

ATSC 3.0 by ENENSYS

Comprehensive end-to-end solution



ATSC 3.0 by ENENSYS covers the entire ATSC 3.0 broadcast network. From the studio with content management, up to the transmission sites, ENENSYS's Solution meets the Broadcast quality requirements while guaranteeing the quality of Service. This is done with a secure, seamless, and redundant IP stream solution and an efficient Test & Monitoring that measures the quality of service.

This solution is dedicated to support the deployment of all innovative services such as: Targeted Ad insertion, NRT and push of content (interactive applications, Push VOD services, interactivities banners...), ESG delivery and Advanced Emergency Alert system.

Delivery and Signaling for all NextGen TV services

MediaCast™ interfaces with multiple providers by grabbing the content from local or cloud-based server to generate a complete NextGen TV signal. By processing the Linear Live content from video encoders, MediaCast generates the DASH segments over ROUTE IP streams and MPU segments over MMTP IP streams.

It can also deliver Non-real Time (NRT) services, such as Electronic Service Guide (ESG), Emergency Alert Service (EAS), and other interactive applications. Both SLT and SLS signaling are automatically generated to ensure the exact description of the on-air services.

Managing all types of Business models

By supporting all ATSC 3.0 modulation profiles, the solution allows Broadcasters the option to choose their signal coverage and robustness while simultaneously targeting multiple receivers' capabilities within one RF channel and offering different business models for a network.

Virtualized, Scalable and Reliable solution

By providing a software based virtualized appliance for services delivery and signaling, the ENENSYS solution enables broadcasters to install and manage their ATSC 3.0 Core Network infrastructure directly into public/private cloud or a dedicated on premises server.

This solution has been designed to support many different architectures; one or multiple content providers with one or multiple ATSC3.0 delivery servers, locally or remotely. For example, SmartGate can aggregate content from multiple ROUTE/MMTP servers and support innovative seamless 1+1 architecture thanks to a patented solution.

Addressable TV

AdsReach is an ENENSYS solution that allow broadcasters to optimize their linear tv services by providing targeted video or banner advertising from real time data information. AdsReach is a solution composed by an SDK, designed to be integrated in a broadcaster's application and a server-based data collection system.

ENENSYS ATSC 3.0 solution is an innovative and homogeneous range of products allowing to set up a complete NextGen TV network.

Applications

- Setting up of a complete ATSC 3.0 network, including SFN management
- ATSC 3.0 content generation, delivery and signaling
- NRT, Push VOD and Interactive Application delivery
- Emergency Alert Service (EAS) delivery
- Addressable TV
- NextGen TV network and content Monitoring for Quality of Service (QoS)

Benefits

- Fully interoperable and validated with all major ATSC3.0 equipment manufacturers
- Generate revenue with Innovative service delivery (Targeted Advertising, Push VOD...)
- Broadcast grade and Secure solution to avoid TV blackout
- Scalable and Reliable solution with the introduction of virtualized products
- ATSC 3.0 VHF/UHF RF broadcast with unequalled performances
- Intuitive and easy to setup and monitor

The unique E2E solution for efficient ATSC 3.0 Broadcasting

1 Live & NRT contents delivery

MediaCast™ Delivery & Signaling server

- Virtualized ROUTE/MMTP Delivery and Signaling server
- SLT tables & SLS fragments generation and delivery
- Aggregate up to 20 Live and NRT contents towards IP Multicast outputs
- Interactive applications and ESG delivery
- Advance Emergency Alert Management

2 Heart of the ATSC 3.0 Network

SmartGate™ Broadcast Gateway

- Virtualized Broadcast Gateway
- Generation of STL output packets over IP (STLTP)
- Single and Multiple PLP management
- Automatic configuration of ATSC 3.0 modulators
- ATSC 3.0 SFN Adaptation
- Validation of ATSC 3.0 transmission parameters

3 2:1 Smart IP streams switching

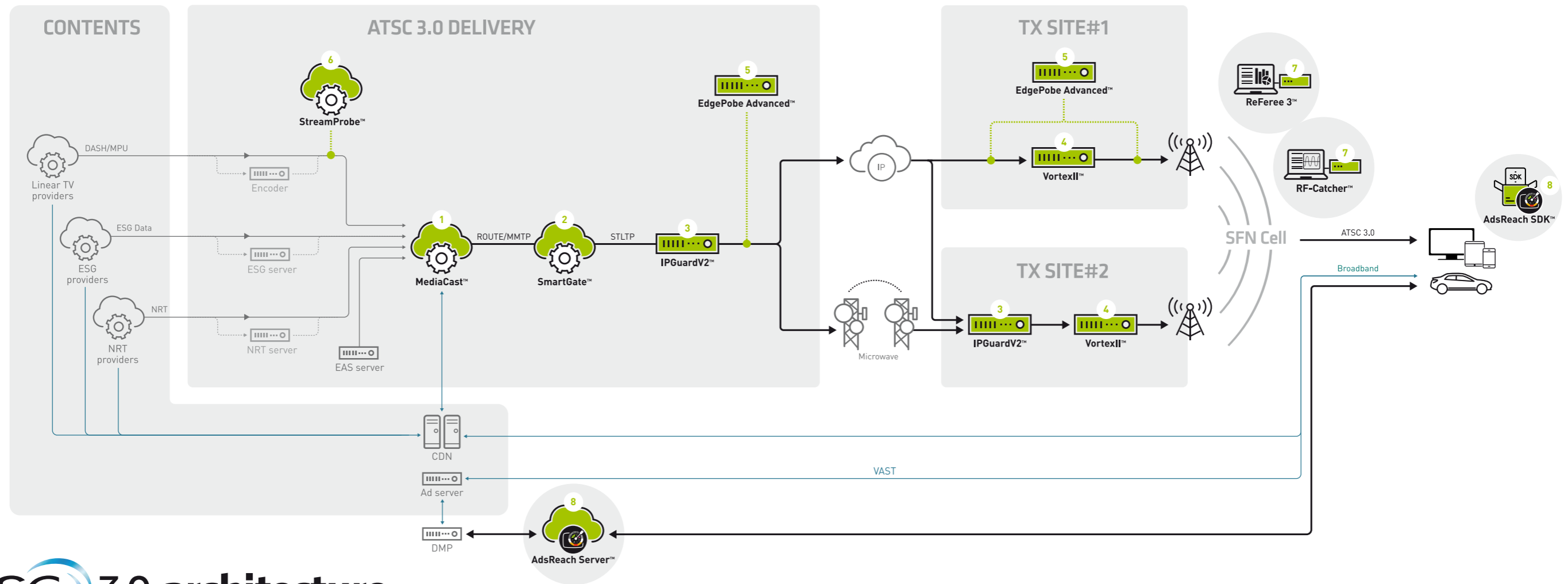
IPGuardV2™ Seamless IP Redundancy Switch

- 1+1 automatic IP switching of IP-based equipment and networks
- Seamless switching between IP links with different propagation delays
- Seamless switching between ATSC 3.0 SFN adapters
- Switch-over based on IP and STLTP criterias

4 ATSC 3.0 Modulator / Exciter

VortexII™ ATSC 3.0 High-End Exciter

- ATSC 1.0/3.0 DualCast modulation core
- Multi-PLPs, TDM, LDM and MISO modes support
- Built_in AGC, Adaptive Precorrection, Forward and Reflected Power Measurement



ATSC 3.0 architecture

5 6 ATSC 3.0 Monitoring Probes

EdgeProbe Advanced™ / StreamProbe™ Monitoring Probe

- 24/7 Monitoring and Maintenance:
 - Head-End: STLTP distribution (over IP, Satellite)
 - TX sites: RF transmission quality & stability, SFN synchronization
 - Reception area (SFN overlapping): RF signal quality & Echoes (w/ TX ID)
- Generation of Service Availability reports for Service Level Agreements
- Plan and improve the network configuration by identifying global trends
- Quality of Experience Content check before transport processing

7 Lab & Field operation

RF-Catcher™ / ReFeree 3™ ATSC 3.0 Analyzer, Recorder & Player

- Put yourself in end-users shoes
- Efficient troubleshooting in the field, easy replication of RF behaviors in the lab
- Reliable RF and SFN measurements, live video decoding
- ATSC 3.0/1.0 spectrum integrity control

8 ATSC 3.0 Addressable TV solution

AdsReach™ Platform and TVData/DAS/L-banner SDK

- Adsreach is designed to fit into existing playout and Adtech ecosystem
- TV Data : TV Consent Management platform, Data collection and real time audience measurement
- Dynamic video Ad insertion solution for linear OTA TV
- Dynamic Banner ad insertion to enhance linear ads
- Turnkey solution with API to AdServers and DMP

ATSC 3.0 solutions by the Experts



DELIVERY & SIGNALING SERVER 1

MediaCast™

Delivery	Delivery of multimedia data on ATSC 3.0 networks Enable to aggregate up to 20 Live and NRT contents towards IP Multicast outputs ESG metadata processing NRT and Interactive applications delivery
Supported standards	ROUTE to deliver MPEG-DASH segments MMTP to deliver Media Processing Units (MPU)
Signaling	SLT and SLS signaling tables generation to enable a perfect decoding on the receiver part

ATSC 3.0 BROADCAST GATEWAY 2

SmartGate™

STLTP encapsulation	Encapsulation of ROUTE and MMTP streams into STLTP
Network configuration	Automatic configuration of ATSC 3.0 modulators & individual addressing
SFN Adaptation	Synchronization of ATSC 3.0 modulators for SFN broadcasting
Physical Layer Pipe (PLP)	Multiple subframes management Multiple PLP management 4 PLP support by default 8 PLP as option
Interfaces	Multiple IP inputs and outputs
Synchronisation	PTP and NTP source
Redundancy	Mirrored outputs and STLGuard

SEAMLESS IP REDUNDANCY SWITCH 3

IPGuardV2™

Seamless switch	Guarantee seamless switchover in SFN and MFN when combined with SmartGate Seamless switching on RTP & STLTP conditions Re-alignment of identical but delayed streams
Inputs resynchronization	Multiple IP inputs and outputs
Interfaces	Passive and advanced passthrough (hardware bypass)
Availability	Redundant power supply

ATSC 3.0 MODULATOR / EXCITER 4

Vortexil™

Supported standards	ATSC 1.0 / ATSC3.0
ATSC 3.0 features	Multi-PLPs, TDM, LDM, MISO
Transmission modes	MFN, SFN (Relative and Absolute modes)
Precorrection	Linear and Non-Linear DAP, Sharp Filter profiles
Monitoring	MER, Shoulders, Crest Factor and forward/reflected power
Datas Input	IP STLTP (ATSC 3.0), ASI-SMPTE (ATSC 1.0)
Satellite input	GSE/MPE (options on x402 model)
Reference inputs	GPS, 1PPS, 10 MHz
Output	RF VHF and UHF bands, up to +20dBm

ATSC 3.0 MONITORING PROBE 5 6

EdgeProbe Advanced™

Input interfaces	RF (N-type connectors) for ATSC 3.0/1.0 1Gb RJ45 for STLTP (IP) Up to 4 channels monitored in parallel in 1RU
Reference inputs	10 MHz, 1PPS or GPS antenna input
RF Monitor	Signal Level, MER, BER
SFN Monitor	RF frame time drift, Echoes - Channel Impulse Response, STLTP Network Delay
Stream Monitor	STLTP (ATSC 3.0), MPEG-2 TS (ATSC 1.0)

StreamProbe™

Input interfaces	1Gb or 10Gb RJ45 for DASH over IP input
Licensing	Bitrate capacity to monitor
Formats	DASH, HEVC, 4K, H264, MPEG-2 A/V, MPEG-1 A
QoS	ABR Manifest, Profile, Chunk integrity check
QoE	Audio/Video content check for each profile Live Thumbnail Mosaic

ATSC 3.0 ANALYZER, RECORDER & PLAYER 7

RF-Catcher™

Input & Output interfaces	RF (SMA or F connector) input & output
Frequency band	70 MHz to 6.0 GHz (1 kHz resolution)
Real-time Bandwidth	1 MHz to 55 MHz
Input dynamic range	-110 to 0 dBm
Reference inputs	10 MHz, 1PPS, GPS connectors
Dimensions	163 x 115 x 32 mm, 600 g
Power supply	USB self-powered

ReFreee 3™

RF Measurements	Signal Level, MER, BER, Spectrum, Constellation, Echoes
ATSC 3.0 decoding	Live video, Frame structure & bitrates
Input interfaces	RF (F-type), 1Gb ETH/SFP for STLTP (IP) for ATSC 3.0/1.0
Reference inputs	10 MHz, 1PPS, GPS antenna for GPS-tracked reports
Dimensions	210 x 120 x 35 mm, 660 g
Power supply	USB self-powered

ATSC 3.0 ADDRESSABLE TV SOLUTION 8

AdsReach™

SDK for NRT applications	Compliant with ATSC 3.0 A344 standard, implement: - TVData (data collection) - Banner insertion - Dynamic video Ad insertion
Analytics	Data visualization tool for PC, Tablet and mobile
Data	Web interface for DMP interconnection
Adservers interconnection	VAST & VMAP
Banner format	HTML5 pattern, PNG and JPG pictures
Video for substitution	DASH

