SFN Offer
Preserve your Single Frequency Network
• ENENSYS offers a unique SFN expertise
• Seamless SFN switch over...
• ... from head-end to transmitters
• Every system interconnection becomes a point of strength of your SFN
1) Introduction and Solution Overview

1) Customers

1) Description of the global Solution

2) DTTV & MobileTV Market

3) Competition Overview

4) Documents available
Broadcasters/Network operators

**Their expectations**

I want a broadcast grade solution

**Our answers**

NN6-MIP Inserter is designed to cope with broadcaster requirements. Robust and interoperable with main transmitters, NN6-MIP inserter can be easily integrated into any broadcast network.

- 100%-FPGA core
- Full SNMP v2 support
- Web-based GUI
Broadcasters/Network operators

Their expectations

I want a high-available solution that guarantees my SFN

Our answers

NN6-MIP Inserter is world-class solution to insure synchronization and configuration of broadcast SFN.

NN6-MIP Inserter prevents broadcaster from dealing with black-out in case of failure through its seamless switch-over solution, SFNguard.

- Redundant ASI inputs
- Mirrored ASI outputs
- Patent Technology based
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1) Description of the Solution

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Description of the SFN Solution

• Background: Redundancy in MFN
  • Redundant SFN Adapters
    – Not synchronized
    – Synchronized « SFN Guard »
  • SFN over IP
  • Redundant path for SFN distribution
    – Desynchronized streams
    – Re-synchronized streams « SynFoNizer »
In MFN, transmitters are not synchronized.
Redundancy is handled with an ASI switch.
If primary source fails, backup source is used.
Background: Redundancy in MFN

- Transmission resumes without interruption
- Only a few video/audio glitches might be observed
- No TV blackout
Description of the SFN Solution

• Redundancy in MFN
• Redundant SFN Adapters
  – Not synchronized
  – Synchronized « SFN Guard »
• SFN over IP
• Redundant path for SFN distribution
  – Desynchronized streams
  – Re-synchronized streams « SynFoNizer »
Redundant SFN Adapters – No synchronization

- In SFN, transmitters synchronization is achieved by SFN Adapters
- SFN Adapters insert synchronization information (MIP)
- If primary source fails, backup source is used
Redundant SFN Adapters – No synchronization

- SFN Adapters are not synchronized
- MIP packets are not inserted consistently
- Transmitters receive inconsistent data
- Up to 30 seconds TV blackout...
Description of the SFN Solution

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Redundant & synchronized SFN Adapters

- SFN Guard synchronizes SFN Adapters
- MIP packets are inserted consistently
- If primary source fails, ASI switch selects backup source
Redundant & synchronized SFN Adapters

- SFN Adapters have the same output
- Transmitters keep receiving consistent information
- Switch is SFN seamless
- No TV blackout
Description of the SFN Solution

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SFN over IP

- SFN distribution over IP
  - IP distribution: network jitter, lost packets, etc.
  - Transmitters require constant bitrate
- If those issues are not coped with: TV blackout
SFN over IP

ENENSYS IP video gateways provide:
- SMPTE 2022: Interoperability & FEC
- Network jitter removal
- Constant output bitrate (MIP packets parsing)
- Clock drift compensation

No TV blackout
Description of the SFN Solution

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Main distribution: Satellite
Backup distribution: IP network
Delay between IP (<10ms) and satellite (>300ms)
Redundant distribution paths – No re-synchronization

- If main source fails, transmitter switches to backup
- As both sources are not synchronized, SFN is lost
- Up to 30 seconds TV blackout
Description of the SFN Solution

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Redundant distribution paths – Re-synchronization

- SynFoNizer synchronizes IP and satellite sources
- Source with lowest delay (IP source) is delayed
Redundant distribution paths – Re-synchronization

- Upon failure, SynFoNizer switches to backup source
- Backup source is synchronized with main source
- SFN is preserved
- No TV blackout
Description of the SFN Solution: Summary

- SFN Adapter
  MIP Inserter
- Synchronized SFN Adapters
  « SFN Guard »
- Dedicated IP gateways for SFN (SFN over IP)
  FastCaster & GigaCaster
- Distribution paths re-synchronization
  SynFoNizer
- SFN Modulation
  LabMod & NetMod
- **Turn every system interconnection into a point of strength of your SFN's reliability and availability**
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Documents and information available

- SFN Solution Datasheet
- For each products
  - Datasheet
  - Product Presentation
  - Product Technical Description

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