



Evolutionary steps towards NGN communications services in Australia

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Topics

- NGN – definition, standards
- VoIP
- QoS
- ENUM
- NGN – longer-term issues
- NGN – longer-term strategies
- Links



NGN definition

A packet-based network able to provide *telecommunication* services and able to make use of multiple broadband, QoS-enabled transport technologies and in which service-related functions are independent from underlying transport-related technologies.

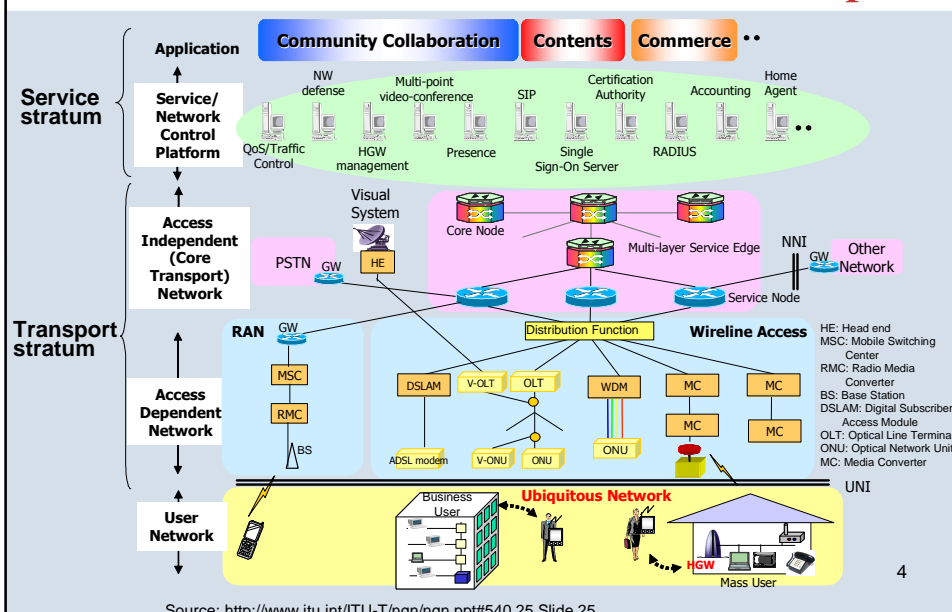
It enables unfettered access for users to networks and to competing service providers and/or services of their choice. It supports generalized mobility which will allow consistent and ubiquitous provision of services to users.

Source: ITU-T Recommendation Y.2001 (12/2004) *General overview of NGN*

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NGN realisation example



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NGN standards: areas of interest

- International Telecommunications Union (ITU-T)
 - NGN Global Standards Initiative (NGN-GSI), since Jan 2006
 - Study Groups (SG13 lead SG for NGN, SG12 Performance & QoS)
- European Telecommunications Standards Institute (ETSI)
 - TISPAN, 3GPP / IMS
- Internet Engineering Task Force (IETF)
 - Protocols (IP, SIP, MGCP, ENUM)
- Global Standards Collaboration (GSC)
 - ACIF/CA, ARIB, ATIS, CCSA, ETSI, ISACC, ITU-T, ITU-R, TIA, TTA, TTC
- Asia-Pacific Telecommunity (APT)
 - ATP Standardisation Program (ASTAP), NGN Expert Group
- Asia-Pacific Economic Cooperation (APEC) Telecommunications and Information Working Group APEC TEL



NGN applications ...

- www access (browsing, information, e-commerce ...)
- Voice telephony (VoIP)
- Video calling
- Video on demand
- Television (IPTV, multicasting)
- Multimedia messaging
- Games
- ?



VoIP

- Forerunner of NGN multimedia services
- Review of policy & regulation
 - Department of Communications, Information Technology & The Arts, Australian Competition & Consumer Commission, Australian Communications & Media Authority
 - top-down review: appropriateness of the existing policy & legislative framework for VoIP
 - bottom-up review: how does VoIP fit into the existing regulatory framework?

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VoIP review considerations

- Facilitate service innovation (potential cost savings and added functionality?)
- Promote competition to benefit consumers
- Protect
 - consumers' interests – benefits & safeguards
 - wider community interest – reliable access to emergency services
- Technological and competitive neutrality
- Industry self-regulation
- Practicality: technical, legal, commercial

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VoIP review conclusions (1)

- VoIP services are:
 - generally ‘carriage services’
 - generally ‘standard telephone services’ if providing any-to-any connectivity (can make and receive calls to/from PSTN)
 - generally carriage services but not ‘standard telephone services’ if peer-to-peer services (due to limited connectivity)
- Regulation may not impede VoIP entering the market
 - may add to costs
 - may seem unreasonable

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VoIP review conclusions (2)

- Policy & legislative framework generally sound; benefits to consumers and providers in some adjustment via subordinate legislation
- Maintain basic safety net for consumers
- Flexibility with numbering, Customer Service Guarantee, Quality of Service
- Deal with VoIP in short term; develop strategy for emerging NGN services & issues

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VoIP

- Central issues: 'standard telephone service' and Universal Service Obligation concepts
- Report (*Examination of Policy and Regulation Relating to Voice over Internet Protocol (VoIP) Services*)
 - published November 2005
 - 30 recommendations
 - www.dcita.gov.au/tel/internet_and_broadband_services/emerging_voice_services
- ACCC, ACMA & DCITA working with Communications Alliance to implement the recommendations

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Australian VoIP market (1)

- Emerging
- Fragmented, dynamic
- Providers mainly:
 - start-up companies specialising in VoIP
 - internet service providers, including a few tier 2 telcos
- Tier 1 telcos yet to enter the residential/small-to-medium enterprise market
 - (but active in enterprise/corporate market)

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Australian VoIP market (2)

- More than 200 companies offer residential or small-to-medium enterprise VoIP services (ACMA/Market Clarity surveys)
- About 130 specialise in residential only
- Accurate user data not available (commercially sensitive) but ...
- 3.91 million broadband services (ABS Sep 06)
 - Estimated 400,000 VoIP services (Market Clarity Feb 07)

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Current VoIP issues

- Consumer awareness
 - Fact sheets & guidelines: ACMA, Communications Alliance
- Numbering Plan amendment
 - Proposed 0500 range for emerging services
 - Interconnect issues
 - Role for ENUM?
- Access to emergency services 000, 106
 - Nomadicty, location of caller? IPND data?
 - Local power?
- Law enforcement
 - Call tracing vs nomadicty
 - Call interception

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Longer-term VoIP issues

- End-to-end QoS benchmark
 - IP network interconnection (NNI)
 - Terminal/network interconnection (UNI)
 - Prioritisation of services
 - Interoperability of services
- Presence/location-based services
 - Nomadicity
 - Industry developed solutions? (e.g. 13taxi, 13pizza)
 - IPv6?
- Jurisdiction
 - Overseas-based service providers
 - Coordination with overseas regulators

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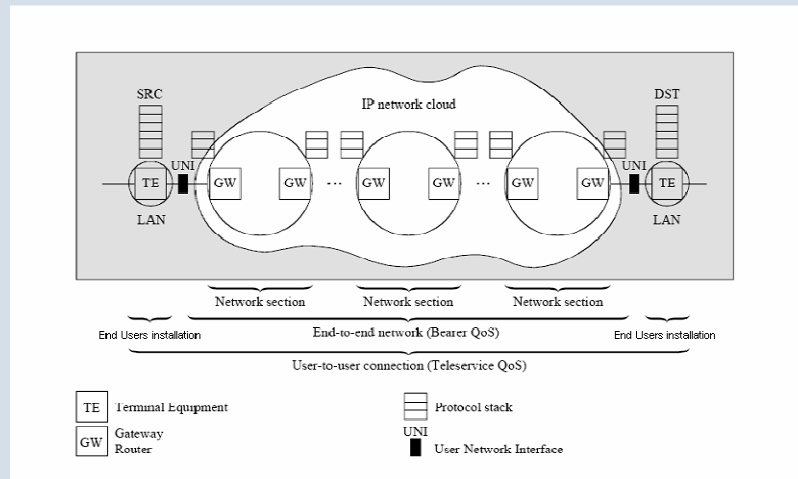
Quality of service

- Communications Alliance has established two working committees to look at QoS issues:
 - IP Network Quality of Service
 - Voice over IP (VoIP) Quality of Service
- Communications Alliance VoIP Working Group

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Bearer and teleservice QoS



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IP Network Quality of Service working committee

- Developing guideline for carriage service providers (including ISPs) on IP network QoS.
 - guideline will:
 - define a default set of IP network QoS classes
 - address performance levels for IP packet delay, jitter and loss
 - address IP packet prioritisation for implementing the IP network QoS classes (e.g. through the use of packet marking and handling)
- Will develop related test documents to verify relevant network IP QoS parameters in the guideline
- Publication? Q3 2007

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Voice over IP Quality of Service working committee

- Developing guideline for Australian VoIP service providers and end users.
 - The guideline will:
 - provide a measure of VoIP quality in a usable format for end-users (e.g. a rating based on the ETSI E-model)
 - consider IP Network QoS service classes and requirements
 - consider interworking with existing voice networks (e.g. PSTN/ISDN)
 - consider standards and requirements for VoIP CE QoS
- Will develop related test documents to verify relevant VoIP QoS parameters in the guideline
- Publication? Q4 2007

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ENUM

- A communications protocol developed by the IETF and defined in RFC3761
- Described by the ITU as:
 - ... a Domain Name System (DNS)-based architecture and protocols for mapping a telephone number to a Uniform Resource Identifier (URI) which can be used to contact a resource associated with that number.
- An enabler of convergence between the PSTN and the internet

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ENUM concept

- ENUM converts ...
+61 3 9285 9000 → **0.0.0.9.5.8.2.9.3.6.1.e164.arpa.**
an E.164 telephone number to a fully qualified domain name
- Domain names are stored in the internet domain name system
- Several communications addresses can be associated with the ENUM domain name:
 - Public addresses used for VoIP services (SIP, H.323)
 - Email & instant messaging addresses
 - Other phone numbers
 - Web pages

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Australian ENUM domain

- ENUM domain corresponding to Australia's country code, 61, needs to be delegated to Tier 1 Registry
 - Australian ENUM domain: .1.6.e164.arpa
- Delegation
 - ITU member state must approve delegation of ENUM domain corresponding to country code
 - must be authorised by DCITA & ACMA so that organisations interested in trialling ENUM can register Australian phone numbers in ENUM

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Australian ENUM trial

- Development of ENUM domain registry
- ENUM trial
 - started in June 05, extended to June 07
 - stages depend on types of phone numbers used:
 - Phase 1: New number range specific to ENUM trial (059x xxx xxx)
 - Phases 2 & 3: Existing geographic & mobile numbers
 - will progress to stage 2/3 shortly

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Australian ENUM trial – Authentication/validation for geographic and mobile numbers

- Robust processes required to allow geographic and mobile numbers to be used in the trial
- Issues:
 - authentication of registrant identity
 - validation of registrant's rights of use of geographic/mobile number
- Authentication/validation will be conducted by registrars

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Australian ENUM trial – Current status

- Tier 1 registry and 2 registrars



- 266 ENUM domain registrations (February 07)
- ENUM Day
- Privacy impact
- Infrastructure ENUM ?
- Website: www.enum.com.au

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Australian ENUM trial – ENUM Day

- Objective: raise awareness and encourage development of end-user applications
- Practical demonstrations
 - e.g. live call diversions to VoIP/mobile/PSTN

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Australian ENUM trial – Privacy impact assessment

- Purpose
 - To examine the privacy risks to end-user information perceived to be present in the use of ENUM in the trial
 - Consider potential future privacy issues in commercial ENUM deployment
 - Provide transparent processes in data collection and data transactions when implementing ENUM

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NGN – Longer-term issues

- Implications for competition policy
- Jurisdiction and extraterritoriality
- Privacy and security
- Digital rights management
- Access and interoperability
- Common standards
- Consumer interests
- International and domestic governance issues
- Scope for industry self-regulation

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NGN – Longer-term strategies

- DCITA
 - consultancy to examine: ‘... the development of NGNs and their policy, regulatory and wider implications for Australia.’
 - participates in:
 - NGN Working Group of the National Broadband Strategy Implementation Group
 - NGN working groups within ITU, OECD and APEC
- Communications Alliance
 - developing work plan for strategic transitioning to NGN
- ACMA
 - developing regulatory philosophy for NGN multimedia communications services

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Links

- ACMA: www.acma.gov.au
- ACCC: www.accc.gov.au
- Communications Alliance: www.commsalliance.com.au/
- DCITA: www.dcita.gov.au
- ITU-T NGN GSI: www.itu.int/ITU-T/ngn/index.phtml
- ETSI TISPAN: <http://portal.etsi.org/portal-common/home.asp?tbkey1=TISPAN>
- IETF: www.ietf.org/
- APT/ASTAP: www.aptsec.org/Program/ASTAP/EG/NGN/index.htm
- GSC: www.gsc.etsi.org/
- Australian ENUM trial: www.enum.com.au
- ACMA ENUM: www.acma.gov.au/WEB/STANDARD//pc=PC_2328

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Thank you for your attention

- Questions ?...