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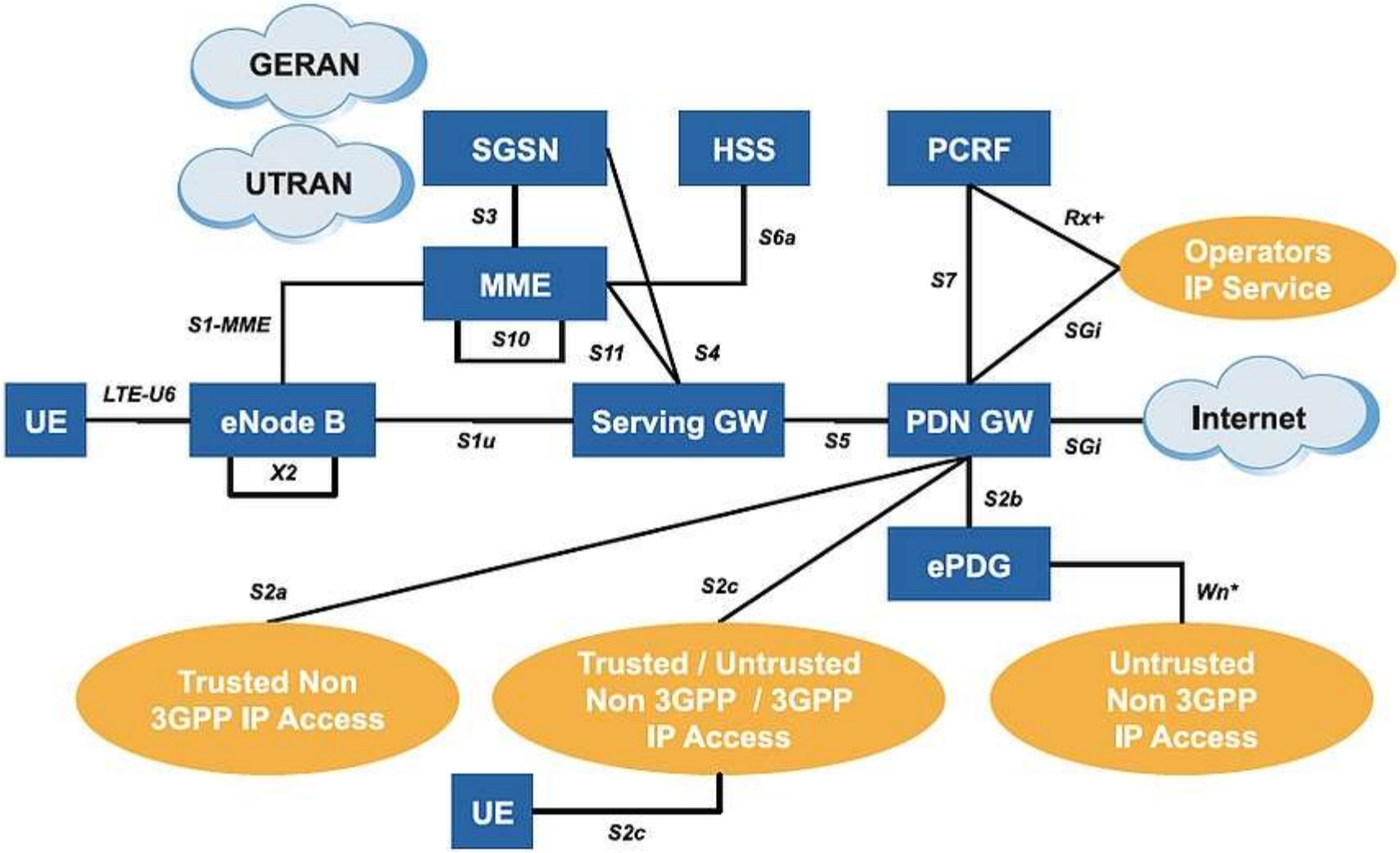
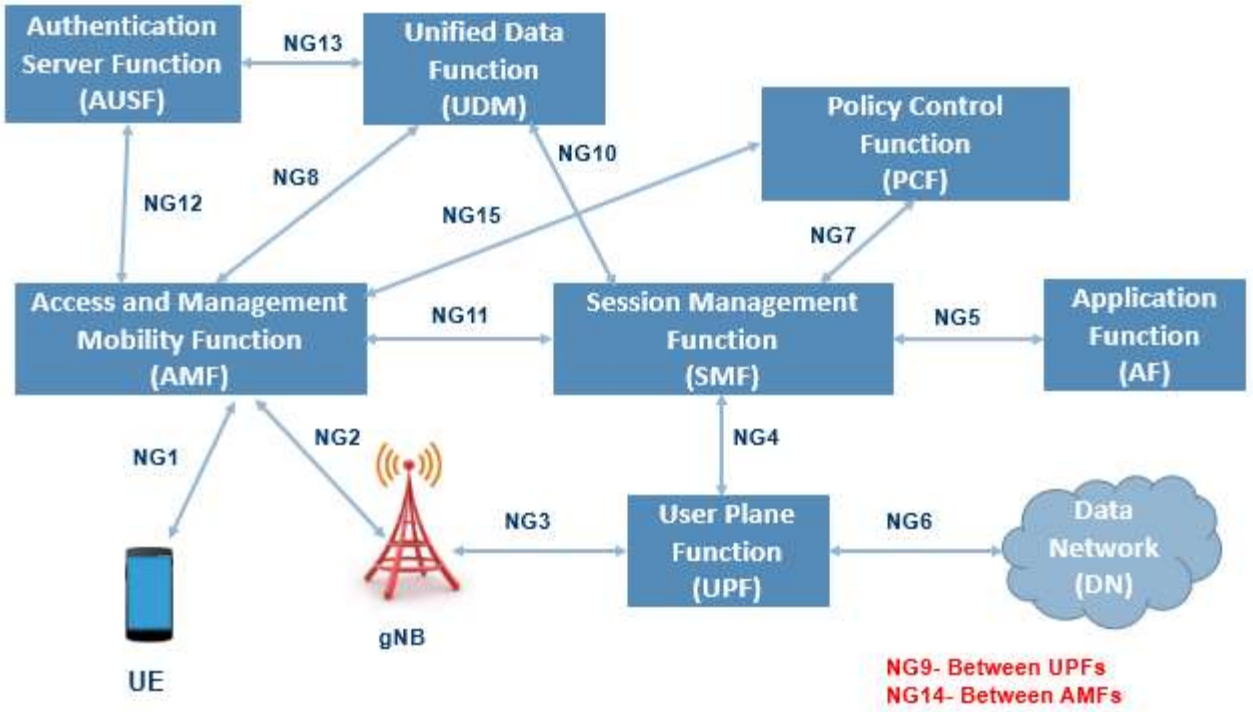
LTE Cellular Network Architecture



LTE TECHENICAL REQUIREMENTS

Technical Items	**LTE-Advanced, IMT Requirement**
Downlink peak data rates	1 Gbps (low mobility 15 km/hr)
Uplink peak data rates	500 Mbps (low mobility 15 km/hr)
Bandwidth	Scalable up to 100 MHz
User plane latency	10 ms
Control plane latency	50 to 100 ms
Uplink peak spectral efficiency	15 bps/Hz
Downlink peak spectral efficiency	30 bps/Hz
Access Scheme	OFDMA

5G Cellular Network Architecture



5G Cellular Network Requirements

- 1-10Gbps connections to end points in the field (i.e. not theoretical maximum)
- 1 millisecond end-to-end round trip delay - latency
- 1000x bandwidth per unit area
- 10-100x number of connected devices
- Perception of) 99.999% availability
- Perception of 100% coverage
- 90% reduction in network energy usage
- Up to ten year battery life for low power, machine-type devices

DIFFERENT TECHONOLOGY IN 5G

- Spectrum reuse and use of different band (e.g., mm-wave communication using 28~GHz and 38~GHz bands), multi-tier network D2D communication, C-RAN, massive-MIMO
- Heterogeneous and multi-tier network
- C-RAN, network virtualization, M2M communication
- M2M communication, self-organizing and cognitive network

THANK YOU