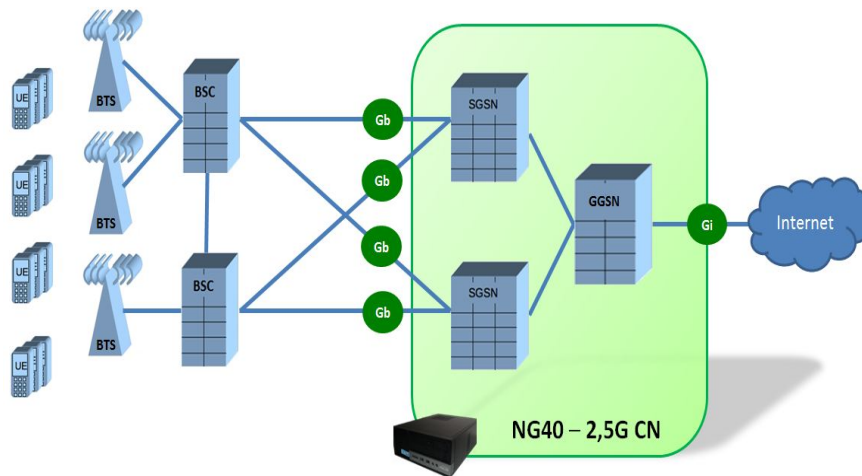


**NG40-CN-Gb-Eth-DT**

Multiple SGSN LOAD TEST Core Network Emulator (Gb-/Gi-Interface) with Control Plane (MAC-IP-NS/IP-BSSGP-LLC-GMM/SM) and User Plane (MAC-IP-NS/IP-BSSGP-LLC-SNDCP-IP) over Ethernet

\*\*\* FEATURES \*\*\*

- Physical interface: GbE
- Transport NS-over-IP
- HLR/HSS and GGSN functionality included
- NS/BSSGP/LLC/SNDCP Release 6+7+8
- NAS Release 8+9+10
- Unlimited number of cells//NSVC's/BVC's
- Unack/Ack mode for LLC Sessions

\*\*\* SESSIONS \*\*\*

- IPv4/IPv6 Transport-IP and Application-IP
- PDP-Context creation/modification/deletion (UE/Network initiated)
- 11 simultaneous PDP-Context per UE (primary, secondary)

\*\*\* SECURITY \*\*\*

- Authentication (XOR/Milenage for 3G USIM's, A3/A8 for 2G SIM's)
- GEA-1 / GEA-2 / GEA-3 Ciphering

\*\*\* EXTENSIONS \*\*\*

- Gb over Frame Relay / IuPS (SGSN 3G) / S1 (MME)

\*\*\* MOBILITY \*\*\*

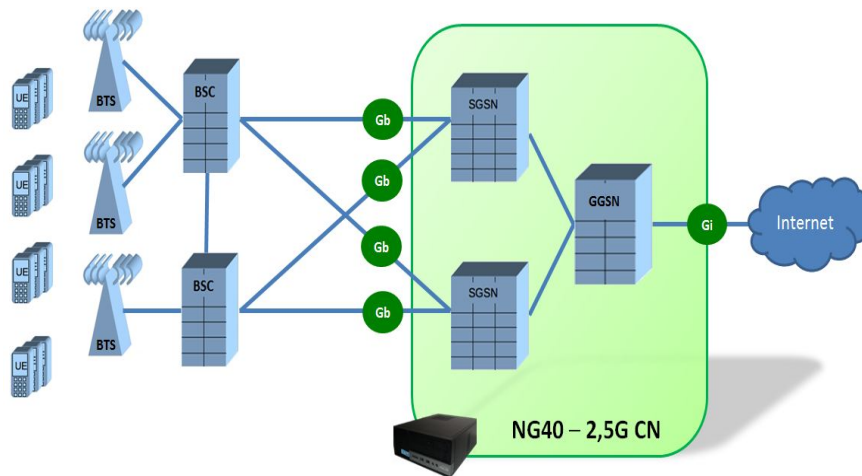
- Attach, Detach, Routing Area Update
- 2G/3G/4G Mobility (3G and 4G Mobility optional)
- Idle Mode Paging for Downlink Data

\*\*\* SERVICES \*\*\*

- IP-Bridge to external servers via Gi-interface
- Integrated User Plane packet generator
- SMS-Generator including concatenated (long) SMS
- Alpha Tagging
- APN-based routing

\*\*\* DEMONSTRATION TEST KPI's \*\*\*

- 10 procedures/sec
- 10 Mbps rx and 100 Mbps tx

**NG40-CN-Gb-Eth-FT**

Multiple SGSN LOAD TEST Core Network Emulator (Gb-/Gi-Interface) with Control Plane (MAC-IP-NS/IP-BSSGP-LLC-GMM/SM) and User Plane (MAC-IP-NS/IP-BSSGP-LLC-SNDCP-IP) over Ethernet

\*\*\* FEATURES \*\*\*

- Physical interface: GbE
- Transport NS-over-IP
- HLR/HSS and GGSN functionality included
- NS/BSSGP/LLC/SNDCP Release 6+7+8
- NAS Release 8+9+10
- Unlimited number of cells//NSVC's/BVC's
- Unack/Ack mode for LLC Sessions

\*\*\* SESSIONS \*\*\*

- IPv4/IPv6 Transport-IP and Application-IP
- PDP-Context creation/modification/deletion (UE/Network initiated)
- 11 simultaneous PDP-Context per UE (primary, secondary)

\*\*\* SECURITY \*\*\*

- Authentication (XOR/Milenage for 3G USIM's, A3/A8 for 2G SIM's)
- GEA-1 / GEA-2 / GEA-3 Ciphering

\*\*\* EXTENSIONS \*\*\*

- Gb over Frame Relay / IuPS (SGSN 3G) / S1 (MME)

\*\*\* MOBILITY \*\*\*

- Attach, Detach, Routing Area Update
- 2G/3G/4G Mobility (3G and 4G Mobility optional)
- Idle Mode Paging for Downlink Data

\*\*\* SERVICES \*\*\*

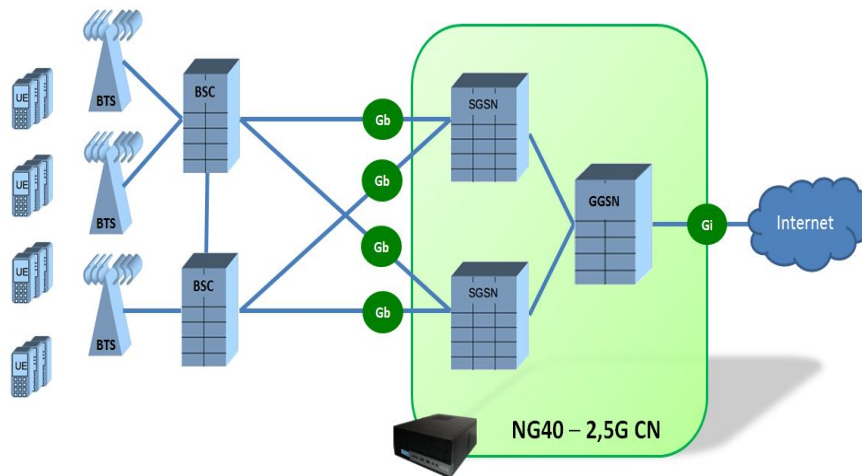
- IP-Bridge to external servers via Gi-interface
- Integrated User Plane packet generator
- SMS-Generator including concatenated (long) SMS
- Alpha Tagging
- APN-based routing

\*\*\* FUNCTIONAL TEST KPI's \*\*\*

Message modification, deletion and insertion with commreplace emulation and Python scripts

- 100 procedures/sec
- 100 Mbps rx and 100 Mbps tx

## NG40-CN-Gb-Eth-LT



Multiple SGSN LOAD TEST Core Network Emulator (Gb-/Gi-Interface) with Control Plane (MAC-IP-NS/IP-BSSGP-LLC-GMM/SM) and User Plane (MAC-IP-NS/IP-BSSGP-LLC-SNDCP-IP) over Ethernet

\*\*\* FEATURES \*\*\*

- Physical interface: GbE
- Transport NS-over-IP
- HLR/HSS and GGSN functionality included
- NS/BSSGP/LLC/SNDCP Release 6+7+8
- NAS Release 8+9+10
- Unlimited number of cells//NSVC's/BVC's
- Unack/Ack mode for LLC Sessions

\*\*\* SESSIONS \*\*\*

- IPv4/IPv6 Transport-IP and Application-IP
- PDP-Context creation/modification/deletion (UE/Network initiated)
- 11 simultaneous PDP-Context per UE (primary, secondary)

\*\*\* SECURITY \*\*\*

- Authentication (XOR/Milenage for 3G USIM's, A3/A8 for 2G SIM's)
- GEA-1 / GEA-2 / GEA-3 Ciphering

\*\*\* EXTENSIONS \*\*\*

- Gb over Frame Relay / IuPS (SGSN 3G) / S1 (MME)

\*\*\* MOBILITY \*\*\*

- Attach, Detach, Routing Area Update
- 2G/3G/4G Mobility (3G and 4G Mobility optional)
- Idle Mode Paging for Downlink Data

\*\*\* SERVICES \*\*\*

- IP-Bridge to external servers via Gi-interface
- Integrated User Plane packet generator
- SMS-Generator including concatenated (long) SMS
- Alpha Tagging / APN-based routing

\*\*\* LOAD TEST KPI's \*\*\*

Typical signaling performance with high end server:

- Up to 3 \* 20.000 GMM-SM msg/s

Typical user plane perform. over 20 \* 1 GbEth interf.:

- With small packages (128 Byte payload): static total: 6 Gbps, dynamic total: 4.5 Gbps
- With 1500 Byte packages: up to 19 Gbps (max. 20 \* 1 GbEth per server and 1 card used for signaling)
- Default number of SGSNs: 40
- Default number of BSSs: 400
- Subscribers/bearers/sessions: 2.000.000 (with GbFlex and max NRI field length: 1.000.000)