

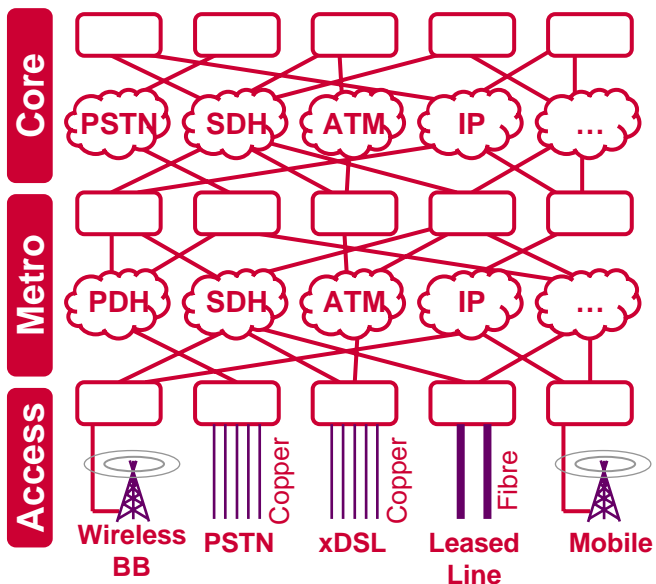
Ofcom perspective on NGNs and NICC

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16 November 2005

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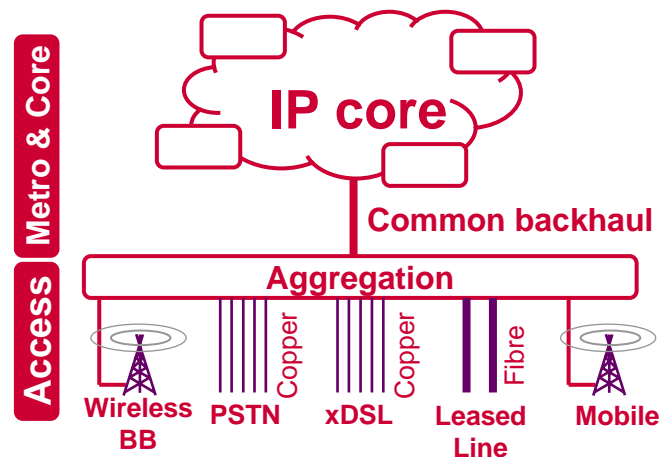
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What is a Next Generation Network ?



Today's Telecom Networks

- Multiple service-specific access nodes
- Multiple service-specific core networks



Next Generation Networks

- Converged access nodes aggregate traffic
- IP-based core network provides conveyance
- Service intelligence decoupled from network

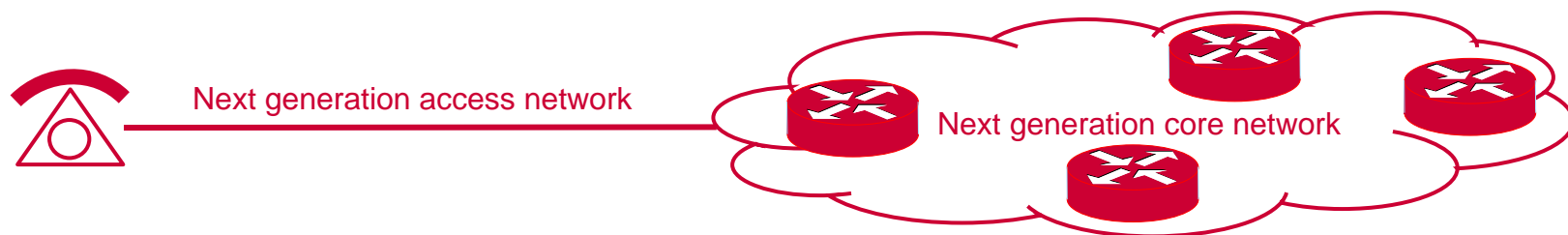


Cost savings



New revenues ?

Contrast with Next Generation Access



Next Generation Access Network

- Next Generation Access would provide much higher bandwidths to consumers
- This would enable the supply of rich (but currently unspecified) multimedia content
- Disruptive change to existing services and existing business models
- Investment risk driven by uncertainty as to consumers' willingness to pay

Next Generation Core Network

- The deployment of Next Generation Core Networks is driven by potential efficiencies in the supply of existing services.
- The ability to deliver new services is also important, but is a potential upside, rather than core to the business case
- Continuity of existing services is key. Existing PSTN services emulated by NGN.
- Investment risk is mainly associated with implementation, supplier management

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Ofcom's role

- Ofcom's principal duties are set out in the Comms Act:
 - “It shall be the principal duty of OFCOM, in carrying out their functions-
 - a) to further the interests of citizens in relation to communications matters; and
 - b) to further the interests of consumers in relevant markets, where appropriate by promoting competition”
- Ofcom does have a remit to address network interoperability issues, but only insofar as these relate to its primary duties:
 - “The fifth Community requirement is a requirement to encourage, to such extent as OFCOM consider appropriate for the purpose mentioned (below) the provision of network access and service interoperability. That purpose is the purpose of securing efficiency and sustainable competition ...”
- And Ofcom has an overarching obligation to act in a manner that is ‘technologically neutral’:
 - “The fourth Community requirement is a requirement to take account of the desirability of OFCOM's carrying out their functions in a manner which, so far as practicable, does not favour one form of electronic communications network... over another”

Encouraging efficient investment

“The national regulatory authorities shall promote competition by ... encouraging efficient investment in infrastructure, and promoting innovation (Art 8(2c), Framework Directive)”

- **Minimising regulatory risk for incumbents**

- Delivery of efficiency savings: The NGN business case depends on the ability to deliver efficiency savings, so anything which prevents this (e.g. a protracted period of parallel running, due to a regulatory requirement to maintain legacy services) puts the business case at risk.
- Retention of efficiency savings: There is always a tension between incumbents’ desire to retain efficiency savings, and regulators’ desire that these feed through to lower prices. Incumbents investing in NGNs need a reasonable degree of certainty as to how this tension is to be managed

- **Minimising regulatory risk for altnets**

- Efficient access and interconnection: Altnets investing in NGNs will continue to be dependent on network access provided by incumbents. Interconnection arrangements will have to evolve so that they are fit-for-purpose in an NGN era. The key test is whether services provided over interconnected NGNs can compete with services provided end-to-end over incumbents NGNs.

Promotion of competition

- Both incumbents and altnets benefit from certainty as to the nature of the ex ante regime - certainty in relation to market structures, the set of regulated SMP products, and the approach to setting charges.
 - Markets: How can the market review framework best reflect the converged nature of NGN-based markets ?
 - Products: how do we maintain continuity of existing interconnection services in the short term, whilst migrating in the longer-term to more efficient IP-based interconnection ?
 - Charges: we currently administer a variety of service-specific charging models, based on a variety of cost drivers (distance, capacity, usage...). Which is the appropriate model for a converged interconnection regime ?
- In order to ensure that this ex ante regulation of NGNs can be effective, we must ensure that NGNs are not designed in such a manner as to foreclose certain forms of competition (e.g. local interconnection). This is an issue that cuts across a number of individual markets, and that may have to be addressed in advance of SMP findings in those markets. It is the main focus of the undertakings which BT has recently provided to Ofcom in relation to its NGN deployment.

Protecting consumers

- The deployment of NGNs raises a variety of consumer protection issues, for example:
 - Potential service disruption during network migration
 - Management of end-to-end QOS over interconnected NGNs
 - Network resilience for lifeline services
 - Provision of emergency call location data
 - Numbering transparency
 - Number portability
 - New forms of abuse (SPIT, identity theft...)
- Which of these can be left to operators to resolve, and which require formal regulatory intervention ?

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Interoperability standards

- IP peering for best-efforts data services is well established.
- There are a number of uncertainties in relation to the signalling standards for voice interconnection. The problems are tractable, but the process of international standardisation takes time:
 - Availability of ETSI TISPAN R1 for IP/SIP-I based voice interconnection
 - Availability of SCTP for conveying SIP-I signalling
 - Availability of AGCF for line-card control
- Particular technical challenges arise for services which require QOS to be managed on an end-to-end basis, such as leased lines. Issues include:
 - Availability of IP-based circuit emulation for low-bandwidth SDH/PDH leased lines
 - Availability of 'carrier-class' Ethernet as a substitute for high bandwidth SDH
 - Availability of inter-AS MPLS for end-to-end QOS management of IP services
- There is uncertainty as to what other types of data might need to be exchanged in order to support the full range of NGN-based services over interconnected NGNs (presence, location, authentication, etc...). Its difficult to even scope this problem without a better understanding of NGN service models.

Network architectures

- Technical standards provide the building blocks for interoperability, but we also need to consider a number of architectural issues.
- **Network Topology** - where will access and interoperability be provided ?
 - Converged IP-based interconnection at metro nodes ?
 - Local handover at Tier 1 MSAN sites
 - Does distance matter for NGN conveyance ?
- **Traffic aggregation** – how is traffic from multiple users / services aggregated ?
 - Aggregation of traffic from multiple MSANs
 - And from multiple services (lots of history !)
- **Control and service differentiation** – how can a standard approach to access and interconnection at the wholesale level support differentiated retail services ?
 - MSAN voice access as a successor to WLR ?
 - Other forms of MSAN access (DSL line card control) ?
 - How do DataStream / IpStream evolve into next-generation bitstream ?
- **Convergence** – What is the impact of the broader convergence story ?
 - How should arrangements for fixed-mobile interoperability evolve ?
 - How do we handle broadcast convergence issues (e.g. DRM, home gateways) ?

The role of Ofcom...

- Ofcom has an ambitious programme over the next year:
 - We need to oversee implementation of the BT undertakings
 - We need to provide greater clarity as to the ex ante competition framework for NGNs – market structure, SMP product roadmap, charging principles
 - We need to consider how best to address a broad range of consumer protection issues
 - We need to develop our strategy in relation to ‘Next Generation Access’
- Ofcom’s role in relation to technical standards and network architectures is:
 - To participate in the debate and understand the issues
 - To understand the implications of NGN deployment for competition and consumer protection, and intervene where necessary
 - But not to intervene in a manner that is unnecessarily prescriptive

The role of NICC...

- NICC is well respected for its work over the last decade on network interoperability. The deployment of NGNs brings renewed emphasis on network interoperability as an enabler of competition. Ofcom fully supports NICC's work programme in this area.
- But NICC does face some major challenges:
 - NGN interoperability standards are being developed by international bodies. The equipment vendors which will support these standards are large multi-national companies. BT has placed a great deal of emphasis on the importance of open international standards. How can a UK body such as NICC best contribute to (and influence) this international process ?
 - It is difficult to make decisions on interoperability standards without having a better understanding of the network architecture, and it is difficult to make decisions on network architecture without a clearer understanding of the commercial drivers for network deployment. How can we as an industry develop a clearer commercial vision for what competition based on interconnected NGNs will look like ?
 - Plus the usual resource constraints...

A model for industry engagement ?

