



TELECOM ITALIA GROUP

GSMA Latam Plenary Mtg#42 Quito – 25 Nov 2014

IPX and its evolution for international roaming & interworking



- **TI Sparkle overview**
- **IPX – making the right connection**
- **LTE & Peering**
- **IPX - Ready for future evolution**
- **Why TI Sparkle**

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TI Sparkle Group Overview



Company Data (as of March 2014)

<u>Headcount</u>	647
<u>Countries of presence</u>	39
<u>Network coverage</u>	121
<u># PoPs</u>	
<u>PoPs via partners</u>	>1,000

Key Figures (as of December 2013)

<u>Voice Traffic</u> (Bn Minutes)	16.0
<u>Revenues</u> (Bn €)	1.27

- TI Sparkle is a **leading global telecommunication service provider**, offering a complete range of **Data, Internet, Mobile and Voice solutions** for Fixed and Mobile Carriers, ISPs, OTTs, Content Providers, Multimedia Players and Multinational Corporations (MNCs)
- **Wholly owned subsidiary of Telecom Italia** created in 2003 with the objective of developing the international wholesale and the retail multinational corporate businesses, as well as of **supporting TI Group business units** for the provisioning of International Services

Leading player in LATAM

Awarded at the latest Global Carrier Awards 2014 that recognize the company' success in two main areas of strategic focus, **the creation of an ecosystem of collaboration with OTTs in its Data Centers as well as its Latin America operations**



IPX

Connectivity

Roaming

Messaging

Signalling

Enables ITZ Roaming & SMS by providing direct reach to more than 800 MNOs WW.

GRX

Enables GPRS/UMTS Data Roaming to more than 500 mobile operators WW.

Roaming

Enable MNOs to piggyback the extensive global roaming footprint of TI Sparkle's sponsor network without having to set up multiple bilateral roaming relationships. Dual IMSI and Single IMSI solutions.



LTE/Diameter Signalling

LTE Diameter is TI Sparkle's answer to a smooth and seamless transition to 4G International Roaming and SMS Interworking

NEW

Signalling VAS

Solutions to increase roaming revenues, minimize costs and enhance the user experience in roaming. It also includes ITU/ANSI and Signalling based SMS Firewall

Messaging

HUB solutions to facilitate SMS/MMS between MNOs without having to set up multiple bilateral agreements. Application to Person one way SMS to deliver content

IPX IS THE ENABLER for Connectivity - Roaming - Messaging

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What is IPX?



IPX IS NOT

A new protocol

▶ It's an IP based platform separated from the public Internet

A new technology

▶ It doesn't introduce new technologies

A new service

▶ It is an efficient, secure, value-added mode of interconnecting networks, which facilitates the addition of future services

Security

▶ Sustain/grow IP services with the required security levels

Quality

▶ Guarantee QoS control/measurement both for Voice and non Voice Services

▶ Provide quality parameters directly to customers

Routing

▶ Provide alternative routing (routing "confined" within the IPX domain unless break-out are announced)

I/C

▶ Provide an alternative configuration for access (ex. via CPE in the MNO domain)

Assurance

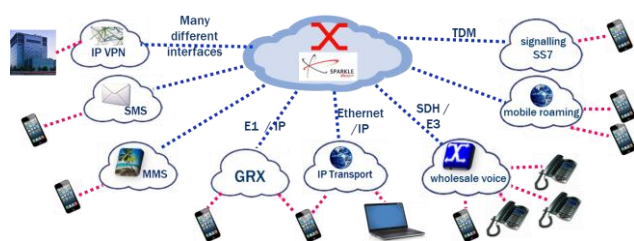
▶ Offer advanced NOC assistance to customers

In a nutshell, IPX is a secure, integrated IP service platform which enables carriers to access Voice and Mobile Data services through a single IP interconnection, with a superior quality level and cascading payment mechanism



BEFORE

Expensive, complex, time &
business inefficient
both for SP and MNOs



- ▶ Different biz models with different contracts
- ▶ Different I/C models with no SLA integration
- ▶ Limited scalability
- ▶ High OPEX / CAPEX for maintaining different platforms



NOW on IPX

Simple, cheap & efficient



Cost efficiency

One single IP I/C
for all services

QoS guaranteed
E2E

One contract

Security



Improved user experience

Seamless access in
roaming to legacy
and innovative
services

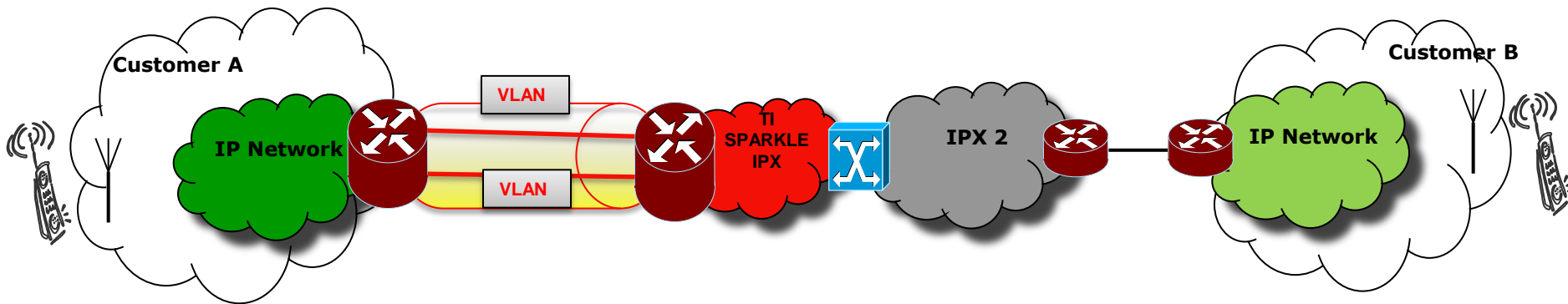
E2E QoS

Extended reach



Platform for innovation

Future proof for
all VAS
innovative
services like
RCS, IMS, IM,
HD Voice etc



In order to differentiate data , voice, signalling streams on the interconnection and on the internal backbone, separate VLANs shall be configured on the access port. For example:

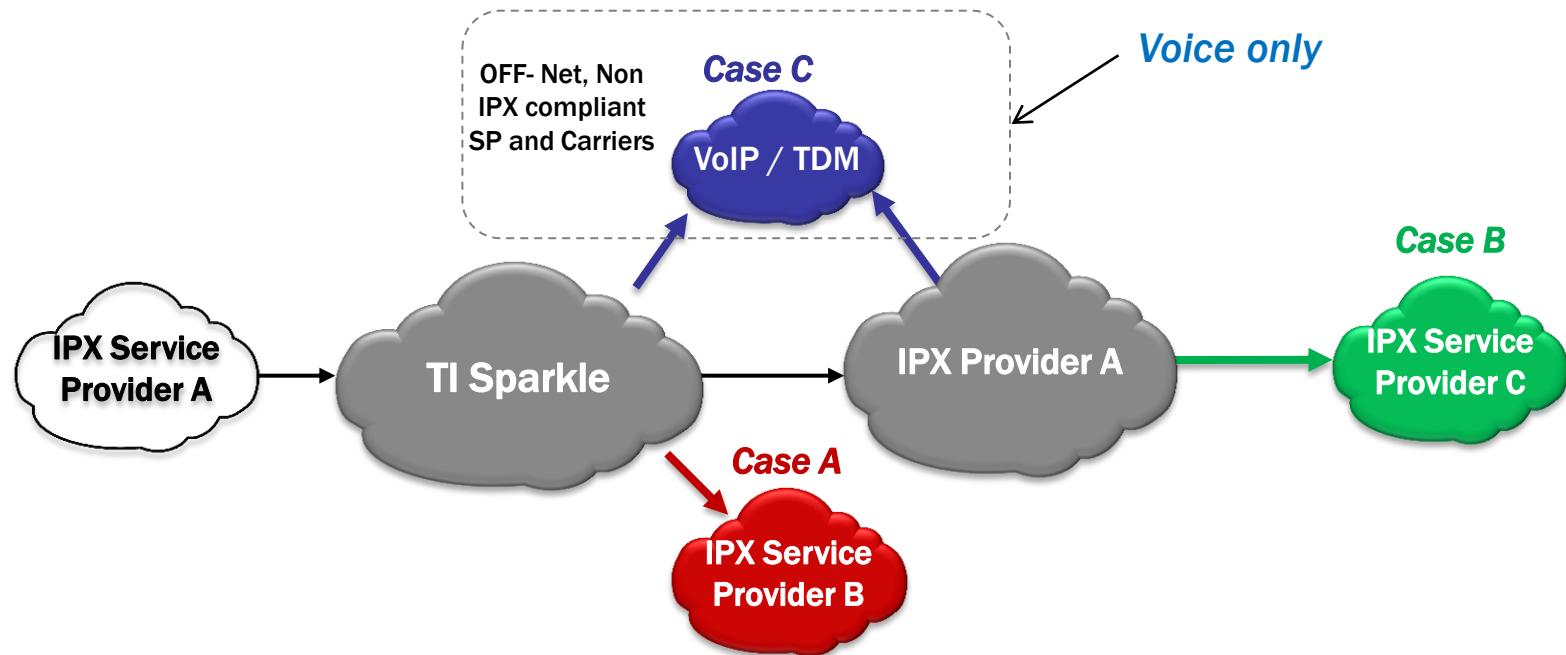
- **VLAN Data:** dedicated to S8 Data roaming traffic (2G/3G/4G)
- **VLAN Signalling:** dedicated to SS7 Signalling for 2G/3G Roaming
- **VLAN Voice:** dedicated to Voice traffic
- **VLAN Diameter:** dedicated to Diameter Signalling for LTE Roaming

GSMA Supported Business Models



IPX Model	Description	Connection	Service Awareness	Billing	Termination Charge	
					Agreed	Paid
Transport Only	Bilateral connection between 2 Service Providers using the IPX transport layer with guaranteed end to end QoS	Bilateral	NO	Per Capacity	Directly between Service Providers	Directly between Service Providers
Service Transit	Bilateral connection between 2 Service Providers using IPX transport layer & IPX service layer with guaranteed end to end QoS	Bilateral	YES	Per Capacity & per Service Usage	Directly between Service Providers	Directly or Cascaded
Hubbing	Multilateral connection with many partners via a single agreement between a Service Providers and an IPX Provider using the transport layer & service layer, with guaranteed end to end QoS	Multilateral	YES	Per Capacity & per Service Usage	By single Service Provider	Cascaded

GSMA IPX Model (TI Sparkle approach)



Direct Destination

A destination which is directly connected to the IPX provider's network. **(Case A)**

Through other IPX Provider

A IPX destination that is not connected directly to one's own IPX network, but to another IPX provider which is connected to our IPX **(Case B)**

Break Out

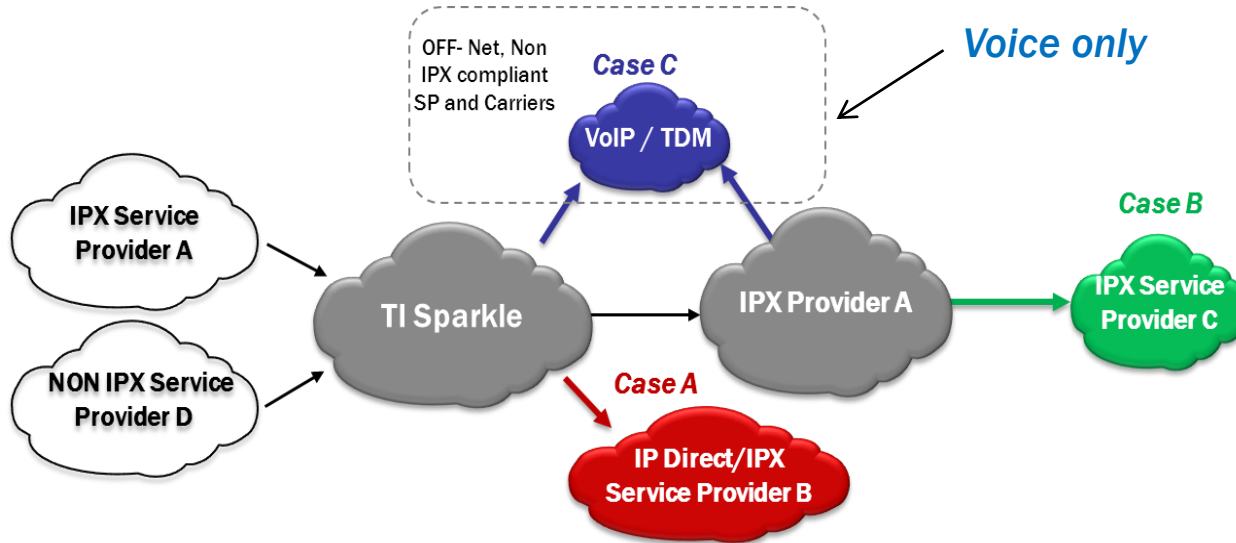
A destination reached through a non-IPX compliant interconnection (i.e. TDM, IP Public etc.) and therefore "breaks-out" the IPX cloud **(Case C)**



Non GSMA IPX Models

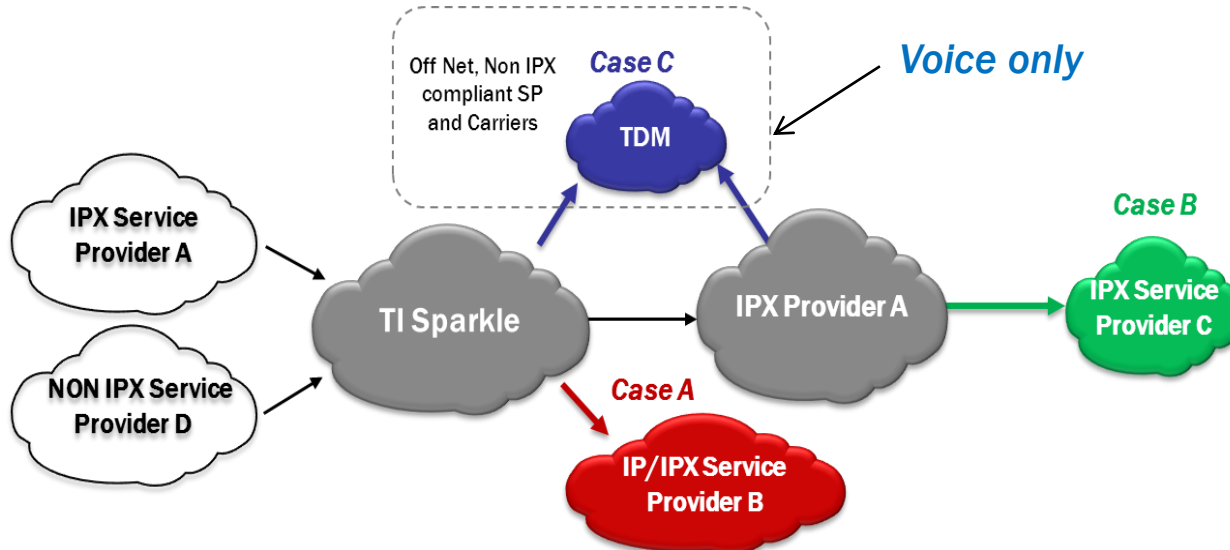


IPX Light Model



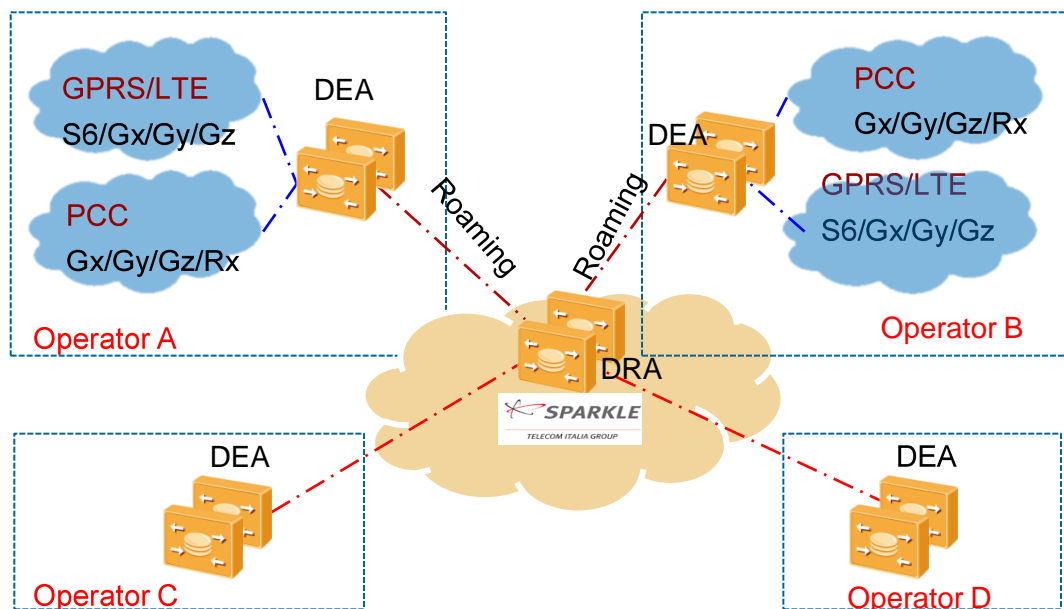
- ▶ Break-In allowed
- ▶ Direct IP Private interconnection considered as IPX Compliant

IP (X) Model



- ▶ Break-In allowed
- ▶ Direct IP (Public or Private) interconnection considered as IPX Compliant

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- It's the SCCP of 4G
- Diameter msg from MNO
Customer is routed by TIS acting as DRA to destination Roaming Partner
- Optional adaptation, policing and screening can be applied

Diameter Relay

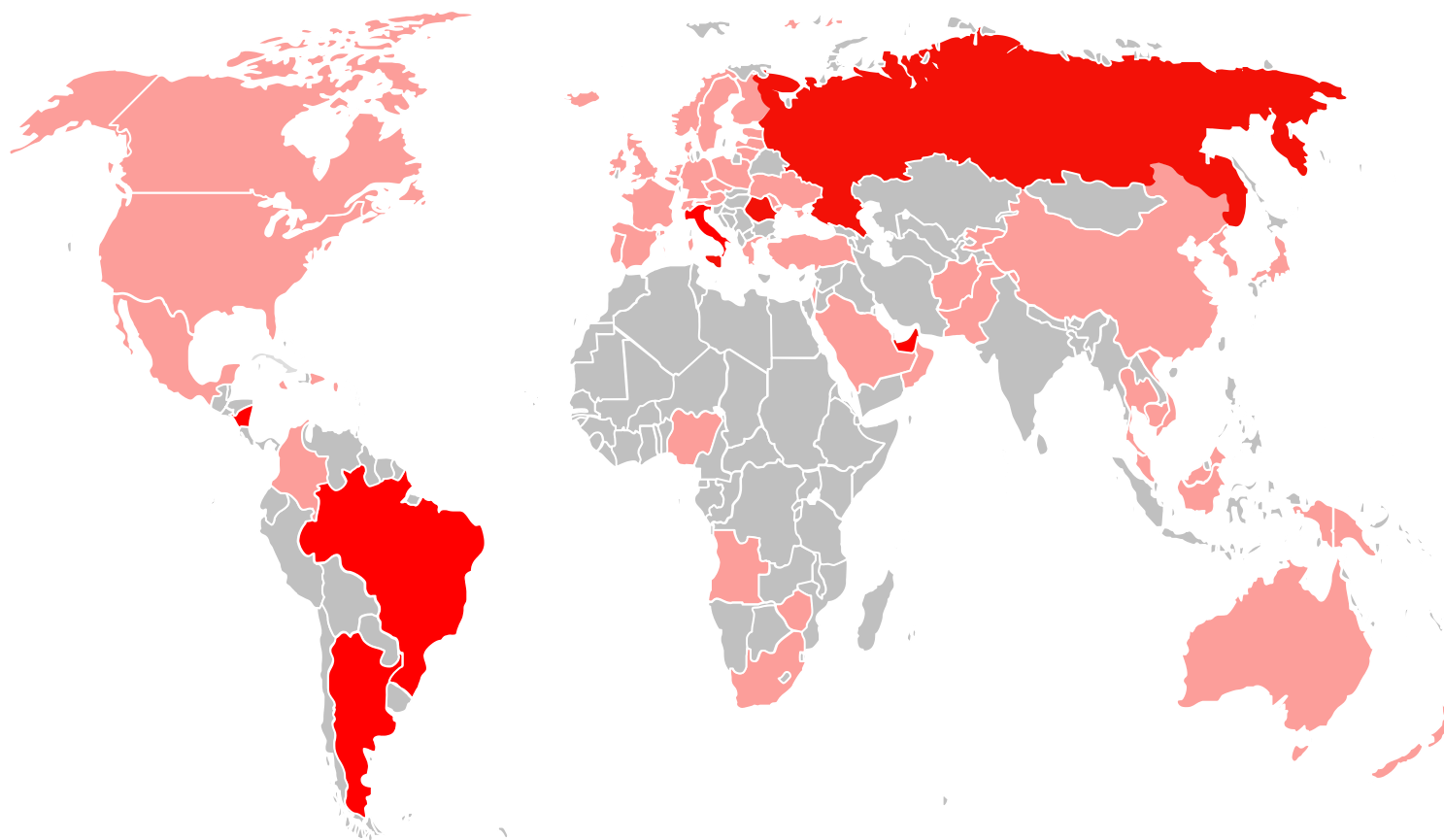
- Diameter vs MAP conversion and vice-versa
- It is used to interoperate with actual 2G/3G networks
- Facilitate LTE deployment also to NON 4G networks (OUTBOUND ONLY)

IWF with MAP

- TIS DEA solution provides the critical functions to make Diameter signaling smoothly flow from network to network eliminating any CAPEX issue
- It helps MNOs to start with Diameter without CAPEX

DEA Hosting

Worldwide Coverage (updated on November 14, 2014)



165 +
Reacheable
networks

70
Countries

19
Peering
Relationship



Countries reachable directly



Countries reachable via peering partner



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Why the interest?

LTE has been major investment for MNOs - but voice connections

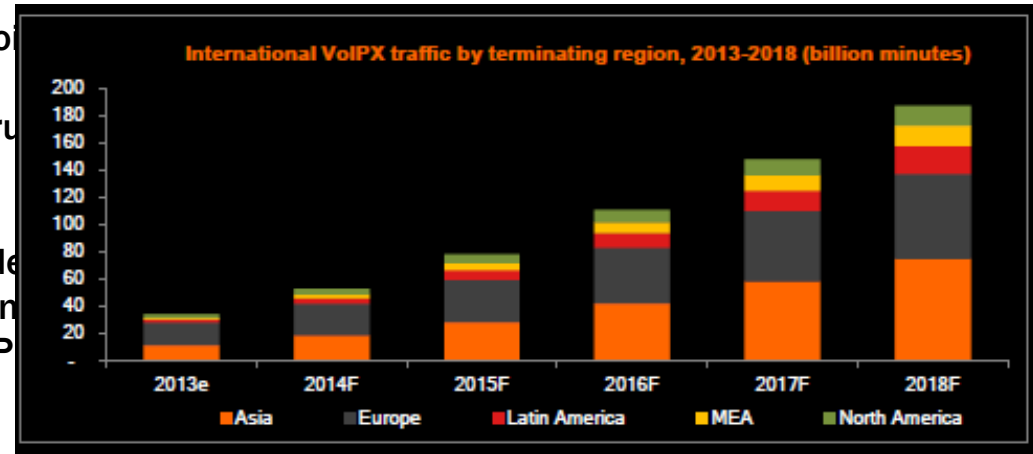
- Requires extra radio capability, uses 3G spectrum

Voice over LTE is an IP based solution that:

- Supports broad range of codecs –HD voice, video
- Provides fast call set-up and high quality transmission
- Can be integrated with messaging and other IP services

Why so difficult?

- **VoLTE was designed on the IMS architecture** –complex
- Fallback of VoLTE calls to 3G as signal strength drops
- Most phones do not support and early implementations
- **Who will pay?** Voice is just a commodity and not a service
- **OTT providers already offer free on-net HD voice** –even better



VoIPX does not equal VoLTE—but towards the end of the period the two will become synonymous to IPX Operators

Impact on IPX

- **International Calling**
 - Relatively simple extension of current calling –SIP signaling is sent to the destination network for termination
 - Addition of portability look-up ensures routing to correct operator to maintain E2E features
- **Roaming**
 - Uses IPX to support registration signaling (Diameter) and data back to home network
 - VoLTE adds complexity to this with SIP signaling both associated with and separate from the voice media

Service Description

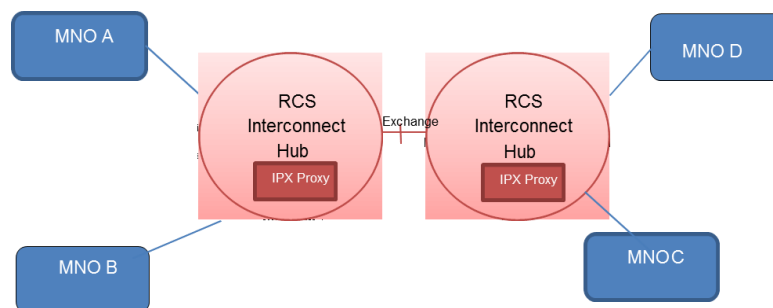
- Rich Communications Services (RCS) is the platform that enables the delivery of communication experiences beyond voice and SMS, providing consumers with instant messaging or chat, live video and file sharing – across devices, on any network.
- RCS marks the transition of messaging and voice capabilities from Circuit Switched technology to an all-IP world – and it shares the same IMS investment and leverages the same IMS capabilities as VoLTE and Video calls over LTE.

The RCS Interconnect challenge

- 6 months each on average
- level of complexity
- lack of maturity of IMS interconnect.

IPX as HUB for RCS

- reducing the number of interconnects from potentially many to just ONE
- simplifying the complexity of RCS interconnect
- cost-effective solution that relies on IPX
- access to numerous destinations via just one connection
- accelerate the overall number of RCS interconnects, thus helping to make RCS a truly ubiquitous service.



IPX Hub function: ONE technical interconnect and ONE commercial contract

Interworking function: simplify complexity of interconnect by reconciling different RCS NNI implementations

TI Sparkle has responded to the RFI sent out by GSMA in 2013 to gather information from vendors about RCS HUB implementation, business and charging model for various services in RCS suite – Available to support GSMA and MNOs in a trial phase via IPX Proxy solution

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Our Mission: Become the best-in-class partner for MNOs

We want to ease your life!

We want to offer you sound quality!

We want to grow with you!



Integrated outsourcing solutions for connectivity, messaging, clearing and roaming brokering services



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