A Light Reading Webinar

The Role of TISPAN In Next-Generation Networks

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Agenda

• What is ETSI TISPAN NGN?
• The NGN evolution & requirements
• ETSI TISPAN architecture
• TISPAN use cases
• Conclusions
What Is ETSI TISPAN NGN?

• **Background**
  - Telecommunications & Internet Converged Services & Protocols for Advanced Networks (TISPAN)
  - TISPAN is a standards group within the European Telecommunication Standards Institute (ETSI)
  - Specialized in fixed networks & Internet convergence
  - 8 sub-groups defining all aspects of NGN

• **Defining a standards-based NGN architecture**
  - Based on well defined sub-systems, functional blocks & defined interfaces
  - Maximizing fixed & mobile convergence, through adoption of 3G IMS components
The Benefits of an NGN
From Stovepipes to Converged

• Enhanced User Experience
  • Universal user experience regardless of access medium
  • Integration of presence & mobility

• Simplified Service Introduction
  • Standardized interfaces
  • Well defined capabilities per functional component

• Reduced Operating Costs
  • Automated service delivery
  • Unified network architecture

Any Application, Any Network, Any Device
Delivered with Quality, Control, and Accountability
What Is an IP NGN Architecture?

INTELLIGENT INFORMATION NETWORK

Application Layer
- Consumer
- Business
- Evolved services

Service Layer
- Service Exchange
- Self Service
- Identity
- Policy
- Billing
- Mobility

Framework for User and Application-Based Control (Data, Voice, Video, Mobility)

Network Layer
- Customer Element
- Access/Aggregation
- Intelligent Edge
- Multiservice Core
- Transport

INTELLIGENT INFORMATION NETWORK
NGN Application/Protocol Requirements

Comprehensive Support for **SIP** and **Non-SIP** applications

- **SIP Applications**
  - VoIP / Push-to-talk (PTT)
  - Buddy lists
  - Click to dial
  - Location-based info services
  - FMC (Dual-mode telephony)
  - More...

- **Non-SIP Applications**
  - IPTV / VoD / Videoconferencing
  - P2P Services
  - Gaming
  - VoIP
  - Email/SMS/MMS
  - More...

- **Multiservice Core**
  - IP Contact Center
  - Intelligent Edge
  - Customer Element

- **Application Layer**
  - SIP Applications
  - Non-SIP Applications

- **Network Layer**
  - IPv4/IPv6
  - PPP/FR/ATM/Ethernet
  - IPoDWDM

- **Service Layer**
  - CoS/QoS
  - L2/L3 VPN
  - VPLS
  - MPLS

- **Transport**
  - Fast Rerouting
  - Security
  - Peering

- **Operational Layer**
  - Mobility
  - Self Service
  - Traffic Engineering

**Intelligent Networking**
Why Not Just Adopt 3GPP IMS for Everything?

- **Claims to be access agnostic**
  - R6 moving in that directions
  - R7 more so
- **Implicit assumptions**
  - Policy element part of the Proxy SIP server: implicit assumption that only SIP applications need policy
  - Wireless UE & authentication: No account taken of 15 years of AAA deployment in wireline
  - Wireless access network via GGSN: No account of CMTS for cable, BRAS for xDSL
  - Only SIP signaled application: No account taken of the majority of Internet applications, bandwidth apps
  - No account of the regulatory and resulting commercial models seen in wireline
ETSI TISPAN NGN
Detail & Status

• Release Timeline
  • Pragmatic approach & emphasis on solutions
  • Release 1 :- Released in Dec 2005
    • Main standards direction
    • Voice, xDSL, SIP-oriented solutions, edge QoS capabilities
  • Release 2:- 2007 timeframe
    • Being defined now
  • Release 3:- 2009 timeframe
    • Generalized mobility

• Architectural Highlights
  • Support of SIP-oriented & Non SIP applications
  • IMS for conversational SIP-oriented applications
  • Other sub-systems for other application types
  • Access agnostic
  • Support for complex commercial models
  • Roadmap to fixed mobile convergence based on IMS
  • Re-use & collaboration with SDO (specifically 3GPP)
TISPAN NGN Architecture Overview

IMS (IP Multimedia Subsystem):
The NGN core subsystem for SIP based conversational services

ETSI TISPAN Network Model (Release 1)

**Transport Function**

- **Function**
  - Core, access and home transport capabilities
  - Deals with different owners of the network

- **Interfaces:**
  - RACS and NASS

User Equipment
- TE: Terminal Equipment
- CNG: Customer Network Gateway

Access network
- ARF: Access Relay Function
- L2TF: Layer 2 Terminal Function
- RCEF: Resource Control Enforcement Function

Core
- BGF: Border Gateway Function
- Access and Interconnect

*Function*: Core, access and home transport capabilities, deals with different owners of the network.

*Interfaces*: RACS and NASS.

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ETSI TISPAN Network Model (Release 1)

**RACS**

- **Function**
  - Policy implementation
  - Admission control
- **Interfaces to**:
  - Application Function (via Gq')
  - NASS (AAA and conf)
- **Functional blocks**
  - SPDF- Serving Policy Decision Function
  - A-RACF- Access Resource and admission Control Function
## ETSI TISPAN Network Model (Release 1)

### NASS

**Function**
Registration and initialisation of UE Network Level ID and authentication

**Interfaces to:**
- RACS, Service, Transport

**Functional blocks**
- AMF: Access Management Function
- NACF: Network Access Configuration Function
- CLF: Connectivity Session Location and Repository Function
- UUAF: User Access Authorization Function
- PDBF: Profile Database Function
- CNCFG: CPE Configuration Function
ETSI TISPAN Network Model (Release 1)

**Service Layer model**

- **General architecture defines**
  - Core IMS subsystem
  - PSTN/ISDN emulation subsystem (PES)
  - Streaming Subsystem
  - Content broadcast subsystem
- **R1 only looks at:-**
  - IMS and PES
- **IMS subsystem**
  - Subset of 3GPP IMS
  - Service control functionality
- **PES**
  - Non IMS PES
  - PES over IMS
Application Function

- Two types of application
- AF-1 applications
  - Don’t use Service Sub-systems
  - Interfaces directly to RACS
  - Defined but not really covered in R1
- AF-2 applications
  - Use Service control sub-systems
- Interfaces to:
  - Service Subsystem
  - RACS (AF-1 apps)
1. User dials phone number, initiates SIP signaling
2. P-CSCF requests authorization for call via Gq’ interface
3. SPDF requests authorization for access network resources via Rq interface
4. A-RACF (optionally) provisions policies using Re/Ra interfaces
5. SPDF (optionally) requests BGF authorization via Ia interface
6. Remote party SDP received
7. P-CSCF requests re-authorization for call given remote SDP via Gq’ interface
8. SDPF (optionally) re-authorizes access network resources via Rq interface
9. A-RACF (optionally) changes policies using Re/Ras
10. SPDF (optionally) requests BGF re-authorization
11. Ringing signal delivered to user
TISPAN in a Wholesale Environment Use Case
Wireline Today
Will TISPAN NGN Succeed?

• R1 Is a Great Start
  • Acknowledgement of different access technologies
  • Acknowledgement of commercial models
  • Acknowledgement of varied application types
  • SIP-based FMC through common IMS subsystem

• TISPAN Future Challenges
  • R1 is heavily voice / SIP orientated
  • Support for network-based services
  • Support for existing non-SIP initiated services
  • Support for new emerging applications (for example IP/TV)
  • Gaining support from the content providers (“over the top” services)
The Poll Question

What will be the first service deployed on a TISPAN RACS / NASS subsystem?

- PSTN emulation service
- FMC multimedia SIP-based services
- IP/TV solution
- Peer to Peer solution
- User initiated bandwidth/QoS services (Turbo button)
Conclusions & Outlook

• NGNs are an important tool in the future profitability of SPs
  • Network Convergence
  • Common service portfolio regardless access

• TISPAN delivers an NGN architecture
  • TISPAN has taken a pragmatic and sensible approach to NGN environments
  • But TISPAN R1 services are limited

• NGNs architectures are still evolving
  • The future relevance of TISPAN in NGN depends on TISPAN R2 and beyond
Q & A

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