Introduction of ASTRI’s Network Functions Virtualization (NFV) Technologies
ASTRI LTE NFV Technology Demo on Intel ONP

**Virtual Network Functions**
Provides LTE Core Network Functions (VNF)

**NFV Platform**
Provides Hypervisor, Virtual Switch to VNFs

**Hardware Platform**
Intel E5-2600 v3 Series provides latest and greatest features supporting NFV capabilities

- X86 Servers (Dell R730)

- ASTRI focus on networking software R&D, license developed technologies to industry for commercial production.
- ASTRI provides LTE end-to-end Core Network Software
- FastGate is ASTRI’s high performance and field-proven Network Processing Software Technologies
- ASTRI NFV supports: WindRiver Titanium Cloud, (Gold member of Titanium Cloud), and Intel ONP
ASTRI LTE Core Network Solution

- Optimized, deliver 20+Gbps NFV performance
- Deployed in CMCC
- Isolate traffic between Small Cell access
- Authenticate LTE small cells
- Encrypt traffic.

- Supports >640K subscribers, >10K signaling call/sec
- Deployed in CMCC
- Aggregate signaling/data traffic from Small Cell
- Reduces EPC loading

- Supports >100K online subscribers, line speed data throughput
- Embedded HSS/PCRF
- Single-box/distributed
- Deployed to manage subway signals
- Mobility Management, Data (GTP-U) tunnels
 ASTRI VNFs (LTE Small Cell GW, Security GW)

WindRiver® Titanium Cloud

Intel x86 server

China Mobile’s NFV Demo/Testing Platform

- Network Function Layer
  - SW and HW decoupled, easy for iteration upgrade and mgmt
- Security Gateway
- LTE Small Cell Gateway
- EPC
- WiFi AC

- Virtual Resource Layer
  - HW resource virtualization, easy deployment, flexible scheduling, elastically scalable
- VM
- Hypervisor

- Hardware Resource Layer
  - General-purpose server, low cost, centralized management

- Intel Reference COTS Server

GW: Gateway  VNF: Virtual Network Function  VM: Virtual Machine
ASTRI’s **FastGate** Key Features:

- Deliver line-speed performance (20-40+Gbps on NFV, depends on config)
- Programmable (wrapped API instead of native API)
- Optimized for Intel DPDK, and virtualization
- Foundations for building performance demanding VNF
- Applications: building LTE EPC, Software Gateway
ASTRI Mobile Core Network NFV Architecture

### Highlights

- Industry-standard, high-volume servers, switches, and storage platform
- Deliver Stable Performance
- Orchestration – smooth operations to provision resources according to requirements
- Inter-operability (of NFV platform with VNFs)

ASTRI is the first to provide carrier-grade VNFs for LTE SeGW and LTE Small Cell GW.
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