IPX

Viewing IPX from specifications and from real offer

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i3 forum

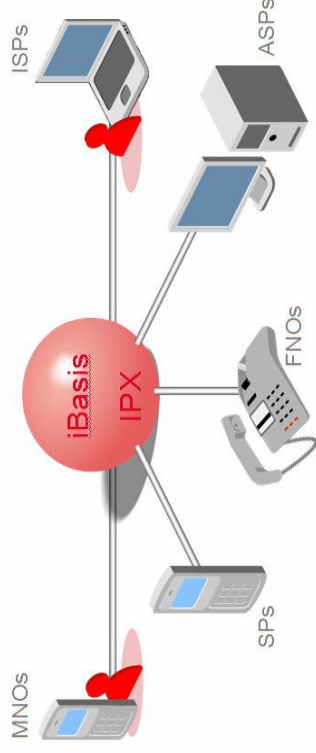international ip interconnection

Agenda

- About the IPX

- IPX Flavors in the market place

  I3 Forum VoIPX and GSMA IPX convergence & differences

- Case Study on real-world IPX experience

What is the IPX

- A next-generation Premium network for Mobile Services endorsed by the I3 Forum and GSMA

- A multi-service IP interconnect and transport network that ensures security, managed quality of service, and cascading payments

- Linking diverse service providers including fixed and mobile operators, content providers, ISPs, ASPs, etc.

I3 Forum VoIPX and GSMA IPX docs

- I3 forum "Technical Interconnection Model for International Voice Services" current release

- I3 forum "Bilateral Voice Service Description" Version 1.0, May 2008

- **I3 forum - Technical - VoIPX Rel 1, October 2010**

- i3forum - Service value and process of measuring QoS KPIs v1 may2010

- **i3 Forum Understanding the different flavors of IPeXchnges (Release 1) May 2011**

- GSMA AA.80 —Agreement for IP Packet eXchange (IPX) Services, Version 3.2, July 2009

- GSMA AA.81 —PACKET VOICE INTERCONNECTION SERVICE SCHEDULE to AA.80, Version 1.2, July 2009

- GSMA IR.34 —Inter-PLMN Backbone Guideline, Version 4.9, March 2010

I3Forum / GSMA IPX Co-operation

- Several items resolved for Voice on IPX
  - Charging Transparency
  - Max 2 Hop rule
  - TDM Break-outs
  - Opt-in / Opt-out
  - Routing transparency

- Still unresolved items
  - IP breakout due to GSMA security concerns

Several IPX like offerings today

- I3 Forum VoIPX built upon the GSMA IPX

- Voice TDM with IP Access

- IPX based on data roaming

- IPX based on the Internet

Who Are the Main Entrants?

- International Wholesale Voice Carriers
  - Most already own/lease and manage large private MPLS networks
  - Networks developed to transport Conversational (real-time) data from the ground up
  - Familiar with the cascaded voice business models

- International Mobile Data Providers
  - Most own/lease MPLS networks
  - Have experience in data services (roaming, SMS, GRX, etc)
  - Usually partner for Voice services

- Non-traditional entrants
  - ISPs, CDNs and other providers entering the IPX arena
  - Not familiar with Mobile and voice data services

How do these IPX flavors differ?

- Useful to understand key points either as a buyer, device manufacturer or competitor

- They differ based on following topics:

  – Access

  – QoS

  – Routing

  – Security

  – Multi-services

  – Commercial Models

Access

- Is IPX traffic isolated from the public Internet?
  - No public internet access from GSMA
  - Secure access via VPN on Internet allowed by I3 Forum and others

- Does the IPX provider support SIP?
  - SIP-I is required for Voice feature support by GSMA
  - SIP and SIP-I allowed by I3 Forum and others

Quality of Service

- Is QoS only guaranteed at the transport/IP layer?
  – Good IP path does not always guarantee good voice quality
  – I3 forum publication on other metrics for voice

- How is the QoS Measured?
  – GSMA theoretic approach
  – I3 Forum is ratifying practical way using RTCP
  – I3 RTCP method allows QoS measureable through multiple IPX Provider networks

Voice Routing

- Does the IPX Provider announce which routes are IPX Direct, Indirect and which ones utilize a TDM breakout?

- Are Break-outs allowed?
  - IP break-out is not allowed in GSMA except to another IPX, is allowed in I3 Forum

- Is number portability supported in the IPX Providers network?
  - I3 forum flexible using NP where available and onward routing
  - GSMA using Pathfinder (not yet feasible)

Security

- Does the IPX Provider guarantee traffic to be isolated from the public internet?
  - I3 forum flexible on transport via Internet as the means when other options not possible.
- In case of transport using Public Internet
  - I3 Forum recommends the IPX Provider offer signaling encryption
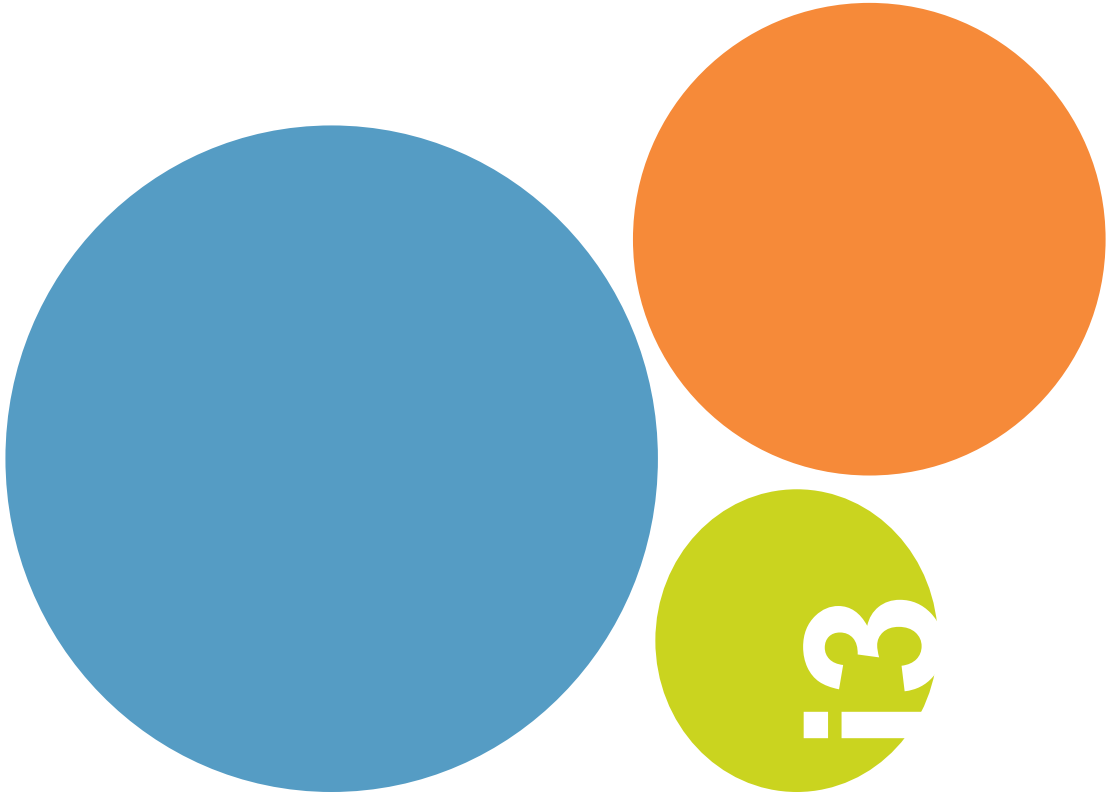
Service Offerings

- Does the IPX Provider offer full-coverage voice termination?

- Does the IPX Provider offer mobile data services GRX, SMS, signaling, roaming on one interconnect?

- Does the IPX Provider offer transport-only mode with class of service?

Case Study: Real-world IPX experience

- European and Asian operators interconnected via IPX with ultimate migration of production traffic to IPX

Challenges:

1. Limited IPX-Compliant vendor selection reduces traffic volumes and ability to net-cost relationships vs. bi-laterals today

2. Not a short-term limitation based on IPX volumes increasing

3. Some conflicts between AA.80, AA.81, AA.82, AA.83 in regards to responsibility, service credits, fault reporting, and general terms

4. SIP-I troubleshooting - equipment vendors do not seem to have their SIP-I implementation issues worked out

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Questions

Thank You!

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