

NGN: Basic Architecture & Interesting Issues

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- Set scene for subsequent sessions by:
 - Introducing basic concepts
 - Showing high-level viewpoints
 - List architectural challenges
 - Summarize architectural work to date
 - Show areas for further study



Next Generation Network (NGN):

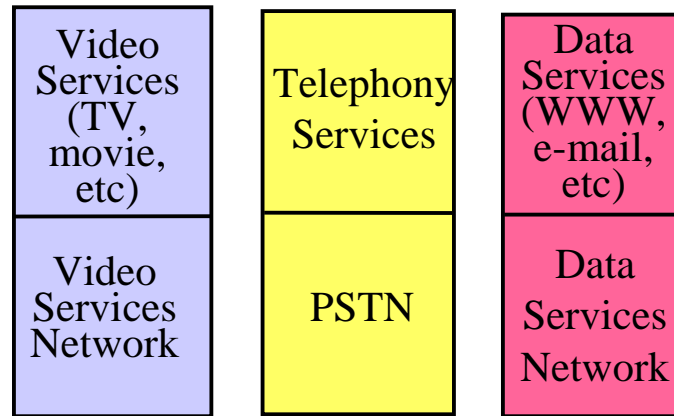
a **packet-based** network able to provide telecommunication services and able to make use of multiple broadband, **QoS-enabled** transport technologies and in which **service-related functions** are **independent** from underlying **transport-related technologies**.

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.

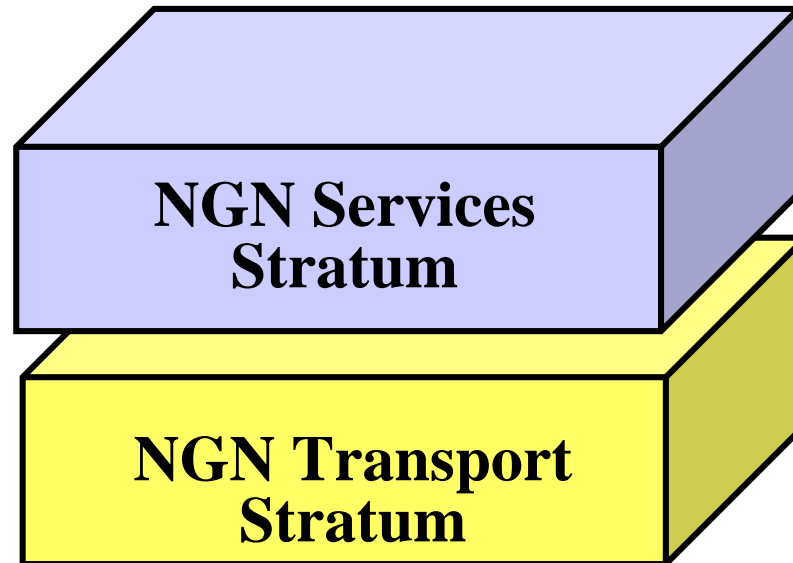
From ITU-T Recommendation Y.2001

Y.2011: NGN General Reference Model

Pre-NGN:
Vertically
Integrated
Networks



NGN:
Horizontally
Integrated
Networks

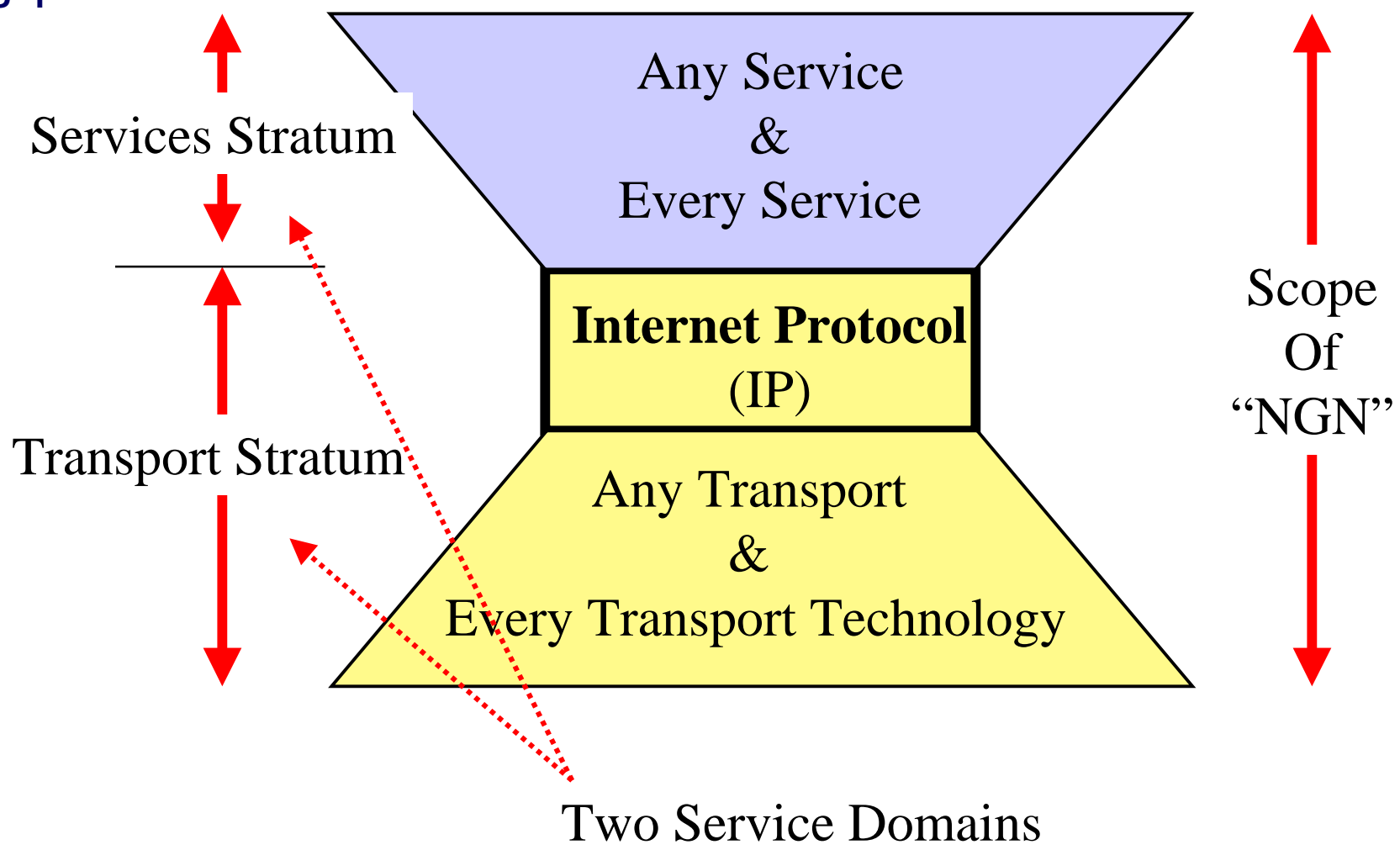


ITU-T Rec.
Y.2011



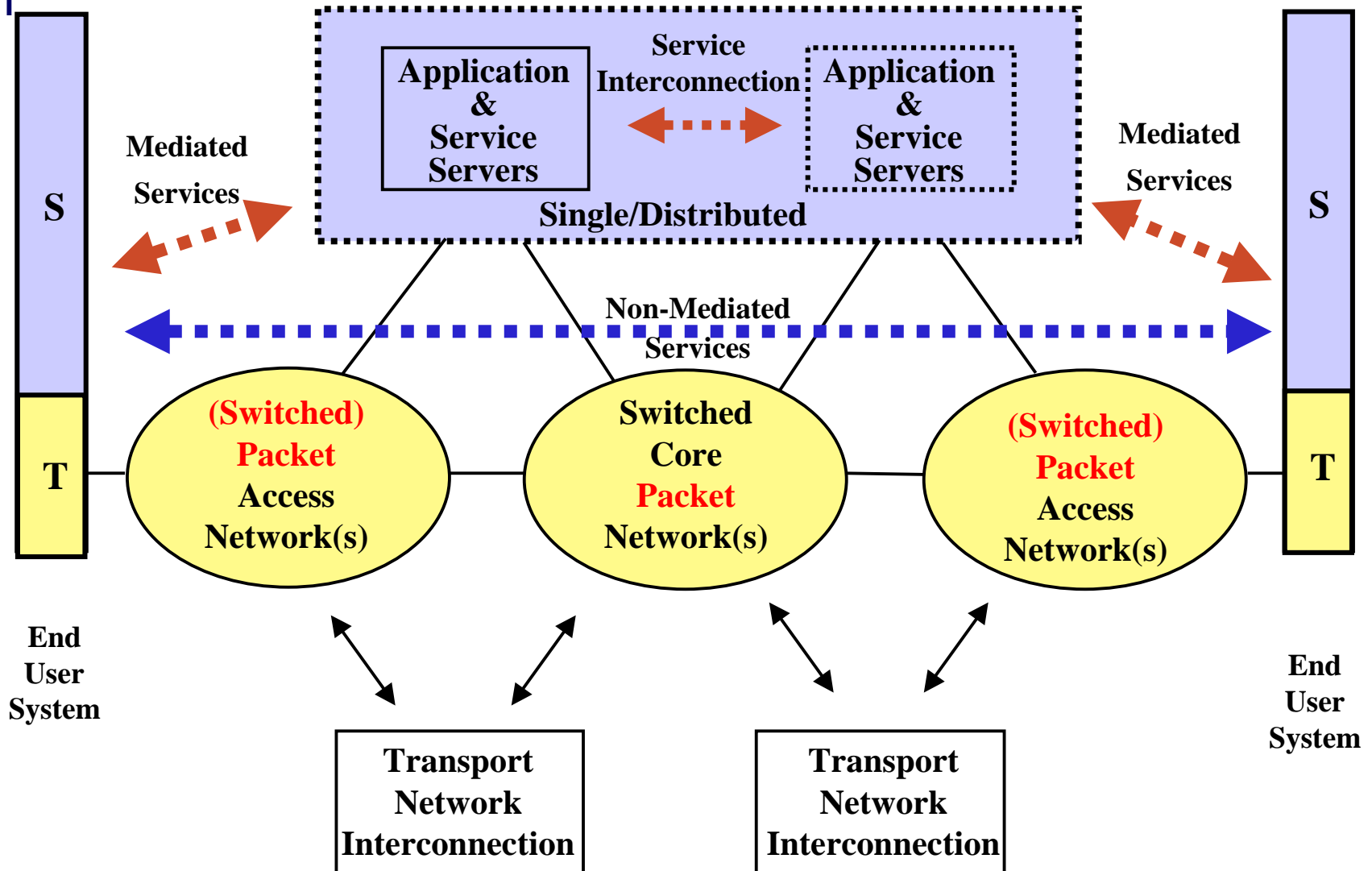
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Single Convergence Layer





Service Provision: Mediated and non-mediated services





Effects of Separation: the good, the bad and the challenge

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- o Good:
 - Any service over a single IP transport network

- o Bad:
 - Two different levels of control, authentication, admission, charging, etc.

- o Challenge:
 - Service to transport coupling & mapping for:
 - QoS selection
 - QoS control
 - transport resource allocation
 - monitoring
 - accounting for usage

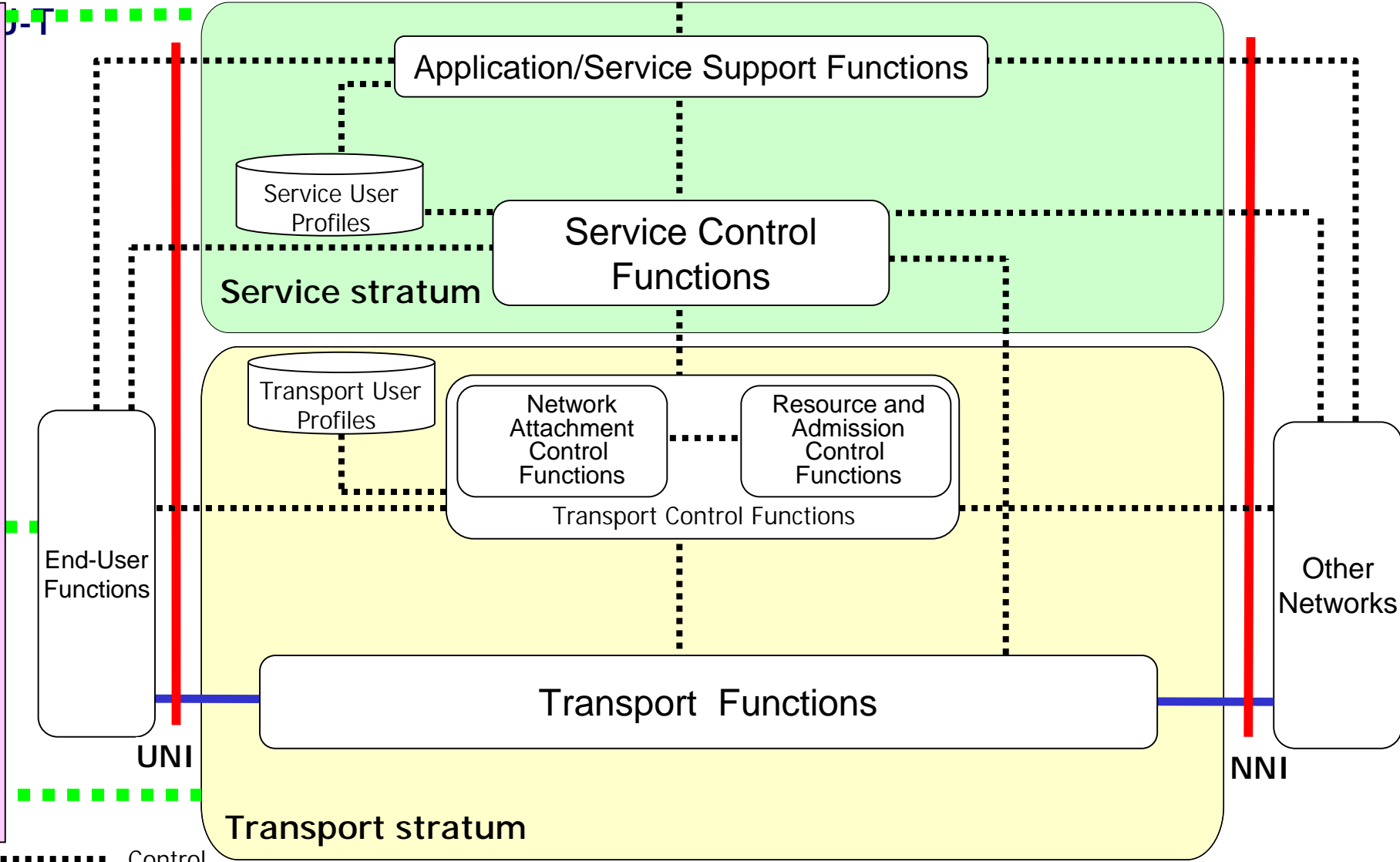
**Solution: Resource & Admission Control Functions
(Session 3)**



Third Party Applications

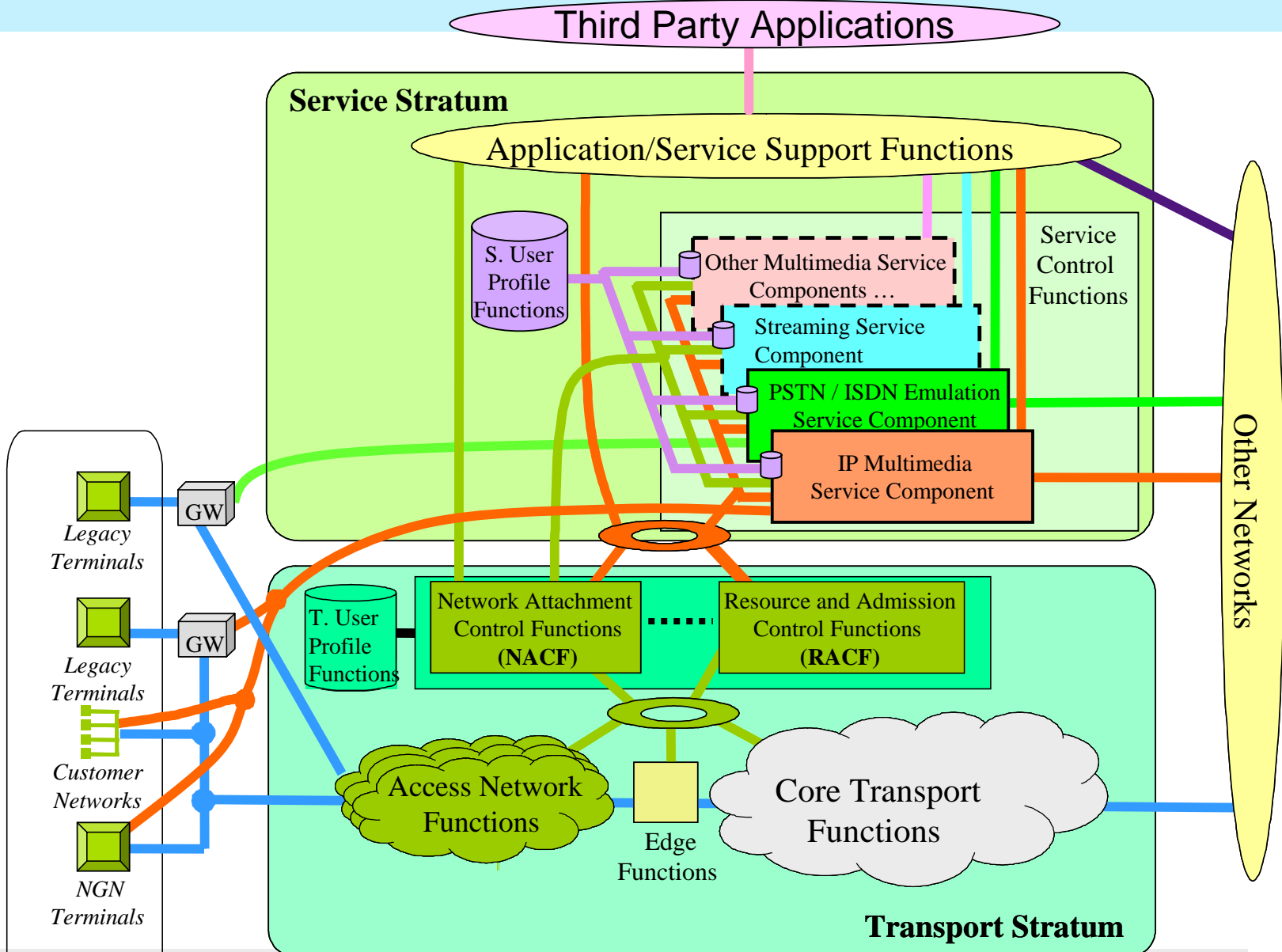
Basic Functional View

Management Functions



- Control
- Media
- ■ ■ ■ Management

Component View



- Mobility
 - Fixed to mobile convergence (FMC)

- Application-driven QoS:
 - Classes and their designations
 - Explicit bandwidth selection
 - Service to transport mapping & control
 - Flow awareness



- QoS in Access:
 - Multiple terminals, multiple QoS
 - Role of Home Gateway (shaping, limiting)
 - Home gateway management control

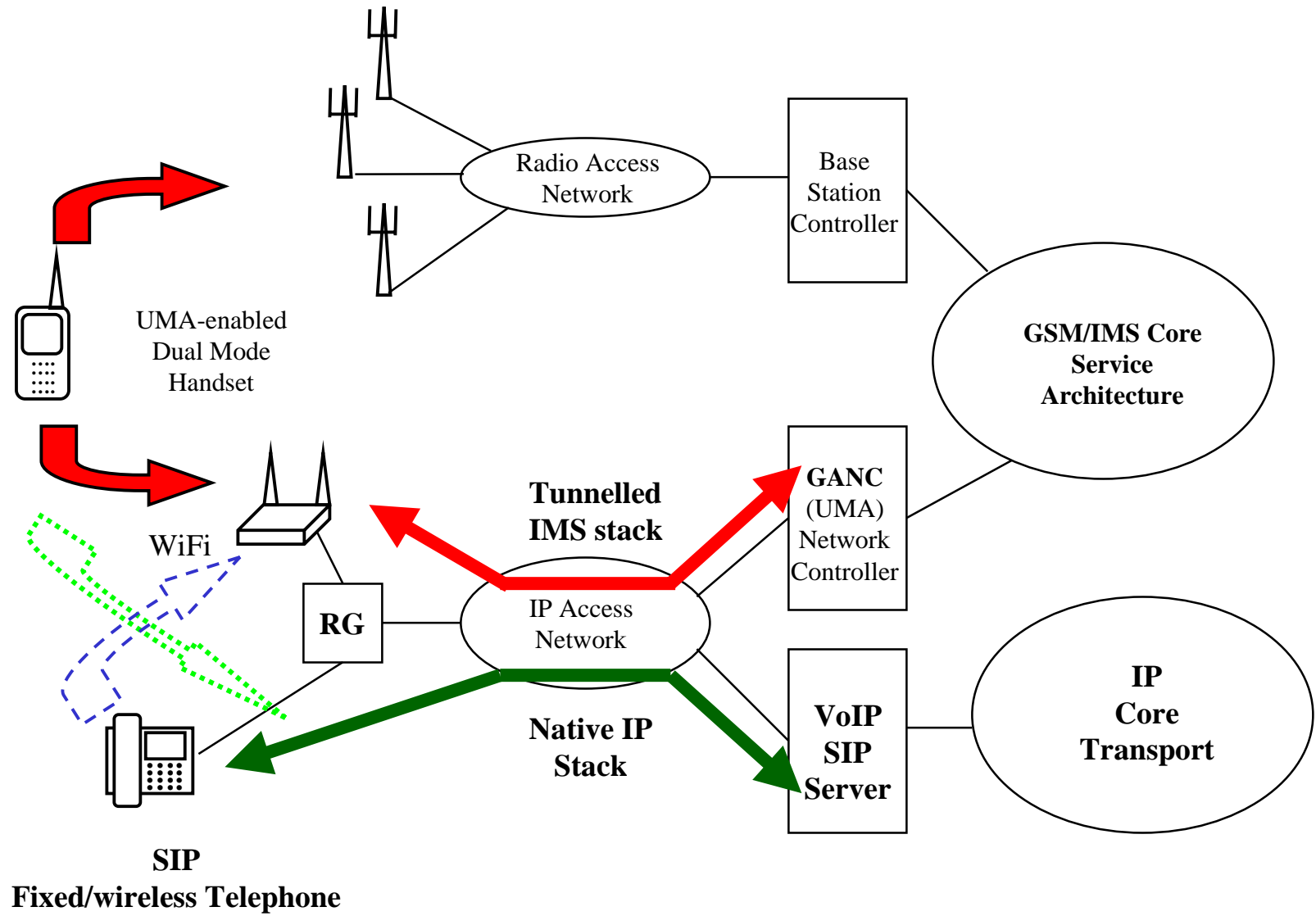
- Distributed network control of/for QoS path:
 - Horizontal means
 - Vertical means
 - Monitoring, dynamic allocations, accounting

- Network Control and Management
 - Protect from attack
 - Separation from payload paths



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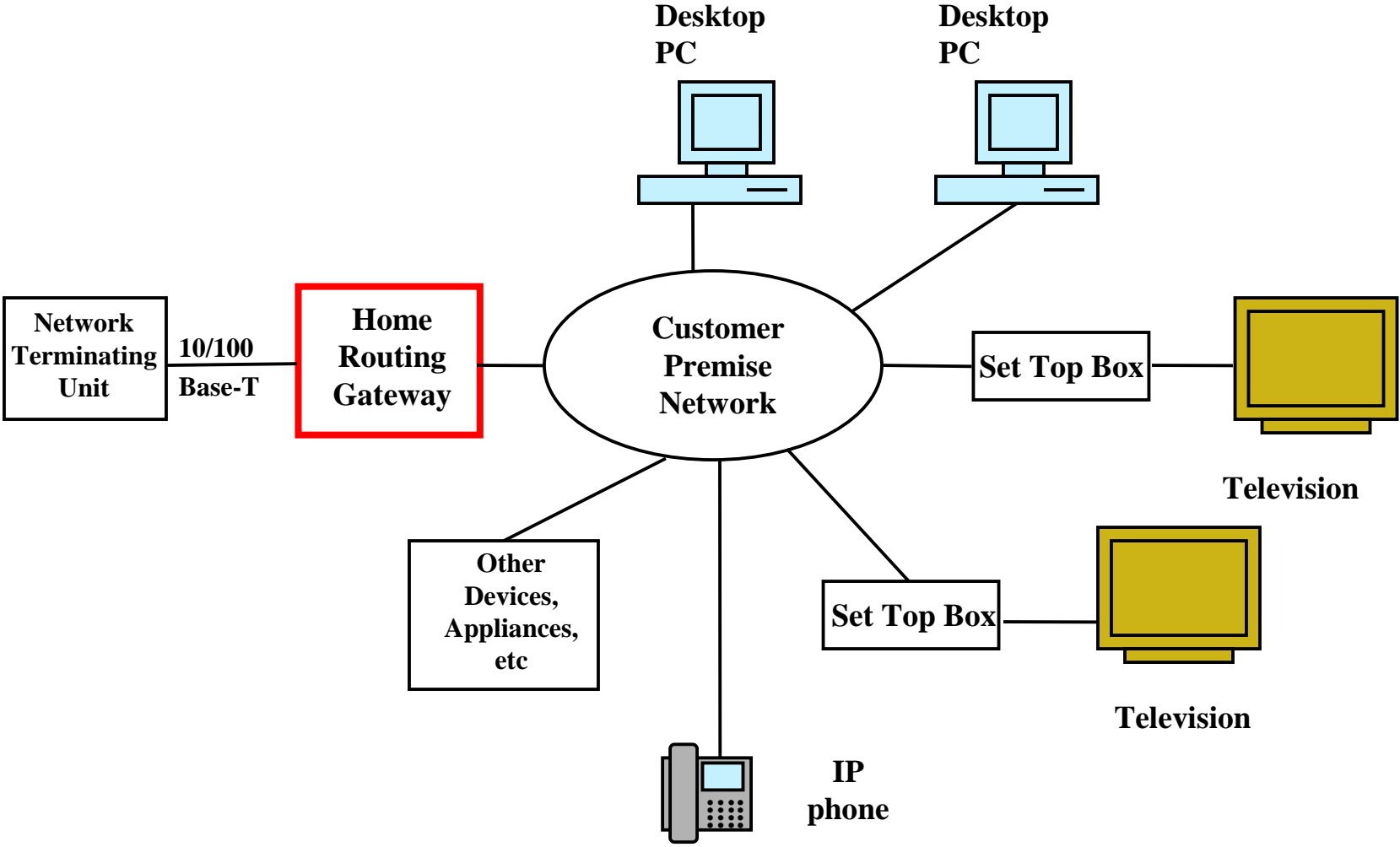
Fixed to Mobile convergence





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Home Gateway Architecture/Functionality



QoS per device/terminal



Summary of key architectural work in SG13 (1)

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- Y.2001: NGN Overview
 - NGN Definition, Characteristics & Subject Areas

- Y.2011: General Reference Model
 - High-level paradigms
 - Separation of concerns, services from networks
 - Architectural principles
 - OSI model relevance
 - G.805 relevance

- Y.FRA: Functional Requirements & Architecture
 - Generic service control functions
 - Generic transport control functions



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Summary of key architectural work in SG13 (2)

- Y.IFN: IMS for NGN
 - IMS functions
 - Positioning with respect to Y.FRA

- Y.PIEA: PSTN/ISDN Emulation Architecture
 - Call Server based emulation
 - IMS based emulation

- Y.CSF: Converged Services Framework
 - Service coordination across heterogenous systems and technologies
 - Overlay architecture across diverse systems

- Streaming Services
 - IPTV

- Identity based systems
 - RFID

- Home Networks
 - Home Gateways
 - Gateway management

The End

**Thank you
for your attention**