Imagine COMMUNICATIONS

Release Notes

Selenio™ BNP

Build 74258

Release 3.7.1

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Publication Information

This publication is designed to assist in the use of the product as it exists on the date of publication of this manual, and may not reflect the product at the current time or an unknown time in the future. This publication does not in any way warrant description accuracy or guarantee the use for the product to which it refers. Imagine Communications reserves the right, without notice to make such changes in equipment, design, specifications, components, or documentation as progress may warrant to improve the performance of the product.

Trademarks

Patents

The products described herein are covered by one or more U.S. and foreign patents pending. The Selenio™ BNP is protected by U.S. Patents. 6,996,129; 7,046,677. Other US and foreign patents pending.

Contact Information

Imagine Communications has office locations around the world. For domestic and international location and contact information see: http://www.imaginecommunications.com/contact-us/

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1. Document Objective

This document describes the latest software release for Imagine Communications' Broadcast Network Processor (BNP) and summarizes product information from previous releases. It is intended to document the current supported features, capabilities, and known issues of this release.

This release supports three chassis types and three module types. The chassis types are the BNP2xr, BNP2xr+ and the BNP3xr. The three module types are the Gigabit Processor Module (GBP), the Processing module (PROC) and the ASI module. The BNP2xr uses the GBP2 and PROC2 modules and the BNP2xr+ and BNP3xr use the GBP3 and PROC3 modules. Either chassis may use the ASI modules. In this document we will refer to the chassis and modules using the generic names (BNP, GBP and PROC) unless required to be specific.

2. Upgrade Designation

BNP 3.7.1_74258 is a major release of BNP software to include some of the customer escalated bug fixes, new features & improvements. This release builds on top of the last Main BNP 3.7.0 release. (including 3.7.0P1 patch release) Upgrading to this release is considered **RECOMMENDED** for customers currently using or considering using earlier releases. To assess whether an upgrade is appropriate please review the details provided in this document.

Upgrade Designation Definitions

Designation	Definition
Mandatory	A release is given this designation when Imagine Communications has addressed critical product issues that it believes all customers will experience on the currently deployed releases.
Recommended	A release is given this designation when Imagine Communications has addressed product issues that it believes some customers may experience on the currently deployed releases or there are important performance improvements that could benefit customers.
Optional	A release is given this designation when Imagine Communications has addressed product issues that it believes certain customers may experience or that an upgrade provides potential benefits over existing product releases.

3. BNP Overview

The high-density Imagine Communications BNP can process video/audio streams over IP protocol through multiple Gigabit Ethernet and DVB-ASI interfaces. The BNP is capable of simultaneous transrating, statistical multiplexing, grooming and digital program insertion (DPI).

The BNP hardware consists of the following modules and components. Some of these modules are programmed during boot-up from a compact flash card and their functionalities are configured through the BNP Graphical User Interface.

- GBP Module – Gigabit Processor, front chassis access, one GBP board per chassis
- PROC Modules – Processing Modules, connections via GBP-2 gigabit ports, 1 to 3 PROC modules per BNP chassis
- ASI Module – Rear chassis access, up to 3 optional ASI modules per chassis
- MID – Mid-Plane, passive assembly, non-removable, one board per chassis
- AC P/S – AC Power Supply, rear chassis access, one power supply per BNP2xr chassis, one or two power supply per BNP3xr chassis
- DC P/S – DC Power Supply, rear chassis access, one power supply per BNP2xr chassis, one or two power supply per BNP3xr chassis
- Fans integrated in the BNP2xr, dual redundant hot swappable fan tray modules for BNP3xr

Chassis Type	GBP Module	PROC Module	ASI Module	Power Supply	Fans
BNP2xr	GBP2	PROC2	ASI module	One AC or DC supply	integrated
BNP2xr+	GBP3	PROC3	ASI module	One AC or DC supply	integrated
BNP3xr	GBP3	PROC3	ASI module	One or two AC or DC supplies	Dual redundant hot swappable fan tray modules

Additional information on the BNP2xr, BNP2xr+ and BNP3xr may be found in the following Imagine Communications documents:

- 250-0309-01_RevA_3-7-0_BNP_UG_12-1-14.pdf
- 250-0305-01_RevA_BNP2xr_IG_12-1-14.pdf
- 250-0145-01_RevB_BNP2xr_QSG_12-1-14.pdf
- 250-0307-01_RevA_BNP2xrPlus_IG_12-1-14.pdf
- 250-0308-01_RevA_BNP-2xrPlus_QSG_12-1-14.pdf
- 250-0306-01_RevA_BNP3xr_IG_12-1-14.pdf
- 250-0147-01_RevB_BNP-3xr_QSG_12-1-14.pdf

4. Contacting Imagine Communications Support

Imagine Communications has office locations around the world. For domestic and international locations and contact information, visit our Contact page:

(http://www.imaginecommunications.com/company/contact-us.aspx)

5. Changes in 3.7.1 release

BNP 3.7.1_74258 is a major release of BNP software to include new features, improvements, and fixes to discrepancies raised by customers. This release builds on top of the last Main BNP 3.7.0 release.

New Features and Enhancements

1. Re-branded GUI with Imagine Communications
2. Ability to create local users other than default “Administrator”, “Operator” or “User”. BNP authenticates with AAA server, when AAA feature is enabled, using the user name and password provided by the user during the login process.
3. Chinese, Japanese and Korean character font support in stream name in GUI
4. Option in Maintenance menu to force re-allocation of output Transport Streams among the hardware devices
5. Corrected display and internal check to reflect actual PPC (PowerPC) processing capacity as 120 Mbps
6. Allow Ghost program data PID to be groomed as ES grooming
7. Generate a critical alarm if Compact Flash Capacity is less than 512 MB
8. Shutdown of overheat primary unit after switchover to redundant backup unit
9. Graceful shutdown of video when user executes “Shutdown” from maintenance menu

Supported Upgrades

This release supports direct upgrades from the following releases:

BNP 3.7.0_72580
BNP 3.6.0_66303
BNP 3.5.5P6_71198

Newly Resolved Issues

These customer-escalated issues were resolved in BNP 3.7.1.

ID	Summary
BNP-4221	Field BNP 3.7.0 - CF card size is less than 512MB alarm generated with new Transcend Compact flash
BNP-4206	Field:BNP2xr 3.5.5: Gige8 Redundancy configuration allows peer address to be same as host address (no error check for duplicate IP)
BNP-3549	FIELD:BNP3.4.0: White and red sparkles present on BNP output
BNP-4190	BNP 3.5.5P6 - Discontinuity indicator flag causing A-Server disruption

Restrictions noted in this release

ID	Summary	Customer Implication/Workaround
BNP-4089	BNP 3.7.0: BNP should avoid to showing the Input TS missing alarm cleared on system reboot which is annoying to user	This may be considered minor annoyance to some customers, but masking such alarm has potential for other side effects.
BNP-4237	BNP:3.7.0-P1: H264 DPI % of success rate reduced to 85% from 100% when compared to 3.7.0 build 72429 with the MUX_H264_CPB_ADDFRAMESIZE=1	If customer is doing DPI then do not turn on newly added tuning parameter. (MUX_H264_CPB_ADDFRAMESIZE)
BNP-4215	BNP:3.7.0-P1: For H.264 output TS, BNP output TS rate should be configured 24% more than input TS rate	Configure 24% more output TS bandwidth for H.264 programs, as BNP does not transrate H.264 programs
BNP-4298	BNP:3.7.1:CJK:GUI allowing More than 32byte to configure CJK program name in TS level grooming with duplicate program names at the input	Do not groom the entire input TS to the output having CJK characters. Instead groom one program at a time
BNP-4302	BNP V3.7.1: FAT ASI output TS (with more than 120 Mbps) creation fail when upgarde from 3.7.0 to 3.7.1 due to HW capacity reduction to 120 Mbps from 160 Mbps/PPC	Make sure FATASI TS BW is less than or equal to 120 Mbps (prior to upgrading to 3.7.1)

6. Changes in 3.7.0P1 release

BNP 3.7.0P1, build 73322 is a patch release that fixes BNP-4219 (PTS gaps seen at the output of BNP for some h264 streams). A tuning parameter has to be turned on in order to fix the issue seen in BNP-4219. Please contact Imagine Communications support to change this tuning parameter.

BNP 3.7.0P1 patch release is built on top of 3.7.0 release. So, all the fixes in 3.7.0 release are also part of this patch release.

Please note the following when a tuning parameter is changed to fix the issue seen in BNP-4219.

1. Please make sure to turn off "Long Delay to support H.264 DPI" while creating output TS when DPI feature is not used.

Supported Upgrades

This release supports direct upgrades from the following releases:

BNP 3.7.0

Newly Resolved Issues

The issues below were resolved in BNP 3.7.0P1.

ID	Summary
4219	BNP 3.7.0 – PTS gaps seen at the output of BNP for some h264 streams

Restrictions noted in this release

ID	Summary	Customer Implication/Workaround
4235	GigE#8 link failure alarm not cleared sometimes when standby BNP reboot and came operationally up	This does not impact the customer as link comes up after standby BNP comes up. User can manually clear the alarm.
4299	New Tuning parameter for the H264 CPB is not automatically populating in the rgbTuning.cfg in redundant BNP system	Reboot BNP after software is upgraded(reboot both active and standby BNP after the upgrade in case of chassis redundancy)
4237	H264 DPI % of success rate reduced to 85% from 100% when compared to 3.7.0 build 72429	If customer is doing DPI then do not turn on newly added tuning parameter.

7. Changes in the previous BNP 3.7.0 Release

The following changes were made with BNP release 3.7.0, build 72580.

New Features and Enhancements

1. BNP2xr+ Introduction and Support – BNP Release 3.7.0 offers the introduction of the BNP2xr+ platform. This is the first release to support the BNP2xr+. The BNP2xr+ is a new combination of existing hardware modules, utilizing the BNP2xr chassis and the BNP3xr functional modules, i.e. GBP3 and PROC3 modules. All functional specifications for the platform are intended to remain the same as the BNP2xr platform.
2. Support for Dolby E-AC-3 Codec – This release of the BNP software provides for support of the Dolby EAC-3 Codec (also known as Dolby Digital Plus). This support includes the ability to recognize an E-AC-3 audio on an input stream and pass it through to the output. Additionally, the user will be able to create an E-AC-3 ghost PID and add an E-AC-3 audio at the output program.
3. Consolidates all the patch releases prior to this release into a single release.
4. Cyrillic Character Support
5. Support for round-robin algorithm – Provide user control via tuning files to configure assignment of streams to PowerPPC's on PROC modules. Contact customer support for additional information.

Supported Upgrades

This release supports direct upgrades from the following releases:

BNP 3.6.1
BNP 3.6.0
BNP 3.5.5

Please reference the BNP2xr or BNP3xr User Guides' "Upgrading Software" section when upgrading.

The upgrade to 3.7.0 does require a power cycle post upgrade as there are FPGA changes in this release.

Newly Resolved Issues

The issues below were resolved in BNP 3.7.0.

ID	Summary
3768	BNP 3.5.0 – PID's not present on BNP output TS
3868	BNP2xr 3.5.2 – Text message cutoff when enabling transparency
3940	BNP 3.5.4P1 – Video freezing on network after splice event

3941	BNP3xr 3.5.4 – BNP turned into an unresponsive state
3956	BNP 3.5.2 – CC Loss when backup grabs configuration
4016	BNP2xr 3.5.5 – Issues with H.264 DPI
4019	BNP dropping groom when Splice Request Message has zero pid count
4154	BNP2xr 3.6.1p2 PCR Accuracy spikes on groomed channels
4157	BNP2xr 3.5.5p6 Program AMC-HD “pulsing” compression artifacts issue
4175	BNP2xr 3.6.1p2 Output programs dropped
4013	High Transrating on pre-transrated services
4015	PMT disappears from the output program

New Known Issues and Workarounds

ID	Summary
4199	UI Shows Garbled Characters on input program names. Primarily related to special characters in some DVB program names.

New Product Constraints

In release 3.7.0, we have provided new recommendations for the use case of Ad Insertion on Single Program Transport Streams (SPTS's) as might be used in a Switched Digital Video or IPTV environment. In that use case, it is recommended to not exceed 80 Mbps per PowerPPC or 320 Mbps per PROC module. The assignment of streams using the new round-robin algorithm in this release will aid in ensuring this maximum is not exceeded. However, the unit will accept more than this capacity so it is incumbent upon the user to not license the platform for more than this recommended bandwidth.

For a complete list of product constraints please refer to Product Constraints in the Appendix A: Product Specifications section.

8. External Dependencies

Syslog Server

NOTE: In order for Imagine Communications to provide the best possible customer support, the BNP supports the logging of events to an external syslog server. It is highly recommended that you connect the BNP to an external Syslog server due to the capacity constraints of the BNP's internal flashcard for local syslog.

NTP Server

The BNP requires an external Network Time Protocol (NTP) server to maintain the precise date and time. The precise time is required for accurate Digital Program Insertion, Scheduled Grooming, Program Substitution and Chassis redundancy.

Appendix A: Product Specifications

The BNP is a flexible video processing platform for transrating, multiplexing, program substitution and digital ad insertion. It supports the following functions:

- MPEG-2 grooming, statistical multiplexing and transrating.
- H.264 grooming and multiplexing in a MPEG-2 Transport Stream (TS).
- MPEG switching, routing, de-jittering, and buffer management
- Input/output support for Multi-Program Transport Streams (MPTS) or Single Program Transport Stream (SPTS) as well as Variable Bit Rate (VBR) or Constant Bit Rate (CBR) and Stripped Null Packet
- Support for MPEG profile and level MP@ML (SD) and MP@HL (HD)
- Ability to multiplex SD and HD programs.
- Support for MPEG over UDP/IP as unicast and multicast, as well as support for IGMPv2 or IGMPv3.
- Ability to convert MPTS VBR input streams to SPTS CBR output streams (at the TS level).
- ATSC PSIP table support - PSIP data de-parsing, reconstruction of Master Guide Table (MGT) and Event Information Table. Pass-through of the Rating Region Table (RRT) and System Time Table (STT). User configurable option to generate Terrestrial Virtual Channel Table (TVCT) or Cable Virtual Channel Table (CVCT) output.
- Option to turn-off PSIP table detection on input to allow pass-through without table processing on ATSC TS output.
- On ATSC output can create TVCT table with no PSIP input, and edit Major and Minor channels for channel mapping.
- DVB SI tables support - Network Information Table (NIT), Service Description Table (SDT), Event Information Table (EIT) and Time and Date Table (TDT) tables; DVB subtitling and teletext pass-through.
- DVB NIT table editor GUI enhancement.
- DVB Radio Services support.
- DVB International Characters - Cyrillic character support.
- DVB and ATSC EIT table merge for multiplexed output.
- Common PCR source grooming support.
- Input shared PID grooming.
- Unreferenced PID pass-through with Ghost program / PID support.
- Reserved PID management.
- Output PMT / ES order configuration management.
- PMT program and ES descriptor management.
- Multiple TSs over a single ASI port (FAT ASI) • Program substitution under SCTE-30 control.
- SCTE-27 subtitle pass-through support.
- SCTE-18 Emergency Alert Messaging (EAS).
- Operator initiated text and graphic crawl alert messaging.
- Graphic logo insertion based on imported PNG files.
- SCTE-21 to SCTE-20 closed captioning conversion.
- International Time Zones.

- Support for SNMPv2 for monitoring and configuration management as well as sending SNMP Traps.
- Service and system event data can be logged using standard remote Syslog support.
- Multiple NTP server addresses are now supported in the BNP GUI configuration.
- Boot-up and shut-down SNMP trap and Alarm events are now supported.
- Time Warner Mystro MIBs support.
- Support for Ericsson's nCompass management system.
- BNP Network Filter supports 512 entries: User can configure up to 512 TSs having unique IP addresses, an additional 1527 input transport streams can be created internally having unique IP address.
- Supports a total of 32 PIDs per program, one for video and the other 31 used for data and audio.
- VoD style PID numbering configuration option (This option is turned off by default and can be enabled through a system tuning parameter. Contact Imagine Communications Customer Support for details).

The following tables specify the BNP's capabilities.

Input / Output Interfaces	Specification
Gigabit Ethernet	• 1-Gigabit Ethernet, 8 x SFP ports (copper or fiber), IEEE-802.3z compliant Ingress only: up to 850 Mbps per port Egress only: up to 850 Mbps per port • It is recommended to separate Input and Output traffic on different GigE ports. Allowing 10%-15% overhead.
Fast Ethernet	• 1 10/100 BaseT control and management interface, RJ-45 connector • The BNP3xr has an additional 10/100 BaseT that provides CA encrypted control and management interface, RJ-45 connector
ASI	• Up to 18 ASI ports per chassis • Up to 3 ASI modules with 6 ASI ports each 2 groups of 3 ASI ports Input capacity: 213 Mbps per ASI port Output capacity: 120 Mbps per group of 3 ASI ports

Processing Capacity	Specification
With 1 PROC Card	• Max 40 Mbps TSs: 12 • Max BW (Mbps): 480 • Max MPTS SD Programs: 192 • Max 4 Mbps SPTSs: 120 • Max 4 Mbps SPTS's with DPI: 80

With 2 PROC Card	• Max 40 Mbps TSs: 24 • Max BW (Mbps): 960 • Max MPTS SD Programs: 384 • Max 4 Mbps SPTSs: 240 • Max 4 Mbps SPTS's with DPI: 160
With 3 PROC Card	• Max 40 Mbps TSs: 36 • Max BW (Mbps): 1440 • Max MPTS SD Programs: 576 • Max 4 Mbps SPTSs: 360 • Max 4 Mbps SPTS's with DPI: 240

TS & Program Guidelines when using Messaging	**Specification (**No Transrating should be done on BNPs using Messaging)
Masking (Transparency) Turned off	• Number of SD Programs per PROC (5 Mbps SPTS): 64 SD Programs per PROC @ 5 Mbps each [320 Mbps total] • Number of HD Programs per PROC (20 Mbps SPTS): 16 HD Programs per PROC @ 20 Mbps each [320 Mbps total] • HD to SD tradeoff Ratios 4:1- Subtract 4 SDs for every HD added
Masking (Transparency) Turned on Note: the 80/40 advanced tuning parameter must be enabled	• Number of SD Programs per PROC (5 Mbps SPTS): 48 SD Programs per PROC @ 5 Mbps each [240 Mbps total] • Number of HD Programs per PROC (20 Mbps SPTS): 12 HD Programs per PROC @ 20 Mbps each [240 Mbps total] • HD to SD tradeoff Ratios 6:1- Subtract 6 SDs for every HD added

Overlay Capacity, Non Transparent	**Specification**
SD Only (no HD programs are present)	• Number of TSs per PROC: 9 • Number of TSs per BNP Chassis: 36
When 2:1 HD exists or 2:1 HD plus SD programs exist	• Number of TSs per PROC: 8 • Number of TSs per BNP Chassis: 32
When 3:1 HD TSs exist, regardless of whether SD programs are present.	• Number of TSs per PROC: 6 • Number of TSs per BNP Chassis: 24

Simultaneous DPI Capacity	Specification
SD Only (no HD programs are present)	120 maximum
HD Only (no SD programs are present)	40 maximum
Mixed: n x SD and m x HD programs	n + 3m=<120

MPEG Processing	Specification
Transrating	• SD and HD MPEG-2 video streams • VBR and CBR support • QoS - Ability to set priority for the level of transrating desired
Multiplexing and Table Processing	• MPEG-2 and MPEG-4 H.264/AVC multiplexing and re-multiplexing • MPTS, SPTS, multicast and unicast support • CBR and VBR support • PID filtering and remapping • PCR restamping and dejitter • Generation and pass-through of PSIP tables • PAT and PMT generation
DPI	• Seamless SD and HD splicing • SCTE 30 (DVS-380, DVS-638) and SCTE 35 (DVS-253) compliant • SCTE 30 to SCTE 35 conversion • Text and graphical crawl messages and graphical logo overlays • SCTE 18 (Emergency Alert Message for cable) • SCTE 21 to SCTE 20 conversion
Jitter Tolerance	+/- 100 msec

Video Formats	Specification
MPEG Profile and Level	• MPEG-2 MP@ML (SD) and MP@HL (HD) • MPEG-4 H.264/AVC (all profiles supported)
All SD and HD resolutions	• SD: 720x576, 720x480, 704x480, 544x480, 528x480, 352x480 • HD: 1080ix1920, 1080ix1440, 1080ix1280, 720px1280, 480px720, 480px704, 480px640
Frame Rates	24, 25, 29.97, 30, 50, 59.94 and 60

Audio Formats	Specification
Audio Format	• Dolby AC-3 • MPEG-1 Layer 2 (Musicam) and MPEG-2 • MPEG-2 AAC • MPEG-4 HE-AAC

Transport Stream Output Type	Specification
MPEG2	• Video ES: MPEG2 video (0x2) converts to 0x2 if input video has type 0x80. H.264 (0x1B) • Audio ES: MPEG1 audio (0x3) MPEG2 audio (0x4) ATSC AC-audio (0x81) DVB AC-3 audio (0x6) AAC (0x0f) HE-AAC (0x11) • Data ES: 0x5 ~ 0xff
ATSC	• Video ES: MPEG2 video (0x2) SCTE video (0x80) H.264 (0x1B) • Audio ES: MPEG1 audio (0x3) MPEG2 audio (0x4) ATSC AC-audio (0x81) Converts to 0x81 if input AC-3 audio has type 0x6 AAC (0x0f) HE-AAC (0x11) • Data ES: 0x5 ~ 0xff

SCTE	• Video ES: SCTE video (0x80) converts to 0x80 if input video has type 0x2. H.264 (0x1B) • Audio ES: MPEG1 audio (0x3) MPEG2 audio (0x4) ATSC AC-audio (0x81) Converts to 0x81 if input AC-3 audio has type 0x6 AAC (0x0f) HE-AAC (0x11) • Data ES: 0x5 ~ 0xff
DVB	• Video ES: MPEG2 video (0x2) converts to 0x2 if input video has type 0x80. H.264 (0x1B) • Audio ES: MPEG1 audio (0x3) MPEG2 audio (0x4) DVB AC-3 audio (0x6) Converts to 0x6 if input AC-3 audio has type 0x81 AAC (0x0f) HE-AAC (0x11) • Data ES: 0x5 ~ 0xff

DVB	Specification
Digital Broadcast	Supported Formats: ATSC PSIP, (A/52B, A/53E, A/58, A/65) DVB (DVB-SI, DVBSUB, DVB-TXT, CSA and Simulcrypt)

Compliance	Specification
Safety	UL / CUL / CB 60950-1
Electro Magnetic	• FCC Part 15, Class A, EN55022, EN55024, EMC, EMI • FCC - Title 47 CFR Part 15, Subpart B • Canada - ICES-003, Issue 2, April 1995 • CE Mark - EN55022 2006 and EN55024:1998 + A1:2001 + A2:2003
Hazardous Substances	RoHS-compliant (Restricted use of Hazardous Substances)

Electrical and Mechanical	Specification

Maximum Input Power Limits	• BNP2xr AC: 100-240V; 8.8A; 50/60Hz; Class 1 • BNP2xr DC: 36-75V; 11A; Class 1 • BNP3xr AC: 100-240V; 8.8A; 50/60Hz; Class 1 • BNP3xr DC: 36-75V; 15.7A; Class 1
Power consumption	• BNP2xr: 330 W maximum (fully loaded) at 110 V AC • BNP3xr: 400 W maximum (fully loaded) at 110 V AC
Dimensions	• BNP2xr: 1RU (1.75"H x 19"W x 23"L) (43.6H x 433W x 583L mm) • BNP3xr: 2RU (3.5˝H x 19˝W x 23.25˝L) (88H x 444W x 590.4L mm)
Weight	• BNP2xr: 25.1 lbs. (11.4 kg) • BNP3xr: 38.8 lbs. (17.6 kg)
Cooling (air flow direction)	Front to back

Environmental	Specification
Storage Temperature	-40º C to 70º C (-40º to 158º F)
Operating Temperature	0º to 40º C (32º to 104º F)
Humidity	5% to 95%, non-condensing

Product Constraints

The following product constraints are applicable in BNP release 3.7.0.

Bandwidth

- Incorrect maximum bandwidth may be reported in “Available Bandwidth” when the maximum TS bandwidth is reached (160Mbps) due to transport stream fragmentation constraints.
- BNP does not currently provide a warning when approaching GigE output capacities when applying bandwidth-based licensing. It recommended that general industry guidelines be followed to not provision more than within 10-15% of the rated port capacities, leaving sufficient capacity for fluctuating packet traffic characteristics. This would mean around 850-900Mbps for a 1Gbps Ethernet ports such as those provided by BNP.
- Depending on a customer’s content input sources and video output goals, BNP transrating can be configured up to 35 or 40%.
- To ensure higher video quality, the aggregate bandwidth of non-MPEG2 video content bypassing the transrater, including H.264 and data, should not to exceed 50% of a TS bandwidth.

Stream Constraints for Seamless Ad Insertion

- When a primary network feed is lost during an ad splice, BNP replies with SCTE-30 spliceComplete_Response message with value of "100". It has been noted that C-Cor ad servers do not recognize this as a valid return message.
- PMT ES reordering is not supported on programs in which there is a currently active DPI ad splice.
- An IDR or I frame must be encoded into the network stream every second in order to identify splice return point opportunities. An IDR or I frame must be present in the network program to align with the splice out point. Improvements to this functionality will be released in future software.
- The BNP supports one CUEI PID per program if, more than one CUEI PID is present in the program all CUEI PIDs will be blocked.

Graphical User Interface

- In the case of program redundancy, when a switch occurs from the primary program to a backup program, the GUI still displays the schedule for the primary program even though the backup program has successfully taken over. Refresh the GUI will reveal accurate current status.
- A "Java exception" sometimes occurs when expanding a Transport Stream. If the TS or program does not appear, close and reopen the GUI.
- Grooming encrypted programs and clear programs within the same output Transport Stream is currently not supported. The GUI may not properly display encrypted streams. If an input TS is created and expanded, it may show all the programs in the clear. If then the TS is collapsed and expanded again, then the programs may be displayed as encrypted.
- When supporting ad server input the BNP output program icon appears active (highlighted as green) even when the connection conditions change, such as when deleting the corresponding input connection.
- The input TS ID of programs with SCTE-27 subtitling can show extra characters in the BNP GUI.
- Changing the TS line up in the bit rate monitor requires a GUI refresh to display the new line up.
- Encrypted streams are displayed as normal programs when TS-level grooming is used. Encrypted streams are not supported in the bitrate monitor.
- Bitrate monitor occasionally shows the entire program bitrate even when regroomed as audio only.
- The BNP's input bitrate monitor should not be used for shared PID input sources as this may affect program output services. Additionally, using this feature for shared PID sources requires rebooting the BNP after removing the shared PID monitoring configuration.
- When using the Network Information Table (NIT) editor, edits for a field will be applied by moving the cursor to any other field in the table before using Apply to take the new value in effect.
- Encrypted video icons can occasionally be displayed when program input is corrupted.

Grooming

- When grooming with custom priority levels, programs of an equal priority level are groomed to an output MPTS the low bit programs may be transrated improperly.
- Occasionally when a TS is groomed on different GigE ports using the BNP Drag and Dropped procedure more than one time the message “Failed to copy input programs” will appear. This is caused by conflicts in the Input program names. If a name is defined for an Input program (or the input TS in ATSC), you cannot groom this TS to more than one output TS.
- When grooming a program with an audio stream underflow condition onto an existing output program, the current output program’s audio will continue to stream until the new program’s audio is actively streaming. The GUI does not currently report audio underflow conditions.
- When using scheduled grooming, time gaps between multiple scheduled grooms are not supported. Only back-to-back multiple scheduled grooms are currently supported.
- Corrupted input programs have been found to cause video tiling in other programs in the same MPTS. This issue has only been seen for MPTSs with less than 8 programs.
- Deleting a scheduled grooming session can cause loss of the program PMT. This will cause loss of video and audio on the program output.
- Grooming will result in the audio being muted if the program PCR is carried in video ES and it is removed on the output when creating an audio-only program without PCRs.
- When using “dummy” PIDs that reference the data ES by PID number to groom a data ES for PID mapping, the program carrying the data ES should be groomed before any dummy PID can be configured. Otherwise the dummy PID configuration request is rejected. Note that multiple dummy data PID in one or more output programs in the same TS can reference the same output data PID.
- After a dummy PID has been configured in a program, the mapping to the output data PID program will persist even if the dummy PID’s output program undergoes a PMT change in applications such as program redundancy, program substitution, ad insertion and during any re-groom activity.
- All dummy data PIDs for the same output program can only be associated with the data PIDs from the same output program.
- An output data PID program is allowed to be deleted only if there are no dummy PIDs associated with the data PID output program.
- A video glitch may occasionally be produced when the GOP size is 45 frames or longer.
- It has occasionally been seen that program frame rate changes can cause video stuttering. A workaround is available to turn a PES alignment parameter on that addresses this issue. Please contact Imagine Commuincations Customer Support for information on how to set this configuration parameter.
- When using the Stripped Null Packet feature: PCR Repetition value is global for all modes including DVB and MPEG-2, and the output TS is non-DVB compliant.

Redundancy

- With program redundancy enabled, if the primary program fails there will be an attempt to switch to the backup program regardless of the state of the backup. If the backup program is healthy but then also fails later, there is no mechanism in place to switch to another backup or to switch back to the primary program.
- It should be noted that with hot-standby 1:1 chassis redundancy configured with virtual IP failover, unicast inputs cannot be received by both the primary BNP and the standby BNP simultaneously. This means that unicast stream failover will not be immediate and the backup unit will need to initiate new unicast sessions, which will not allow an immediate failover condition for those streams. As an alternative, the unicast stream sender can send two identical streams destined to physical IP address of both BNP units with the standby unit output muted.
- It has been determined that upgrading a BNP running v1.03 and earlier releases that has been configured for Program Redundancy can result in the grooming configuration file corruption. Please contact Imagine Communications customer support for assistance in addressing this configuration file update issue.
- For BNP Program Redundancy - Automatic Failover and Automatic Recovery operations, the BNP currently does not offer user selectable audio ESs to track for triggering either failover to the designated redundant program or the return to the primary program. Currently a program's video ES or PMT/PAT presence is checked. For BNP Program Redundancy - Manual Recovery operation, the BNP checks the health status of the backup program PAT/PMT. There is no detection for the underflow of video ES before manually selected recovery to primary occurs.
- It is recommended that ghost programs are not be assigned as backup programs.
- On a 1+1 chassis redundancy setup changing the virtual IP address for the 10/100 Ethernet Management Port 1 does not reboot the primary unit as indicated by the popup window. The primary unit must be manually rebooted using the new virtual IP address before proceeding to reboot the standby unit.
- After configuring redundant chassis 10/100 Ethernet management port, removing the IP address does not ensure that the redundancy configuration is removed upon a reboot. The work around is to explicitly use "Remove Chassis Redundancy" from the Maintenance menu of the redundant chassis.

Messaging

- SCTE-18 EAS and operator-managed Alert Messaging text crawls are supported on MPEG-2 programs. SCTE-18 EAS video and audio substitution, such as for SCTE-18 Alert Level 15, are supported on H.264 and data streams.
- Video discontinuity on STBs can potentially occur from PMT updates during EAS audio PID changes when EAS audio override is applied. The affects are momentary during the audio.
- Text crawls on 1080i HD programs occasionally do not start playout on right edge of the display.
- Up to 400 characters can entered for an Alert Message from the BNP GUI. Note that when an Operator Messaging zone is configured at the "Slow" crawl speed setting, text input is supported for up to 398

charters for HD PAL programs. The Normal and Fast crawl speed settings for HD PAL content as well as other content type are supported with up to 400 characters. The total number of available zones for standard EAS is 10.

- Up to 1800 characters may be entered for an Alert Message from the BNP GUI when EAS CAP is selected. EAS CAP is off by default, when the user selects this feature the BNP will reboot. The total number of available zones for EAS CAP is 2 zones per chassis.
- It has been noted that transrated MPEG-2 HD programs with a quality service level of 1 through 8 and associated with an Operator Messaging zone configured for background color transparency can cause video output stuttering. A workaround is available by reducing the quality service level to 0 for these HD programs.
- EAS audio playout alignment with the crawl message is dependent on the SCTE 18 management system providing subsequent update messages during a crawl with accurate time remaining data.

Other

- User will have to run a utility (manually, before rebooting BNP) provided with 3.4.0 if they are downgrading to an earlier version from 3.4.1, only when BNP has unreferenced programs configured.
- If formatting the flash card prior to flash card upgrade, Overlay logo configuration must be reapplied.
- When migrating from IGMP V2/V3 non-SSM to IGMP V3/SSM, and using the same multicast groups, it is necessary to first remove all non-SSM groups prior to configuring IGMPV3/SSM multicasts.
- The flash card should not be removed during normal product operations. The “System Shutdown” selection under the Maintenance tab should be used prior to removing the flash card. It is recommended to use FTP to upgrade the software when the product is operational.
- The Fault LED does not accurately reflect the status of Major and Critical alarms.
- User configuration of the 2007 US changes in Daylight Savings Time (DST) is not currently supported.
- Program encryption detection has a couple of known limitations. First, program encryption is reported in this release on the GUI according to the primary video stream. The specific encryption status of other elementary streams in a program are not currently reported. Additionally, program encryption detection cannot be supported in the downstream BNP in a cascaded pair configuration. This is due to a change in the PMT table for the encrypted program that is not recognized by the downstream unit. Recreation of the downstream input TS will show recognized encrypted streams.
- SCTE-27 subtitling is currently supported for 160 programs with subtitles per PROC module. SCTE-27 subtitling functionality has been tested on Motorola 1800 and 6412 STBs, the later with software client v16.53. The BNP GUI does not currently display the subtitle language.
- BNP only supports DVB AC-3 audio stream type 0x6 in an output TS when source provides DVB AC-3 audio stream input.
- Before changing the slot assignment of a hardware module that has already been configured, the user must delete its configuration information. BNP are does not automatically update configuration

information, allowing a hardware module to be temporarily removed for inspection and reinserted into the same slot.

- Upgrading from v2.0 beta requires manual reconfiguration of the BNP if the v2.0 beta configuration included ASI modules.
- On rare occasions during lab testing it has been observed that BNP ASI configurations can be lost. If this condition occurs, reconfigure the ASI ports to their original settings.
- Changing the VOD_start_PID value causes duplicate PID values. This parameter is typically set during the initial configuration procedure and not changed afterwards. Please contact Imagine Communications customer service for support in modifying this BNP configuration parameter.
- The NIT can disappear from the Output TS view after reediting the current NIT when adding one more transport streams in NIT editor.
- The Samsung STB model DCB-H360R is not fully supported due to incompatibility with AC-3 audio (Dolby Digital) on this STB.
- BNP can support H.264 content with up to 4 seconds delta between PCR to PTS timing. The SCTE recommendation is 1 second for broadcast.
- Different audio type streams in the same program with a common PID number are not currently supported.
- It is recommended that any software downgrade use the FTP server-based procedure. Please contact Imagine Communications Customer Support for assistance in performing a software downgrade process.
- After applying a new XPO license to a BNP, the Ericsson / Tandberg nCompass server cannot recognize the BNP until the BNP is rebooted.
- The BNP reports an incorrect GigE port speed using the IF-MIB ifSpeed SNMP MIB.