbps	0
259	<input type="checkbox"/>	16 kbps	29 kbps	0
260	<input type="checkbox"/>	16 kbps	29 kbps	0
261	<input type="checkbox"/>	16 kbps	29 kbps	0
264	<input type="checkbox"/>	16 kbps	29 kbps	0

You can now check what is coming in from selected ASI input. The page includes view for services and PIDs.

You can refresh service information by clicking the Reload tree -button.

Hint! You can reset TS peak rates of all PIDs at the lower end of PID list.

Hint! You can reset Continuity Counter Errors (CC Errors) of all PIDs at the lower end of PID list.

Step 3: Create output – multicast IP streaming

To create output – multicast IP streaming, select Configure -> Outputs.

Alias	Destination IP Address	UDP Port	TTL	Current bitrate			
<input type="checkbox"/> SPTS streaming 1	230.0.1.1	5000	5	0 kbps	Monitor	Configure	Delete
<input type="checkbox"/> SPTS streaming 2	230.0.1.2	5000	5	0 kbps	Monitor	Configure	Delete
<input type="checkbox"/> SPTS streaming 3	230.0.1.3	5000	5	0 kbps	Monitor	Configure	Delete

Add IP Output

1. Enter alias names for output streamers.
2. Enter the multicast ip address.
3. Enter the destination UDP port number.

Note! TTL value is 5 by default. Adjust TTL to higher if you have more than five routers in transmission chain.

Note! The output streamers cannot be enabled until input is selected. This is explained in the next step.

Hint! The next entry will add by one Destination IP address and UDP port.

Step 4: Select adaptive mode – service oriented configuration

To select adaptive mode – service oriented configuration, select Configure -> Processing.

Note! IP streamer outputs are shown to the right of the page. Currently all outputs are disabled.

Choose the output that you want to configure by clicking the Service name in the Alias column. This will open the left side of page to add parameters for this output streams.

In this example is mention to do service oriented configuration. The operating mode must be in adaptive mode. Check active mode in the top left corner.

1. Choose the module slot, where you are aiming to take service. Alias name and Destination multicast ip address and UDP port are already entered in previous step.

Note! You cannot yet Enable output streaming as there are still missing configuration parameters. Enable will be activated after configuration has been applied.

2. Enter Output PID range parameters. The starting value is essential to enter to define, where the outgoing PIDs is started to allocate for the streamed TS. All PIDs are automatically remapped .

Note! Luminato allocates outgoing PIDs based on this setting: the first PID is assigned to PMT and then each component is added in sequence.

Output Advanced settings

You may also do configuration to define outgoing Transport stream ID Network ID and Network name.

Note! By default TS id is 0 and Network ID is 0. Network name field is empty by default.

Open Advanced settings section.

3. Enter transport stream parameters: Transport stream ID, Network ID, Network name.

Output PID range 100 - 102

▶ OUTPUT ADVANCED SETTINGS

Transport stream ID

Network ID

Network name

TS buffer overflow

▶ SERVICES (0)

Input	SID	Service Name	Output SID	Service Name
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

▶ SUBTABLE INSERTIONS (0)

These parameters are used by Luminato, when it generates automatically PSI/SI (PAT, SDT, NIT) tables to streamed TS.

The next step is to select service for this output IP stream.

Step 5: Configure Service for streaming

To configure Service for streaming, select the service from the dropdown menu under “Service Name”.

Note! Service Name dropdown menu list includes all available services from selected slot. The list has original service name and in brackets also original service ID and original network name.

1. Select service from the dropdown list. When the service is selected, Luminato copies original SID and Service name to output fields. These fields are used by Luminato, when it does SID remapping and also PSI/SI table auto generation. You may give your own SID and service name for streamed TS.

Note! You may also select service by entering SID value. Luminato now picks up service that matches to entered SID

2. Enter output SID and Service name, if original values doesn't match your channel line-up.

OUTPUT ADVANCED SETTINGS					
SERVICES (1)					
Input	SID	Service Name	Output SID	Service Name	
<input checked="" type="checkbox"/>	49	MTV3 (#49, MTV Oy, SI	100	MTV3	Delete
<input type="checkbox"/>					

3. Press Apply –button to confirm configuration. Luminato generates automatically PAT, PMT, CAT and SDT tables for streamed TS by default. You can adjust automatic table insertion from generate-section.

4. Enable configured streaming from right side list of IP Outputs

IP OUTPUTS						
	Alias	IP Address	Port	Current bitrate	Mode	
<input checked="" type="checkbox"/>	SPTS streaming 1	230.0.1.1	5000	4206 kbps	adaptive	
<input type="checkbox"/>	SPTS streaming 2	230.0.1.2	5000	0 kbps	adaptive	
<input type="checkbox"/>	SPTS streaming 3	230.0.1.3	5000	0 kbps	adaptive	

Add IP Output

You should now see in IP output table (at the right of the page) that bitrate field show you current utilized bitrate.

Step 6: Verify streaming results

Connect your ip set top box or analyzer to receive multicast stream. You should now see the program that you have configured.



You may use transport stream analyzer, which can receive IP streams to validate the result.

Scenario 2

How to remove transport components or PID

In this scenario you learn to remove some unwanted components from incoming transport stream. A transport stream may have for example some additional audio or data components, which are not used in your system so you may remove them to save utilized bandwidth in your system.

To go forward in scenario you should have already configured transport stream, where you decide to remove some components or PIDs.

There are three methods to do component or PID removal:

1. PID filtering.
2. Stream ID filtering.
3. Priority filtering.

You may choose the best method, which suits your configuration targets. In all cases out coming PMT-table is updated according to configuration and there is no need to manually insert PMT table.

The followed chapter gives detailed configuration task for each method.

Method 1: PID filtering

This method removes any incoming PID. This method might be useful, when component doesn't have stream id or is not audio, teletext or subtitle stream.

Note! One special case is ECM PID. If user creates PID filter for incoming ECM PID, this also removes CAT table (PID 1) and EMM (PID value is referred in CAT table) stream from incoming stream.

Choose from menu:

1. Select Configuration -> Processing.
2. Choose the output that you want configure by clicking the Service name in the Alias column.
3. Open the Service-section.
4. Expand the service by clicking the plus (+) sign.
5. Open the PID filter-section.

The screenshot displays the 'OUTPUT ADVANCED SETTINGS' section. Under 'SERVICES (1)', a table lists the service configuration:

Input	SID	Service Name	Output SID	Service Name	
<input type="checkbox"/>	<input checked="" type="checkbox"/>	49 MTV3 (#49, MTV Oy, S	100	MTV3	Delete

Below this, the 'COMPONENTS (3)' section shows a table of stream types:

PID	Stream Type	
<input type="checkbox"/> 101	video	Delete
<input type="checkbox"/> 102	audio	Delete
<input type="checkbox"/> 103	teletext	Delete

The 'SERVICE ADVANCED SETTINGS' section includes a 'PID FILTER (1)' area with two lists:

- Available input PIDs:** 305, 561, 817
- Excluded input PIDs:** 1073

Between the lists are an input field, an 'Add input PID' button, and a 'Delete' button.

At the bottom, there is a 'STREAM ID FILTER (0)' section.

You can see incoming PIDs in the left side in Available PIDs table. All components PIDs are listed. PSI/SI table PIDs are not listed. Also ECM and EMM PIDs do not exist.

1. Choose the PID that you want to filter away.
2. Press Add PID and the PID is appearing in the right side as excluded PIDs.
3. To confirm configuration click the Apply button.

Note! You may choose multiple PIDs for PIDs filtering. Also you can add PID outside of left table listing. Add your PID into the box at the middle of tables and click the Add PID button. Your PID now appears to Excluded list. Check the result with a stream analyzer.

Note! To remove filtering you just need to select the PID from Excluded PIDs list and click the Delete button.

Method 2: Stream ID filtering

This method is based on Stream ID descriptors component tag filtering. Luminato detects incoming Stream IDs, if they exist.

Note! This method is useful in case, where broadcaster use stream ID descriptors to identify for example audio stream. This may mean that language code of audio stream may change according to program is live. Therefore Stream ID is the method to identify unique stream.

1. Select Configuration -> Processing.
2. Choose the output that you want to configure by clicking the Service name in the Alias column.
3. Open the Service-section.
4. Expand the service by clicking the plus (+) sign.
5. Open the Stream ID filter-section.

The screenshot displays the 'OUTPUT ADVANCED SETTINGS' window, specifically the 'SERVICES(1)' section. It shows a table with columns for 'Input', 'SID', 'Service Name', 'Output SID', and 'Service Name'. The first row is expanded to show 'COMPONENTS (3)'. This section contains a table with columns for 'PID' and 'Stream Type', listing video (PID 111), teletext (PID 113), and subtitle (PID 114). Below this is the 'STREAM ID FILTER (1)' section, which includes two lists: 'Available Stream IDs' (containing 2 and 66) and 'Excluded Stream IDs' (containing 158). Between these lists are 'Add Stream ID' and 'Delete' buttons.

You can see now at left table incoming stream IDs.

1. Choose the Stream ID and click Add Stream ID to create filtering. Selected Stream IDs are appearing in the Excluded Stream IDs list.
2. Click Apply to confirm configuration.

Note! You can also add Stream ID outside left table listing. Insert your Stream ID number to the box in the middle of table and click Add Stream ID and then your Stream ID has added to Excluded Stream IDs.

Note! To remove filtering you just need to select the Stream ID from Excluded Stream IDs list and click the Delete button.

Method 3: Priority filter

This method actually is a include filter, which means that all wanted components are listed to filter. Creating rule for components Luminato includes components based in these rules.

Note! The priority filter is useful, when user want to limit amount of components also pickup favourite subtype (language).

Example! If user want to take English audio to output stream, he creates priority filter for audio-type stream that has language descriptor value eng (= English). See the picture example.

The screenshot displays the Luminato configuration interface. At the top, there is a section for 'OUTPUT ADVANCED SETTINGS'. Below it, the 'SERVICES (1)' section shows a table with columns for Input, SID, Service Name, Output, SID, and Service Name. A single service is listed: Input checked, SID 49, Service Name 'MTV3 (#49, MTV Oy, Slc)', Output SID 1, and Service Name 'MTV3'. Below the services section is the 'COMPONENTS (4)' section, which lists four components: PID 101 (video), PID 102 (audio), PID 103 (teletext), and PID 104 (subtitle). Each component has a 'Delete' button. Below the components section are several collapsed sections: 'SERVICE ADVANCED SETTINGS', 'PID FILTER (0)', 'STREAM ID FILTER (0)', and 'ECM COMPONENTS (0)'. The 'PRIORITY FILTERS (1)' section is expanded, showing a 'Filter type' dropdown set to 'audio' and a 'Delete' button. Below this, there is a 'LANGUAGE CODE (1)' section with a dropdown set to 'English (ENG)' and a 'Delete' button. At the bottom of the priority filters section is an 'Add Filter' button.

If there is no match for configured priority filter, Luminato takes amount of each type priority filter.

Example! If there are two priority filter for audio-type streams: eng and swe. The program has ger, dut and nor audios present. In this example ger and dut are passed assuming that they are in that irdrer in PMT-table.

Scenario 3

MPTS passthrough

This scenario creates a configuration, where all incoming components, PIDs and PSI/SI tables are included to the output stream. Luminato is acting like a transparent media converter from ASI to IP.

Note! Is assumed that user has already created IP output. (refer to scenario 1 step 3).

Choose from menu:

1. Select Configuration -> Processing. To the right are viewed the configured outputs.
2. Select the output that you want to use for MPTS passthrough. Left side opens.
3. Choose the Operation Mode to Static. Alias name and destination ip address and ports are already configured.
4. Select the Input interface, where you want take MPTS for this output streaming. Available PIDs in the input appeared into left side table.

The screenshot displays the Luminato web interface for configuring MPTS streaming. The main navigation bar includes 'Main', 'Configuration', 'Administration', 'About', and 'LOGOUT'. The current page is 'PROCESSING'.

MPTS STREAMING(230.0.1.4:5000), STATIC MODE

Operation mode: static, adaptive

Enable streaming:

Alias: MPTS streaming

IP Address: 230.0.1.4

Port: 5000

Count of TS buffer overflows: 0 [Reset]

IP OUTPUTS

Alias	IP Address	Port	Current bitrate	Mode
<input checked="" type="checkbox"/> SPTS streaming 1	230.0.1.1	5000	5846 kbps	adaptive
<input checked="" type="checkbox"/> SPTS streaming 2	230.0.1.2	5000	3581 kbps	adaptive
<input type="checkbox"/> SPTS streaming 3	230.0.1.3	5000	0 kbps	adaptive
<input checked="" type="checkbox"/> MPTS streaming	230.0.1.4	5000	23806 kbps	static

Add IP Output

PID FILTERING

Input interface: Digita DVB-T mux B

PID Filtering Mode: Exclude, Include

Available input PIDs: 0, 1, 16, 17, 18, 20, 192, 256

Filtered PIDs: [Empty]

Add PID, Delete

SUBTABLE INSERTIONS (0)

Apply, Ok, Cancel

Note! If you want to pass all of them through, select Exclude filter mode. Do NOT add any PIDs to Filtered PIDs list. That means that no PIDs are filtered.

Version Information

This document is based on the following system component versions. If the component versions of your system differ from these, some of the features presented in this document may not function or the configuration display pages may look slightly different.

VERSION INFORMATION	
Hardware version	A12
Software version	1.1.2

Environmental

WEEE Notice

This product complies with the relevant clauses of the European Directive 2002/96/EC on Waste Electrical and Electronic Equipment (WEEE). The unit must be recycled or discarded according to applicable local and national regulations.



European Conformity

This equipment conforms to all applicable regulations and directives of European Union which concern it and has gone through relevant conformity assessment procedures.



Legal Declarations

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