APT-ITU Workshop on NGN Planning
Evolution beyond distributed architecture

APT-ITU Workshop on NGN Planning

Laurent Perche

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Agenda

1. The reasons for a Next Generation Network
2. Maximizing NGN Assets
3. IP transformation

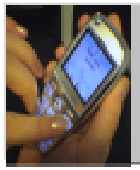
1 The reasons for a Next Generation Network

Capturing traffic growth and engaging service innovation while optimizing Total Cost of Ownership

End-User Trends and Operator Challenges

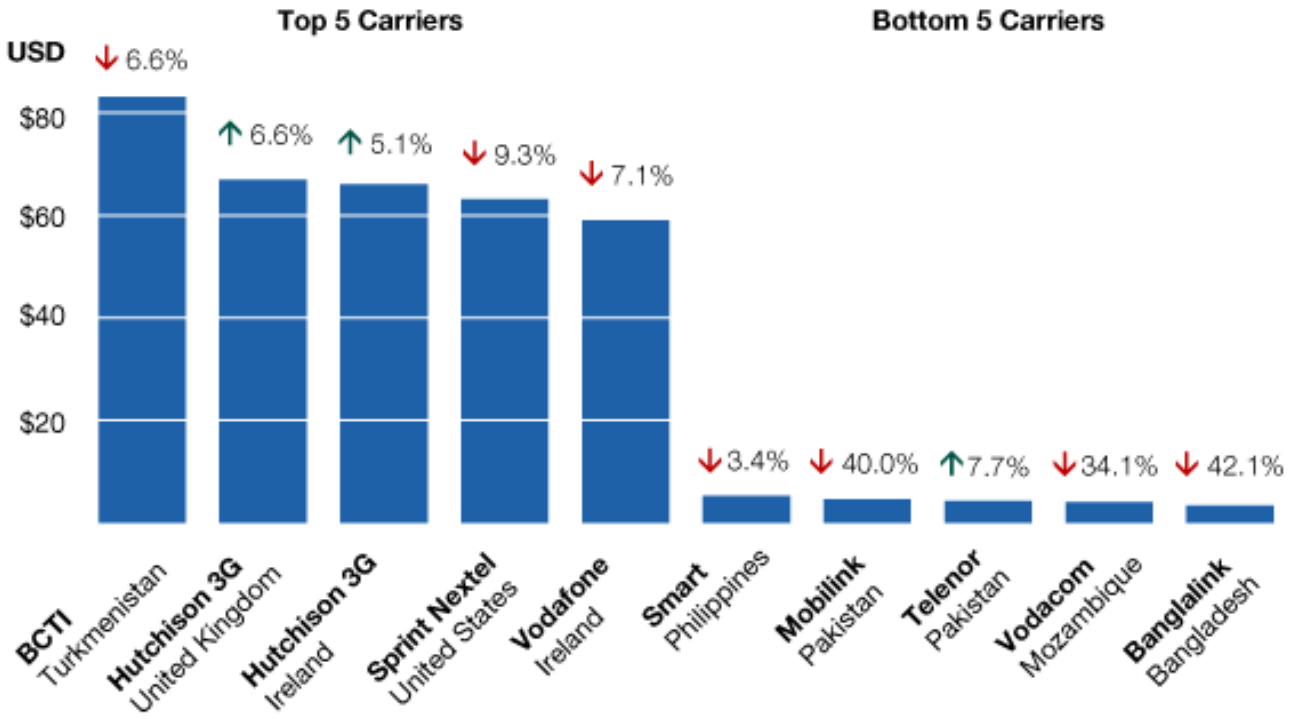

Next billion


Unlimited plans


1 phone
1 number


MM services

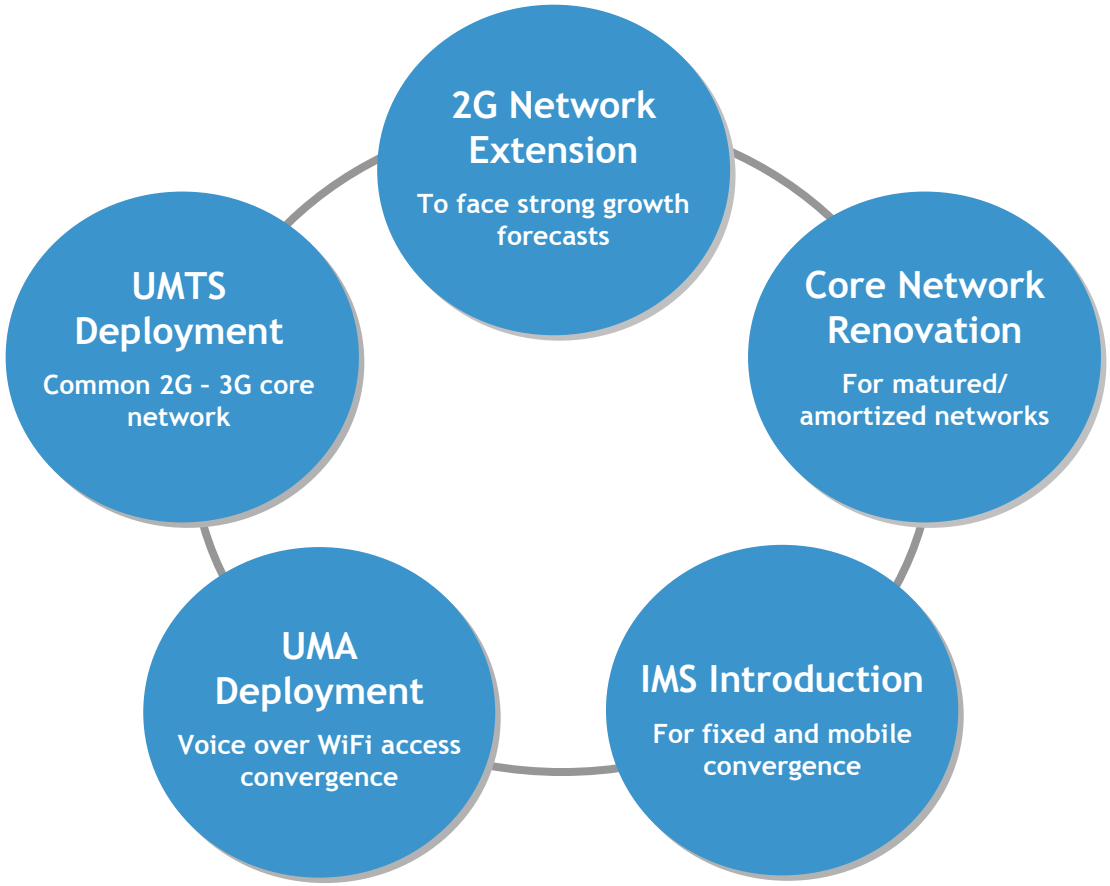

FMC
FMS



Growing data revenues are helping these providers to offset declining voice revenue

falling ARPU were offset by dramatic subscriber growth: the five low-ARPU carriers increased their total revenues by 175 percent.

Key Customer Opportunities for Mobile NGN



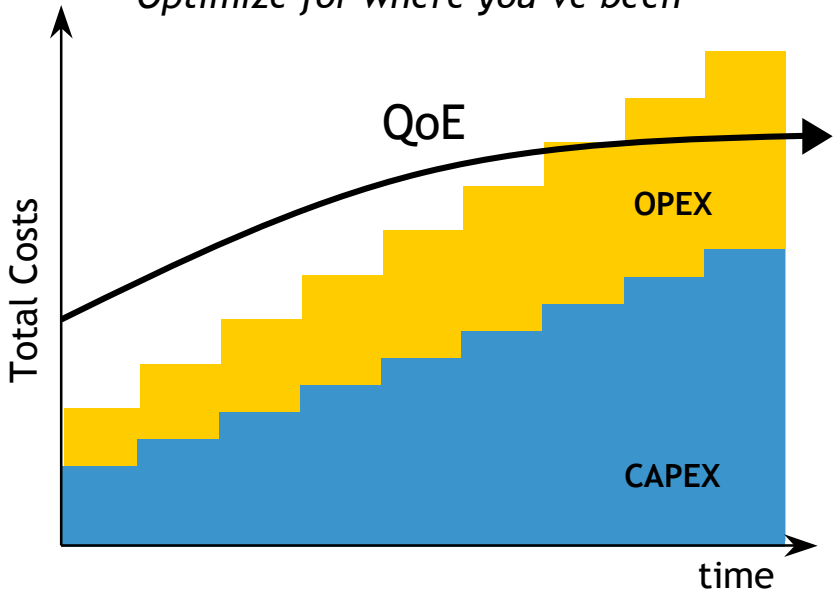
Traffic growth and service innovation while optimizing Total Cost of Ownership

Upgrade or Transformation: What's at Stake?

Traditional Approach

- Tactical network upgrades
- Unchecked total cost of ownership
- Poor user experience

Optimize for where you've been

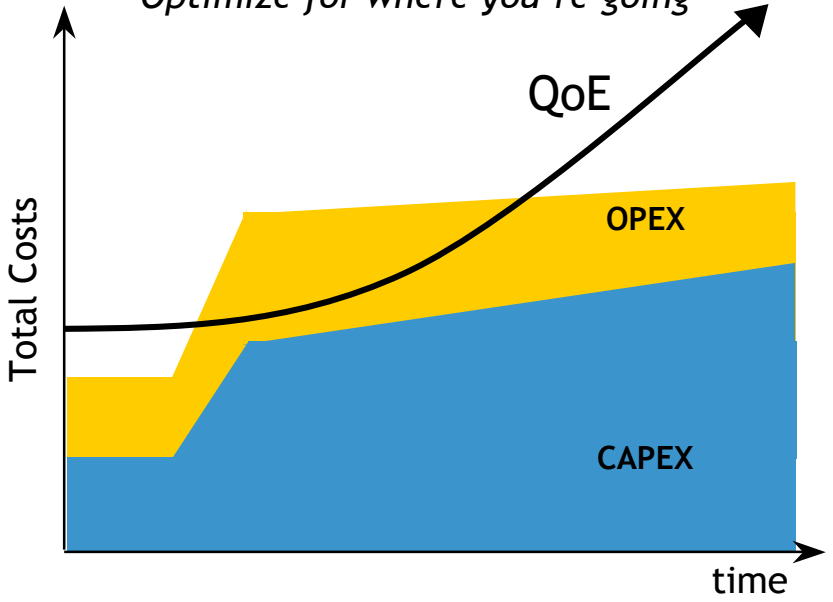


Increased churn
ARPU erosion
Margin pressure

Innovative Approach

- Strategic network transformation
- Cost control and investment protection
- Manage end-to-end quality of experience

Optimize for where you're going

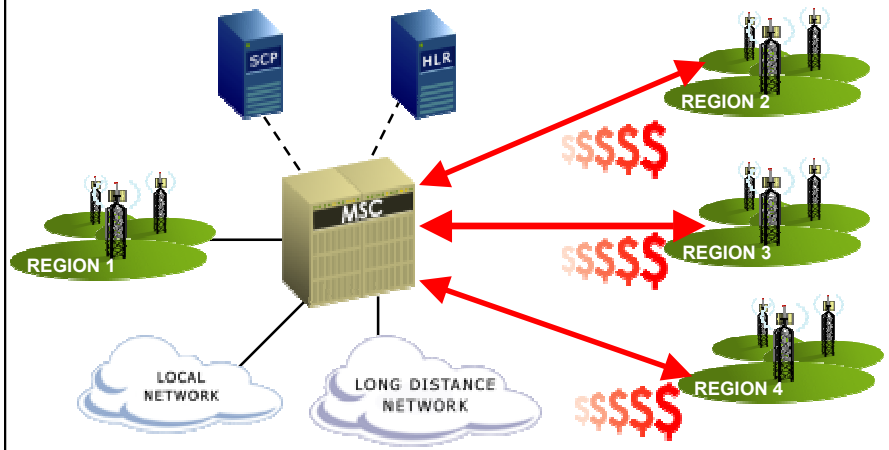


Customer attraction
ARPU expansion
Margin protection

2 Maximizing NGN assets

Solution that offers real competitive flexibility and differentiation

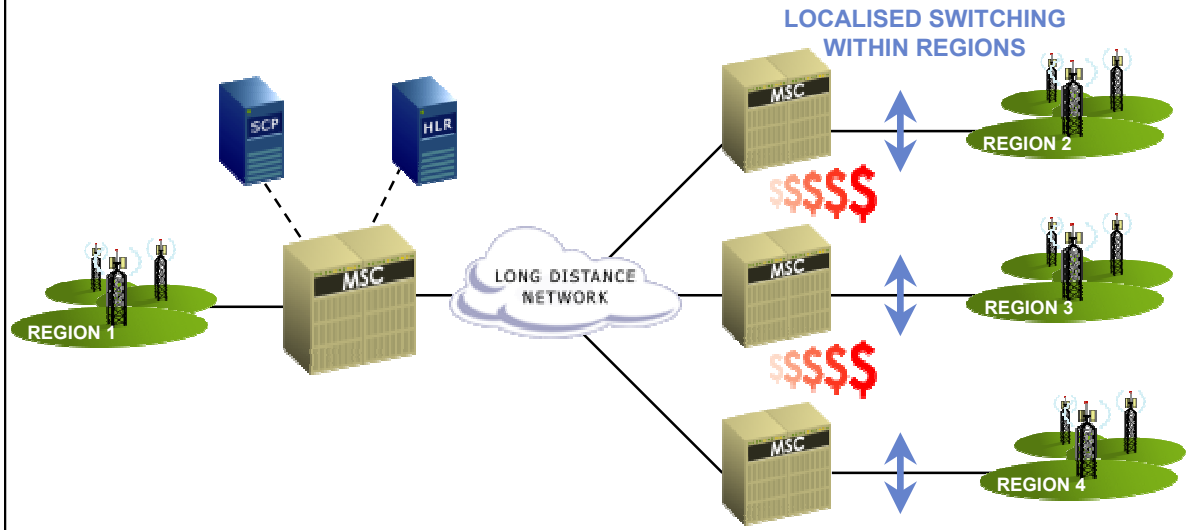
Traditional Circuit Switched networks…



Early Stage

Single MSC Backhaul all traffic

As traffic grows transport related OPEX becomes excessive



Multiple MSCs, one in each region

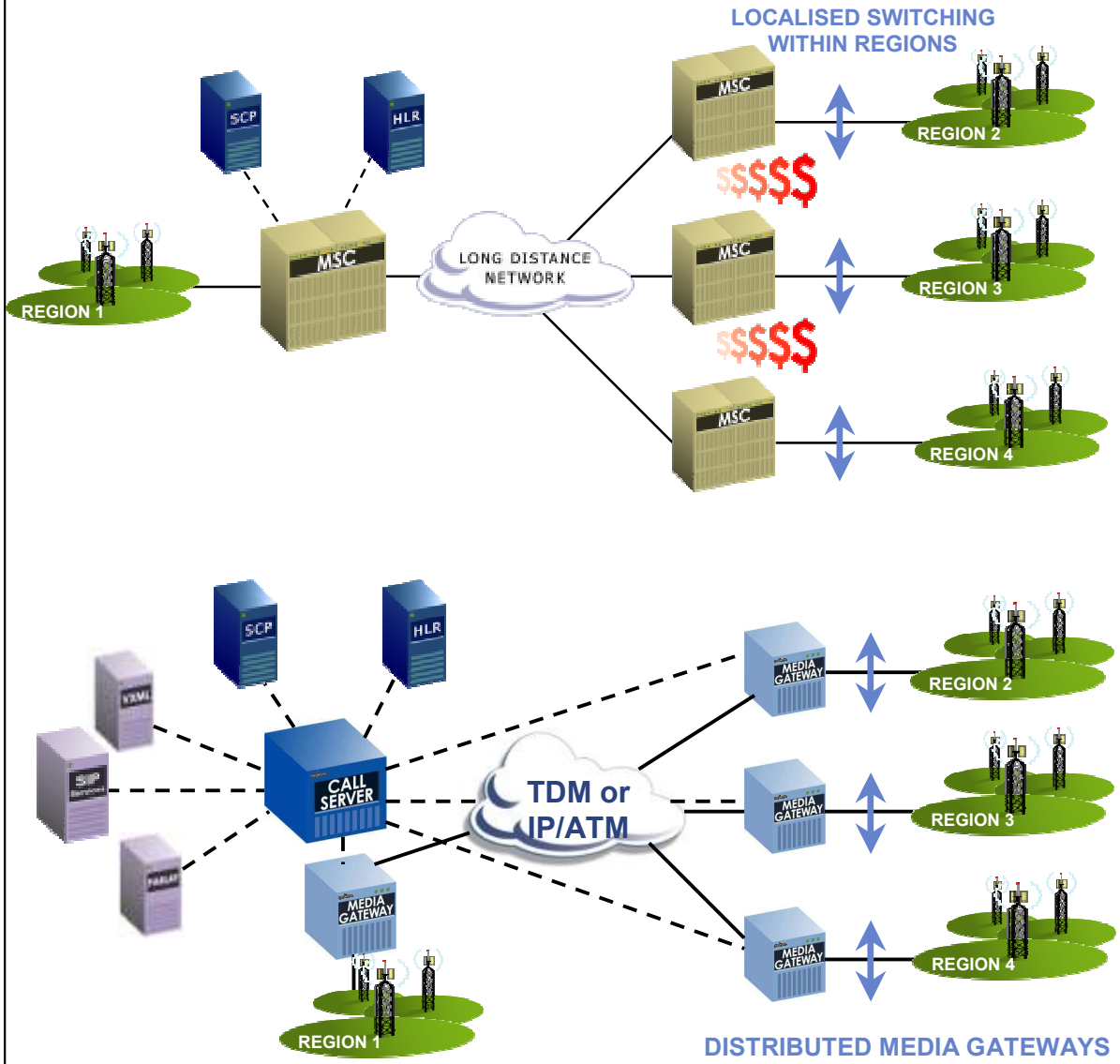
Transport savings with localized switching BUT new OPEX due to additional human resources, real estate costs

High CAPEX – purchase of new MSCs.

Difficulty to maintain service uniformity

Only cost effective for high subscriber regions

… versus Distributed MSC implementation



Central Call Server with distributed Media Gateways

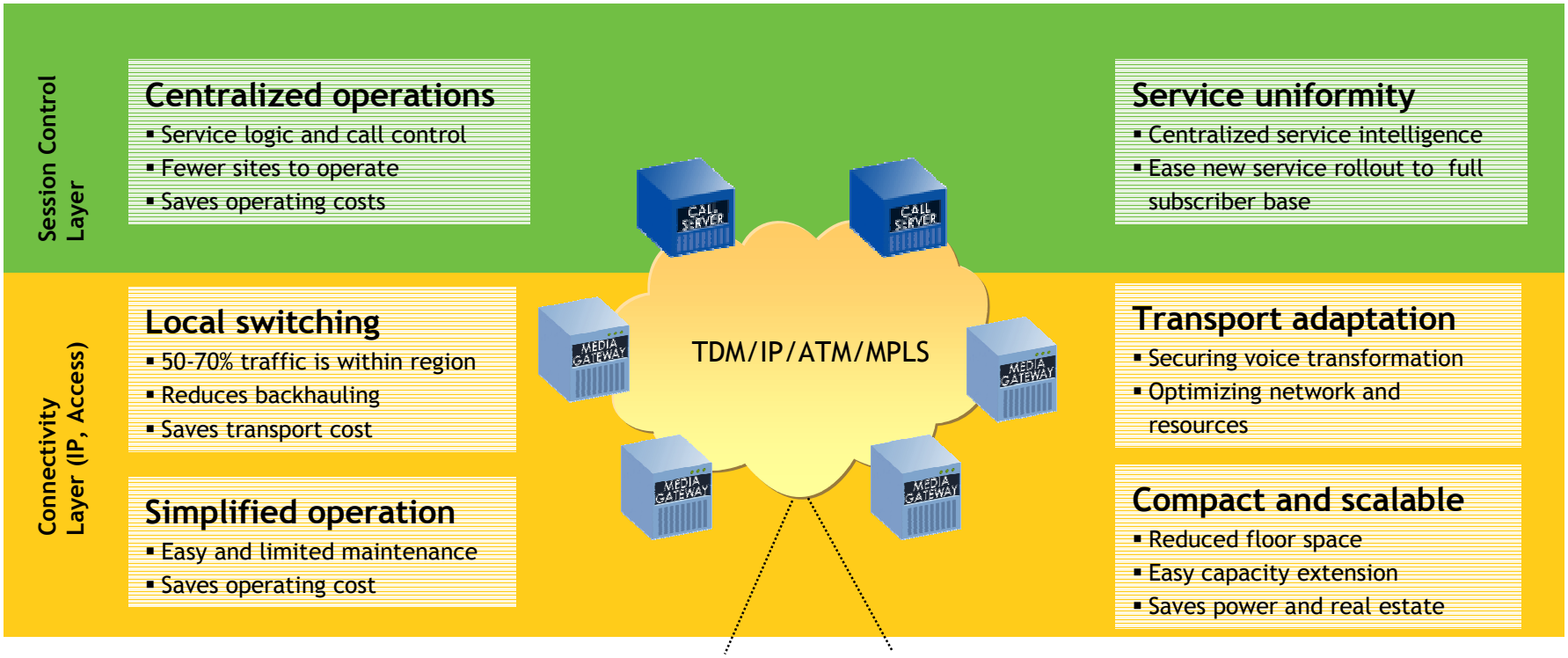
Significant OPEX and CAPEX savings

Move to IP/ATM backbone saves long distance costs

Service uniformity

IP interfaces enable innovative services

The Advantages of the Distributed Architecture



Optimized IP transport

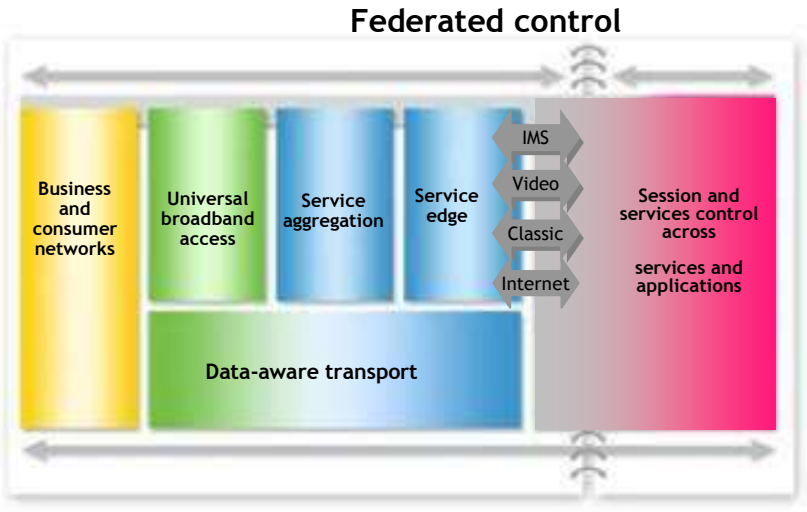
- Traffic aggregation, unifying CS + PS
- Simplified connectivity (no meshing effect)
- Saves transport costs
- Ready for IP-based services

Flexible switching

- Any-to-any: TDM, IP, ATM, MPLS
- Supports all scenarios
- Start NGN with TDM in the core
- Secure network transformation to IP

Operating costs + Scalability

But there is more



- **Network control and gateways**
  - Provide cost effective network interworking
  - Unifying circuit and packet domains over IP
  - Integrated ATM & TDM Cross-Connect for less nodes & less links

- **Session and services control**
  - Multi-protocol call control
  - Redundancy and traffic control strategy
  - Maximized Voice quality strategy

- **Dynamic resource management**
  - Fined-grained QoS per-service, per-subscriber
  - Traffic flow differentiation (Bearer, Control, Signalling, Management planes)
  - Optimized resources (DSP…) & bandwidth

Federated control provides the critical linkage between service control and service creation

A True NGN Solution

All the Advantages of an IT Platform (Open Hardware as well as Open Software)

Traditional approach

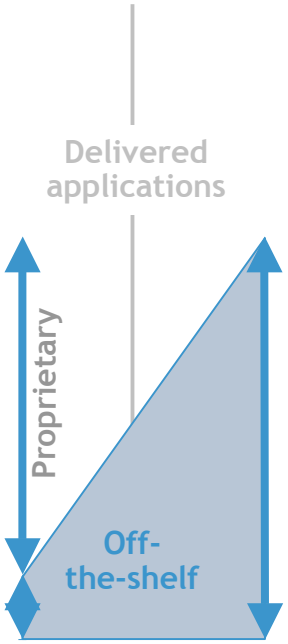
Slow and expensive time-to-market
No synergy between products
Disruptive evolution paths

- Wireless application
- Single carrier grade telecom application
- Protocol stacks and databases
- Programming environment
- Operating system
- Boards, platform
- Switch Interconnect
- Silicon and processors

2G $$$ 3G $$$ All IP

- 12-24 months development cycle
- Large footprint

vs.



Alcatel-Lucent approach best in class elements

Fast development and time to market
Standard open platform
Flexible/smooth evolution path

- Wireless application
- Multiplecarrier grade telecom applications
- Protocol stacks and databases
  S97, H248, SIP, VOXML, real time DB
- Programming environment
  C++, Java, Tools…
- Operating system
  Carrier Grade Linux, Unix, Solaris
- Boards, platform
  Alcatel, Continuous Computing, SUN, Force
- Switch interconnect
- Silicon and processors
  Intel, AMD, SUN

Alcatel overall integration

2G 3G All IP

3GPP R4 Purpose-built
3GPP R5 Compliant
Seamless evolution to R6+

- 3-6 months development cycle
- Superior capacity and density

Alcatel·Lucent

Pragmatic Approach to Network Evolution

3GPP R4 NGN	3GPP R4 NGN + VoIP	3GPP R5/R6 NGN + VoIP + IMS
MSC server	MSC server / UMA server	MSC server / UMA server / MGCF / CSCF
Common functions	Common functions	Common functions
Common IT platform	Common IT platform	Common IT platform
CS GW	CS GW / UMA GW	CS GW / UMA GW / IM GW
Common functions	Common functions	Common functions
Common IT platform	Common IT platform	Common IT platform

SW upgrade

SW upgrade

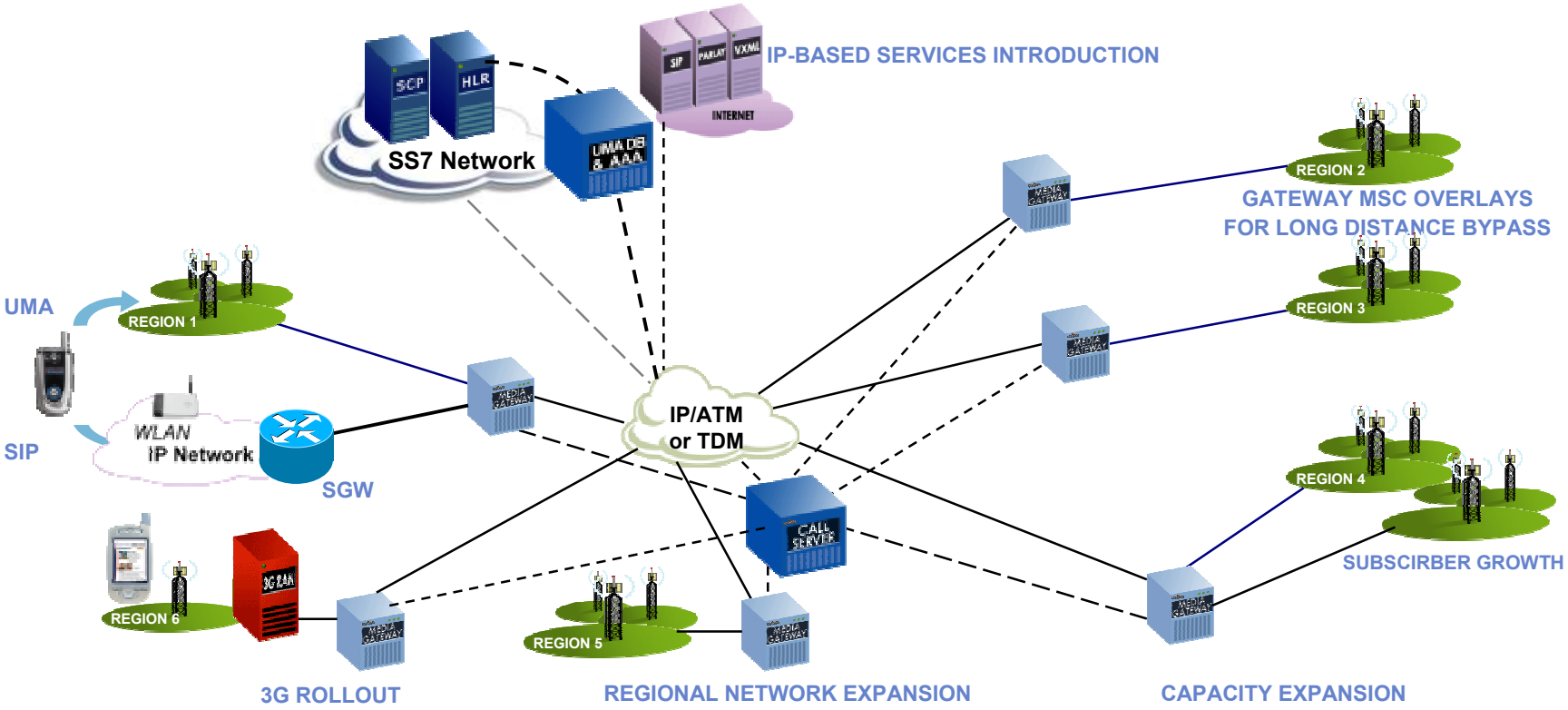
"Mobile NGN"
Start with MSC softswitching
GSM and UMTS

"SIP/UMA Enhanced Mobile NGN"
VoIP support in the core
VoIP support to WiFi and IP Endpoints
UMA/GAN secure IP infrastructure

"Mobile NGN + IMS introduction"
Mobile NGN + IMS introduction
Add IMS/SIP capabilities; interworking
between IMS and local CS/UMA-GAN domain
Combined SIP/IMS and CS/UMA Services

- Same platform/architecture to support GSM, UMTS, UMA and IMS
- A pragmatic approach to safely transform CS domain services

NGN Deployment summary



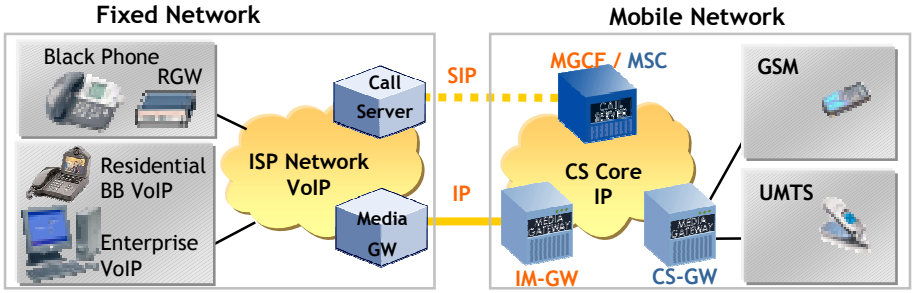
- Call server supports multiple media gateways to augment current network
- Gateway MSC overlays for long distance bypass with IP/ATM
- Network and capacity expansion with additional MGW
- Seamless evolution to support 3G rollout
- Seamless evolution to support FMC/UMA (Distributed)
- Full flexibility introducing IMS & IP Based Services
- Phase out legacy MSC network

3 IP Transformation

Transforming network and business with IMS as a framework

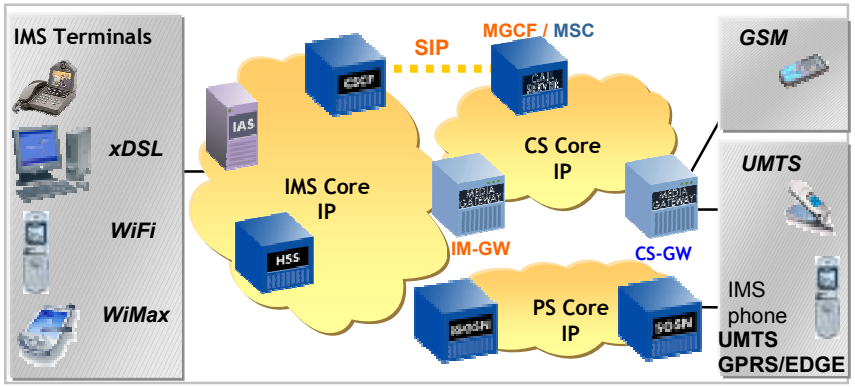
IMS Inside
MGCF for IMS Gradual Network Upgrade

Pre-IMS (SIP-ISUP interworking)



- VoIP inter-connexion – lower cost (vs LL / TDM)
- Full service parity - between VoIP/SIP and ISUP/BICC
- Convergence – for combined operators

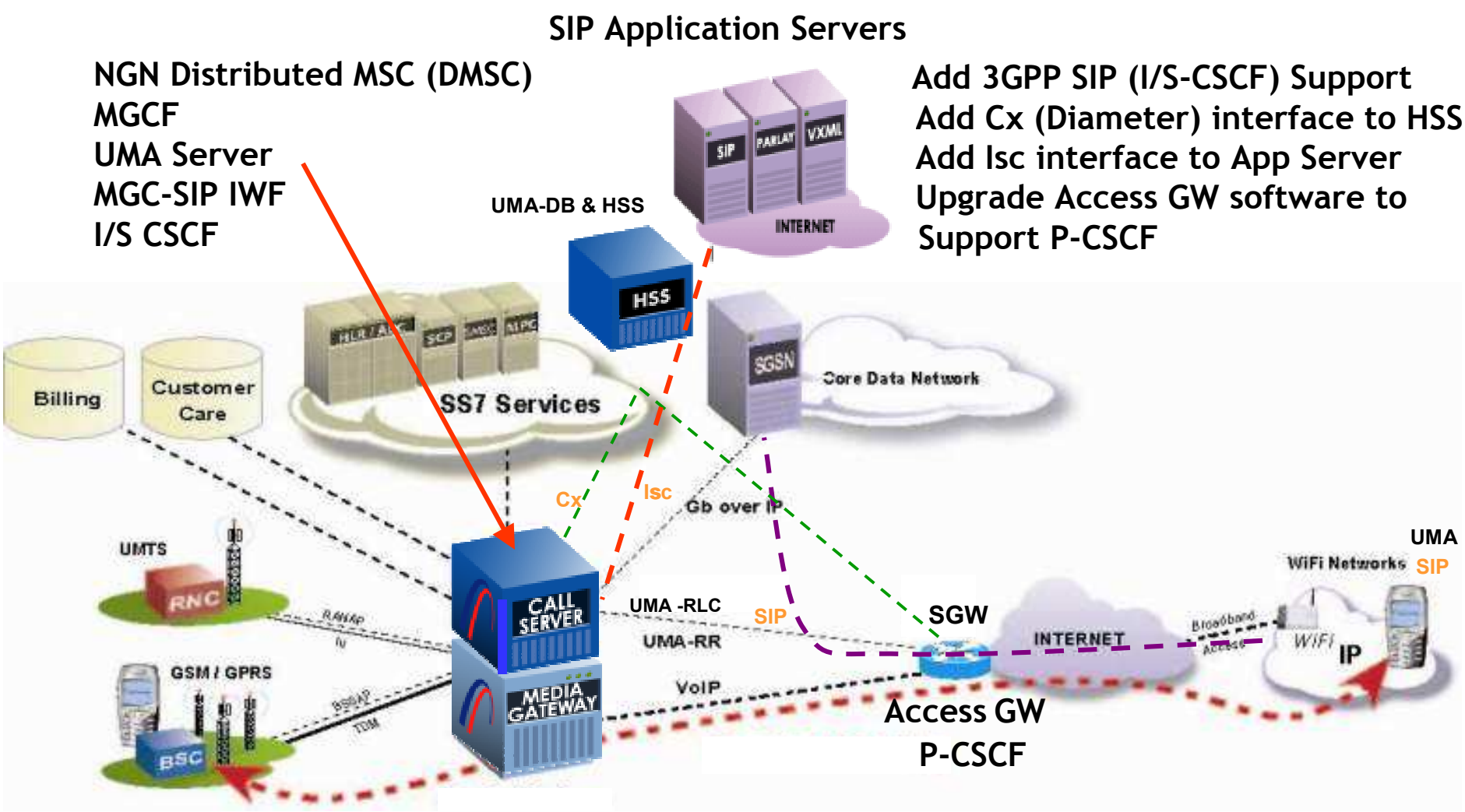
IMS Multi-Service Core Network



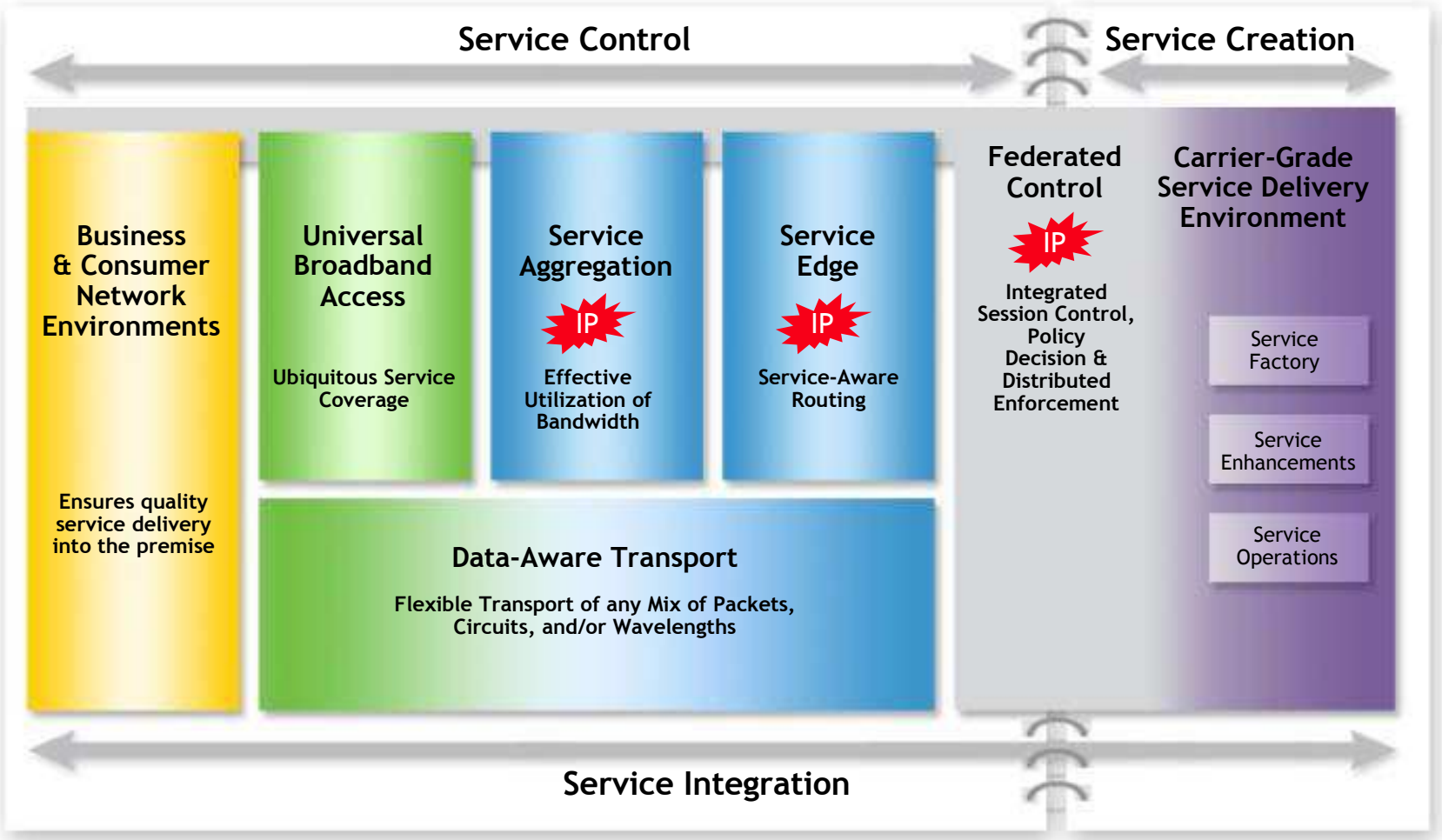
- IMS service inter-working
- Full network and service convergence

A ramp-up solution for transformation to IMS

NGN VoIP and IMS Solution with maximum flexibility



Alcatel-Lucent Acuity™ Transformation Framework

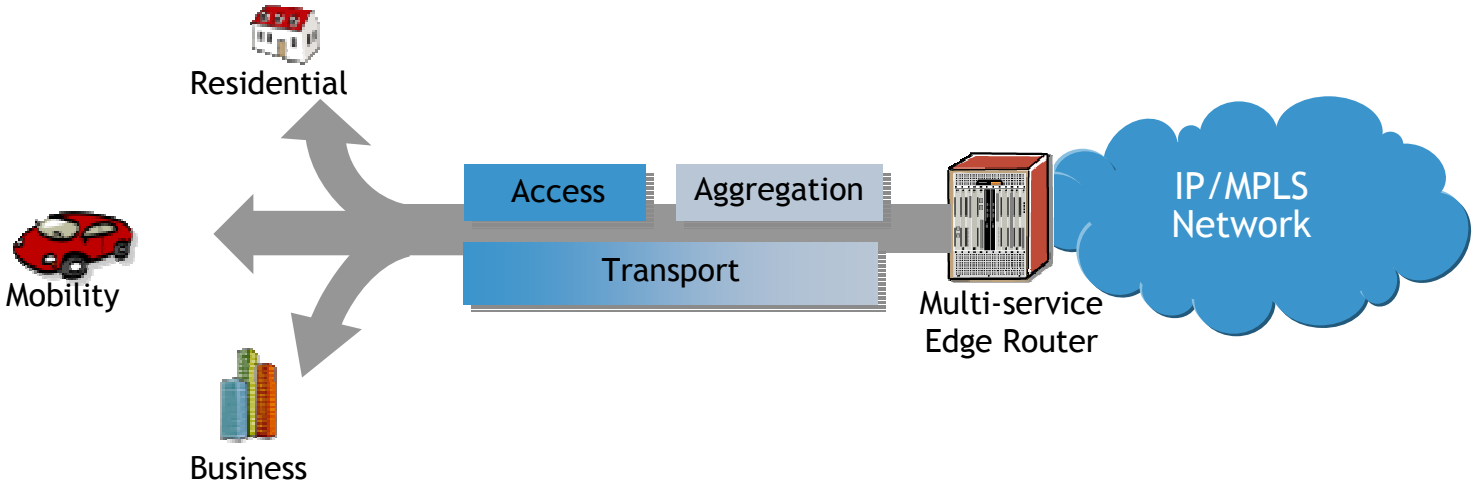


Linking service creation to service control provides end-to-end quality of experience

What is the Service Edge?

The edge of a converged network where IP/MPLS services are provisioned:

- Has a full range of access-facing interfaces to support multiple legacy and IP/MPLS services over a converged backbone
- Differentiates and manages thousands of unique services with wide variations in QoS policy
- Authenticates, authorizes and generates accounting data for subscribers of high-speed Internet and IPTV services



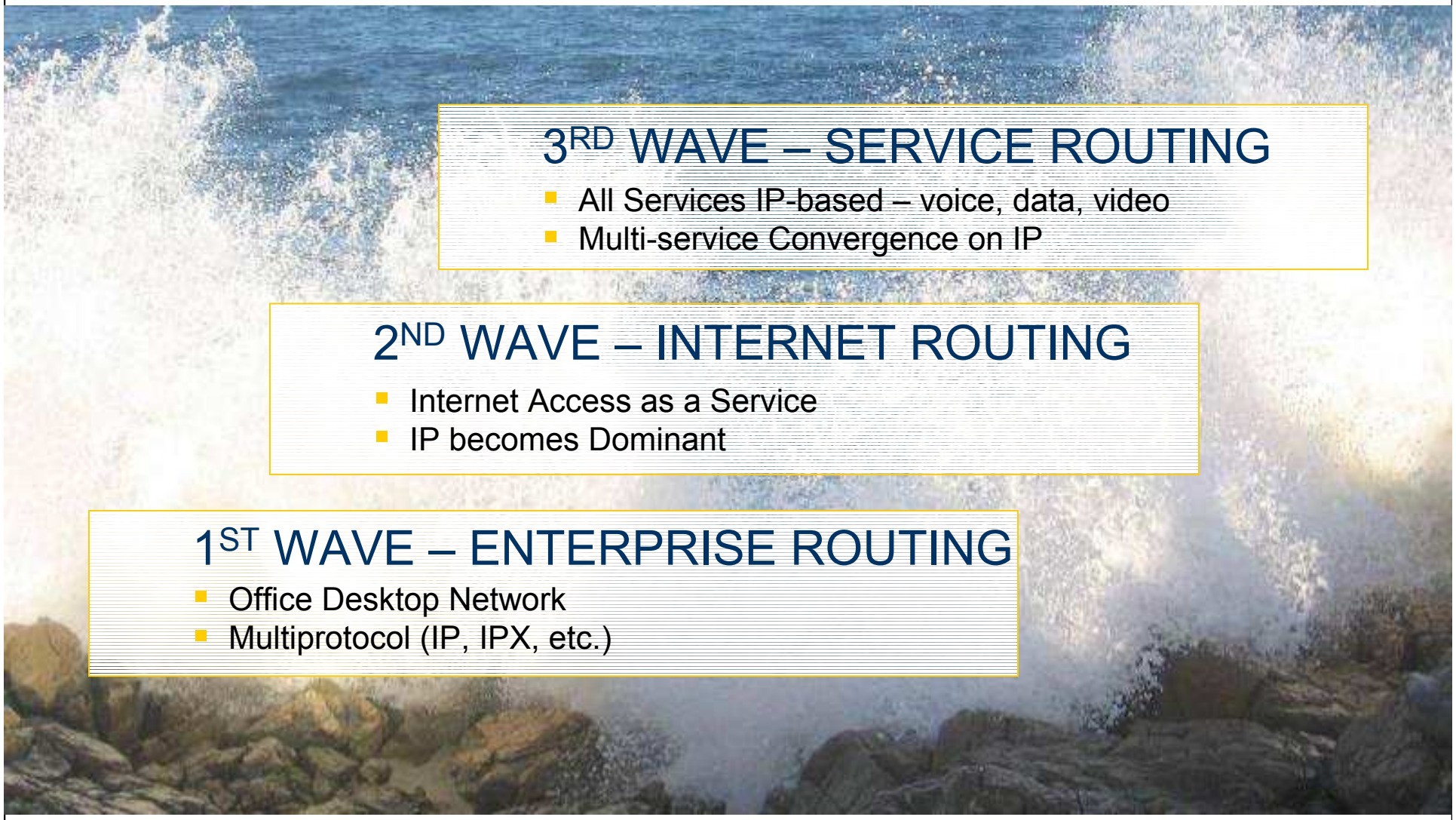
"As the point from which IP/MPLS-based services are provisioned, the multi-service edge is one of the most critical areas of investment." Mark Bieberich, Yankee Group

What is Service Aggregation?

- A cost-effective response to the new requirements of bandwidth-hungry services
  - Massive increase in bandwidth for video (triple play, mobile TV)
  - Broadcast television needs constant bandwidth
  - Video on demand, mobile TV, mobile music and other applications will only increase total bandwidth
- An SLA-based solution for Ethernet business services
  - Ethernet economics and bandwidth
  - MPLS stability, scaling and service richness

Service aggregation reduces facilities cost without compromising SLA guarantees

Alcatel-Lucent Service Routing
- The 3rd Wave of IP Innovation



3RD WAVE – SERVICE ROUTING

- All Services IP-based – voice, data, video
- Multi-service Convergence on IP

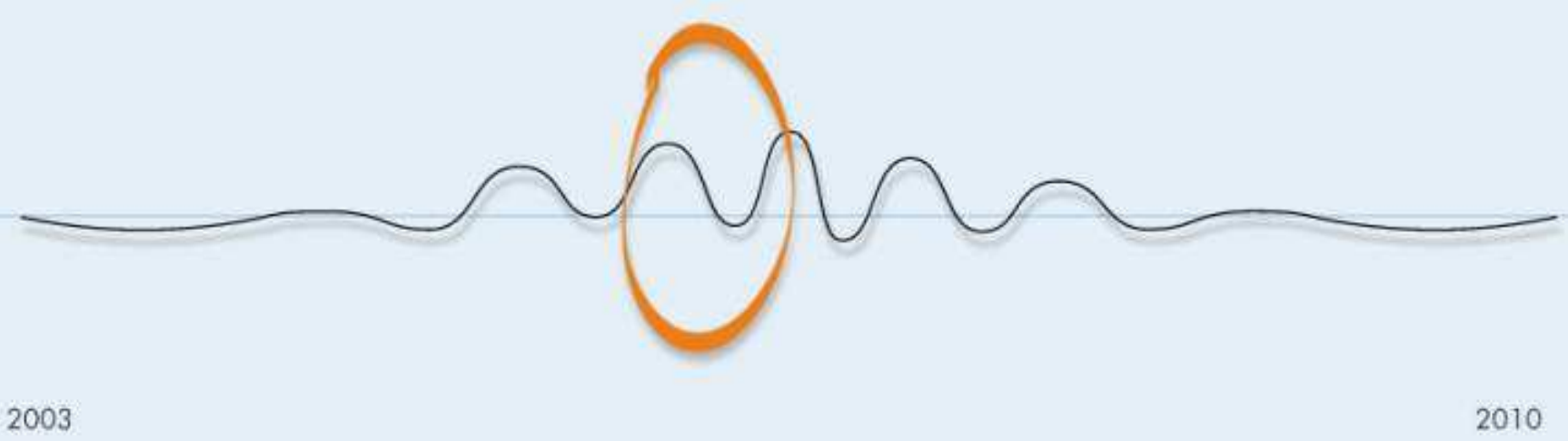
2ND WAVE – INTERNET ROUTING

- Internet Access as a Service
- IP becomes Dominant

1ST WAVE – ENTERPRISE ROUTING

- Office Desktop Network
- Multiprotocol (IP, IPX, etc.)

The Time is Now



Broadband wireless multi-service convergence on IP

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