

Nokia Cloud Mobile Gateway — appliance

Release 25

The Nokia Cloud Mobile Gateway appliance (CMG-a) is a multi-functional packet core gateway that provides increased deployment flexibility with pre-integrated software packages to support a diverse range of business and operational deployment models. The CMG-a leverages the same Cloud Mobile Gateway software from the industry-leading Nokia Cloud Packet Core solution – with its proven deployment in global Tier 1 communications service provider networks, supporting a comprehensive 3GPP gateway feature set.

Features

Deployment flexibility

To deliver the required architectural and deployment flexibility, the Nokia CMG-a supports pre-integrated hardware configurations: CMG-a2 and CMG-a6. Centralized and distributed network architectures can be supported to meet service, application, and business requirements. The CMG-a supports a wide range of gateway functions in the packet core, for licensed wireless 2G/3G/4G and 5G non-standalone (NSA) and 5G standalone (SA) radio access. It also supports unlicensed and shared spectrum, including Wi-Fi®. The Nokia CMG-a supports the following network functions:

- Packet Data Network Gateway (PGW)
- Serving Gateway (SGW)
- Session Management Function (SMF)
- User Plane Function (UPF)
- Evolved Packet Data Gateway (ePDG)

Benefits

With its extensive IP networking, common software across deployment options, the Nokia CMG-a offers a comprehensive core feature set that supports:

- Enhanced mobile broadband data services
- Business/mobile enterprise virtual private network (VPN) services
- Enhanced packet voice — Voice over LTE (VoLTE) and Voice over Wi-Fi (VoWiFi)
- Video and multimedia services
- Internet of Things (IoT) and machine type communications (MTC)
- Public safety, government and military applications for highly reliable broadband services.

CMG-a management

CMG-a is managed by Nokia MantaRay NM for seamless, comprehensive management of mobile network cores and radio access networks. MantaRay NM provides the fault, configuration, accounting, performance and security (FCAPS) management capabilities for the CMG-a.

The CMG-a uses HPE ProLiant Gen11 server integrated Lights-Out (iLO) as an embedded technology to provide server visibility and health.

CMG-a hardware options

The CMG-a supports three pre-integrated packages: CMG-a2 on HPE ProLiant DL325 servers, CMG-a2 on HPE ProLiant DL345 servers and CMG-a6 on HPE DL325 servers and 7220 IXR-D3L switches. These three hardware variants provide flexible deployment for a broad range of applications that require a minimum footprint with high performance and capacity while still operating in a telco environment.

Figure 1. CMG-a2 on HPE DL325 servers



Figure 2. CMG-a2 on HPE DL345 servers



Figure 3: CMG-a6 on HPE DL325 servers



HPE ProLiant servers provide redundant AC or DC power supplies, as well as redundant cooling fans. By reducing energy consumption, the HPE ProLiant server is optimized for lowering data center operation costs.

The 1RU HPE ProLiant DL325 server runs on the 4th Generation AMD EPYC 9534 Series processor, which delivers an exceptional balance of processor, memory and I/O for high performance at lower total-cost of ownership (TCO) for telecom data applications. Each server has four integrated 100 Gbps ports.

Figure 4: HPE ProLiant DL325 Gen11 server front view



Figure 5: HPE ProLiant DL325 Gen11 server rear view



The 2RU HPE ProLiant DL345 server runs on the 4th Generation AMD EPYC 9654P Series processor, which delivers an exceptional balance of processor, memory, and I/O for high performance at lower total-cost of ownership (TCO) for telecom data applications. Each server has eight integrated 100 Gbps ports.

Figure 6: HPE ProLiant DL345 Gen11 server front view



Figure 7: HPE ProLiant DL345 Gen11 server rear view



The CMG-a2 hardware configuration includes:

- 2 x 1RU HPE ProLiant DL325 Gen11 servers or
- 2 x 2RU HPE ProLiant DL345 Gen11 servers

CMG-a6 hardware configuration includes:

- 6 x 1RU HPE ProLiant DL325 Gen11 servers
- 2 x Nokia 7220 IXR-D3L switches.

Technical specifications

Cloud Mobile Gateway (CMG) standards and protocols

3GPP standards

- | | | | |
|-------------|-------------|-------------|-------------|
| • TS 23.060 | • TS 24.501 | • TS 29.501 | • TS 32.298 |
| • TS 23.203 | • TS 29.060 | • TS 29.503 | • TS 32.299 |
| • TS 23.234 | • TS 29.212 | • TS 29.510 | • TS 33.102 |
| • TS 23.401 | • TS 29.273 | • TS 29.518 | • TS 33.106 |
| • TS 23.402 | • TS 29.274 | • TS 29.531 | • TS 33.107 |
| • TS 23.501 | • TS 29.275 | • TS 32.251 | • TS 33.108 |
| • TS 23.502 | • TS 29.281 | • TS 32.295 | • TS 33.402 |
| • TS 24.302 | • TS 29.500 | • TS 32.297 | • TS 38.413 |

Table 1. HPE ProLiant DL325 Gen11 server

Specifications	
Dimensions	<ul style="list-style-type: none"> 8SFF chassis (Height x Width x Depth): <ul style="list-style-type: none"> – 4.29 X 43.46 X 64.94 cm – 1.69 X 17.11 X 25.57 in
Weight (max. configuration)	18.6 kg (40.9 lb)
CPU	1 x AMD 9534 2.45GHz 64-core 280W
Power supply	Redundant HPE 1000W AC or DC Flex Slot power supplies
System rating	<ul style="list-style-type: none"> 100 120 or 200 240 V AC, 50/60 Hz, 7.5/4A or 240 V DC, 3.7 A (per PSU inlet) –40 to –72V DC, 22 A max. (per PSU inlet) Energy Star 4.0
Cooling	7 high-performance fans
Input/output	4 x 100 GE QSFP56 ports (2 x 2p Mellanox ConnectX-6 NICs)
Storage	2 x 960G SATA 3dwpd 2.5-inch SSDs
Peripheral interconnect	PCIe Gen5
Server management	IPMI v2.0 compliant, on-board Baseboard Management Controller
FCC compliance	Part 15
Operating temperature	<ul style="list-style-type: none"> Operating temperature range: 10°C to 35°C (50°F to 95°F) Non-operating temperature range: –30°C to +60°C (–22°F to 140°F)
Operating relative humidity	<ul style="list-style-type: none"> Operating relative humidity: 8% to 90% non-condensing Non-operating relative humidity: 5% to 95% non-condensing
European Union environmental	ErP Lot9 Declarations (EU Regulation 2019/424)
RoHS compliance	<ul style="list-style-type: none"> EU RoHS2, applicable restrictions under Annex XVII of the EU REACH Regulation Management Methods for Restricted Use of Hazardous Substances in Electrical and Electronic Products, China RoHS 2
BTU rating	For 1000W (Titanium) Power Supply: 3741 BTU/hr (at 100 VAC), 3596 BTU/hr (at 200 VAC), 3582 BTU/hr (at 240 VAC) (for China only)

Table 2. HPE ProLiant DL345 Gen11 server

Specifications	
Dimensions	<ul style="list-style-type: none"> 8SFF chassis (Height x Width x Depth): <ul style="list-style-type: none"> – 8.75 x 44.8 x 66.3 cm – 3.45 x 17.64 x 26.11 in
Weight (max. configuration)	22.9 kg (50.5 lb)
CPU	1 x AMD 9654P 2.4GHz 96-core 360W
Power supply	Redundant HPE 1000W AC or DC Flex Slot power supplies
System rating	<ul style="list-style-type: none"> 200 240 V AC, 60 Hz, 7.5/4A or 240 V DC, 3.7 A (per PSU inlet) –40 to –72V DC, 22 A max. (per PSU inlet) Energy Star 4.0
Cooling	6 high-performance fans
Input/output	8 x 100 GE QSFP56 ports (4 x 2p Mellanox ConnectX-6 NICs)
Storage	2 x 960G SATA 3dwpd 2.5-inch SSDs
Peripheral interconnect	PCIe Gen5
Server management	IPMI v2.0 compliant, on-board Baseboard Management Controller
FCC compliance	Part 15
Operating temperature	<ul style="list-style-type: none"> Operating temperature range: 10°C to 35°C (50°F to 95°F) Non-operating temperature range: –30°C to +60°C (–22°F to 140°F)
Operating relative humidity	<ul style="list-style-type: none"> Operating relative humidity: 8% to 90% non-condensing Non-operating relative humidity: 5% to 95% non-condensing
European Union environmental	ErP Lot9 Declarations (EU Regulation 2019/424)
RoHS compliance	<ul style="list-style-type: none"> EU RoHS2, applicable restrictions under Annex XVII of the EU REACH Regulation Management Methods for Restricted Use of Hazardous Substances in Electrical and Electronic Products, China RoHS 2
BTU rating	For 1800-2200W (Titanium) Power Supply, 7230 BTU/hr at 220 VAC.

Table 3. Nokia 7220 IXR-D3L

Specifications	
Dimensions	<ul style="list-style-type: none"> Height: 43 mm (1.69 in.) • Width: 438.5 mm (17.26 in.) • Depth: 515 mm (20.27 in.)
Weight (max. configuration)	<ul style="list-style-type: none"> 6.65 kg (14.66 lb) (unpopulated) • 9.36 kg (20.64 lb) (fully populated)
Operating temperature	0°C to +40°C (32°F to +104°F) sustained
Operating relative humidity	5% to 95%, non-condensing
Power	<ul style="list-style-type: none"> 1+1 redundant AC or –48V DC 650W AC / 650W DC
Cooling	Fans, N+1 redundant Front-to-back or back-to-front* airflow

* For more detailed specification information, please contact your Nokia sales representative.



Table 4. HPE ProLiant DL325 Gen11 server power calculations

CMG	AC Power					DC Power				
Utilization (%)	0%	20%	50%	80%	100%	0%	20%	50%	80%	100%
Line voltage	220 VAC	220 VAC	220 VAC	220 VAC	220 VAC	-48 VDC	-48 VDC	-48 VDC	-48 VDC	-48 VDC
VA rating	114.44 VA	240.15 VA	416.68 VA	592.16 VA	710.78 VA	137.25 VA	265.59 VA	436.55 VA	608.57 VA	727.48 VA
BTU HR	363.41 BTU/h	777.52 BTU/h	1384.13 BTU/h	1995.65 BTU/h	2405.31 BTU/h	468.02 BTU/h	905.68 BTU/h	1488.63 BTU/h	2075.22 BTU/h	2480.71 BTU/h
System current	0.52 A	1.09 A	1.89 A	2.69 A	3.23 A	2.86 A	5.53 A	9.09 A	12.68 A	15.16 A
Utilization input power	106.57 W	228.01 W	405.9 W	585.23 W	705.37 W	137.25 W	265.59 W	436.55 W	608.57 W	727.48 W
Idle input power	106.57 W	106.57 W	106.57 W	106.57 W	106.57 W	137.25 W	137.25 W	137.25 W	137.25 W	137.25 W
Max. load input power	705.37 W	705.37 W	705.37 W	705.37 W	705.37 W	727.48 W	727.48 W	727.48 W	727.48 W	727.48 W
Utilization carbon emissions (CO ₂ e)	369 kg CO ₂ e	790 kg CO ₂ e	790 kg CO ₂ e	1407 kg CO ₂ e	2445 kg CO ₂ e	1371 kg CO ₂ e	2653 kg CO ₂ e	4360 kg CO ₂ e	6079 kg CO ₂ e	7266 kg CO ₂ e

Table 5. HPE ProLiant DL345 Gen11 server power calculations

CMG	AC Power					DC Power				
Utilization (%)	0%	20%	50%	80%	100%	0%	20%	50%	80%	100%
Line voltage	220 VAC	220 VAC	220 VAC	220 VAC	220 VAC	-48 VDC	-48 VDC	-48 VDC	-48 VDC	-48 VDC
VA rating	223.16 VA	417.51 VA	698.93 VA	982.13 VA	1173.15 VA	248.73 VA	432.20 VA	711.31 VA	1007.13 VA	1207.22 VA
BTU HR	741.2 BTU/h	1402.29 BTU/h	2366.92 BTU/h	3336.89 BTU/h	3990.10 BTU/h	848.148 BTU/h	1473.81 BTU/h	2425.55 BTU/h	3434.32 BTU/h	4116.60 BTU/h
System current	1.01 A	1.9 A	3.18 A	4.46 A	5.33 A	5.18 A	9.0 A	14.82 A	20.98 A	25.15 A
Utilization input power	217.36 W	411.23 W	694.11 W	978.56 W	1170.12 W	248.73 W	432.20 W	711.31 W	1007.13 W	1207.22 W
Idle input power	217.36 W	217.36 W	217.36 W	217.36 W	217.36 W	248.73 W	248.73 W	248.73 W	248.73 W	248.73 W
Max. load input power	1170.12 W	1170.12 W	1170.12 W	1170.12 W	1170.12 W	1207.22 W	1207.22 W	1207.22 W	1207.22 W	1207.22 W
Utilization carbon emissions (CO ₂ e)	1757 kg CO ₂ e	3480 kg CO ₂ e	6084 kg CO ₂ e	8706 kg CO ₂ e	10480 kg CO ₂ e	2484 kg CO ₂ e	4317 kg CO ₂ e	7105 kg CO ₂ e	10006 kg CO ₂ e	12060 kg CO ₂ e

Ordering information

The CMG-a orderable items consist of the hardware package required, the operating system software, and the application software licenses (ASLs) based on the required network functions.

For ordering questions, please contact your Nokia sales representative.

Learn more

For more information about the Nokia Cloud Mobile Gateway, please visit: <https://www.nokia.com/networks/core-networks/cloud-mobile-gateway/>

About Nokia

At Nokia, we create technology that helps the world act together.

As a B2B technology innovation leader, we are pioneering networks that sense, think and act by leveraging our work across mobile, fixed and cloud networks. In addition, we create value with intellectual property and long-term research, led by the award-winning Nokia Bell Labs.

Service providers, enterprises and partners worldwide trust Nokia to deliver secure, reliable and sustainable networks today – and work with us to create the digital services and applications of the future.

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