Satellite based Alarm and Surveillance System for IP Security Applications

SASS-2IP

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ARTES Applications Workshop

Noordwijk, April 2011

Presentation Overview

- Project Data and Objectives
- System Architecture and Features
- Project Achievements
- User Benefits
- Commercial Status
- Lessons Learnt
- Conclusions

SASS-2IP Project Data

- ESA Programme: ARTES-3 Integrated Applications
- Total Costs: 480.000 Euro
- Contractor: MediaMobil Communication GmbH
- Pilot Users: Media-Saturn, Germany
  Media-Saturn, Russia
  Heitel Digital Video
- Project start: May 2007
- Project end: April 2010

Project Objectives

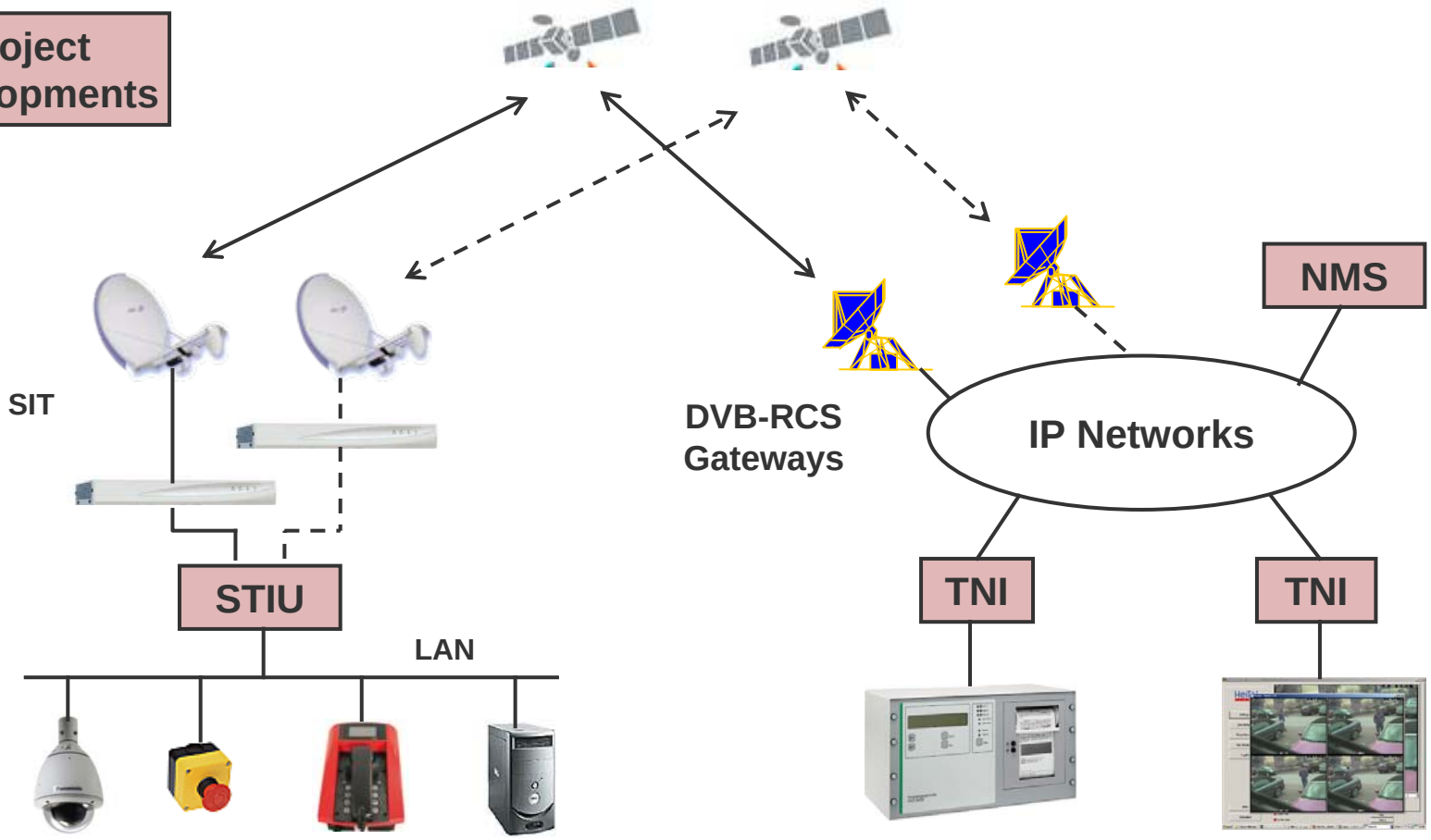
- To develop **Interface Units** which enable the interconnection of IP security systems via two-way IP satellite services
- To implement **IP Traffic Control Mechanisms** supporting alarm transmission and other security applications with the highest performance classification according to EN 50136
- To develop a solution which is **minimising the bandwidth** required for satellite link monitoring and alarm transmission
- To support **redundant** SIT and satellite link configurations
- To validate the system performance in a **4 months pilot phase** with real end users

Why Satellite for Security Applications?

- Alarm transmission networks for objects with high security risks must conform to highest performance classification of EN 50136
- This requires highly reliable and redundant network connections
- In many regions, networks conforming to EN 50136 are either unavailable or expensive (e.g. leased-lines)
- ✓ Satellite based networks are providing extended coverage, but IP services do not meet requirements for security applications
- ➔ SASS-2IP satellite system solution conforms to EN 50136 and meets performance requirements for security applications while being more cost efficient than comparable terrestrial systems

System Architecture

Project Developments



IP Security Systems (Surveillance Cameras, Alarm Transmission Units, Emergency Phones…)

Security Centers (Alarm Receivers, Video Systems etc.)

System Features

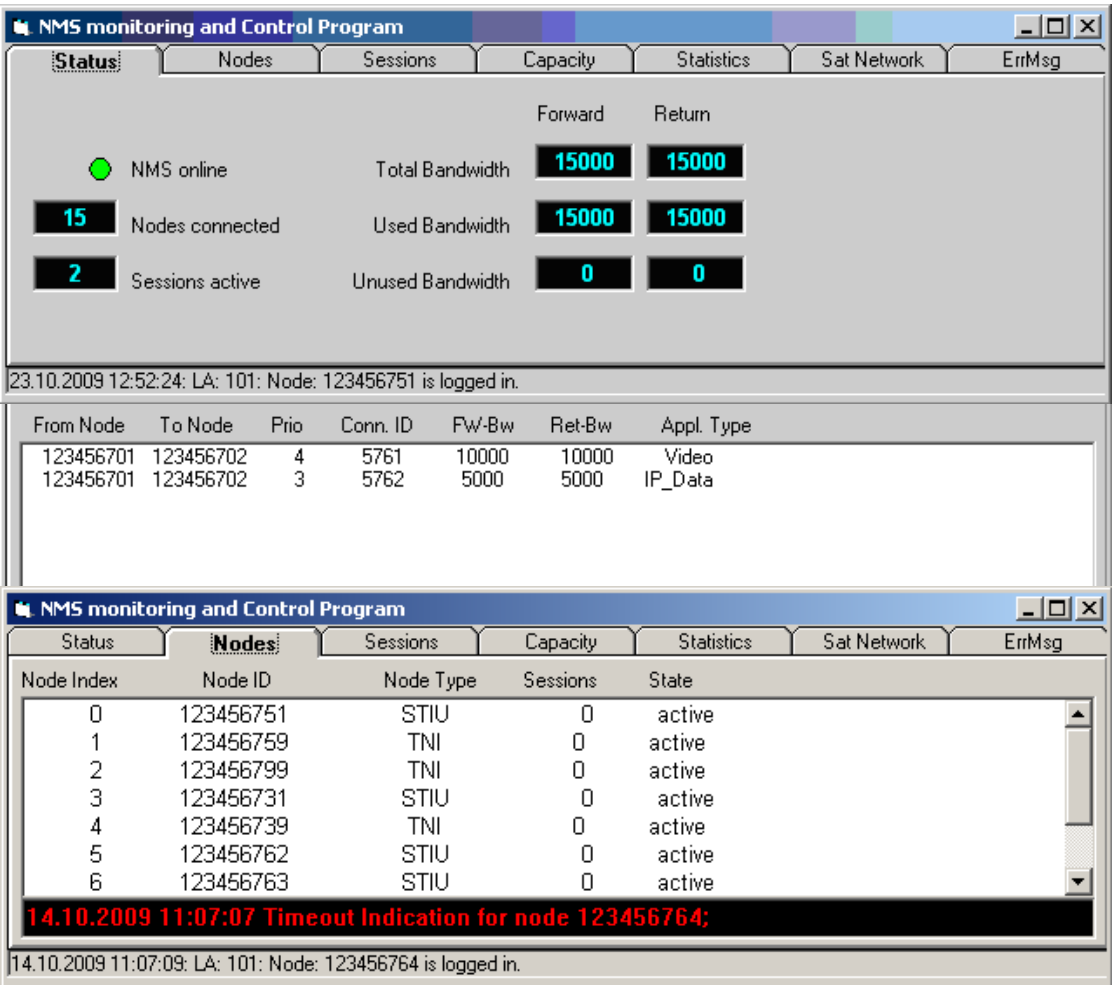
- 5 Priority levels for different IP security applications
- Automatic identification and classification of IP traffic
- Assignment of bandwidth on-demand depending on traffic type and priority
- Fully redundant satellite links (STIU, SIT, DVB-RCS Gateways)
- Permanent monitoring of all network connections
- Alarm transmission and line fault reporting performance compliant with EN 50136
- Proxy interface for IP alarm transmission protocols

Satellite Terminal Interface Unit (STIU)

Redundant Version

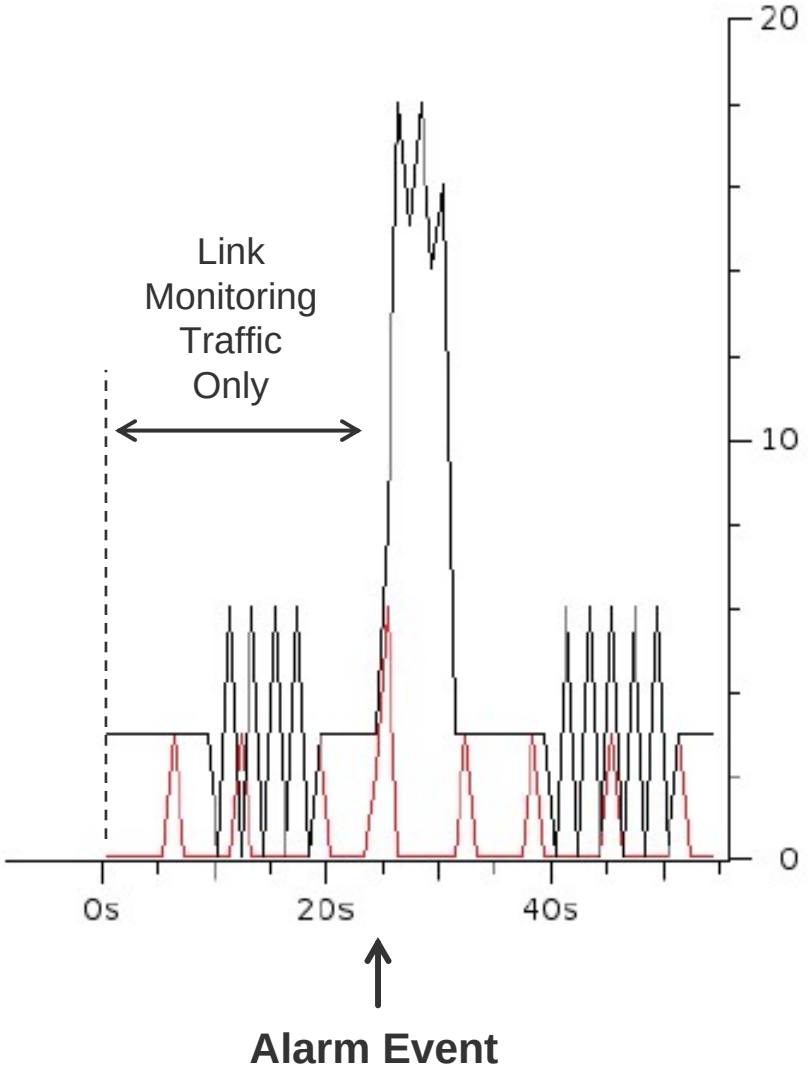
- Redundant COTS processor boards with embedded Linux OS and SASS-2IP firmware
- SASS-2IP redundancy control board
- Hardware and link fail over switching transparently for user traffic
- Session setup and release signaling with NMS via SSPv2 protocol
- Control of outbound IP bit rate
- Proxy interface for VdS 2465 alarm transmission and link monitoring protocol

Network Management System



- Redundant Linux server with SASS-2IP NMS software
- STIU and TNI authentication
- Session setup and release signaling via SSPv2 protocol
- Bandwidth on-demand assignment
- Bandwidth re-assignment in case of congestion
- Session data logging
- STIU and TNI link monitoring

VdS 2465 Proxy Performance



Black: VdS 2465

Red: via proxy

Proxy solution is reducing bandwidth utilisation by more than 50% !

Russian Pilot Network

Intelsat
IS-904

Pilot Sites:

- Media-Saturn St. Petersburg
- Media-Saturn Krasnodar
- Media-Saturn Samara 1
- Media-Saturn Samara 2
- Media-Saturn Rostov 1
- Media-Saturn Rostov 2

RuSat
DVB-RCS Gateway
Moscow

MACOMNET E1

BT MPLS

Internet

Media-Saturn Head-Office Moscow

Media-Saturn Head-Office Ingolstadt

NMS MediaMobil Bremen

European Pilot Network

Eutelsat
AB-1

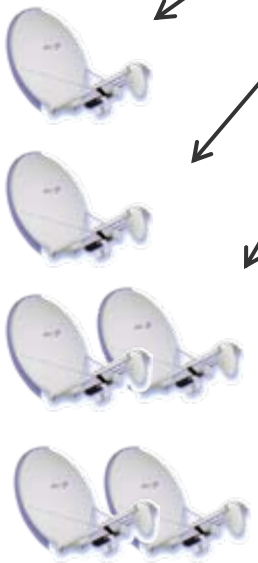
Pilot Sites:

Media-Saturn
ITC
Ingolstadt

Heitel
Kiel

MediaMobil
Bremen

ESRIN
Frascati



Skylogic
DVB-RCS Gateway
Turin

E1

BT MPLS

Internet

Media-Saturn
Head-Office
Ingolstadt

ESRIN
Test Site
Frascati

Heitel
Test Site
Kiel

NMS
MMO
Bremen

Images of Pilot Sites

SASS-2IP Terminals at Media-Saturn Stores in Russia

Images of Pilot Sites

Network Rack
at Media-Saturn Stores
in Russia

Test Setup
at ESRIN Lab
in Italy

User Benefits

1. Compliance with police and insurance company requirements for objects with high security risks at remote locations

2. Support of terrestrial network backup service besides of security applications

3. High reliability (during pilot phase 2-3 terrestrial network outages at Russian pilot sites per week)

4. Fast deployment at any location

5. Consistent service features and quality in different regions

6. Lower service charges than comparable terrestrial lines

Commercial Status

- Closed network operated for Media-Saturn in Russia in cooperation with Russian gateway operator Rusat
- Closed network being deployed for German electricity company at 30 sites
- Service partner agreements being discussed with two worldwide network operators
- SASS-2IP signaling protocols and traffic control solution integrated in VSAT systems for non-security applications
- Adoption of SASS-2IP functionality for Inmarsat BGAN applications being evaluated by European Defence company

Lessons Learnt

- Operation of pilot service in Russia is only feasible in cooperation with a Russian operator
- Transborder use of satellite services is an issue for security applications
- Export of satellite equipment to non-EU member states can be very time consuming and expensive
- New releases of GPL Linux Operating System may be incompatible with firmware developed under previous release
- Schedule of GPL OS bug fixes is not predictable
- Pilot implementation efforts are always under estimated

Conclusions

- Closed SASS-2IP networks being operational in Russia and Germany as planned after the end of the project phase
- SASS-2IP developments also used for non-security applications (terrestrial network backup, bandwidth on-demand services)
- Revenue forecasts in strategic plan are maintained, **but** with one year delay and extended portfolio of services.
- Looking for partners to provide open and closed SASS-2IP network services (DVB-RCS operators, satellite service providers, terrestrial network operators)
- SASS-2IP signalling and traffic control will be adapted for Inmarsat BGAN system (multi link traffic balancing applications)

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