

the present and the future of VoIP

Definition VOIP

- ▶ Voice over IP, or "VoIP" for Voice over IP is a technology that allows to communicate by voice over IP compatible networks, either networks or the Internet.

Voice over IP

- ▶ Several solutions exist to make VoIP:
- ▶ Some use proprietary software connected a server-based infrastructure of a service provider like Skype.
- ▶ The box triple play of Internet service providers integrate a VoIP function based on SIP (session initiation protocol).
- ▶ but today Skype also uses the SIP protocol

history

- ▶ Before 2002, VoIP has not known any significant changes because of the complexity of the first servers, the cost of bandwidth, low implementation of broadband in business ...

After 2002, a real acceleration of VOIP with the emergence of new standardized VOIP protocols from the IP world: SIP

Examples of applications providing calls via internet

- ▶ Skype, born in 2003, is based on free software that allows users to make phone and video calls over the Internet. The user-to-user calls are free, while those to landlines and mobile phones lines are paid.
- ▶ Viber is a proprietary software for smartphones, PC and Mac that allows you to make phone calls using VoIP technology.
- ▶ FaceTime is a video conferencing application (and VoIP software since September 2013) developed by Apple for iOS-based devices or computers running Mac OS X 10.6.4 or higher.
- ▶ but today all also try to uses the SIP protocol

The voice application on Whatsapp

- ▶ The Whatsapp instant messaging application, acquired by Facebook in 2014 to \$ 22 billion, has launched VoIP.
- ▶ Users can now, such as Viber and Skype, make calls on the new version of the application on Android. Calls are certainly free on Whatsapp, but require prior activation of a data plan that assumes a wi-fi internet access or using the mobile network 3G / 4G.
- ▶ WhatsApp turns out more threatening than Skype. Note WhatsApp That Will aussi compete Viber and Skype respectivement Claiming 500 million and 300 million users.

The voice application on Whatsapp

- ▶ This function WhatsApp competes with other players in the mobile internet as Skype (Microsoft) and Viber (acquired by Rakuten).
- ▶ WhatsApp strength is its very large user base, estimated at 700 million active users in January 2015 and 900 million in 2016. Its entry into the telephone market will not therefore be neutral for mobile operators.

The voice application on Whatsapp

- ▶ According to these analysts, the very large size of the park WhatsApp users would be able to disturb the market. Some operators have already adopted a defensive attitude.

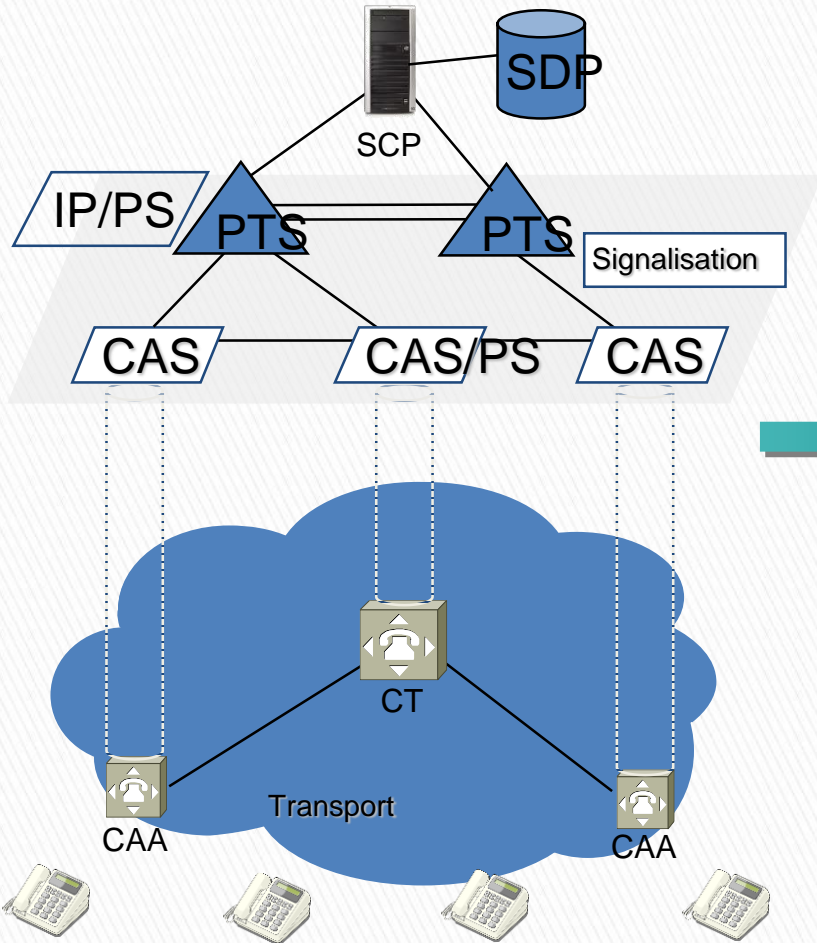
VoIP banishment attempts in some developing countries

- ▶ The use of VoIP has caused a significant loss of revenue for telephone network operators.
- ▶ Many Arab countries, some have restricted the use of VoIP to protect revenues from international communications constituted a high percentage of their resources (typically 60–70%). In some countries only the incumbents may market VoIP.

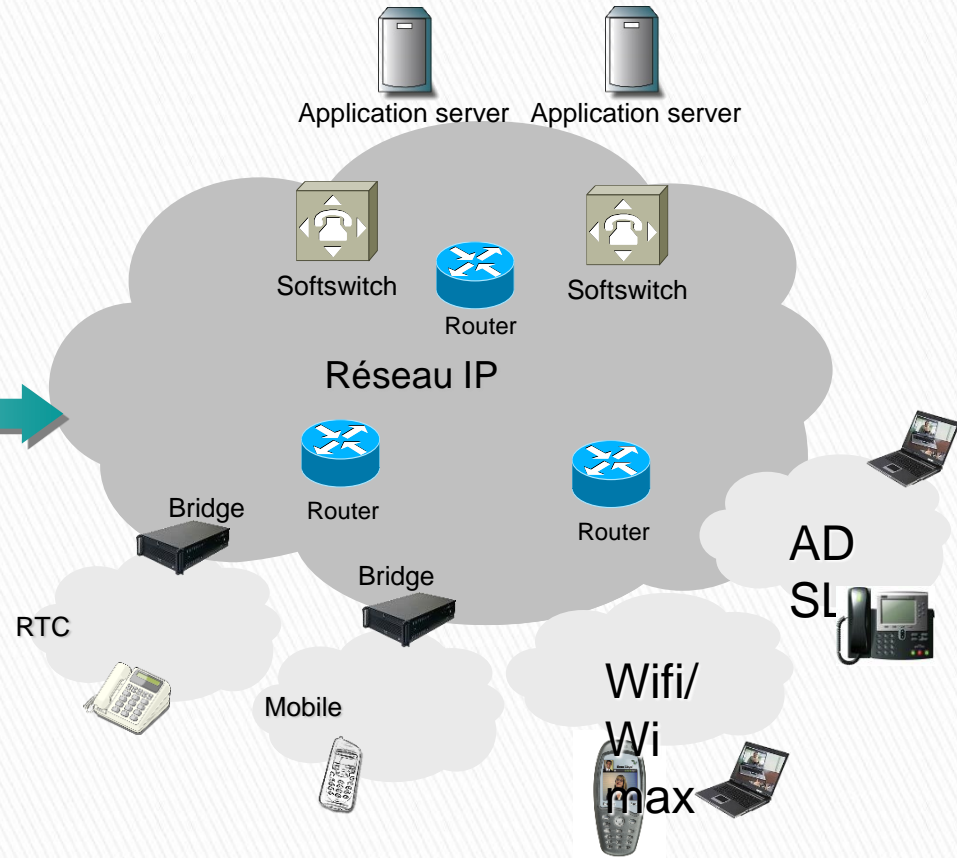
NEXT GENERATION NETWORK(NGN) 2005–2007

- ▶ NGN is Network of a telecom operator whose architecture is based on a transfer plan in packet mode, capable of replacing the PSTN and other traditional networks.
- ▶ The operator has a unique network of heart which allows it to provide multiple services subscribers (voice, data, audiovisual content ...) on various fixed and mobile access technologies.
- ▶ The standardization work at the international level within the ITU-T, ETSI at European level.

Changes implied by the transition to NGN : Evolution or Revolution?



▪Control and transport functions are performed by the same elements (switches)



▪Control, transport and service functions (logic functions) are separated ("centralized intelligence")

For ITU-T NGN is a network that meets the following general conditions:

- ▶ For ITU-T NGN is a network that meets the following general conditions:
The network is able to provide telecommunication services to the public (notion of operator network licensed).
- ▶ Its transfer plan is operated packet (IP ...)
It can use multiple broadband transport technologies, provided they are capable of ensuring an end-to-end QoS.

For ITU-T NGN is a network that meets the following general conditions:

- ▶ The service-related functions are independent from technologies transportation.
- ▶ The functions are well defined and interact together by standardized interfaces.
It allows unrestricted access by users to the operators of their choice and to multiple services.
It can support multiple access technologies (the last kilometer can be DSL, optical fiber, cable, WiMAX ...)

For ITU–T NGN is a network that meets the following general conditions:

- ▶ It supports the notion of generalized mobility.
- ▶ It ensures interoperability with networks based on older technologies (eg. Circuit switching) via open interfaces.
- ▶ It allows the operator to meet its regulatory obligations: emergency calls, security, confidentiality, legal Interceptions,

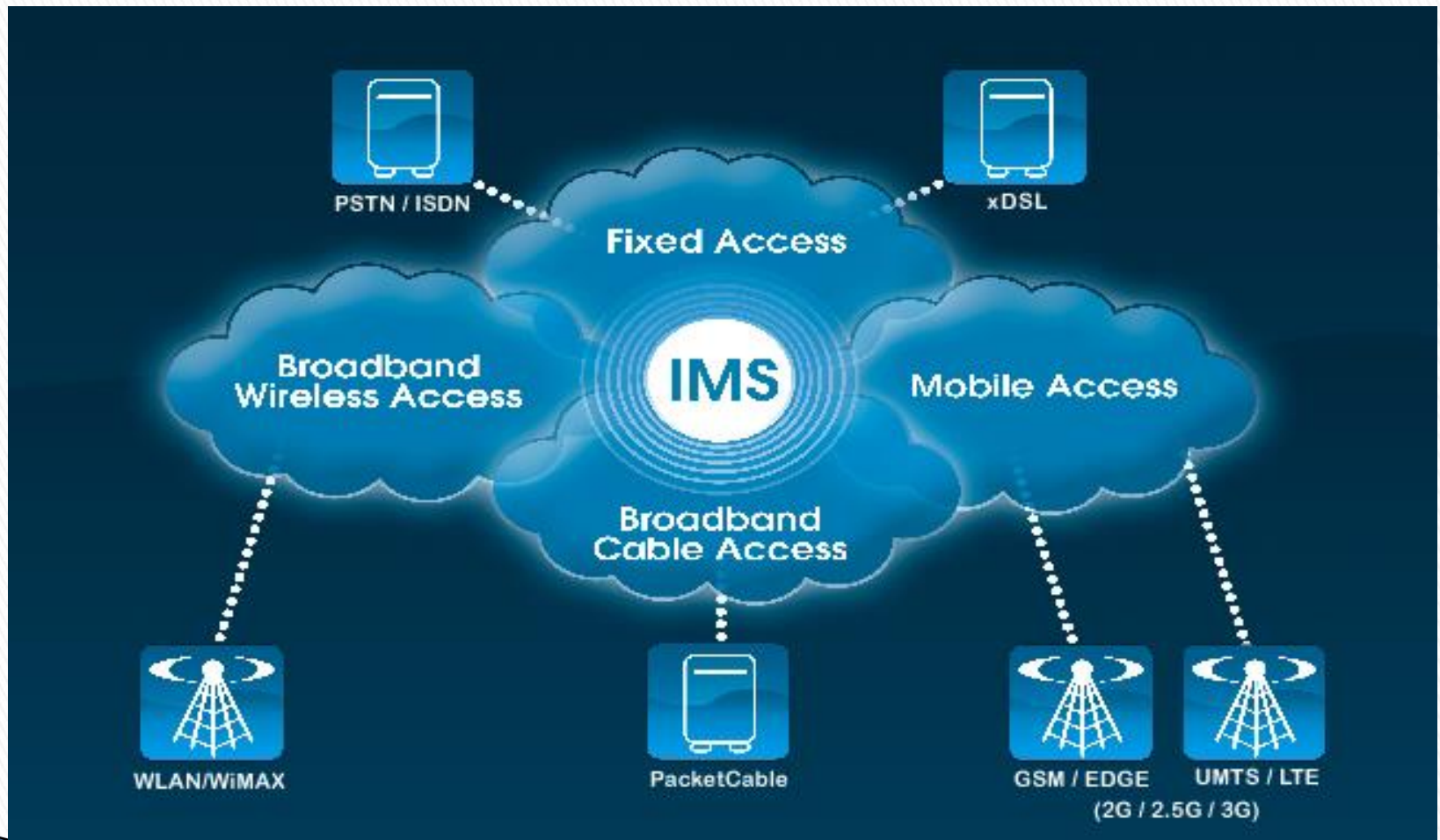
IP multimedia subsystem (IMS) began in 2007

- ▶ The IP multimedia subsystem (IMS) is a standardized architecture type next generation network (NGN) used by phone companies that allows to provide mobile and fixed multimedia services.
- ▶ This architecture allows , inter alia, to use VoIP technology and a standardized implementation of SIP by the 3GPP operating on standard IP protocols (IPv4 and IPv6).

IP multimedia subsystem (IMS)

- ▶ Traditional telephone systems (packet and circuit-switched) are also supported.
- ▶ The goal of IMS is to provide other services in addition to those offered by the NGN like, such as the presence and convergence.
- ▶ IMS allows the converging Internet and the world of mobile (cellular) and the fixed

IMS Architecture



NGN and IMS standardization work? The active bodies

- ❑ ITU-T mène des travaux au niveau mondial
- ❑ ETSI TISPAN a pris en charge la définition des NGNs pour les réseaux fixes en s'appuyant sur l'IMS
- ❑ ETSI TISPAN contribue aux travaux de l'ITU-T



- ❑ 3GPP a développé l'IMS, qui est stable mais subit toujours des améliorations
- ❑ Le 3GPP2 a développé une architecture de type NGN appelée MMD (MultiMedia Domain), qui tend à présent vers IMS



- ❑ ETSI TISPAN a pris en charge la définition des NGNs pour les réseaux fixes en s'appuyant sur l'IMS
- ❑ 3GPP et ETSI TISPAN travaille conjointement pour adapter l'IMS aux réseaux fixes



A GLOBAL INITIATIVE

- ❑ Les membres du 3GPP travaille avec l'IETF pour s'assurer que les protocoles de base sont compatibles avec les besoins de la mobilité



3RD GENERATION
PARTNERSHIP
PROJECT 2
"3GPP2"

Protocol SIP

- ▶ SIP protocol: Allow registration, authentication, initialization and control of the call. It also allows negotiation on how to encode information was exchanged.

SIP Advantage

- ▶ Installation & configuration much easier than a proprietary network
- Easy management via web interface
- configuration
- Reduced call costs
- No separate telephone connection required – use computer network
- Best service and productivity
- More standard features included

Main regulatory impacts on NGN and IMS

Interconnection

- ▶ Evolution of the interconnection model:

How to change technical interconnection arrangements?

What pricing model applied? Package or duration?

The Service Quality

- ▶ Should we require to guarantee at least the same level of QoS in switched?
How actors can be mutually ensure compliance of QoS?

Security

- ▶ How to ensure the protection vis-à-vis the risks of intrusion networks, hacking, see spam and virus?

Numbering and Addressing

- ▶ Is it necessary to change the numbering plan?

Should we adopt a different system of numbering or naming?

What role for the regulator in the world of IP managements password?

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