CP525 cMUX Remultiplexer Release Notes

Revision: 6.0.48 (5082)

2016-08-08

1 Overview

This document contains the SW revision history for CP525 cMUX Remultiplexer. The release note is cumulative, each chapter describing changes since the previous released version.

2 Upgrade instructions

- Software upgrade of the device should – if possible – be done at a time when the device is not in use for critical signal transmission.
- Always take a backup of the device's current configuration before doing the upgrade (use Device Info > Save/load Configs > Save Configuration in the device's GUI).
- Have a copy of the original software file currently in use at hand, in case of a need for reverting to the last operational state.

2.1 How to upgrade

- Log into the unit as admin using any web browser. Navigate to Device Info > Maintenance > Software Upgrade and click on Browse. Then upload the software image (*.out) from your file system.
- After the software is loaded the unit will reboot and load the new software image. Loading the new software image takes the same amount of time as a normal reboot, which may take from 45-90 seconds.
- It is possible to upload the software to the unit, and postpone the reboot operation. The old software will be used until the next reboot. This is done by disabling the Reboot on success option on the Software Upgrade page.
- If you have T-VIPS Connect, refer to the T-VIPS Connect User's Manual on how to upgrade several units.

3 Release 6.0.48 Stung Treng

3.1 Release date 2016-08-08

- Fixed bug in PSIP editor where caption_service_descriptors with no services in the service loop caused a flash exception on import.

3.2 Hardware

- 6.0.48 and on supports a new NAND flash variant that is not backwards compatible with older SW versions. Added a check in the SW loader to ensure software compatibility with running HW.

4 Release 6.0.38 Artigas

4.1 Release date 2015-03-23

- Patch release.

4.2 Fixes

- Fixed problem to synchronize to a single, low bandwidth (4-5Mbit/s), high jitter (>50ms) IP stream. Problem would only be visible if receiving this single channel, i.e adding an ASI feed would mask the problem.
- Fixed problem with the switcher MIBS (pswitchConfigTable), used for the service switchers, missing in the SNMP agent.
- Fixed a problem with editing of rows in the global alarm config table

5 Release 6.0.34 Shijiazhuang

5.1 Release date 2014-12-09

- Patch release with a few fixes

5.2 Fixes

- Fix for potential hang on FTP client when fetching PMCP files, if server does not answer anything to an FTP command, or answer never reaches the unit. The hang of the FTP client would eventually cause reboot by watchdog when the PMCP settings were accessed while the FTP client was hanging. This was the same kind of problem that was fixed in 6.0.20, but on a different location.
- Fix for rounding problem when typing in frequency parameter in PSI/SI/PSIP Editor.

6 Release 6.0.30 Molenhoek

6.1 Release date 2014-08-11

Maintenance release with a few patches.

6.2 Fixes

- MIP Inserter: Fixed a minor drop i SFN delay every 8th day, causing some modulators to resynchronize.
- Fixes an issue where Flash Player 14 was reported as being too old.
- PMCP: Fixed an issue with utf16 string of odd length in PMCP parser.
- Service Fallback: Fixed an issue where a switch might not be performed for streams of continuous CC errors.
- Other minor fixes and improvements

7 Release 6.0.20 Kvarndrup

7.1 Release date 2014-01-17

Maintenance release with a few patches.

The release also updates the look and feel of the GUI to Nevion flavors.

7.2 Features

7.2.1 VCT channel re-branding

A new SW license APU is now required to perform automatic re-branding of major and minor channel numbers.

7.2.2 DHCP/DNS

Unit now supports automatic IP address assignment by DHCP on the Ethernet interfaces. When using this function a hostname can be registered for the unit on the DNS server by the DHCP server. This makes it possible to access the units on the network by name instead of IP address.

When configuring a uni-cast destination for transmitted IP streams, it is now possible to specify the destination by hostname instead of IP address.

The VLAN interface configuration pages have been slightly changed to adapt to the new parameters for DHCP.

7.2.3 Automatic re-mapping

Extended auto-remap function with option to turn off auto-remapping per input port.

When 'keep last remap' flag is used, the regenerator has been changed to better stick to previously used PID values for already existing routes when new services appear on input.

Known issues: Disabling auto-remapping per port and using remap mode On conflict does not work properly.

7.2.4 PSI/SI/PSIP table version numbers

Added support for manually specifying the version numbers on statically played out PSI/SI/PSIP tables.

Note: Remark that receivers that only look at version numbers to detect changes may not work properly if you change the content of a table without also changing the version number.

7.2.5 IP Outputs

- Option added to override the default SSRC ID field, separately on data and FEC streams. This was added for compatibility with another manufacturers IP inputs.
- Support for transmission of 204 byte TS packets on IP. Note that all IP outputs must have the same number of bytes per TS packet.

7.2.6 IP Inputs

- Added alarm on missing row/col FEC stream when FEC enabled.
- Support for reception of 204 byte TS packets on IP. Packet length is auto-detected.

7.3 GUI

- New Nevion look and feel.
- Alarm description text added on each alarm for better documentation of the purpose of the alarm, without having to refer to the user's manual.

7.4 Issues fixed

7.4.1 PMCP Dynamic PSIP EPG

- A few improvements on PMCP loading of dynamic PSIP EPG.
- A potential fix for reported problem on hanging PMCP service.
- Fixed bug in handling of PMCP strings with lengths exceeding 255 characters. The strings would not be correctly handled when split into segments when converted to PSIP multiple string structures.
- Fixed proper handling of character encoding when converting from UTF-8 strings received in the PMCP XML to binary PSIP multiple string structures. Previous versions would not encode non-ascii characters correctly (range >0x7f). Added proper handling of Uni-code characters in range 0x10-0xff using mode 0 and implemented conversion to UTF-16 for strings containing uni-code characters exceeding 0xff.
- Added new option controlled from the PMCP GUI page, to force the language code on all strings to a specific value, overriding the language signalled in the PMCP files. This is to overcome a problem seen with a set-top box, that would not display EPG strings signaled as Spanish (language code = "spa"), even when the encoding was correct after the fixes in the previous point.

7.4.2 TS inputs

A fix has been included for a potential crash problem when receiving massive SI updates saturating the section filter and at the same time receiving a PAT update on any port.

7.4.3 IP inputs

- Fixed an issue with resource allocation on IP diversity inputs. When defining an input diversity pair, consecutive IP channels added would not work properly.
- Fixed a problem with latency calculation when receiving IP streams with frames out of order and row FEC processing enabled. Symptom would be slowly increasing latency to be displayed.
- Fixed a problem with handling of out-of-order streams when running with relatively low latencies and without FEC processing. This usage scenario could cause reporting of missing packets and disturbances on input signal.
- Fixed an issue where the FEC engine would introduce errors for very specific FEC and Data receive patterns. The issue appeared if both FEC Row and FEC Column was received before a row of Data. This could happen with network equipment using different QoS settings on FEC and Data, and sometimes delaying the Data frames relative to the FEC frames by some milliseconds. This issue would typically also only be seen for FEC matrixes with a small FEC Row length.
- Fixed an issue with restoring of a non-default value on the advanced page parameter "Expected PCR accuracy". The parameter would be set to the default value after boot, and after switching regulator modes.
- Fixed an issue with synching to channels with no RTP layer and TS priority bit set on PIDs in range 0x01xx.

7.4.4 TXP_post / Network

- Fixed a TCP/IP network stack issue that could cause large HTTP requests to be interrupted before an answer was fully transmitted. The problem was seen on config loading requests, where processing of a received HTTP request would take several seconds before the HTTP response should be sent. In some cases a mechanism to catch hanging socket connections would take down the connection before the response was fully transmitted.
- Added HTTP 411 Length Required error message on TXP post request where the HTTP parameter Content-Length is omitted. The WEB server requires this field to handle such requests efficiently.

7.4.5 PID crash detection

- Fixed an issue with PID crash detection between routed data and PMT PIDs played out in modes “Playout Unchanged” and “Playout Static”.

7.4.6 IP Diversity

- Fixed an issue with deletion of an IP input belonging to an IP diversity pair.

7.5 Licensing

The following table lists the available SW options in this SW version.

Table 7.1 The list of licensed features in this version

Key	Function
APU	VCT channel rebranding.
TSIX	Number of input streams that can be used simultaneously (TSIX).
ASIN	Enables use of ASI inputs.
IP	Enables use of Ethernet data ports for video transport.
ISW	Input switching.
FEC	Forward error correction, both input and output.
TCON	Connect control. Enables management of a device with the Connect Tool.
SFP	SFP slot support.
SFPC	Enables configuration of some telco variants of SFPs.
SFN	Enables use of device as an SFN adapter with MIP insertion.
SFB	The feature makes it possible to configure pairs of services where one is back-up for the other. Switching decision is made based on alarm levels on each service.
ESI	Enables some more advanced features on the SI playout module. See user manual for more info.
ESW	Emergency switch support.
CA	CA Scrambler support.
ATS	Advanced traffic shaping for prioritisation of data on output.
DSI	SI download for external SI manager system.
BISS	Enables BISS scrambling support.
IDR	Enables RTP/IP Diversity reception.
PSIE	Enables PSI/SI/PSIP editor.
PMCP	Enables Dynamic PSIP insertion from PMCP XML data (ATSC A76/B).

The APU licence is new in this version. The PMCP licence now displays as an integer to make use of the same licence possible to license multiple outputs on the CP524. On the CP525, the maximum value for this licence is 1, since there is only one output.

8 Release 5.20.16

8.1 Release 2013-01-02 Thynes

This release contains new functionality, and some bugfixes.

8.2 New features

8.2.1 Input Copies

- Added Input Copies. May create up to 8 copies, where each copy may select from any ASI or IP source.
- An Input Copy is treated as a separate source in the MUX process.
- Not a licenced feature, but each input copy counts on the /TSIX licence.
- Located under Inputs -> Inputs Overview -> Input Copies

8.2.2 SFN synchronization

- Added option to synchronize timestamps in DVB-T MIP packets for Seamless SFN functionality.
- Requires connection to SNTP server and 1 PPS, and that the SNTP server and 1 PPS are synchronized.

8.3 Bug fixes and improvements

- Fixed service names not being imported correctly in the PSI/SI/PSIP editor.
- Fixed an issue where the selected input in an Input Switch would not be changed on config load if in manual mode.
- Made /TSIX, /ASI and /TCON hot upgradeable licences, i.e. may be upgrade without rebooting the unit.
- Several minor improvements.

9 Release 5.18.24 Glendale

9.1 Release 2012-11-28

This release contains mostly bugfixes, but also some minor features.

9.2 Service Fallback (/SFB)

- Much reduced switch times when using a Service from an IP input port.
- Removed Service ID collision warning.

9.3 ATSC mode

- Fixed an issue where TVCT would not be correct in Playout Regenerated mode if being larger than one section.
- Fixed an issue where Program Number would not follow Service ID in TVCT when using the Auto-Remap feature and Transmit Services by Default.
- Fixed an issue where Auto-Remapped PIDs would not be updated correctly in TVCT.

9.4 Stored Configs

- Fixed an issue where the configuration files stored on the unit would not be shown after a re-boot. The configurations are not deleted, and will be detected by this software version.
- Added Download button to fetch stored configurations.
- Several other minor improvements.

9.5 Input Switching (/ISW)

- Changed behavior of the Return Wait functionality. Previous implementation required that the input has not been selected for the last Return Wait seconds. The new implementation additionally requires that the input has been in **Valid** state for Return Wait seconds.

9.6 Other

- Fixed IP-RX streams of type UDP being shown as RDP.
- Several minor improvements for PSI/SI/PSIP Editor.

10 Release 5.18.2 Serov

10.1 Release 2012-10-22

This release adds some new features and several enhancements to the CP525 cMUX Remultiplexer

10.2 New features

10.2.1 Output Mute

- Added Output Mute functionality. Located under Outputs -> Advanced -> Mute
  - Configurable ASI mute; Idle bytes or DC.
  - Manual or automatic operation.
  - Very flexible configuration of mute criteria for automatic mute mode.

10.3 Miscellaneous improvements and bug fixes

- Added Configuration ID field under Device Info -> Product Info. This field changes on configuration load and will be displayed in the status header. Makes it easy to see which configuration is loaded.
- Now possible to Load Configuration from other devices using HTTP. Located under Device Info -> Save/Load Config.
- Enhancements to Automatic PID/Service ID remapping.
  - Added functionality to add offset between PIDs within a Service.
  - Added option to let Services IDs be remapped even if a Service configuration is present. Controlled by option Allow Auto SID for each service. This fixes a known issue in 5.16.6.
  - Added Keep last remap option. If disabled the unit will try to reassign new PIDs/Service IDs when new PID/Service IDs appear.
- Added functionality to set default priority queue per input port. Requires ATS feature key.
- Added support for letters found in ISO8859-9 when overriding Service Name and Service Provider.
- PSI/SI/PSIP editor.
  - Added editor for descriptor payload.

  - The order of descriptors may now be configured.
  - Several minor improvements.
- Added DNS configuration page. Requires PMCP feature key.
- Fixed occasional crash if changing the BISS1 key more than 10 times.

10.4 Licencing

- No changes.

11 Release 5.16.6 Cerveny Kostelec

11.1 Release 2012-09-21

This release adds several new features to the CP525 cMUX Remultiplexer, including automatic PID and service ID remapping, RTP/IP diversity reception, dynamic PSIP (PMCP) and PSI/SI/PSIP editor.

11.2 New Features

11.2.1 Automatic PID and service ID re-mapping

- Rule based automatic re-mapping.
- Up to 11 different rule types for PID remapping and 4 for service ID remapping.
- Possible to only remap on ID conflict events.
- Algorithmically predictable output.

11.2.2 PSI/SI/PSIP Editor

- Build tables from scratch or import tables from input ports, a file, the currently transmitted data or the currently stored static tables.
- PSI/SI is available in DVB mode and PSIP in ATSC mode.
- Activated by the PSIE feature key.

11.2.3 RTP/IP Diversity Reception

- Combine two synchronized IP streams into one.
- Provides stream redundancy over multiple network paths.
- Activated by the IDR feature key.

11.2.4 Dynamic PSIP (PMCP)

- Enables reception of PMCP XML files (ATSC A/76B) to regenerate PSIP EIT and ETT table.
- Regenerated tables are multiplexed on-the-fly together with the transport stream and played out at regular intervals.

- Supports HTTP and FTP communication to fetch the PMCP data.
- Activated by the PMCP feature key.

11.3 Miscellaneous improvements and bug fixes

- Added the possibility to play out static RST tables.
- Improvements on synchronizing speed on IP inputs when using PCR to regulate.
- Added a fast regulator mode to regulate IP inputs without PCR packets.
- Possible to allow pass-through PID for ATSC PSIP EIT/ETT tables.
- Fixed a bug where PIDs was being transmitted even if an input switch was disabled while chosen as default service source.
- Fixed a bug where IP outputs were not properly disabled when the multiplexer output was in SMPTE310M mode.

11.4 Known issues

- Auto re-mapping of PIDs and service IDs does not currently work if a custom service and/or PID configuration is present. Use default pass through of ports when using automatic re-mapping.

11.5 Licensing

The following table lists the available SW options in this SW version.

Table 11.1.a The list of licensed features in this version

Key	Function
TSIX	Number of input streams that can be used simultaneously (TSIX).
ASIN	Enables use of ASI inputs.
IP	Enables use of Ethernet data ports for video transport.
ISW	Input switching.
FEC	Forward error correction, both input and output.
TCON	Connect control. Enables management of a device with the Connect Tool.
SFP	SFP slot support.
SFPC	Enables configuration of some telco variants of SFPs.
SFN	Enables use of device as an SFN adapter with MIP insertion.
SFB	The feature makes it possible to configure pairs of services where one is back-up for the other. Switching decision is made based on alarm levels on each service.

Table 11.1.b The list of licensed features in this version

Key	Function
ESI	Enables some more advanced features on the SI playout module. See user manual for more info.
ESW	Emergency switch support.
CA	CA Scrambler support.
ATS	Advanced traffic shaping for prioritisation of data on output.
DSI	SI download for external SI manager system.
BISS	Enables BISS scrambling support.
IDR	Enables RTP/IP Diversity reception.
PSIE	Enables PSI/SI/PSIP editor.
PMCP	Enables Dynamic PSIP insertion from PMCP XML data (ATSC A76/B).

12 Release 5.2.52 La Reole

12.1 Release date 2012-06-11

- Extended allowed port range for TCP connections to allow ports 1024 to 65535 on Data ports.
- Improved robustness against illegal adaptation field lengths in scrambling mode which could cause PCR errors on output.
- Fixed stability issue for some PSIP tables in ATSC mode.

13 Release 5.2.46 Montespertoli

13.1 Release date 2012-03-30

Patch release with a number of fixes.

13.2 Changes

13.2.1 Scrambling (/CA)

- Various general improvements on the scrambling feature.
- Stability fixes in EMM and ECM servers.
- Fixed rare crash issue on broken ECMG connections.
- Improvements in GUI pages.
- ECM PIDs are now played out with same priority as PSI PIDs.
- Ethernet Data ports now available for ECM/EMM connections even without Ethernet Data Interface (/IP) licence.

13.2.2 IP inputs (/IP)

- Fixed an issue with handling of Ethernet frames with 4 TS packets per frame.

13.2.3 ATSC/PSIP handling

- Fixes on the communication between the PSIP section filter and input table database during updates of version numbers. There were a number of ways PSIP tables could go missing in the input database during handling of updates to MGT. This was observed in particular for VCT and RTT. A number of holes were covered, and the database now also has a housekeeper that checks basic presence of tables configured for filtering on a regular basis.

13.2.4 Alarms

- Fix in the PID rate too low alarm.

13.2.5 Input port switching (/ISW)

- Fixed a bug in the input switcher, potentially causing switching not to happen when it should do.
- Fixed handling of Return wait after performing a Return switch.
- Fixed a case where a switch would be performed correctly, but with "Unable to switch" alarm triggered.

13.2.6 Triveni PSIP download

- Corrected serious bug with restore of downloaded SI tables from file. Could cause eternal loop, making product stop responding to web requests.
- Fixed issue with handling of zero-length tables posted from client.
- Improvement in handling of corrupted files.

13.3 Licensing

- No changes.

13.4 Known issues

14 Release 5.2.2 Tanjung Pelepas

14.1 Release date 2011-08-25

This release adds BISS mode 1 and a few patches.

14.2 Changes

14.2.1 Scrambling

- Added new feature for BISS scrambling with licence key BISS.
- Moved existing Conditional Access page from Device Info into new top level Scrambling tab.

14.2.2 Input switching

- Fixed an issue where the Switch would not wait the defined number of seconds (Switch Wait) for critical alarms.
- Fixed an issue when starting the switch in Manual mode not having any ouput.
- Increased maximum values for switch wait and reswitch wait.

14.2.3 FEC

- Fixed a bug in the FEC engine, potentially causing problems with IP transmission when enabling FEC with skew matrixes for the first time after a boot.

14.2.4 IP input

- Fixes to improve handling of very low bitrate inputs on IP. Previous version could introduce severe jittering on the TS packets received, jitter that would be propagated on the output if packets passed directly. Problem was observed when using an IP input port for reception of table data, and configuring the tables to “Pass-through PID”.

14.2.5 SNMP

- MIBs for IP transport and input switching now supported.

14.3 Licensing

The following table lists the available SW options in this SW version.

Table 14.1 The list of licensed features in this version

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TSIX	Number of input streams that can be used simultaneously (TSIX).
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IP	Enables used of Ethernet data ports for video transport.
ISW	Input switching
FEC	Forward error correction, both input and output.
TCON	Connect control. Enables management of a device with the Connect Tool.
SFP	SFP slot support
SFPC	Enable config of some telco variants of SFPs.
SFN	Enables use of device as an SFN adapter with MIP insertion.
SFB	The feature makes it possible to configure pairs of services where one is back-up for the other. Switching decision is made based on alarm levels on each service.
ESI	Enables some more advanced features on the SI playout module. See user manual for more info.
ESW	Emergency switch support.
CA	CA Scrambler support.
ATS	Advanced traffic shaping for prioritisation of data on output.
DSI	SI download for external SI manager system.
BISS	Enables BISS scrambling support.

15 Release 5.0.6 Kawashimo

15.1 Release date 2011-06-01

Main release featuring forward error correction (FEC) for IP input and output streams.

15.2 Changes

15.2.1 FEC

- FEC is now available both on input and output IP streams. FEC is a licensed feature.
- Matrix sizes are limited to L+D<=32, L*D<256, which slightly exceeds the numbers specified in Cop3.
- For IP TX sub-channels (small-casts), one can configure transmission of column FEC, column+row FEC or turn off FEC individually on each sub-channel, the FEC matrix size and skew however being shared between all the sub-channels.

15.2.2 IP sources

- Max input buffering changed from 4Mb to 8Mb per IP source.
- Some improvements on bitrate measurement for buffer regulation.
- Improvement on handling of initial buffer filling when syncing to a stream with packet losses.
- Added a parameter on IP sources to increase catch range of buffer regulator to be able to handle streams with very large offsets on the incoming PCR clock. Receiving streams from PC could yield PCR clock offsets of >25ppm, increasing the catch range of the regulator could enable reception of such streams.
- Improved details on NO-DATA alarm, showing info on interface link/enable.

15.2.3 IP destinations

- Added differentiation on link down and interface disabled on ARP unresolved alarm details.
- Added conflict check on IP parameters used on output. New alarm “Output parameter conflict” set on conflicts.

15.2.4 Input switching

- Added switching on any critical port alarm on a port in the switch. This means that by configuring any of the alarms in the alarm tree on a port to yield critical severity, you can enable switching based on that specific alarm. It is only the "no sync" alarm ("no lock" for IP sources) that has critical severity level by default.

15.2.5 PSIP

- Fixes for handling of PSIP ETT table. ETT sub-tables could build up on the input during EIT/ETT changes. If playout of data from input was used, old tables would build up on output too.
- Fixed an issue with section filtering of ETT with same ETT ID on different PIDs.

15.2.6 SNMP

- A number of optimisations improve performance on SNMP requests, especially get-next operations.
- New SNMP tables enabling management of FEC parameters via SNMP agent.

15.2.7 Dual Power

- Added support for dual power shelf. This adds one alarm for failing power.

15.2.8 GUI

- Various library fixes.
- Service edit dialog now floating.

15.2.9 General

- IP sources and input switches now kept untouched (no picture breaks) when loading a new configuration file where overlapping such elements are defined. This also fixes a problem with hanging alarms on loading of configs with overlapping IP sources.
- Some optimisations on video data handling to improve performance and leave more room for management serving (GUI/SNMP).
- Various general library fixes.

15.3 Known Issues

- There are some problems with FEC on IP streams with 1 TS packet per frame.
- Iterative FEC processing when using 2 dimensional FEC may not be able to correct all theoretically fixable errors when error rate across all streams is too high.

15.4 Licensing

The following table lists the available SW options in this SW version.

Table 15.1 The list of licensed features in this version

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TSIX	Number of input streams that can be used simultaneously (TSIX).
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IP	Enables used of Ethernet data ports for video transport.
ISW	Input switching
FEC	Forward error correction, both input and output.
TCON	Connect control. Enables management of a device with the Connect Tool.
SFP	SFP slot support
SFPC	Enable config of some telco variants of SFPs.
SFN	Enables use of device as an SFN adapter with MIP insertion.
SFB	The feature makes it possible to configure pairs of services where one is back-up for the other. Switching decision is made based on alarm levels on each service.
ESI	Enables some more advanced features on the SI playout module. See user manual for more info.
ESW	Emergency switch support.
CA	CA Scrambler support.
ATS	Advanced traffic shaping for prioritisation of data on output.
DSI	SI download for external SI manager system.

16 Release 4.10.10 Brighouse

16.1 Release date 2010-12-20

Follow-up on 4.10.10, with fixes for the issue with ASI sync problems in SFP mode. Version is now allowed for use in SFP mode also.

16.1.1 Known Issues fixed

- Fixed problems with ASI sync in SFP mode. Problem was related to FPGA routing of image used together with SFP slot.
- Also did some modifications to ASI sync detection logic to improve robustness slightly.

16.1.2 New issues fixed

- Fix for removal of small cast IP destinations. Data would continue to be transmitted in previous version. Work around would be to stop transmission manually by disabling channel before removal. This bug could cause strange results f.ex. when loading a configuration with less destinations than the active configuration.
- Fixed bug in port switching of IP input sources. There was a chance that the switcher would stay on an IP source with no signal.
- Fixed bug in rate display for null packet queue on the priority queue page. The rate was not shown correctly when there was data on the EMM/Data queue also.
- Fixed priority column for Data/EMM queue on output PID table.
- Added better validation of configuration when adding IP sources and input switches. Previously, unit could end up in an invalid state when trying to add more than max number of allowed sources or switches.
- Several minor fixes to GUI pages and operation.
  - Empty rate column on output summary page.
  - Fixed problem with config transaction handling when trying to resolve conflicts when adding a port switch.
  - Fixes for operation without licence for Ethernet data interface feature.
  - Bug in service tool tip for input switch.
- Fixed bug in setting of "ARP unresolved" alarm when configuring destination addresses 0.0.0.0 or 255.255.255.255 for data stream.
- Fix to avoid exception on SNMP walk.

17 Release 4.10.0 Charleston

17.1 Release date 2010-12-02

Warning: This version is only approved for Electrical Ethernet mode. Problems have been identified with ASI sync when using the SFP operation mode.

Note: This version introduces licensing of ASI input ports. If you are upgrading an old device you should acquire a SW licence key for ASI input before loading the new SW.

17.2 New features

17.2.1 PSI/SI processing features

- Added possibility to define new component signalling information for a PID and add it to any service on the output. This makes it possible to point at an unsignalled PID on any input port and add it to one or more services as a service component.
- Added option to add/remove/replace descriptors in PMT and SDT actual. Descriptors can be manipulated for PMT program loop, component loops and SDT service descriptor loop. Descriptors are entered in hex-string format, and are validated as they are typed.
- Added option for component type remapping for service components.

17.2.2 IP output

Added support for transmitting the output TS to more than one IP destination, some times referred to as IP small-casting. This makes it possible to transmit the same stream on two physical Ethernet interfaces, using the same or different IP addressing.

17.2.3 Conditional Access

This version contains a licenced option for simulcrypt CA. The CA module is currently being tested with the Conax CA system.

17.2.4 User interface

- Current alarms frame at bottom of input and output pages, showing alarms for the currently displayed port.
- Scrambling indicators on services in service list.
- A number of minor layout changes and fixes.

17.3 Licensing

- New licence for use of ASI input ports (ASIN). This allows customers to avoid paying for unused ASI ports in an IP only environment.
- New licence for the SFP configuration feature (SFPC).

17.4 Fixed issues

17.4.1 Network

- Fixed issue with IP forwarding to a VLAN interface. Full Ethernet frames will now be fragmented to assure a max frame length of 1518 bytes.

17.4.2 PSI/SI

- Fix for correct display of service names when encoded with 3 byte character set selection code.

17.4.3 User interface

- Fixed issue with refreshing of service information on Service config page on some kind of changes on input. The problem was mostly related to switching between ATSC and DVB mode on the input.
- Number of re-sync counter now cleared when clearing IP source statistics.
- Fix to map the SFP generic alarm to the right Ethernet port for filtering option.

17.4.4 Config

- Fix to assure IP sources keep their identification number after a reboot.

17.5 Known issues

- There are problems with ASI sync detection when using the operation mode for SFP slot. Use only permitted for Electrical Ethernet mode.

18 Release 4.6.10 Llangennech

18.1 Release date 2010-08-25

Production release with support for new 10 port ASI card, input port redundancy switching option and other updates.

18.2 New Features

18.2.1 Input port redundancy switching

This SW features a new input port switching functionality. 2 or more input ports can be configured as a group of prioritised signals, where the best port is always used. Switching is based on whether a port has TS sync only. The TS sync detection logic has been improved to be able to trigger fast switches on sync loss.

IP sources can also be switches by the port switcher, together with other IP sources or in a mix of ASI inputs and IP inputs. Switching from an IP source is slower since the switching criterion is based on whether the buffer is in lock or not, meaning that switching will happen when the buffer runs empty.

Input port switches appear as available TS inputs in the rest of the system, labeled “Switch 1”, “Switch-2” etc, so services and PIDs and Table playout configurations can be referenced to the switched input. It is important to notice that ports that are used in a switch, cannot be referenced directly in the service/PID/Table configuration.

- The port switching feature requires a licence key.
- Ports switches are created dynamically on the “Inputs->Inputs Overview->Switch Inputs” page.
- A symbol representing each port switch is showed on the main status page, displaying which ports that are members of the switch and which port is currently selected.
- The port switcher can be used to switch between signals with different content. Fastest switching is achieved if the PID values are identical on the switches sources.

18.2.2 Simultaneous SMPTE310M and ASI output

On the “Device Info->Port Mappings” it is now possible to select whether a port configured as output should use the format selected on the output page, or always carry an ASI format signal. This makes it possible to transmit both SMPTE310M and ASI from the unit. When selecting SMPTE310M on the output page, output ports configured to be fixed ASI, will be locked to the SMPTE310M bitrate and carry the same transport stream as the other outputs.

This option is only available in ATSC+DVB mode, configured on the “Device Info->Maintenance” page.

18.2.3 Synchronisation of device clock to PSIP-STT

On the "Device Info->Time Settings" page it is now possible to select STT on an SMPT310M/ASI input port as time reference for the unit.

18.2.4 New 10 port ASI card

This SW version supports a new 10 port ASI card that will be mounted as standard in the CP525 from now on. On the 10 port ASI card, ports 1-6 can be configured as either inputs or outputs, port 7 and 8 are fixed inputs and port 9-10 are fixed outputs. All ports configured as outputs carry a copy of the same transport stream.

18.2.5 SFP

- More information listed for SFP module plugged in.

18.2.6 GUI improvements

- Added more details on output content on the Outputs->TS-OUT->Outgoing" page.
  - Service composition details on same format as on input, based on PAT/PMT/SDT or VCT played out. If these tables are configured in "Pass-through PID" mode, information is taken from input SI database. If these tables are in "Pass-through Remap" mode, this view will fail.
  - More details on type, service and ECM reference on output PID list. Same constrains on playout modes for PAT/PMT applies as above.
  - Added reference to input port and input PID in output PID list, to see which port a PID is routed from. PIDs generated internally do not have an input reference.
  - Added table list view that displays content of the SI playout database. The format is the same as used on the inputs, displaying tables with version numbers. Only tables in a "Playout" mode will be visible here.
- Added display of total PSI/SI/PSIP processed on all inputs on the status page.
- A few adaptations to avoid confusions of terms between DVB and ATSC mode. SID abbreviation replaced by "Service ID" a few places to avoid confusion with the key field "Source ID" used in PSIP. Added "Source ID" to present services listing.
- Fixes on tool tips for columns in table view for PSIP tables to show correct labelling of extension fields.
- Changed labelling of IP sources to start on 1 instead of 16. 16 is still the base number for IP sources in the configuration, while 64 is the base for input switches.
- Added inventory ID parameter as an addition to Device name. Parameter is accessible through GUI and SNMP.

- Adding of IP input port is now done on separate tab on "Inputs->Inputs Overview->Ip Inputs". Likewise, Switch inputs has its own tab for status and creation/deletion. A new tab lists all types of inputs with common status columns and check box for enabling.
- IP sources are displayed with multicast address if set up with multicast parameters and no user label has been assigned.
- Improved checking on configuration conficts when changing direction of ports. Checking also applies when moving ports in and out of port switchers.

18.2.7 ATSC-PSIP

- Added "Playout Regenerated" mode for PSIP-MGT, to use together with "Playout Regenerated" for VCT to avoid version mismatch between signalling in MGT and version used on VCT.

18.3 Fixed issues

- Fixed issues with IGMPv3.
- Fixed bug in control of the back panel red alarm led and green power led. The bug was introduced in SW version 4.2.x.
- Fixed a problem with the alarm "No PSIP download client" being set to early when using negative time zone.
- Fixed crash issue with changing EIT/ETT playout intervals on "Outputs->TS-OUT->Tables->Main" while the EIT/ETT base PID settings were set up incorrectly on "Outputs->TS-OUT->Tables->EIT/ETT Sch".

18.4 Known issues

18.4.1 ATSC PSIP related

- "Playout Unchanged" for PSIP-STT uses the device internal clock for time stamp. Care must be taken to get time that is in sync with EIT played out. This can be achieved by synchronising internal clock to the STT on the stream where the EIT is taken from.
- When configuring playout intervals for PSIP-EIT and PSIP-ETT on "Outputs->TS-OUT->Tables->EIT/ETT Sch", the parameters "EIT base PID", "ETT base PID" and "Number of EITs/ETTs" are not changing the EIT and ETT pids used, but they must be set to match the used PIDs for the playout intervals configured below to be effective.

18.4.2 General

- IP sources cannot be used to synchronise internal clock.

19 Release 4.2.40 Le Fuilet

19.1 Release date 2010-06-14

Production release of IP functionality.

19.2 Fixed issues

- This version uses DATA-1 together with SFP slot when in SFP operation mode, as opposed to 4.2.36 where DATA-2 was used. Still only one additional Electrical Ethernet interface is available together with SFP, in addition to the dedicated management port (Control).
- Fixed an issue with handling of 1 TS packet per IP frame in certain circumstances.

20 Release 4.2.36 Zminj

20.1 Release date 2010-06-10

Release adding UDP only support on IP inputs and support for SFP slot.

Also a number of important stability issues have been solved.

20.2 New features

- Support for UDP only on IP input sources. This means that the UDP headers in the incoming Ethernet frames are not followed by an RTP header before the MPEG TS packet payload data.
- Support for SFP slot. To use SFP, switch to SFP mode on the "Device Info->Maintenance" page. Remark that when using SFP, only one electrical Ethernet data port is available, in addition to the Ethernet control port. On the current SW version the DATA-2 port is used for this purpose.

20.3 Fixed issues

20.3.1 Stability

- Fixed a few issues with Ethernet packet reception that could previously cause occational single loss or corruption of frames on the input IP sources.
- Fix for problem with side-effect on output from other channels when re-synching an IP source.
- A number of other minor fixes for stability and robustness.

20.3.2 Functions

- Fixed bug in IP channel ping mechanism used to generate traffic in return direction on unicast links to keep the MAC address tables updated. Ping would erroneously start to show timeouts after some time of operation.
- Fixed bug in removal of IP source that would cause problems with section filter registrations on consecutive adds of new channels. This would typically lead to "PAT missing" alarm on the new IP source added.
- Fix in appying of table timeouts on input table configuration page. Changes to timeouts in GUI would not have any effect until rebooting.

- Fix in IP channel demuxing to allow reception of the same IP stream on two different physical interfaces.
- Fix for version number inconsistency between PSIP-MGT and PSIP-EIT when using play-out unchanged mode on both.

20.4 Known issues

- IGMPv3 does not work properly. IGMPv2 is OK.
- IP sources cannot be used to syncronize the real time clock.

21 Intermediate Release 4.2.18 Dorchester

21.1 Release date 2010-04-21

Follow-up release on 4.2.0, with some important fixes

21.2 New features

- Added zooming feature in GUI. Zooming is enabled in "Device Info->GUI Preferences" and stored in cookie. After enabling zooming GUI can be zoomed using CTRL +/-.

21.3 Fixed issues

21.3.1 Stability

- Fixed memory leak on IP sources linked to use of the Re-sync Condition "Bitrate change", which is default enabled. Having this option enabled would cause a memory leak that would eventually cause device re-boot. Disabling the option would stop the leak.
- Fixed stability issue that could lead to CC-errors on output when having a configuration with PID remappings.
- Fixed stability issues that could cause interruptions in programs from IP sources.
- Tunings on buffer handling and regulator on IP sources. Channels were not good at handling large burst losses in 4.2.0.
- Fixed small memory leak on telnet access.

21.3.2 Functions

- Fixed bug in "Transmit services by default" option. It would fail after a reboot when having IP sources in the configuration.
- Fixed handling of 6 TS packets per frame on IP inputs that was previously not working when having more than one IP channel.
- Fixed issue with SNMP. Traverse was not working. Platform TS MIBs were not working for IP sources.
- Fixed issue with the Emergency Switch feature. UDP port used was not letting through the firewall.

21.3.3 GUI

- Fixes to refreshing of Service config page on changes to service lists
- Fixed various issues on service config page.

21.4 Known issues

- No support for UDP only, i.e transport streams received on IP must have an RTP encapsulation.
- IGMPv3 does not work properly. IGMPv2 is OK.
- No support for the SFP slot in this version.
- IP sources cannot be used to syncronize the real time clock.
- No option to determine IP input bitrate based on MIP.
- Output multiplex can be affected by a small glitch (CC errors) on content from other ports when an IP source re-syncs.

22 Release 4.2.0 St. Johnsville

22.1 Release date 2010-03-18

This is the first official release of the CP525 with Transport stream over IP support.

Included features are as described for 4.1.17.

22.2 New features

- Added VLAN groups in Ethernet buckes on status figure. It is possible to drag-and-drop channels between VLANs from here.
- Added IP source buffer re-sync conditions as available on TVG420.

22.3 Resolved issues

22.3.1 Known issues from 4.1.17

- Added support for transport streams without PCR PIDs. Initial bitrate calculations for such streams are less reliable than for streams with PCR.
- Several fixes around buffer handling and robustness towards RTP frame drops.
- Added VBR mode.
- Lots of optimizations to get better GUI response when loading the device with data, and major improvements on loading speed for large configurations with many IP channels. Expected loading speed for a 16 channel IP configuration is ~30 seconds.
- Fixed problems with instability on configuration loading when having IP channels in existing configuration. The instability was related to removal of IP TS sources.
- Fixed problems with drop down menu for TS identifiers on output menue when choosing an IP source as source of output keys.
- Fixes on alarm filtering during transitions phases (boot and channel enable).
- Added optional monitoring of bitrate changes on IP sources with channel resync.
- Removed entries in the global alarm list for alarms not supported by the device.

22.3.2 Other issues fixed

- Fixed bug causing removal of IP source to inhibit future routing of data from ASI 1.
- Lots of GUI updates.
- A number of the listed alarms were not working for IP sources.
- Improved boot time.
- Fixed issue with 16 padding bytes in 204 byte mode on ASI output.

22.4 Known issues

- No support for UDP only, i.e transport streams received on IP must have an RTP encapsulation.
- IGMPv3 does not work properly. IGMPv2 is OK.
- No support for the SFP slot in this version.
- IP sources cannot be used to syncronize the real time clock.
- No option to determine IP input bitrate based on MIP.

23 BETA Release 4.1.17 Skodstrup

23.1 Release date 2010-03-04

This release is a BETA code for evaluation of the Transport stream over IP support being developed on the CP525. In addition to the Transport stream output on IP support added in 4.1.5, this version demonstrates Transport stream input.

Warning: This version is **not** recommended for production use, and is only indended for evaluation and feed-back purposes. The version is not fully tested, but is expected to perform sufficiently for evaluation purposes.

23.2 Transport stream input on IP

The support for IP Transport stream inputs in this release involves:

- Up to 16 transport stream inputs over IP, in addition to up to 8 ASI inputs. Future versions will potentially increase number to 32 input streams on IP. IP sources are created on need by pushing the 'Add IP' button on the 'Inputs->Inputs Overview' page.
- Two electrical GBit interfaces are availablefor video transport. Each stream is set up with its own individual interface reference.
- Max speed on one IP input source is 213Mbit/s.
- Total input data rate at least 400Mbit/s, depending on various conditions. Needs more testing to locate bottle necks.
- VLAN support with virtual interfaces.

23.3 Known issues

23.3.1 IP input related

- No support for UDP only, i.e transport streams received on IP must have an RTP encapsulation.
- IP input streams **must** have PCR PIDs for rate determination.
- IGMPv3 does not work properly. IGMPv2 is OK.
- No VBR mode support implemented.
- Optimizations will be performed to improve performance on data rates and GUI responsiveness.

- Improvements will be made on buffer regulator and latency control.
- Instability on loading of configuration files with IP input channels defined is under investigation.
- Selecting an IP source as source for TS identifiers on the output (Output->TS-OUT->TS Identifier Settings->Source Input) causes the drop down to refresh with an invalid value and it will either be yellow or blank.
- Better filtering of TS alarms needed on IP sources during boot and enable/disable.
- No monitoring of small bitrate changes. Channel buffer will increase or decrease slowly until over/underflow occurs.
- A few alarms that are not and will not be supported are shown in the global alarm list.
- No support for the SFP slot in this version.
- IP sources cannot be used to syncronize the real time clock.

24 Beta release 4.1.5 Ergolding (2010-01-27)

This release offers a preview of the upcoming versions with support for transport stream transport on Ethernet.

Note: Note Only IP transmission is available in this version.

24.1 General

24.1.1 Port Map

Additional flexibility has been added to the "Device Info->Port Mappings". Any ASI connector can be used as either input or copy of the logical output transport stream.

24.2 Ethernet/IP

This release enables use of two additional Gbit Ethernet connectors that can be used for management traffic or video transmission.

24.2.1 IP routing table

For selecting Ethernet interface for outgoing traffic to IP addresses not matching any of the interfaces, the unit offers a traditional IP routing table. The routing table can be used both for video transmission and management traffic. For video transmission, it is possible to manually select interface.

24.2.2 IP forwarding

On the IP routing table configuration page, one can check of the "Allow IP forwarding" to use the device as a router for management traffic. Any incoming traffic that is not for the unit itself, will be forwarded to the interface indicated by standard routing rules.

24.2.3 IP transmit function

The version is fully functional for IP transmission. The MUX has one, and only one, logical transport stream output. The user chooses wheter to transmit this transport stream on one or more ASI output and/or on one IP output destination.

This function is licence protected with the 'Ethernet data interface' key.

24.2.4 VLAN support

This version fully supports VLAN functionality on both managment traffic and video transmission.

VLAN handling is done by defining a virtual network interface for the given VLAN ID on the physical Ethernet interface where the traffic should reside. Each interface is flagged with the intended type of traffic. To tag video data with VLAN, select a VLAN interface on the IP transmit tab on the output, or let the selection happen automatically via the routing table.

24.2.5 MIP

The MIP inserter functionallity has been extended with support for setting optinal functions for more than one transmitter.

24.3 Known Issues

- No IP input support, even though some GUI control of this is included in the SW.
- No support for 'small-casting'.
- No support for FEC
- No support for SFP module.
- Decoded MIP on MIP status is not shown correctly
- Some minor GUI drawing problems.

25 Release 3.14.2 Terranova dei Passerini (2010-02-06)

25.1 Features

25.1.1 ATSC PSIP

- Added optional support for SI/PSIP insertion from the Triveni GuideBuilder. Tables are downloaded from GuideBuilder to the CP525 cMUX Remultiplexer over the Ethernet control network interface.
- Added support for playout of ATSC PSIP tables from any input to the output.
- Added support for regeneration of PSIP TVCT (Terrestrial Virtual Channel Table), as well as support for editing certain fields in the TVCT, which is needed for rebranding of ATSC transport streams.

25.1.2 SMPTE-310 support

- Input and output ports are now switchable between DVB-ASI or SMPTE-310.

25.2 Alarms

- Major update to alarm configuration. Added global alarm configuration page and option to use global setting for each port alarm. Factory default is to use the global setting.
- Added configurable delimiter for alarm log.
- Added support for virtual alarm relays, which are programmable status indicators that can be set to react to any specific alarm condition. Detailed information can be found in the user manual.

25.3 General

- Introduced new transport stream configuration mode which can be set to either “DVB” or “ATSC+DVB”. Selecting the latter will enable ATSC PSIP and SMPTE-310 features (a change to this parameter requires a unit reboot).
- Added configuration wizard for output priority queues.
- MIP configuration has been extended and moved to new tab under Outputs.
- New T-VIPS logo in web user interface.

25.4 Fixed Issues

- Critical fix on MIP insertion. MIP frame was stamped with STS from one megaframe offset, making modulator accumulate too large buffer.
- Fixed bug in service component SNMP table.
- Fixed burst problem on PSI/SI input. Overflows were observed with >10Mbit/s total SI input.
- Fix on resetting of port statistics from SNMP via access to tsResetStatistics in tsStatusTable. Now resets all statistics on port, including PID CC error counters etc. Previously only cleared alarm counters.
- Fixed communication error that sometimes occured when using the web interface.

26 Beta Release 3.7.9 Greifenstein (2009-03-13)

26.1 Features

26.1.1 Service switching

- Added option for manual switching based on GPI input signal on alarm relay connector. This pin is the same as can also be used for reset input. When enabled as reset input, the GPI cannot be used for service switching.
- Added right-click option to switch between main and spare in the service configuration list for faster access.
- Added binding to the vigw-ts-switch MIB for service switchers. Instances start at 100 for service switchers, lower instanced being reserved for future port switching. Available fields are
  - Instance (100 and up)
  - pSwitchLabel (Name on switcher)
  - pSwitchCurrentInput (0=main,1=spare). Writable for manual switching.
  - pSwitchMode (Auto switching and return mode in GUI)
  - pSwitchPreferredInput (Always 0=main, writing not supported)
  - pSwitchAlarmStatusPortA (current alarm level on main service)
  - pSwitchAlarmStatusPortB (current alarm level on spare service)

26.1.2 General

- Added GUI option to choose whether to enable unit reset on the GPI/Reset input signal on the alarm connector.
- Added report frame on activation of pre-stored configuration. This function was previously not showing the same status list as when loading configurations from externally.
- Added forced reloading of page when using factory defaults, or loading configuration files, to make sure new values are presented.
- Link down alarm now set for Ethernet management interface, so that event is logged to the alarm log.

26.2 Fixed issues

- Fixed bug in PMT generation when switching between two output services with same output service ID. The new PMT would not let through before a new config change.
- Fixed bug in handling of changing output service id for a service with fall-back switcher already attached.
- Fixed wrap-around problem with sysUpTime, that would cause problems after about 1 year uptime.
- General library fixes and updates.

27 Release 3.5.10 Kaster (2009-02-12)

27.1 Features

- Service configuration wizard for faster configuration of services and priority queues when having the advanced traffic shaping feature.
- Individual override of each SDT field. Fields that can be overridden are now Service name, provider name, service type, running status, EIT p/f flag, EIT schedule flag, free/CA flag.
- PMT missing alarm now set per service. This means it can also be filtered per service.

27.2 Fixed issues

- Fixed bug in removal of SDT field overriding.
- Several fixed in GUI and low level handling of EIT source table functionality.
- Fixed bug in CAT regeneration when feeding ASI output into a second input.
- Made input analysis of all SI tables enabled by default.
- Tuned dialog for entering global/local remap to avoid having to type incoming PID in global remap field when using local remap.
- Fixed bug in routing of PIDs shared between services in a grouped queue environment, to assure they always end up in the highest priority queue of the ones specified.

28 Release 3.4.0 (2009-01-20)

This release is the first official release for CP525. This release features ASI I/O only, with emphasis on advanced output prioritization of data.

28.1 Features

- Feature for license protected advanced output prioritization queues.
  - Up to 15 data queues on audio/video from input.
  - Rate shaping on data queues from input.
  - Optional 2-level prioritization with grouping of queues.
- PCR filtering options for time sharing.
- TDT/TOT internal playout support.
- 2 or 4 ASI connectors, 2-7 licensed inputs, last ports can be configured to be either inputs or output copies.

28.2 Known issues

- The unit does not support low level PCR presence detection. The clock icon does not appear in the PID detail views.
- Alarm log CSV format only supports ; (semi-colon) as column divider.
- There is no place to configure the default priority for unsignalled PIDs, so when having the advanced output prioritization feature enabled, using the pass unsignalled PIDs by default functionality causes data to end up at the first A/V queue. Work-around is to add a PID routing with priority field to route PID to wanted queue, or to reserve the first queue for this type of traffic.
- When adding global PID remappings through the service edit dialog, the PID remap entries written are with default priority queue (1). This means that when later looking at the remap entries on the PID config screen, the correct queue may not be shown. The output data screen should always show the correct priority queue though. When not having the advanced priority feature, this bug is not relevant.
- PID crash details text is awkward when one input PID is re-mapped to several different PIDs.
- When receiving a very low bitrate on the input, and at the same time having a high output bitrate, there may be false CC-errors reported on the input.