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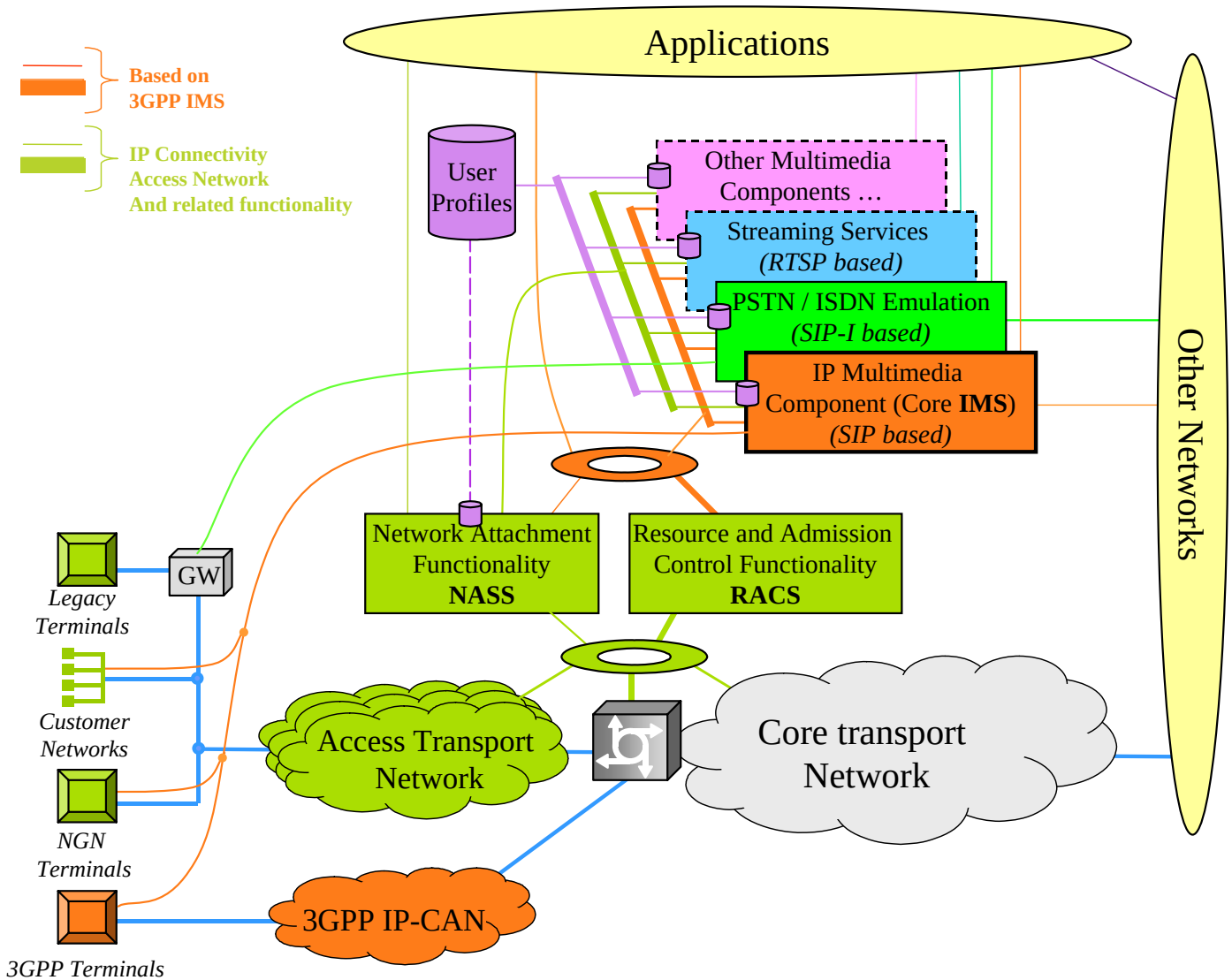
Resource and Admission Control and IMS

Keith Mainwaring
Cisco Systems

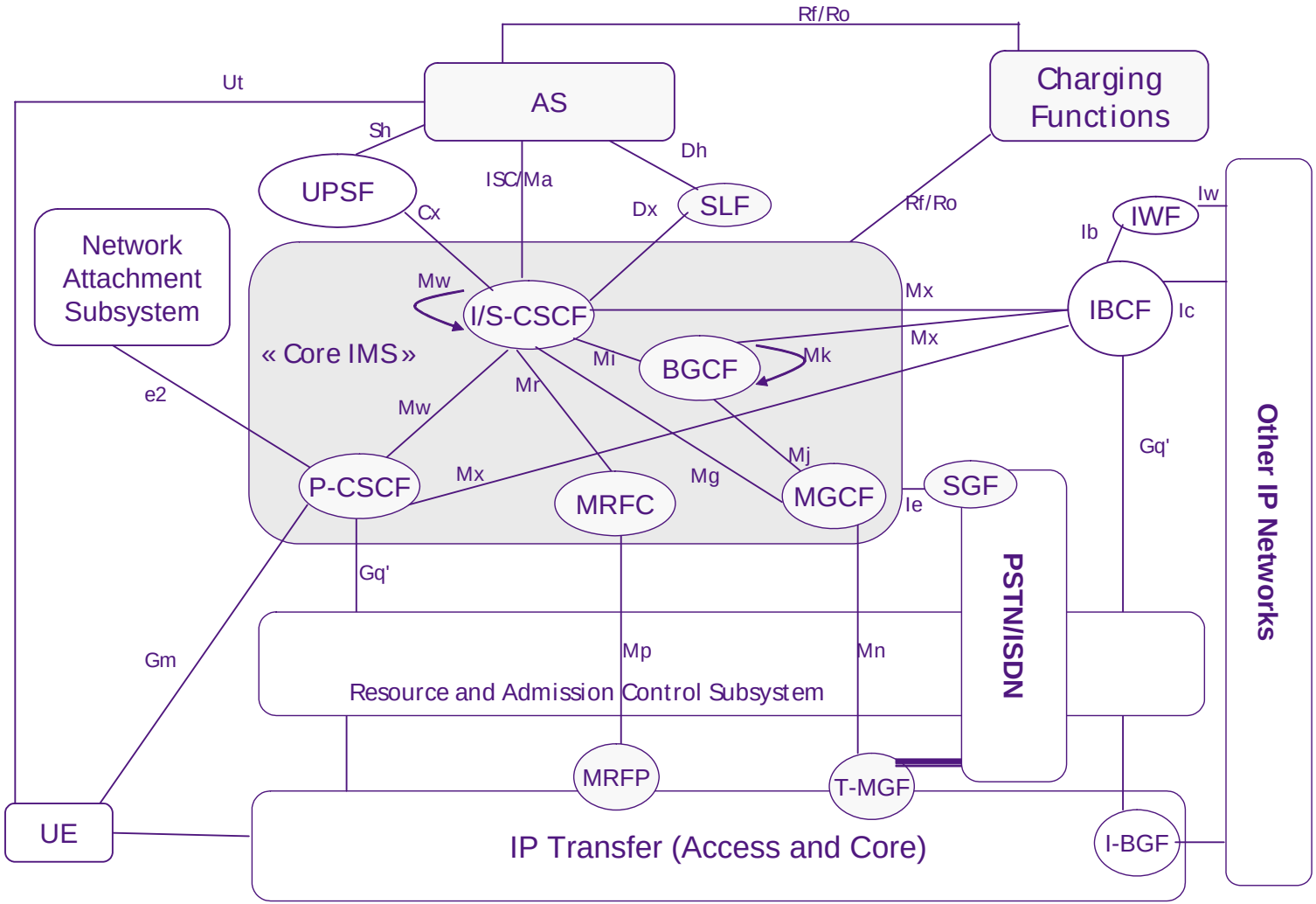
ITU-T

Alliance for Telecommunications Industry Solutions

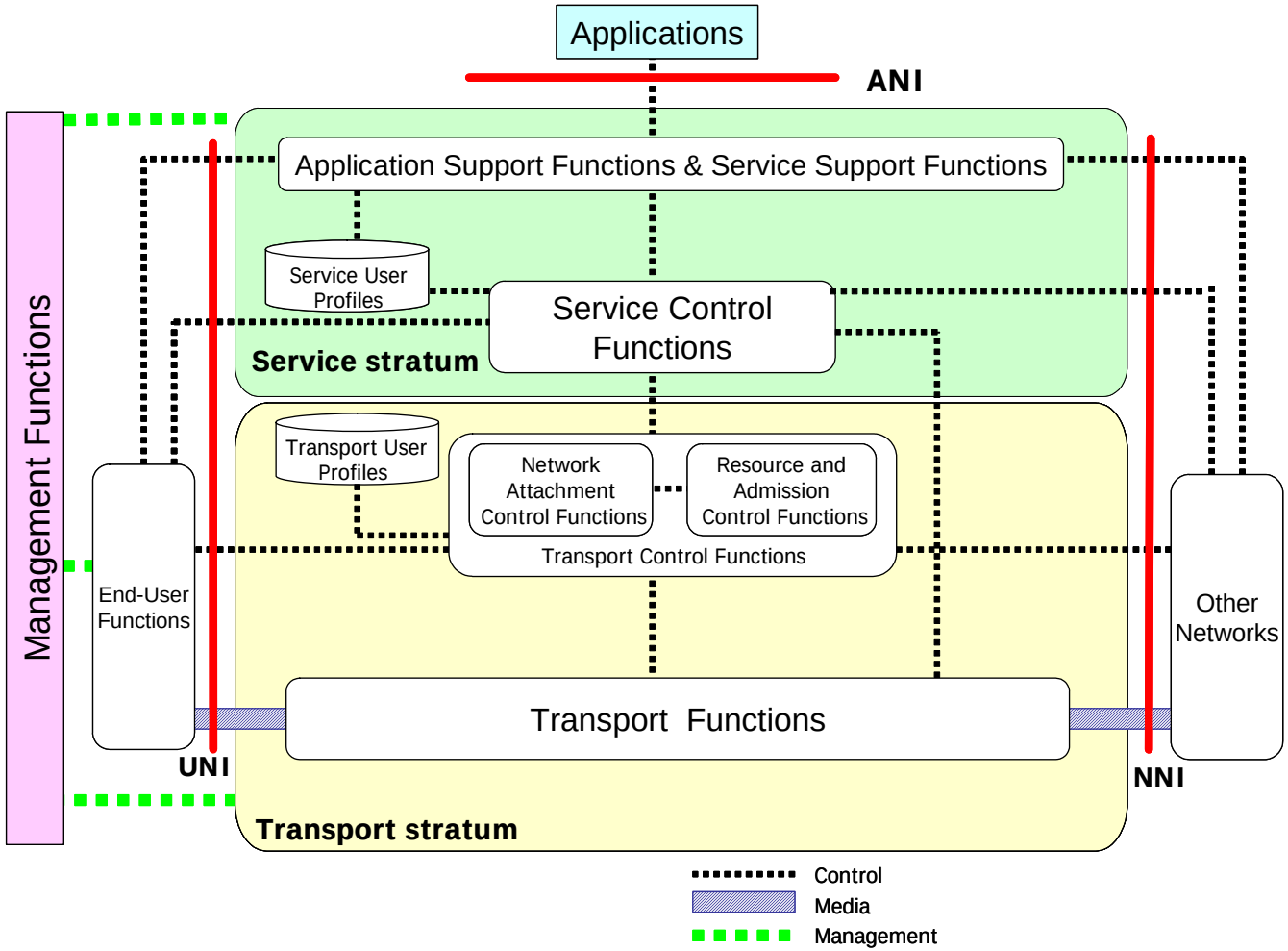
ETSI NGN Architecture



ETSI TISPAN NGN IMS Overview

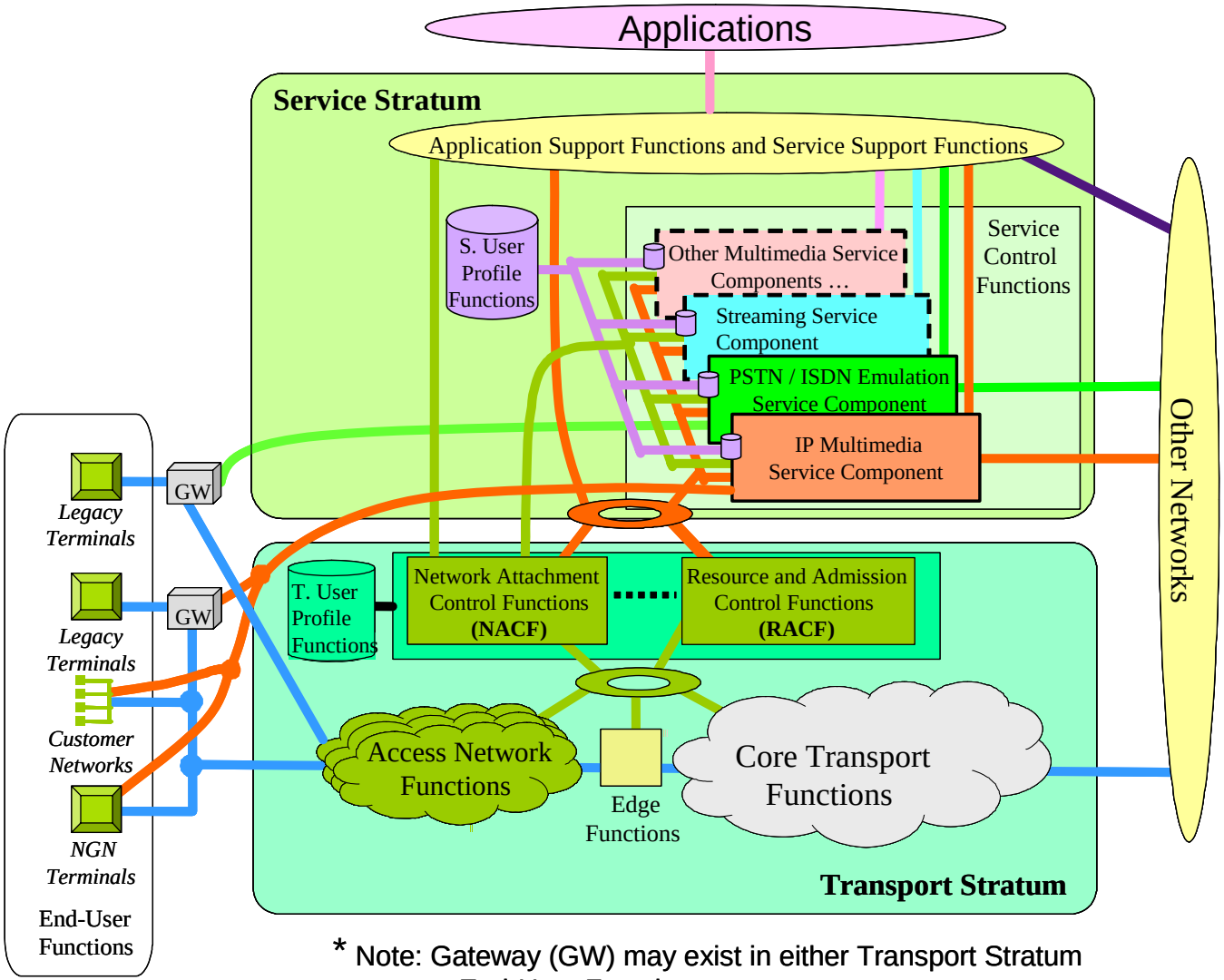


NGN Architecture Overview

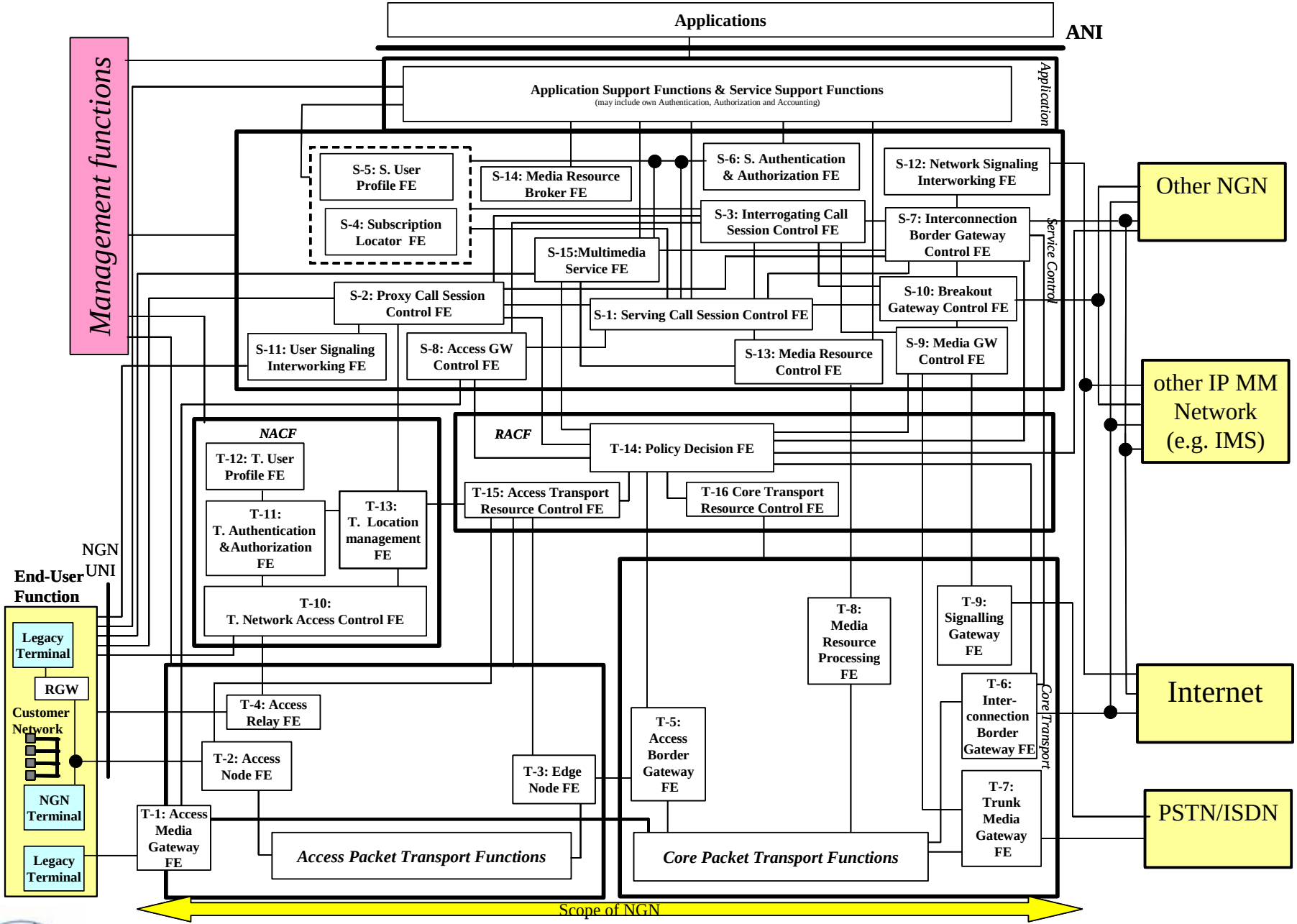


Note: UNI/NNI/ANI are not meant to represent any specific interfaces.
(This type of note is written in TR-FRA word file.)

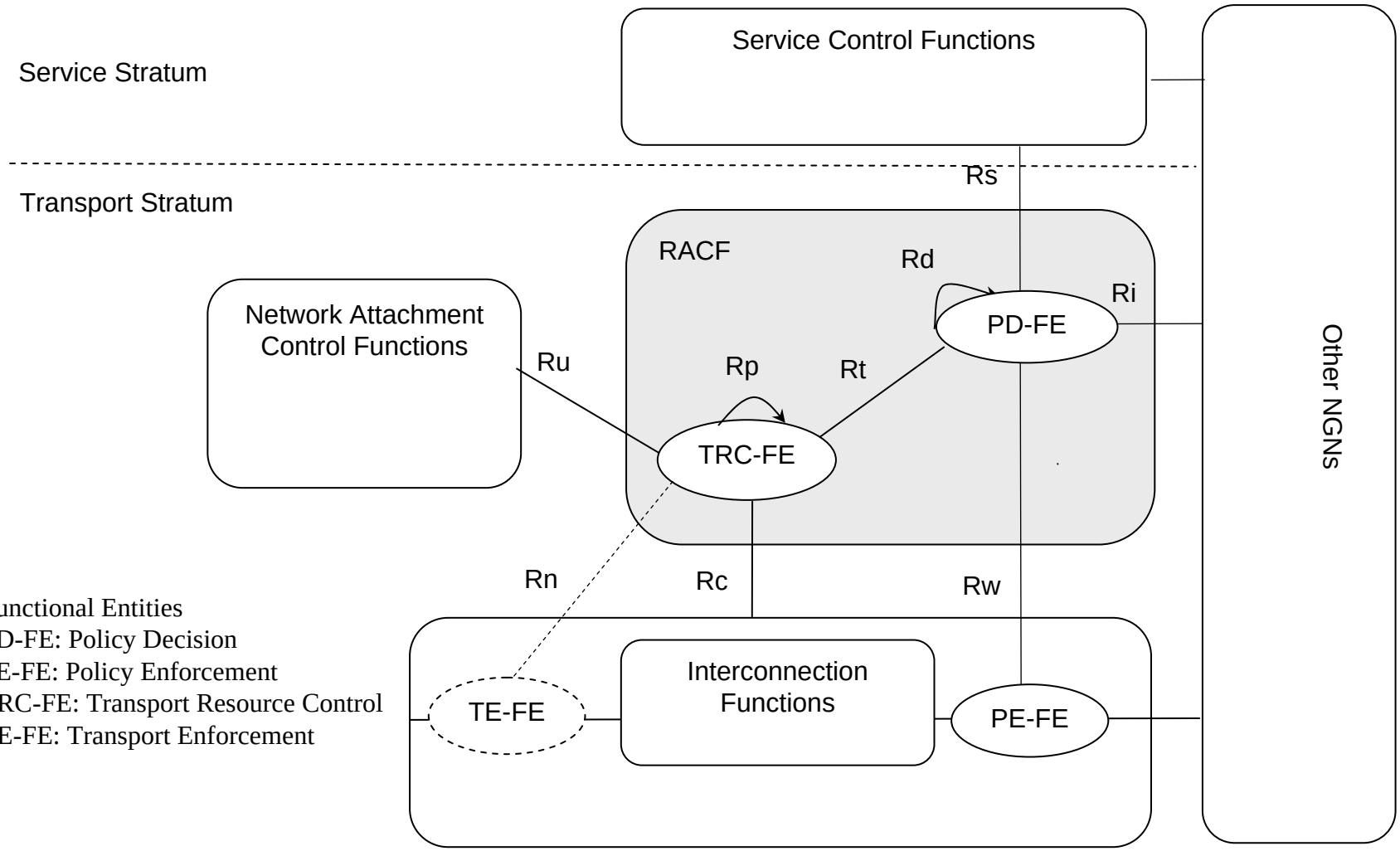
ITU-T NGN Transport and Service Configuration



* Note: Gateway (GW) may exist in either Transport Stratum or End-User Functions.

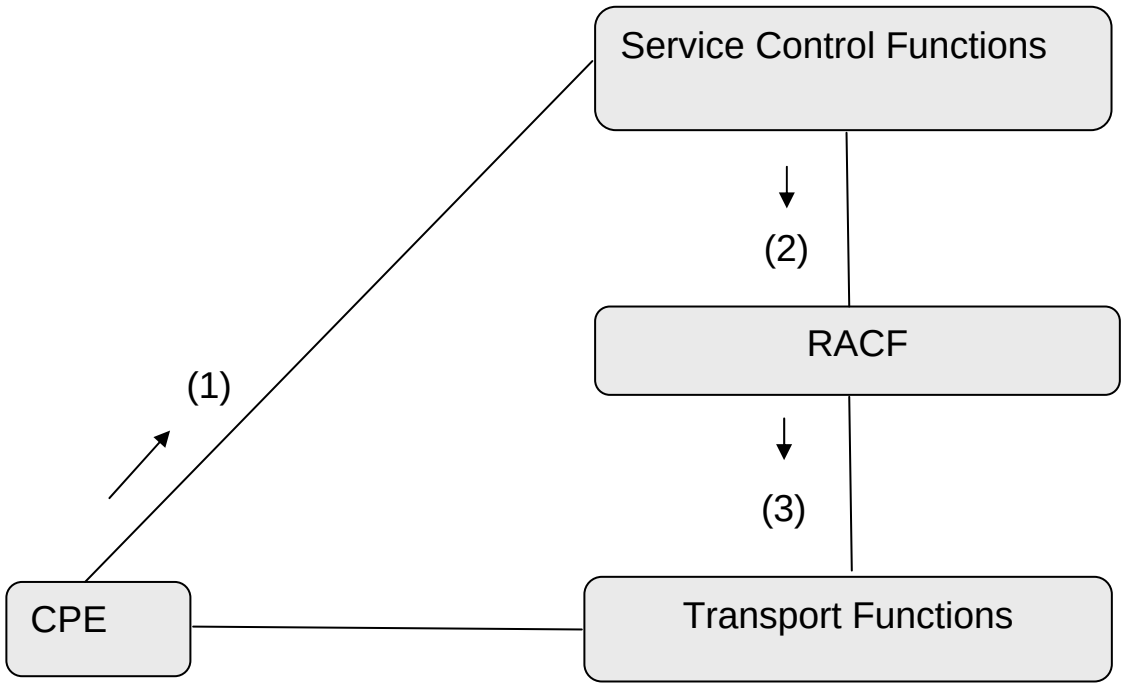

Applications
ANI
Management functions
Application Support Functions & Service Support Functions
(may include own Authentication, Authorization and Accounting)
Application
S-5: S. User Profile FE
S-4: Subscription Locator FE
S-14: Media Resource Broker FE
S-6: S. Authentication & Authorization FE
S-12: Network Signaling Interworking FE
S-3: Interrogating Call Session Control FE
S-7: Interconnection Border Gateway Control FE
S-15:Multimedia Service FE
S-2: Proxy Call Session Control FE
S-10: Breakout Gateway Control FE
S-1: Serving Call Session Control FE
S-11: User Signaling Interworking FE
S-8: Access GW Control FE
S-13: Media Resource Control FE
S-9: Media GW Control FE
Service Control
Other NGN
other IP MM Network (e.g. IMS)
NACF
T-12: T. User Profile FE
T-11: T. Authentication &Authorization FE
T-13: T. Location management FE
T-10: T. Network Access Control FE
RACF
T-14: Policy Decision FE
T-15: Access Transport Resource Control FE
T-16 Core Transport Resource Control FE
NGN UNI
End-User Function
Legacy Terminal
RGW
Customer Network
NGN Terminal
Legacy Terminal
T-4: Access Relay FE
T-2: Access Node FE
T-1: Access Media Gateway FE
T-3: Edge Node FE
T-5: Access Border Gateway FE
T-8: Media Resource Processing FE
T-9: Signalling Gateway FE
T-6: Inter-connection Border Gateway FE
Core Transport
T-7: Trunk Media Gateway FE
Internet
PSTN/ISDN
Access Packet Transport Functions
Core Packet Transport Functions
Scope of NGN

Generic Resource & Admission Control Architecture in NGN

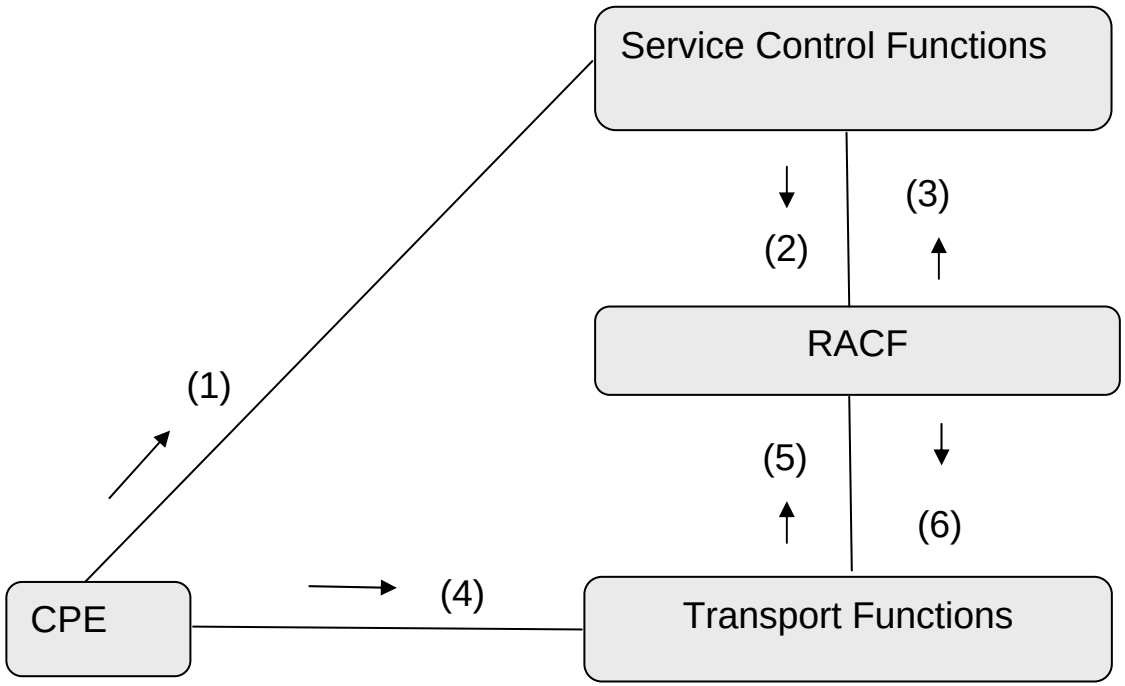


Functional Entities
PD-FE: Policy Decision
PE-FE: Policy Enforcement
TRC-FE: Transport Resource Control
TE-FE: Transport Enforcement

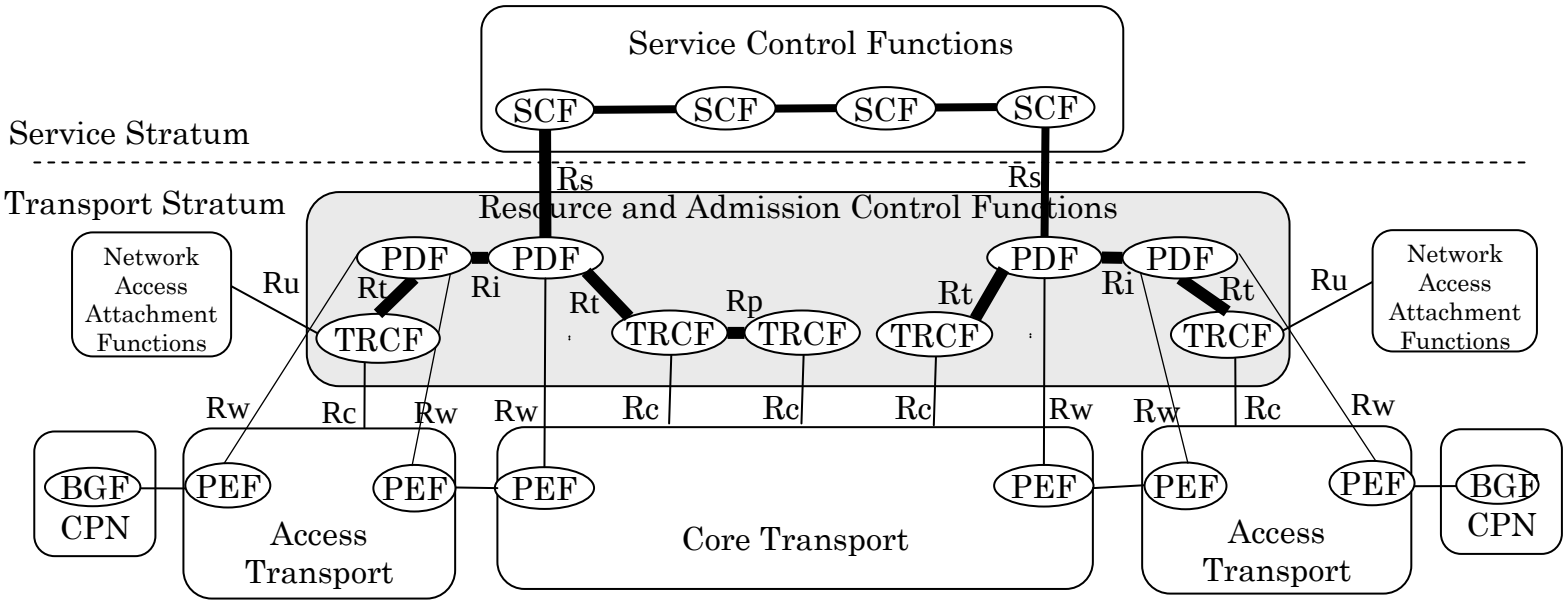
Information Flow for Policy Push Scenario



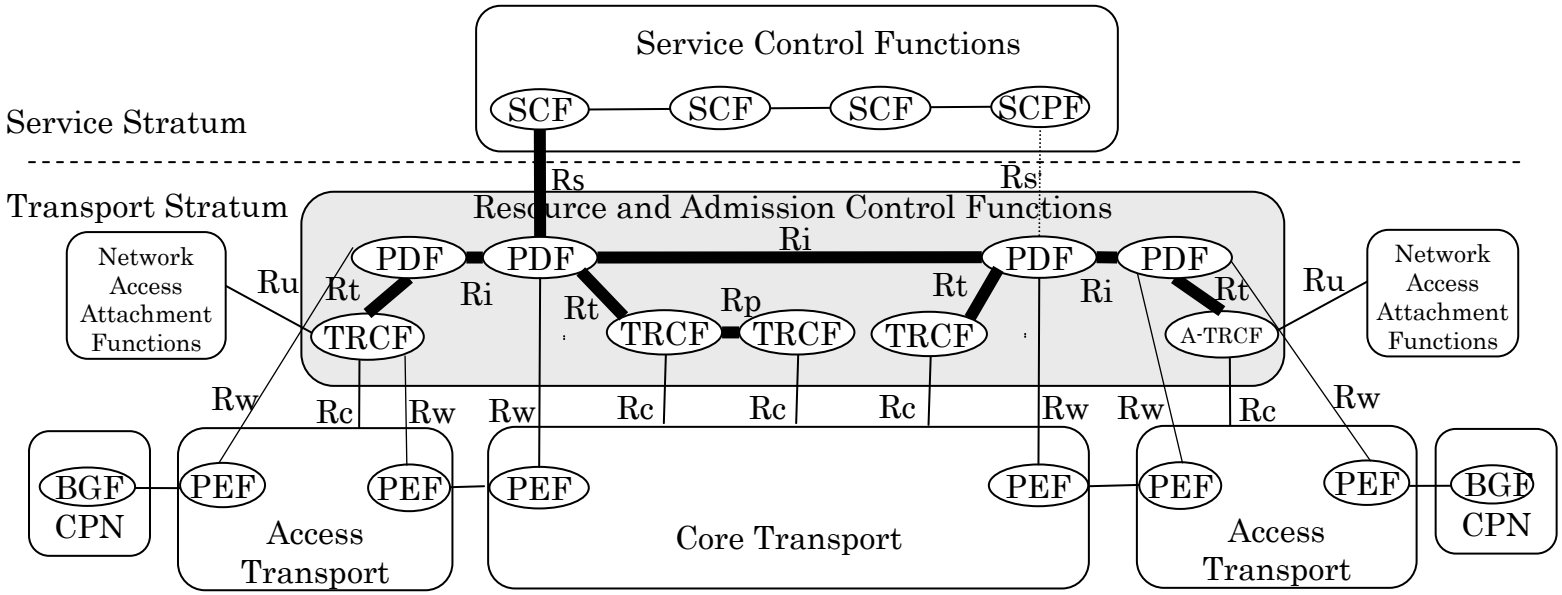
Information Flow for Policy Pull Scenario



Possible point of control scenarios - 1



Possible point of control scenarios - 2



Back Up Slides

Resource & Admission Control Functions

- Covers procedures for the control of QoS (including resource reservation, admission control and gate control) , control of NAPT and Firewall traversal.
- Admission control involves checking authorisation based on user profiles, SLAs, operator specific policy rules, and resource availability within access and core transport.
- Within the NGN architecture, the RACF acts as the arbitrator for resource negotiation and allocation between Application Functions and Transport Functions.
- Similar to ETSI but wider scope than TISPAN Release 1 (e.g. including core network control and inter-domain PDF-PDF communication).

Network Attachment Control Functions

- Dynamic provision of IP address and other user equipment configuration parameters.
- Authentication of user access network, prior or during the IP address allocation procedure.
- Authorisation of user access network, based on user profiles (e.g. access transport subscription).
- Access network configuration, based on user profiles.
- Location management.

Functional Entity Capabilities

Policy Decision FE

- IP Packet Marking Control
- Gate Control
- Rate limiting Control
- NAPT Control
- Firewall Working Mode Selection

Transport Resource Control FE

- Resource status monitoring and network information collection
- Resource based admission control
- Transport dependent policy control

Policy Enforcement FE

- Opening and closing gate: enabling or disabling packet filtering for a IP media flow
- Rate limiting and bandwidth allocation
- Traffic classification and marking
- Traffic policing and shaping
- Mapping of layer 3 QoS information onto link-layer QoS information (e.g. setting 802.1p priority values)
- Network address and port translation
- Media Relay (i.e. address latching) for NAT Traversal
- Collecting and reporting resource Usage information (e.g. start-time, end-time, octets of sent data)
- Packet filtering based firewall: inspecting and dropping packets based on security policy rules

[Transport Enforcement FE

- enforces the transport policy rules instructed by the TRC-FE at the aggregate transport level (e.g. VLAN, VPN and MPLS)]

Rw interface – Resource Request

- Application Identifier
- Session Identifier
- Global IP Address Information (optional, see note 1)
  - Unique IP address
  - Address Realm
- Transport Subscriber Identifier (optional, see note 1)
- Resource Request Client Information
  - Client Name
  - Request Class
- Reservation Holding Time
- Resource Control Session Information (Optional)
- Dynamic firewall working mode (Optional)
- Charging correlation information (Optional)
- Media Profile
  - Media Number
  - Type of Service
  - Class of Service (Optional)
  - Media Priority (Optional)
  - Path Selection Information (Optional)
  - Media Flow Description
- - Flow direction
- - Flow Number
- - Flow Status
- - Protocol Version
- - IP Addresses
- - Ports
- - Protocol Number
- - Bandwidth
- - Gate Status
- - Network QoS handling class (Optional)
- Resource Reservation Mode
- Bearer Event Notification Information (Optional)
  - Service Information Indicator
  - Bearer Loss Indicator
  - Bearer Recovery Indicator
  - Bearer Release Indicator
- NAPT Control and NAT Traversal (Conditional)
  - Address Binding Information Request