

The Service Model for IP-based voice services

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Drivers to interconnect in Voice Over IP

- **From a green field point of view**
 - VoIP is cost effective, and future proof
 - Even to interconnect in TDM, a soft switch is often a cheaper solution than legacy TDM
- **For existing TDM infrastructures**
 - Business decision. Capex, Opex, unit cost, transmission costs, real estate..
 - End of life of legacy TDM equipment
 - Cost of running dual technology switches
 - Opportunity cost of doing more or less business in VoIP or TDM
- **Most of the international voice traffic is still in TDM**
- **I3forum's role is to pave the way for carriers to migrate to IP once they decide that it is the right thing to do for their organization.**

Service challenges of moving to Voice Over IP

TDM is old, well known, standardized, highly reliable... TDM interconnections are a “no brainer”. VoIP interconnections reshuffle everything.

- **Which voice services can I move to IP ?**
 - All services can be migrated to VoIPs
 - See technical documents on how to use VoIP for specific services
- **Is the quality good enough ?**
 - It is a matter of comparing apples to apples...
 - VoIP quality is as good as TDM and in some cases it is better than TDM
 - which quality do you want?
- **How do I interconnect, are interconnections via the Internet OK ?**
 - Yes, Internet is an acceptable interconnection method with some limitations.
 - 3 model of interconnections have been define. They provide choice and equal or better quality than similar architectures in TDM
- ...

See the I3forum service documents for detail answers.

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Service challenges of moving to Voice Over IP (2)

- **Which protocols should I use, SIP, SIP-I ?**
 - SIP-I or SIP with profiles defined by I3forum to facilitate interconnections and to improve QoS.
- **Which codec's should I use ?**
 - The target is to limit transcoding at the core
 - One mandatory codec per service function: standard, compressed, wideband
- **What about security and fraud, are there risks with VoIP?**
 - Security is part of quality and Security equipment and engineering are highly recommended.
- **Is VoIP cheaper, free.. do I need to change my business model ?**
 - Free does not exist.
 - VoIP has no or little influence on voice prices
 - Business models can stay the same with VoIP or can evolve, it is a business decision not a technology decision.
- ...

See the I3forum service documents for detail answers.

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QoS for Voice over IP, the cultural shift

TDM, SS7, network topology... they are all taken for granted... the voice quality comes mainly from the routes available not from the network.

In VoIP, the QoS paradigm shifts

QoS on VoIP depends on routing but also on the IP transport layer, Signaling used, Network topology...

QoS for Voice over IP, the cultural shift (2)

Route quality	+	Transport quality	+	Codecs quality	+	Signaling quality	+	Security quality	=	Interconnection quality
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➤ **Transport Quality**

- I3forum proposes 3 transport interconnection model which provide different levels of quality

➤ **Codecs quality**

- Codecs quality but mainly the cascading of transcoding will impact quality
- Codecs will also offer or not voice services such as wideband (or Fax) and as such impact the quality of the interconnection.

➤ **Signaling quality**

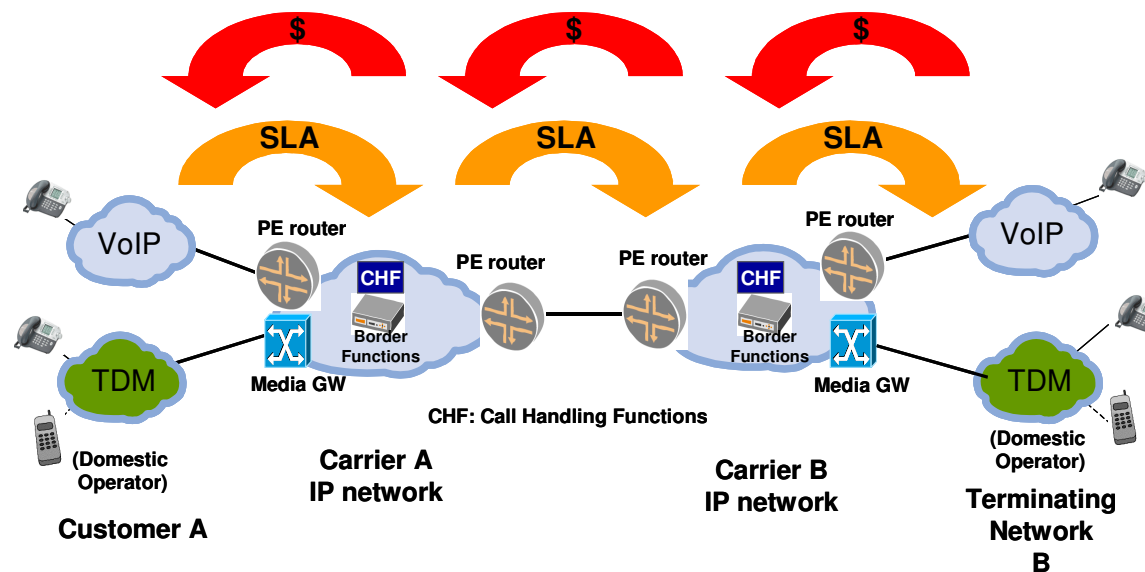
- CLI, OCN, RDN and other ISUP services will depend on signaling protocol and profiles used between carriers.
- Accurate exchange of network event information will impact the quality of indicators and network management

➤ **Security quality**

- Preventing fraud, congestion, IP DOS attack... will have a direct impact on the quality of the service

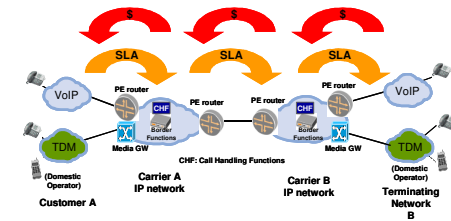
Measuring ASR quality is not enough, measuring packet loss quality is not enough either. The quality of VoIP interconnections is the result of a more complex matrix of parameters. Network topology and engineering is more important than TDM used to be.

QoS measurement, SLAs and cascading



- **Loss of revenue versus financial penalties and SLAs to guarantee QoS**
 - Existing model already provides high quality and strong QoS financial incentives but no SLAs
- **SLAs at the transport layer versus voice service layer**
 - What can and cannot be accurately measured ?
- **Standard measurements, End-to-End commitments and cascading**
 - End-to-End and cascading imply common indicators and common data to compute these indicators
 - All parties from A to Z must be involved, and commercial principles must be set.

QoS measurement, SLAs and cascading (2)



➤ Cascading of responsibility across networks

- It implies that the Indicators can be broken per each network limit of responsibility across the chain.
- Very few voice indicators can be broken-up by transited network.
- Some indicators are therefore technically not suitable for cascading.

➤ Commercial implications

- Cascading implies that terminating network should also commit for its quality
- Difficulty to effectively and accurately dispute measurements leads to a commercial risk and commercial decisions
- **I3forum provides recommendations on how to make measurements and lists the limitations of the measurements. It is left to the carriers and customers to commercially agree on which Indicators and which SLAs to use.**

Business models

- **I3forum does not promote nor endorse any business model, it is left to carriers to individual decide on what's best for them.**
- **Today's international voice business is largely driven mainly by 2 models**
 - Hubbing:
 - Bilaterals:
- Other models are however appearing in the market
 - Private and Secured IP transport
 - Communities
 - Routing and Addressing business model
- A white paper describes these models and list what is specific to each model and some considerations to have to use the models .
- A common need for the evolution of the existing model and for the new models is the need to identify the terminating service provider.
 - I3forum has a white paper describing the business and service needs and requirements for Routing and Addressing.

Conclusions

- Migrations from TDM to IP are not a revolution but an evolution.
- The i3forum will not make the case for migrations to IP, that market will.
- The I3forum will facilitate the migrations to be implemented, pragmatically, faster, more efficiently and with a set of common recommendations to enable standard and high quality and new services to be developed across carriers
- The i3forum clarifies the possibilities and limitations for VoIP QoS and SLAs across several networks. The market will decide of the commercial implementations.
- Existing and new business models will need new Routing and Addressing solutions to foster.

Thank you



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