SIMECA: SDN-based IoT Mobile Edge Cloud Architecture
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Limitations of current LTE/EPC architecture in supporting IoT

1. Inflexibility in deploying new IoT services:
   - The network is "closed" with a heavy weight standards process.
2. Centralized deployment of core network functions:
   - Specialized and hardware-based equipment (SPGW, MME, PCRF) deployed in a limited physical locations.
3. Heavy-weight data and control plane for IoT traffic:
   - GTP tunnels add data plane overhead and forwarding states.
   - Maintaining GTP tunnels incurs control plane signaling.

Proposed mobile edge cloud architecture for IoT services

1. Multiple IoT service providers share an infrastructure.
   - IoT network service abstraction (ISA) realized by NFV, SDN, and cloud.
2. More distributed architecture: mobile edge network and cloud.
   - NFV mobility functions and cloud deployed close to the edge, SDN-based forwarding.
3. Light-weight data and control plane for IoT devices.
   - Remove GTP tunnels, best-effort forwarding to local cloud.
   - SDN-based path implementation.

Infrastructure: mobile edge network and edge cloud

SIMECA vs. LTE/EPC: number of forwarding states

1. C2S attach:
   - Nexus 5 attaches to edge cloud via OAI eNB*.
2. P2P attach:
   - Emulated client attaches and communicates with the Nexus 5 via emulated OPENEPC eNB*.
3. Mobility:
   - Emulated client hands-over and maintains a continuous flow with the Nexus 5.

IoT Service Abstraction, Control and Data plane

References