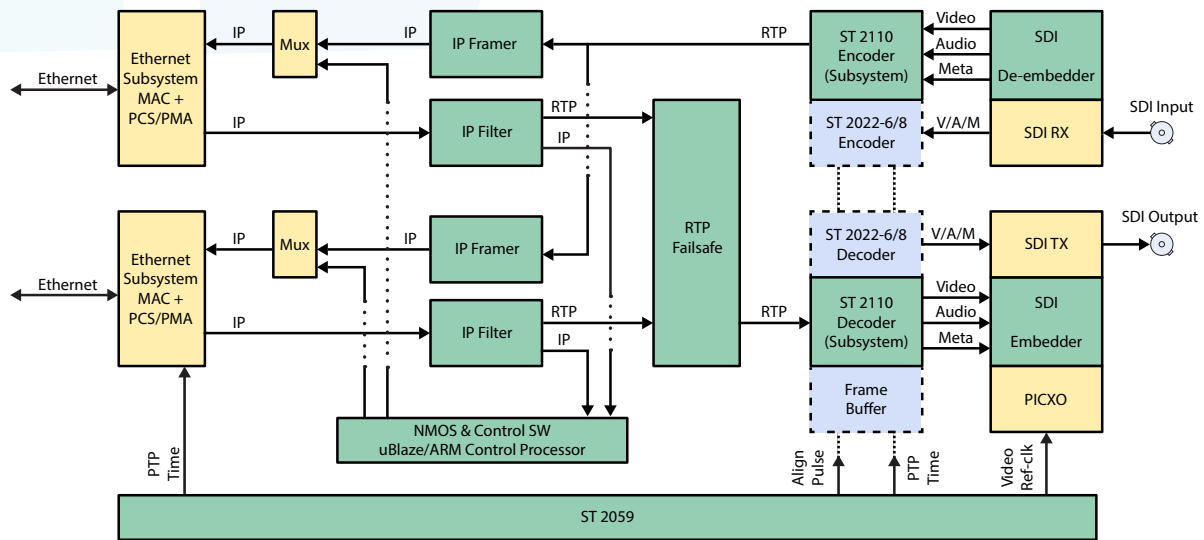


# ST 2110, ST 2059 & NMOS IP Cores

## Turn-key Solution for Professional Media over IP



Available Reference Design

Nextera and Aideas have teamed up to provide a complete solution for standards based Video over IP. Our fully modular solution consists of FPGA cores, control software, and an end-to-end reference design enabling turn-key development and fast time to market.

### Available IP Cores

- SMPTE ST 2110 Encoder / Decoder  
-10, -20, -21, -22, -30, -31, -40
- SMPTE ST 2059 Time Synchronization
- IP Framer and Filter
- RTP Failsafe (ST 2022-7)
- SMPTE ST 2022-6/8 companion core
- NMOS Control Software  
IS-04, IS-05, IS-07, IS-08, IS-09, and IS-10
- SDI Bridge (Audio/ANC embed/de-embed)
- Frame Synchronizer - Production ready

### Applications

- SDI-IP gateways
- PCIe adapters
- ST 2022-6/8 to ST 2110 Transcoders
- Media Servers
- Cameras
- Displays

### Network Speeds

Network Speed Independent

- 1 Gb/s, 10Gb/s, 25Gb/s, 100Gb/s

### Video

Format and Frame Rate Independent

- RGB, YCrCb, Key
- 4:4:4, 4:2:2, 4:2:0
- 8, 10, 12, 16 bits per component
- Resolution Independent
- Uncompressed & Compressed
- HD, 3G, 4K, 8K

### RTL & Software

- RTL and SW drivers & daemons included
- Modular & Configurable
- Demo design available

### Audio

- Sample Rate Independent
- Programmable packet time
- PCM: L16, L20, L24, AES3

### Interoperability

- Fully tested at numerous official interops and test events (JT-NM Tested), earning all possible "JT-NM Tested" badges

# ST 2110, ST 2059 & NMOS IP Cores

## Turn-key Solution for Professional Media over IP

### Hardware RTL Cores

#### SMPTE ST 2110 Core

The ST 2110 IP core set provides broadcast and professional AV equipment the ability to send and/or receive media over IP networks. It supports the following sub standards:

- ST 2110-10: System timing
- ST 2110-20: Uncompressed active video
- ST 2110-21: Traffic shaping
- ST 2110-22: Compressed video
- ST 2110-30: PCM digital audio
- ST 2110-31: AES3 transparent transport
- ST 2110-40: Ancillary data

A full demo design project is provided along with all of the drivers, daemons, control software, and a Web GUI so customers can start with a working system and customize to their needs.

#### SMPTE ST 2059 Time Synchronization

The ST 2059 IP core provides broadcast and professional AV equipment the ability to support the generation of deterministic timing signals for video and audio systems. Per the standards:

- ST 2059-1: Alignment of Signals to Epoch
- ST 2059-2: Profile for IEEE1588 PTP

Configurable to output multiple programmable reference clock and sync signals, supports the generation of HH:MM:SS:FF Time Code including drop frame, and is network speed independent.

### NMOS Control Software

Compatible with any IP Core, any OS, on any platform, the NMOS Software Core (Linux Daemon) enables SMPTE ST 2110 based products to interoperate on a multi-vendor IP network.

- IS-04: Discovery and Registration
- IS-05: Connection Management
- IS-07: Event & Tally
- IS-08: Audio Channel Mapping
- IS-09: System Parameters
- IS-10: API Security

### Companion RTL Cores

#### ST 2022-7 (RTP Fail-Safe )

This IP core provides seamless protection switching (hitless failover) using two Ethernet ports. One RTP stream is reconstructed out of two input RTP streams. Able to cope with Ethernet jitter, latency differences between streams, and re-ordered packets.

#### IP Frammer

This IP core provides the formatting of RTP packets into UDP/IP packets. It assembles and adds UDP, IP and MAC headers, calculates and inserts CRC checksums, and provides VLAN tag headers and specific MAC header commands.

#### IP Filter

This IP core filters incoming packets from an Ethernet MAC and distributes them to the appropriate channel. Programmable by SW control, it removes faulty packets and strips IP, VLAN and/or UDP headers from media channels.

#### SDI Bridge

Production-ready Audio/ANC embedder and de-embedder, works with Xilinx UHD-SDI Core.

#### ST 2022-6/8

Provides PTP synchronized 2022-6. Fully integrated with 2110 core enabling creation of ST 2022-6/8 to ST 2110 gateways.

#### Frame Synchronizer

Production-ready triple buffered frame controller enables interfacing with asynchronous sources.