NGN Introduction

Soft Switching

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Agenda

- Evolution from TDM to NGN
- UTStarcom Architecture
- Tiscali IOT environment
- Tiscali UTStarcom Solution Topology
- NGN UTStarcom Solution Benefits
Traditional Telephone Networks

• Commonly referred to as PSTN.
  – Public Switched Telephone Network.

• PSTN Network composed of:
  – Access devices.
  – Switching.
  – Transport.
Generic Switch Architecture

- Signaling
- Call Processing
- Switching Matrix

Proprietary, Closed Environment
What is a Soft Switch?

Voice switching platform built in a distributed architecture, based on open standard interfaces between its components and supported by actual TDM (PDH/SDH) and packet switching transport networks (IP).

- Performs the same functions as legacy PSTN Switches, but in a more flexible, economic and open architecture.

- Softswitches leverage the actual data network technologies for transporting voice media and signaling.
  - Voice – VoIP (RTP/RTCP).
  - Signaling – MGCP, MEGACO, SIGTRAN, SIP, SNSP, etc.
Legacy - NGN Evolution

LE

SS7
E1’s
Voice

Signaling
Call Processing
Switching Matrix

LE

SS7
E1’s
Voice

LE

SS7
E1’s
Voice

LE

SS7
E1’s
Voice

MG

MEGACO
MEGACO
VoIP (RTP)
VoIP (RTP)

IP
Legacy - NGN Evolution

Signaling

Call Processing

LE

SS7

E1’s

Voice

MG

MEGACO

VoIP (RTP)

IP

MEGACO

VoIP (RTP)

LE

SS7

E1’s

Voice
Legacy Switch vs. Softswitch

- **Proprietary, Closed Environment**
  - Signaling
    - Monolithic
    - Proprietary
    - Expensive
    - Dependant
  - Call Processing
  - Switching

- **Open, Standard Interfaces**
  - Signaling
    - Distributed
    - Open Interfaces
    - Scalable
    - Vendor independent
    - Convergence
  - Call Processing
  - Media Gateways

**Notes:**
- Monolithic
- Proprietary
- Expensive
- Dependant
- Distributed
- Open Interfaces
- Scalable
- Vendor independent
- Convergence
Distributed Softswitch Model

Media Gateway Controller (MGC)

Signaling Gateway (SG)

Media Gateways (MG)

SIGTRAN

MGCP
MEGACO
H.248

Packet Interface

PSTN
mSwitch Architecture

- Logically, mSwitch architecture consists of 4 layers:

  - **SNMS/mBOSS Layer**
  - **Service/Application Layer**
  - **Control Layer**
  - **Access Layer (Gateways)**
mSwitch R6 Network Architecture

- Server applications can be collocated. Minimum deployable configuration requires 3 Sun servers.

- Chassis components can be collocated. Minimum deployable configuration requires 1 mSwitch chassis.

- AS is a placeholder for applications such as voice mail, ring back tone, find me follow me, etc.

AS – Application Server
NMS – Network Management System
SG – Signaling Gateway

CSS – Customer Self-Service
SAM – Subscriber Administration Management
iUMG/TG – IP based Unified Media Gateway/Trunk Gateway

UTStarcom Confidential
TISCALI IOT Environment

CS-P/CS-G/CPS
PC=0-144-4

Active

iUMG A
IMT CIC 1-31
IMT CIC 33-63
Link TS16
LSET x
SCP
PC=2-87-0
PC=0-67-0

RAS
Dial up

E1 PRI

IMT CIC 1-31
IMT CIC 33-63

IP

SCP
PC=1-460-1
PC=0-64-6

SCP
PC=0-63-7
PC=0-28-0

SSP Rome
PC=0-27-7

SSP Milano
PC=0-28-0

Active

H.248
RTP
Standby

SIGTRAN

H.248
RTP
Standby

iUMG B

iUMG C

PC=x-yy-z

IMT CIC 1-31
IMT CIC 33-63
Link TS16
LSET x

RAS
Dial up

E1 PRI

IMT CIC 1-31
IMT CIC 33-63

SSP Cagliari
PC=0-124-0

SCP
PC=0-64-6
PC=2-87-0

RAS
Dial up

E1 PRI

iUMG C

Active

H.248
RTP
Standby

SIGTRAN

H.248
RTP
Standby

PC=0-144-4

Active

SIGTRAN

H.248
RTP
Standby

PC=0-63-7

Active

H.248
RTP
Standby

PC=0-124-0

Active

H.248
RTP
Standby

PC=0-27-7

Active

H.248
RTP
Standby

PC=0-28-0

Active

H.248
RTP
Standby

PC=x-yy-z
UTStarcom Solution Topology

(Milano CO) (Roma CO)

UTSI IN SCP

CPS

INAP/E1

ISUP/E1

iUMG

H.248

SS7/M2UA

SS7/M3UA SG (SEP)

IN SCP

UTSI

CPS

INAP/E1

ISUP/E1

iUMG

SS7/M2UA

SS7/M3UA

H.248

Secondary connections

Primary connections

Other Carrier TDM Switches

High Density POPs

New Low Density POPs

> 400 DPCs, > 500 links

ISUP/E1

SS7 F links

C-TG

SS7 F-Links

Other Carriers TDM Switches

iAN8000 MSAN

iAN8000 MSAN

N POPs in total

(Milano CO and Roma CO are two geo. Redundant sites. Each can handle the entire network.)

Other Carriers TDM Switches

IP transport network

iUMG

H.248

SS7 F links

iAN8000 MSAN

UTSI

IN SCP

CPS

INAP/E1

ISUP/E1

iUMG

H.248

SS7/M2UA

SS7/M3UA

New Low Density POPs

Other Carriers TDM Switches

iAN8000 MSAN

UTSI

IN SCP

CPS

INAP/E1

ISUP/E1

iUMG

SS7/M2UA

SS7/M3UA

H.248

Secondary connections

Primary connections

Other Carrier TDM Switches

High Density POPs

New Low Density POPs

> 400 DPCs, > 500 links

(Milano CO and Roma CO are two geo. Redundant sites. Each can handle the entire network.)
Benefits

- Increase the granularity and power processing distribution of the Network
  - Low density interconnection
  - Signaling, Media and IN capabilities distributed or concentrated depending on carrier needs
- One Network
  - Reduction planning and engineering time
  - Reduction maintenance and operation costs
- Transport
  - Eliminate the need of internal E1
  - Reduction bandwidth needed
  - Reduction maintenance and operation costs
- Organization
  - UTStarcom solution implemented in a common platform allow to focus on services instead of networks
Grazie