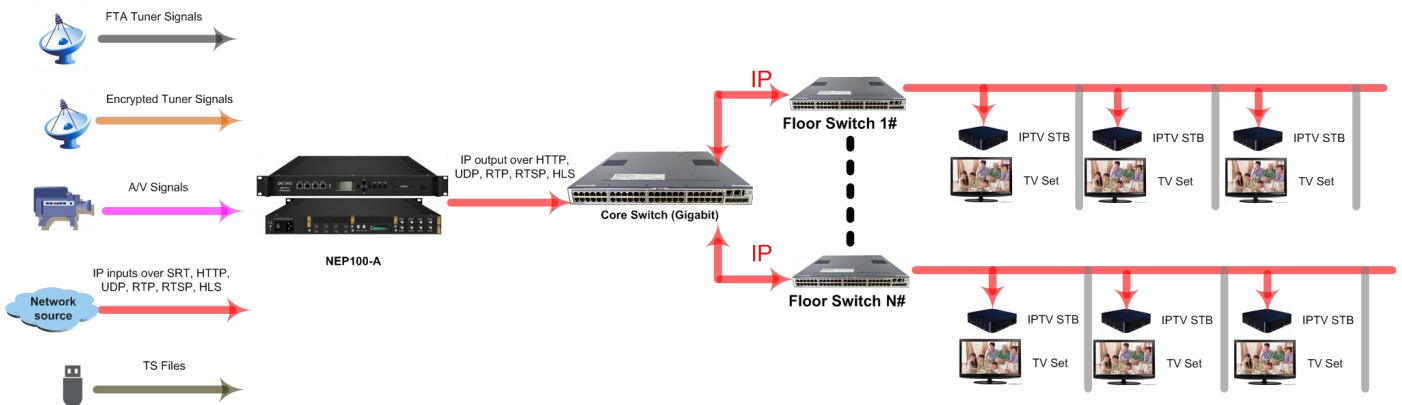# DESING

NEP100-A

IP Streamer

Mutiple Inputs (HDMI+Tuner+IP over Multi-Protocol+TS file) + Multi-Protocol Conversion + IPTV Server
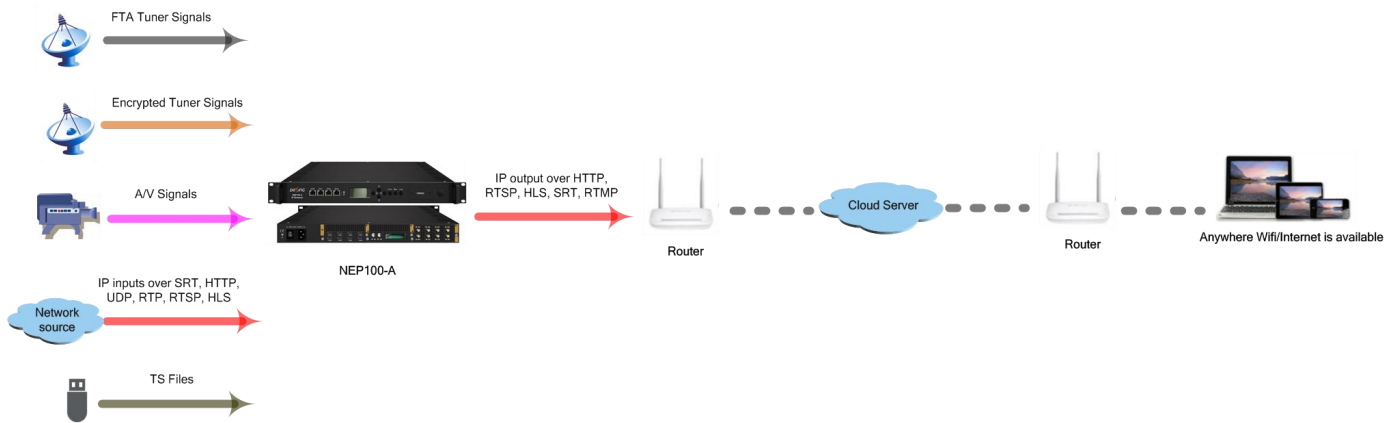

Application Example

IPTV System as a Server

Protocol Conversion as a Streamer

FTA Tuner Signals

Encrypted Tuner Signals

A/V Signals

IP output over HTTP, RTSP, HLS, SRT, RTMP

Cloud Server

Router

Router

Anywhere Wifi/Internet is available

NEP100-A

IP inputs over SRT, HTTP, UDP, RTP, RTSP, HLS

Network source

TS Files

Outline

NEP100-A is a flexibly modularized 1U device with the features of Encoder/Receiver, IP Gateway and IPTV Server for the protocol-conversion application and IPTV-system application. It can get max 3 pluggable streamer cards embedded, such as encoder card and tuner card to receive the HDMI signals and tuner signals etc. It can also convert the input IP streams from the embedded modules and Ethernet ports over SRT, HTTP, UDP, RTP, RTSP, HLS protocol and TS files into the output IP streams over SRT, HTTP, UDP, RTP, RTSP, HLS and RTMP protocol. It is also integrated with Dexin IPTV management software and Streamer cards to make it ideal in an IPTV system, such as hotel, hospital and community.

Key Features

- **Encoder/Receiver, IP Gateway and IPTV Server in one device**
- **2 separate Web GUI, one for Cards and Gateway, the other for IPTV Server**
- **4 Ethernet ports(GE), customized Ethernet port setting is available**

  ETH0: IP output over SRT, HTTP, UDP (SPTS), RTP, RTSP, HLS and RTMP

  ETH1&2: IP input over SRT, HTTP, UDP (SPTS), RTP (SPTS), RTSP and HLS

  ETH3: Web Management Port
- **Support uploading TS files directly in Web GUI to broadcast your own channels**
- **Support inter-cut feature of a live program, a TS file and a picture**
- **Support IP anti-jitter feature for the external IP streams**
- **IPTV Features: Live channel, VOD, Hotel intro, Dining, Hotel service, Scenery intro, APPS,**

Adding scrolling caption, welcome words, pictures, advertisement, video, music etc (the features are

only applicable to IP out application in the STB/Android TV installed with Dexin IPTV APK)

● **Support downloading Dexin IPTV APK directly in the Web GUI**

● **It is closely related with the program bitrate and protocol type etc for Max program numbers involved in protocol conversion, and the actual application shall prevail with maximum 80% CPU utilization (Please refer to Test data for reference in the end of the spec)**

● **It is closely related with the program bitrate and protocol type etc for Max affordable terminal numbers in IPTV application of the STB/Android TV installed with Dexin IPTV APK, and the actual application shall prevail with maximum 80% CPU utilization (Please refer to Test data for reference in the end of the spec)**

● **Multi-level password control for your system security**

● **LCD/Key button for Network-Setting checking**

● **Modularized design, max 3 cards embedded, a flexible option as per the actual application**

IP Protocol Conversion (example)

Specifications

Input	IP inputs thru ETH 1&2, GE ports over SRT,HTTP, UDP(SPTS), RTP(SPTS), RTSP (over UDP, payload: mpeg TS) and HLS
	TS files uploading through Web management
	Encoder card and Tuner card etc (Please refer to the detailed card spec below)
IP output	IP outputs thru ETH0, GE port over SRT, HTTP (Unicast), UDP(SPTS, Multicast) , RTP, RTSP, HLS and RTMP (Program source should be H.264 and AAC encoding)
System	Channel switching time with DEXIN' STB: HTTP (1-3s), HLS (0.4-0.7s)
	It is closely related with the program bitrate and protocol type etc for Max program numbers involved in protocol conversion, and the actual application shall prevail with maximum 80% CPU utilization (Please refer to Test data for reference in the end of the spec)
	It is closely related with the program bitrate and protocol type etc for Max affordable terminal numbers in IPTV application of the STB/Android TV

	installed with Dexin IPTV APK, and the actual application shall prevail with maximum 80% CPU utilization (Please refer to Test data for reference in the end of the spec)	
	IPTV Features: Live channel, VOD, Hotel intro, Dining, Hotel service, Scenery intro, APPS, Adding scrolling caption, welcome words, pictures, advertisement, video, music etc (the features are only applicable to IP out application in the STB/Android TV installed with Dexin IPTV APK)	
General	Demission	482mm×464mm×44mm (WxLxH)
	Temperature	0~45℃(operation), -20~80℃(storage)
	Power Supply	AC100V±10%, 50/60Hz or AC 220V±10%, 50/60Hz

Available Card Specification (more available cards later for development)

DX902A 2 Tuner Descrambling Card

Stream in:

2 Tuner input, F Type,

Stream out:

16 SPTS output over UDP/RTP

DVB-CI:

2 independent common interface slots

Standard:

DVB-S/S2/S2X;

DVB-S

Input Frequency: 950-2150MHz

Symbol Rate: QPSK 1~45Msps

Signal Strength: -65~ -25dBm

FEC Demodulation: 1/2, 2/3, 3/4, 5/6, 7/8

DVB-S2

Input Frequency: 950-2150MHz

Symbol rate: QPSK/8PSK 1~45Msps

16APSK 1~45 Msps

32APSK1~32 Msps

FEC Demodulation: 1/2, 2/3, 3/4,5/6,7/8, 4/5,5/6,8/9, 9/10

DVB-S2X

 Input Frequency: 950-2150MHz

Symbol rate: QPSK/8PSK/16APSK 0.5~45 Msps;

        8APSK/32APSK: 0.5~40Msps

FEC Demodulation:

QPSK: 1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9, 9/10, 13/45, 9/20, 11/20

8PSK: 3/5, 2/3, 3/4, 5/6, 8/9, 9/10, 23/36, 25/36, 13/18

8APSK: 5/9-L, 26/45-L

16APSK: 2/3, 3/4, 4/5, 5/6, 8/9, 9/10,1/2-L, 8/15-L, 5/9-L, 26/45, 3/5, 3/5-L, 28/45, 23/36, 2/3-L, 25/36, 13/18, 7/9, 77/90

32APSK: 3/4, 4/5, 5/6, 8/9, 2/3-L, 32/45, 11/15, 7/9

Support Diseqc function

Multiplexing:

Maximum PID Remapping: 256 output pids

Function: PID remapping (automatically or manually), Accurate PCR adjusting, generate PSI/ SI table automatically

Descrambling:

CAM/CI Quantity: 2

BISS Mode: Mode 1, Mode E; 32 BISS Keys

DX942A 4 frequencies Descrambling Card

Stream in:

4 frequencies input (each RF in interface for 2 frequencies locking), F Type,

Stream out:

16 SPTS output over UDP/RTP

DVB-CI:

2 independent common interface slots

Standard: DVB-C (J.83 A/C)/J.83B/ DVB-T/DVB-T2/ISDB-T switchable

Standard: DVB-C (J.83 A/C); J.83B

Input Frequency: 60MHz~890MHz

Symbol rate: 1000~9000Ksps

Constellation: 16/32/64/128/256 QAM; 64/256 QAM for J.83B

Standard: DVB-T/T2

Frequency In: 60MHz~890MHz

Bandwidth: 5/6/7/8M bandwidth

PLP supported for DVB-T2

Standard: ISDB-T

Input Frequency: 60-890MHz

Multiplexing:

Maximum PID Remapping: 256 output pids

Function: PID remapping (automatically or manually), generate PSI/ SI table automatically

Descrambling:

CAM/CI Quantity: 2

BISS Mode: Mode 1, Mode E; 32 BISS Keys

DX228S 8 HDMI Encoder Card

Input: 8*HDMI (4 HDMI is available)

Output: 8*SPTS (4 SPTS if 4 HDMI) output over UDP/RTP/RTSP, Unicast/Multicast

Video Encoding:

Video format: MPEG-4 AVC/H.264

Input resolution: 1920×1080_60P, 1920×1080_60i, 1920×1080_50P, 1920×1080_50i,1280×720_60P, 1280×720_50P, 720×576_50i, 720×480_60i,

Output resolution: 1920×1080_30P, 1920×1080_25P, 1280×720_30P, 1280×720_25P, 720×576_25P,720×480_30P,

GOP structure: IP…P (P Frame adjustment, without B Frame)

Video Bit-rate: 1Mbps~13Mbps each channel

Rate Control: CBR/VBR

Audio Encoding:

Audio format: MPEG1 Layer II, LC-AAC, HE-AAC and AC3 Pass through, support audio gain adjustment

Sampling rate: 48 KHz

Audio Bit-rate:

MPEG-1 Layer 2: 48/56/64/80/96/112/128/160/192/224/256/320/384 kbps

LC-AAC: 48/56/64/80/96/112/128/160/192/224/256/320/384 kbps

HE-AAC: 48/56/64/80/96/112/128 kbps

Support Logo, Caption, QR Code insertion

DX228S-V2 8 HDMI Encoder Card

Input: 8*HDMI (4 HDMI is available)

Output: 8*SPTS (4 SPTS if 4 HDMI) output over UDP/RTP/RTSP, Unicast/Multicast

Video Encoding:

Video format: HEVC/H.265, MPEG-4 AVC/H.264

Input resolution: 1920×1080_60P, 1920×1080_60i, 1920×1080_50P, 1920×1080_50i,1280×720_60P, 1280×720_50P, 720×576_50i, 720×480_60i,

Output resolution: 1920×1080_30P, 1920×1080_25P, 1280×720_30P, 1280×720_25P, 720×576_25P,720×480_30P,

GOP structure: IP…P (P Frame adjustment, without B Frame)

Video Bit-rate: 1Mbps~13Mbps each channel

Rate Control: CBR/VBR

Audio Encoding:

Audio format: MPEG1 Layer II, LC-AAC, HE-AAC and AC3 Pass through, support audio gain adjustment

Sampling rate: 48 KHz

Audio Bit-rate:

MPEG-1 Layer 2: 48/56/64/80/96/112/128/160/192/224/256/320/384 kbps

LC-AAC: 48/56/64/80/96/112/128/160/192/224/256/320/384 kbps

HE-AAC: 48/56/64/80/96/112/128 kbps

Support Logo, Caption, QR Code insertion

DX908 8 FTA DVB-S/S2/S2X Tuner Card

Stream in: 8 Tuner input, F Type,

Stream out: 512 SPTS out over UDP/RTP/RTSP, Unicast/Multicast

Tuner input: DVB-S/S2/S2X

Symbol rate: QPSK/8PSK/16APSK 0.5~45 Msps;   8APSK/32APSK: 0.5~40Msps

Input Frequency: 950-2150MHz

DVB-S   Constellation: QPSK
           FEC Demodulation: 1/2, 2/3, 3/4, 5/6, 7/8
DVB-S2   Constellation: QPSK/8PSK/16APSK/32APSK
           FEC Demodulation:
           QPSK: 1/2, 2/3, 3/4, 5/6, 3/5, 4/5, 8/9, 9/10
            8PSK: 3/5, 2/3, 3/4, 5/6, 8/9, 9/10
           16APSK: 2/3, 3/4, 4/5, 5/6, 8/9, 9/10
            32APSK: 3/4, 4/5, 5/6, 8/9, 9/10
DVB-S2X   Constellation: QPSK/8PSK/8APSK/16APSK/32APSK
            FEC Demodulation:
           QPSK: 1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9, 9/10, 13/45, 9/20, 11/20
            8PSK: 3/5, 2/3, 3/4, 5/6, 8/9, 9/10, 23/36, 25/36, 13/18
            8APSK: 5/9-L, 26/45-L
           16APSK: 2/3, 3/4, 4/5, 5/6, 8/9, 9/10,1/2-L, 8/15-L, 5/9-L, 26/45, 3/5, 3/5-L, 28/45, 23/36, 2/3-L, 25/36, 13/18,
                7/9, 77/90

32APSK: 3/4, 4/5, 5/6, 8/9, 2/3-L, 32/45, 11/15, 7/9, 9/10

Support Diseqc function

Multiplexing:
Maximum PID Remapping: 256 output pids
Function: PID remapping (automatically or manually), Accurate PCR adjusting, generate PSI/ SI table automatically

Descrambling:
BISS Mode: Mode 1, Mode E; up to 120Mbps, 32 BISS Key

DX928 8 FTA DVB-C/T/T2/ISDB-T Multi-Mode Tuner Card

Stream in: 8 tuner input, F Type
Stream out: 512 SPTS out over UDP/RTP/RTSP, Unicast/Multicast

Tuner input: DVB-C (J.83 A/C)/J.83B/ DVB-T/DVB-T2/ISDB-T switchable

Standard: DVB-C (J.83 A/C); J.83B
Input Frequency: 60MHz~890MHz
Symbol rate: 1000~9000Ksps
Constellation: 16/32/64/128/256 QAM; 64/256 QAM for J.83B

Standard: DVB-T/T2
Frequency In: 60MHz~890MHz
Bandwidth: 5/6/7/8M bandwidth
PLP Index: 0~255 for DVB-T2

Standard: ISDB-T
Input Frequency: 60-890MHz

Multiplexing:
Maximum PID Remapping: 256 output pids
Function: PID remapping (automatically or manually), generate PSI/ SI table automatically

Descrambling:
BISS Mode: Mode 1, Mode E;   up to 120Mbps, 32 BISS Keys

Test data for reference:

Protocol conversion	Programs	Bitrate	Terminals	CPU utilization
UDP to HTTP	60	8M	100	80%
UDP to HLS	60	8M	120	65%
UDP to HTTP	60	2M	400	80%
UDP to HLS	60	2M	400	40%
UDP to SRT	45	8M	---	80%
UDP to RTMP	50	8M	---	80%