

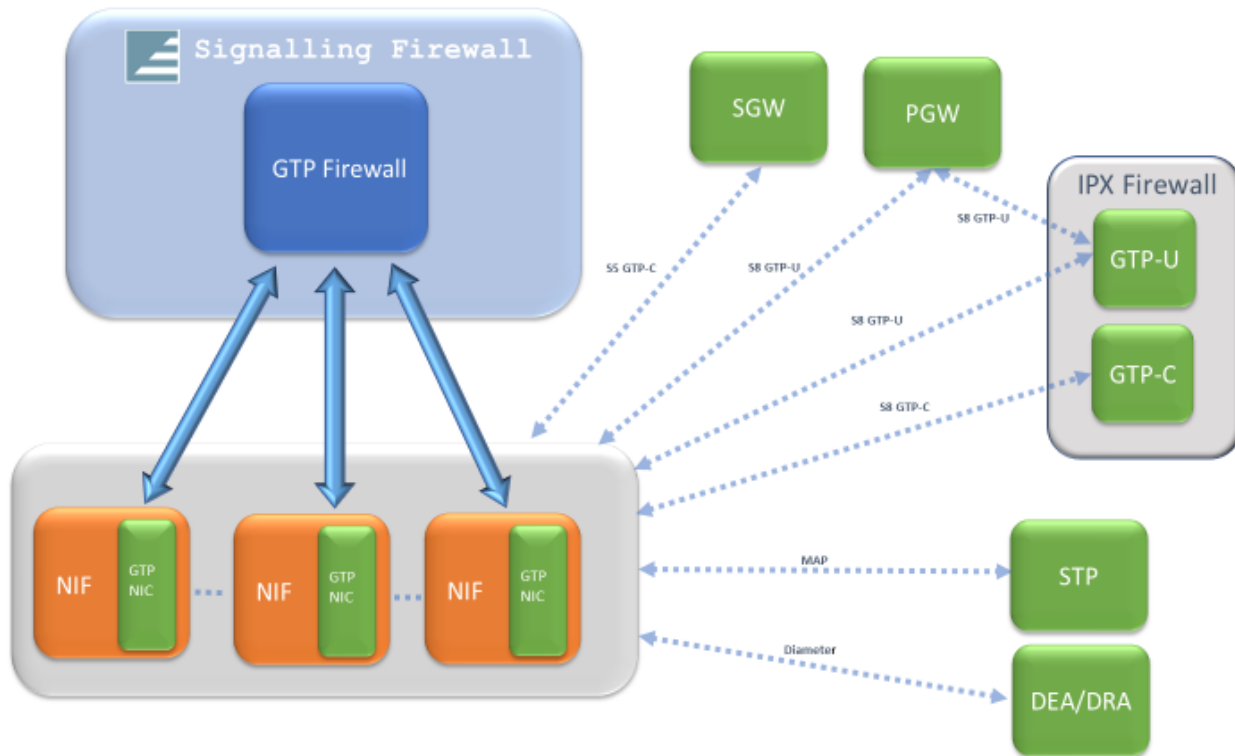


# **MOBILEUM**

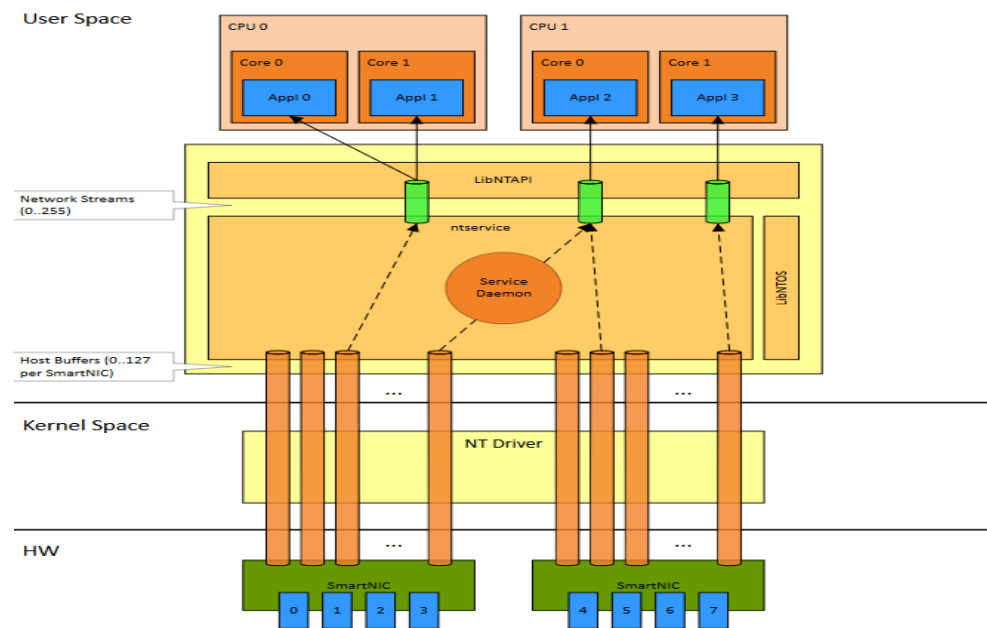
## **GTP Firewall**



# GTP Firewall – Q2 19



SmartNIC - Hardware



Supports 200Gb/s per card



# GTP Firewall Features

- GSMA FS.20 Category 1, 2, 3
- S8 and Gp interfaces
- Message format checks to ensure the necessary IEs are present
- GTP v0, v1 & v2 support
- Rate limiting
- Powerful configuration options depending on source, messages, consistency between layers and management of exceptions
- Up to 200Gb/s bandwidth support and scalable:
  - CPUs additional can be allocated to streams for processing to spread load across CPUs
  - Buffers can be shared across CPUs
  - SmartNICs support stream separation across cards, i.e. to increase bandwidth additional cards can be added
- GTPu inspection & content filtering (Later roadmap- but SmartNIC hardware enables)
  - Perform consistency checking on GTPu messages to stop tunnel hijacking by spoofing TIED



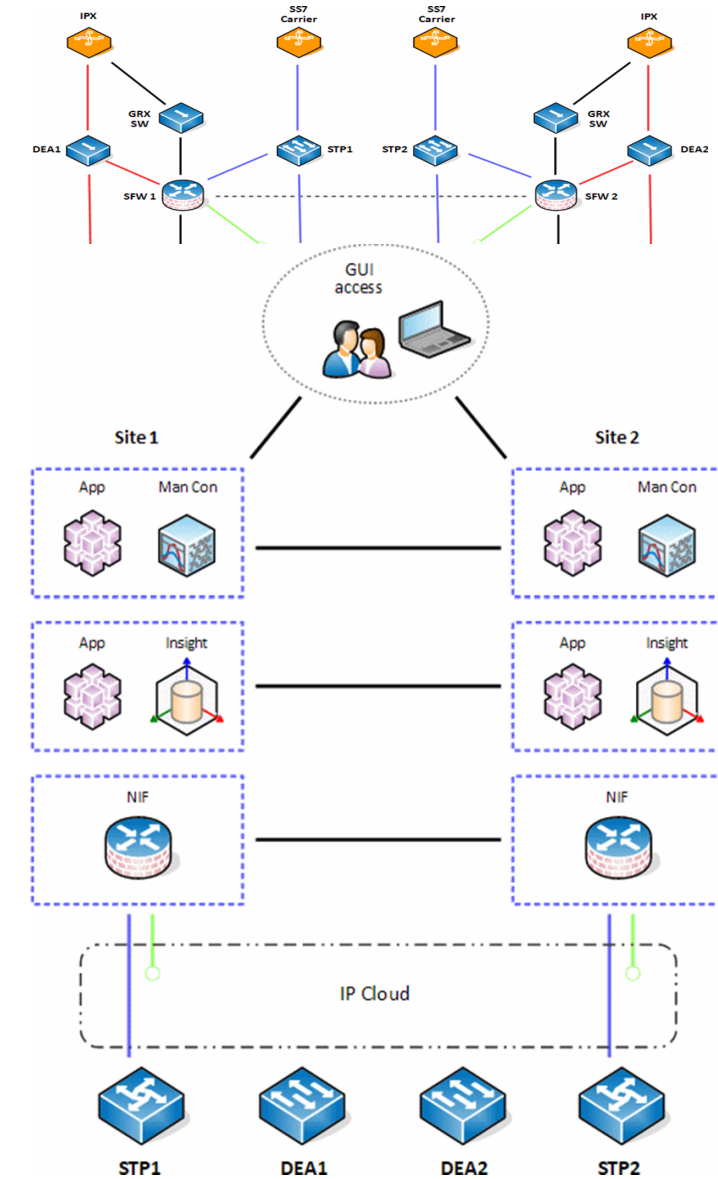
# GTPc Firewall – Q2 2019

- SmartNIC to separate GTPc (and this then supports GTPu roadmap) or route GTPc to NIF
- Actions
  - › Block: IP/source, TEID (GTPu roadmap allow content block)
  - › GTPc message/reject
- Format
  - › Order, nesting, mandatory IEs etc
- Source checks (category 1)
  - › Operator, subnet, IR21 etc
  - › E.g. Echo response from known peers (used for discovering network equipment)
- Own subscriber and consistency (category 2)
  - › Check home network of IMSI for appropriate messages
  - › E.g. Delete session should come from home network (DOS)
- Location (category 3)
  - › Check source address location is consistent with other protocols
  - › E.g. Create session
- Rate limiting
- Alerting , EDRs, reports, PCAP etc as per firewall



# Integration

- Assuming Tx/Rx SS7, DIAMETER and GTP across two physical sites for resilience & geo-redundancy
- Two options for integration into a MNO
  - GTPc & GTPu forwarded to NIF
    - SmartNIC breaks out GTPc and GTPu into hardware processed streams
    - Disadvantage is that in GTPc only installations the NIF processes the entire GTP bandwidth (GTPu & GTPc)
  - GTPc port forwarded from IPX firewall to NIF
    - Advantage: lower bandwidth SmartNIC required
    - Disadvantage GTPu processing is harder to implement later upgrade to NIF required, higher capacity SmartNIC would need to be added, and additional CPUs to handle the GTPu stream processing





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Thank You