Xingtera 5G RAN and 5G Core Product and Solution

Xingtera Inc.

Santa Clara, California

5G gNodeB Product Portfolio

5G Disaggregated Small Cells

- Frequency Sub-6 or mmWave
- Bandwidth 100MHz
- MIMO 2T2R/4T4R

RU

- CAT6A Ethernet cable or optical fiber
- Photoelectric composite cables or PoE+ power supply

- 10G/25G interface
- Remote power supply

FHGW/HUB

- Optical fiber
- 10G/25G data transmission

- On-site, concentrated, hardened, and secured O-RAN architecture DU
- O-RAN, 3GPP, and SCF splits

BU

5G All-in-One Small Cells

mmWave All-in-One

- Frequency mmWave 28GHz
- Bandwidth 400MHz
- Backhaul 10G SFP

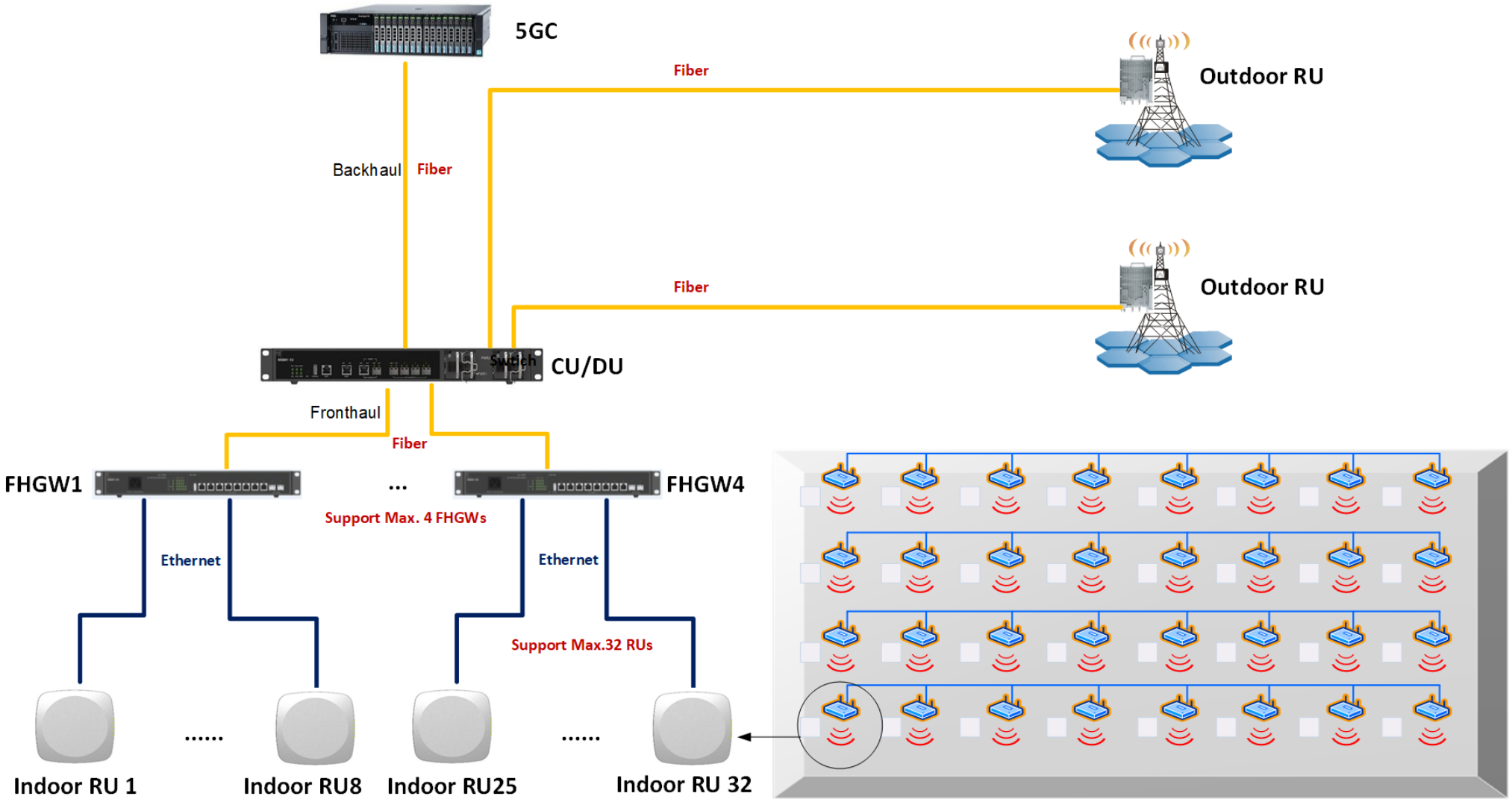
Sub-6G All-in-One

- Frequency 2.6GHz/3.5GHz/4.9GHz
- Bandwidth 100MHz
- MIMO 2T2R
- Backhaul 2.5G/10G SFP

Sub-6G Outdoor All-in-One

- Frequency Sub 6 GHz
- Bandwidth 100MHz
- MIMO 4T4R
- 10G SFP interface
- O RAN , 3GPP and Small Cell Forum splits
- Flexible deployment in an open interface architecture

5G Disaggregated Small Cell to Support Seamless Coverage



CU/DU Specification

Parameter	Spec
Backhaul interface	1*10Gbps SFP (or Ethernet)
Fronthaul interface	4*10/25Gbps SFP
Capability	4 Cells for 2T2R, 2 Cells for 4T4R
MIMO	2T2R/4T4R
Users	400 active concurrent users per cell
Max Throughput Per Cell	DL: 750Mbps (100MHz, 256 QAM, 2T2R) UL: 281Mbps (100MHz, 64 QAM, 2T2R) DL: 1.5Gbps (100MHz, 256 QAM, 4T4R)
Power consumption	< 350W with full load
Dimension	19 inch 1U chassis, <400 mm in depth
Sync	GPS/Beidou, IEEE1588V2

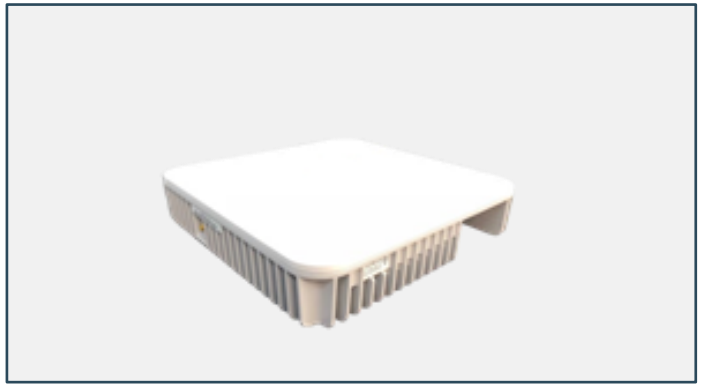
- CU/DU connects with max 4 fronthaul gateways via 10/25Gbps SFP+
- CU/DU supports NR cell split/merge, support one NR super cell or 4 NR standalone cells
- Support option8, option 7-2 and option 6 split

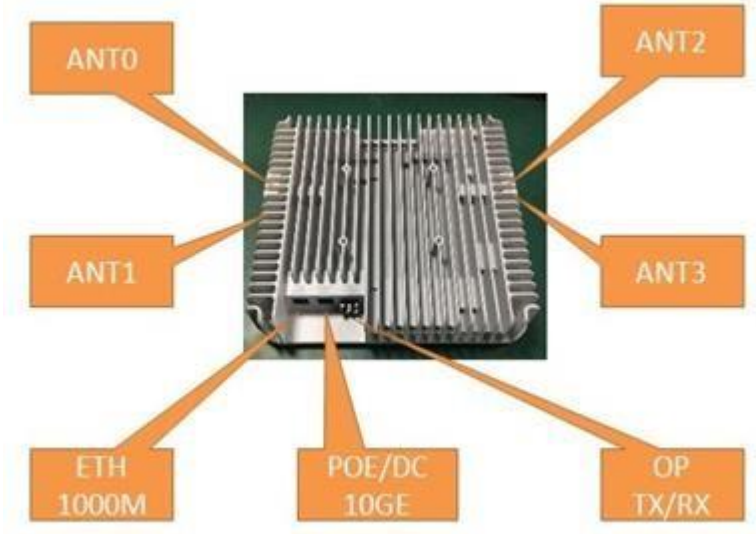
Fronthaul Gateway (FHGW)

Parameter	Spec
Interface with CU/DU	1*10/25Gbps SFP
Cascade Interface	1*10/25Gbps SFP
Interface with RU	8*10Gbps RJ45(POE+) or 8*10Gbps SFP for photoelectric hybrid cable
Dimension	19 inch 1U chassis, <400 mm in depth
Power Consumption	<45W (non POE+ supply module)
POE+ to RUs	30W * 8 Ports

Sub6G RU Specification of Option8/Option7-2 Split

Items	Spec
FPGA and RFIC	Intel/Xilinx + ADI
Sync mode	IEEE1588V2
Frequency Bands	N41/N77/N78/N79
Standard	3GPP 5G-NR Rel-15
Bandwidth	100Mhz
MIMO	2T2R/4T4R
Antenna location	Internal
Max Tx Power	24dBm per antenna
Interface	10Gbps SFP+ x 1 port LMT: 1Gbps Ethernet x 1 port
Volume	< 3 L
Weight	< 3 Kg
Power consumption	< 40W
Installation	Wall mount, Ceiling
Power Supply	DC-48V / PoE+/ photoelectric hybrid cable
IP Grade	IP 31
Operating Temperature	-10ºC to +45ºC
Operating Humidity	10% to 95%





Sub6G Outdoor RU Specification

Item	Spec.
Split option	O-RAN, 3GPP and Small Cell Forum recommended split option in open interface architecture
Sync	IEEE1588V2
Bandwidth	100Mhz
Frequency Band	N40/N41/N48/N77/N78
MIMO	2T2R/4T4R
Max Tx Power	40-46dBm per antenna
Installation:	Wall mount, Pole
IP Grade	IP65

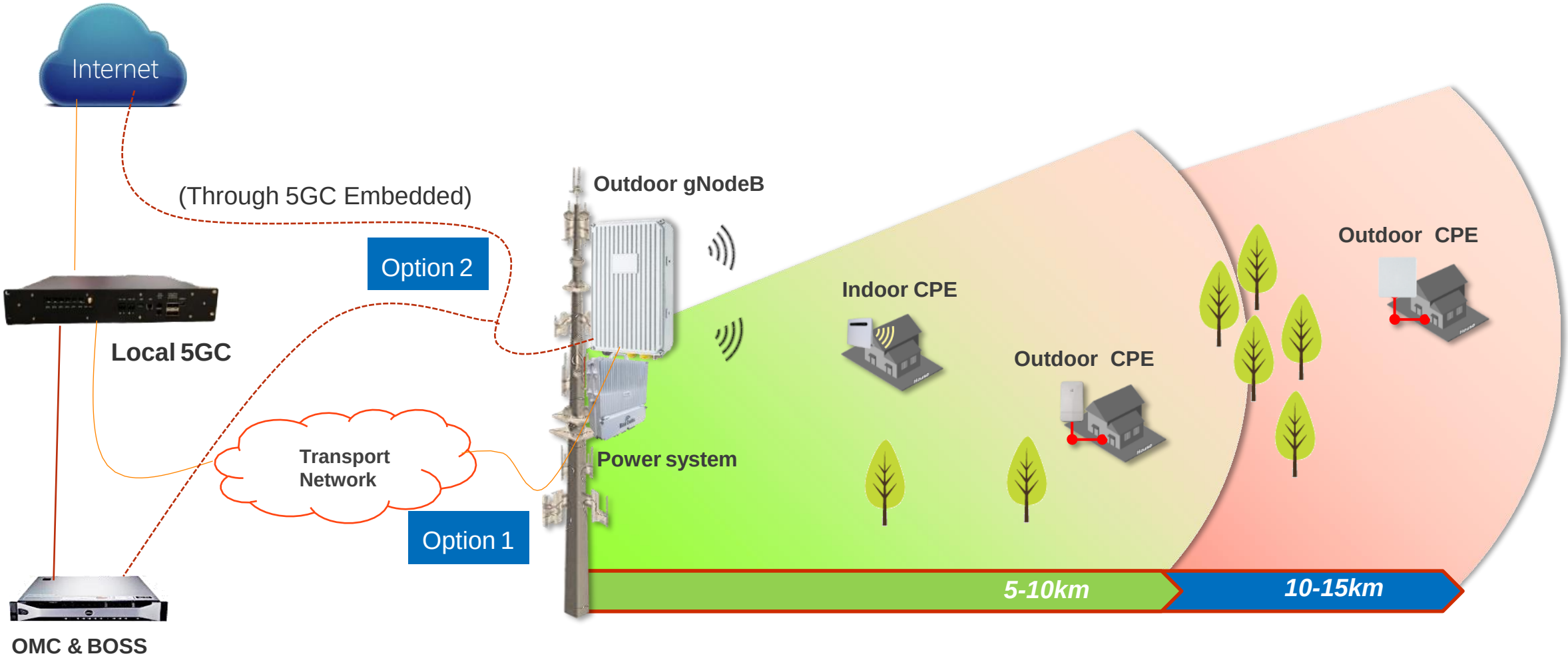
5G All-in-One Small Cell for Indoor hot/blind Spots Coverage

Items	Spec
NPU	**NXP LS1046A**
Baseband and RFIC	**FSM10056 + SDR9000**
Sync mode	GPS/BD, IEEE1588V2
Frequency Bands	N41/N78/N48
Standard	3GPP 5G-NR Rel-15
Bandwidth	**100Mhz**
MIMO	**2T2R**
Antenna location	Internal
Max Tx Power	24dBm per antenna
Backhaul	Backhaul: 10Gbps SFP+ x 1 port LMT: 1Gbps Ethernet x 1 port
User Number	Concurrent users: 64 RRC connections: 128
Max Data Rate Per Cell	**DL: 750Mbps (100MHz, 256 QAM, DDDSU-DDSUU)** **UL: 284Mbps (100MHz, 64 QAM, DDDSU-DDSUU)**
Volume	< 2.5L
Weight	< 2.5Kg
Power consumption	< 35W
Material	PC-ABS and Cast aluminum
Flammability	UL94 V-0 (Main body, Accessories)
Installation	Wall mount, Ceiling
Power Supply	AC/DC 12V/5A power adaptor
IP Grade	IP 30
Operating Temperature	-10ºC to +45ºC
Operating Humidity	10% to 95%

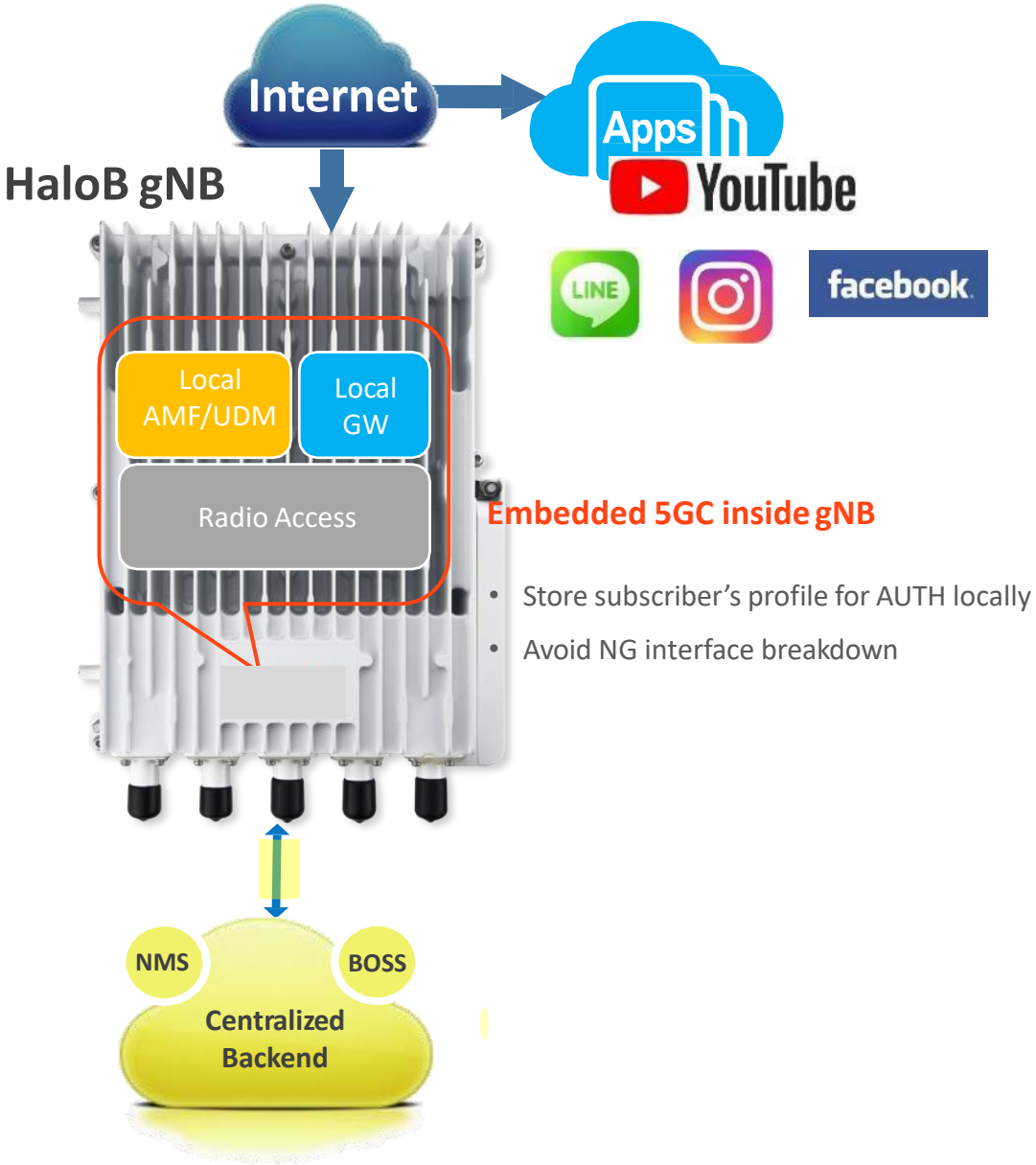
5G All-in-One Outdoor Small Cell for Hot/Blind Spots Coverage

Frequency Bands	Sub-6G All –in – one Outdoor
Interfaces	Backhaul -10Gbps SFP+ (for optical) x 1 port Management - 1Gbps Ethernet x 1 port
BW	40MHZ/100MHz IBW
MIMO	2T2R/4T4R
Number of RF Ports	6 RF (4*ANT、SNF、GPS/BD)
Antenna Location	External
Max Output Power	5W/Antenna
Capacity	128/ 200 Concurrent Active Users
Throughput	DL: 1.5Gbps (100MHz, 256 QAM, 4T4R) UL: 281Mbps (100MHz, 64 QAM, 2T2R)
Synchronization	GPS/BD, IEEE 1588v2(TDD), SyncE
Power Consumption	＜300W
Volume	< 15L
Weight	< 5kg
Installation	Pole, Wall mounted
IP Level	IP67

Site Solution Based On All-in-One gNodeB



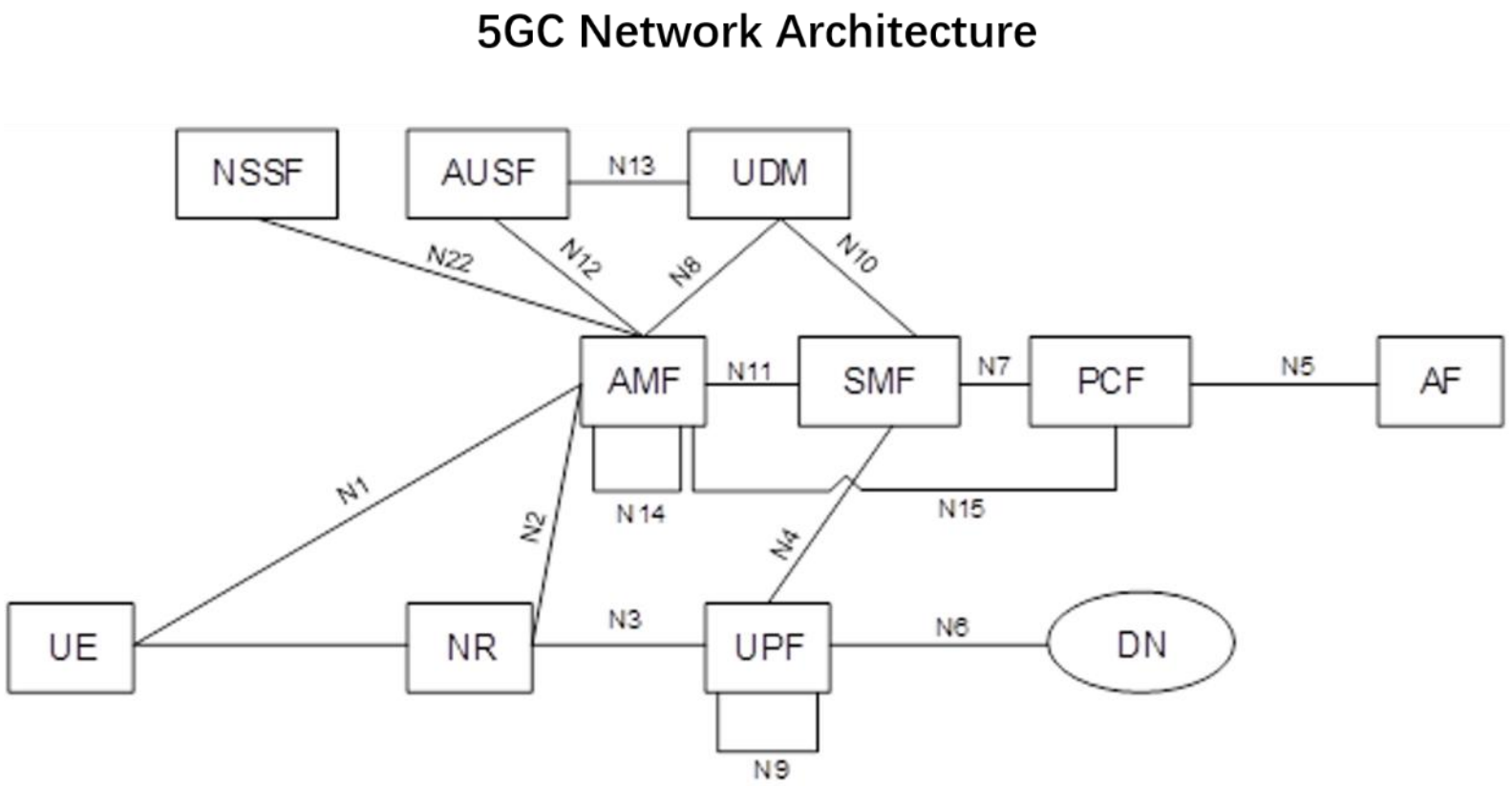
Unique Embedded 5GC in gNodeB



- ***Put a lite 5G Core inside gNB to make the whole system more robust and easy deploy***

- ✓ Embedded 5GC inside eNB
- ✓ **Easier and faster Deployment like WiFi**
- ✓ **Lowest CAPEX and OPEX**
- ✓ Localized control plane
- ✓ Localized GW, traffic offload at gNB
- ✓ System more robust, easy management
- ✓ Offline Billing
- ✓ Nomadic data

5G Local Core Network for Private Network



Flexible

Support X86 server deployment or cloud deployment

Open

Comply with standard of 3GPP, TIP, O-RAN, so 5GC owns excellent compatibility with UE and gNB

Convergence

Support 5G SA/NSA, 4G EPC and NB IOT

Local 5GC Specifications

Hardware	Specification
X86 Server	2 or more
CPU	2 x 10 cores, 2.3GHz CPU
Memory	16 * 4G RAM
HDD	1.2T * 2 HDD
NIC	4 * 10GE
SFP Module	4 * 10GE

Network Element	Technical Item	Specification
AMF	Maximum gNBs	500
	Maximum Online Users	400,000
AUSF	Maximum Registered Users	1,000,000
UDM	Maximum Registered Users	1,000,000
PCF	IP-CAN	500,000
SMF	Session Control Number	500,000
UPF	PDP Session Number	200,000
	Maximum Throughput	25-750 Gbps

1+1 Server can support 50 gNBs, 20,000Users, 25Gbps throughput at most

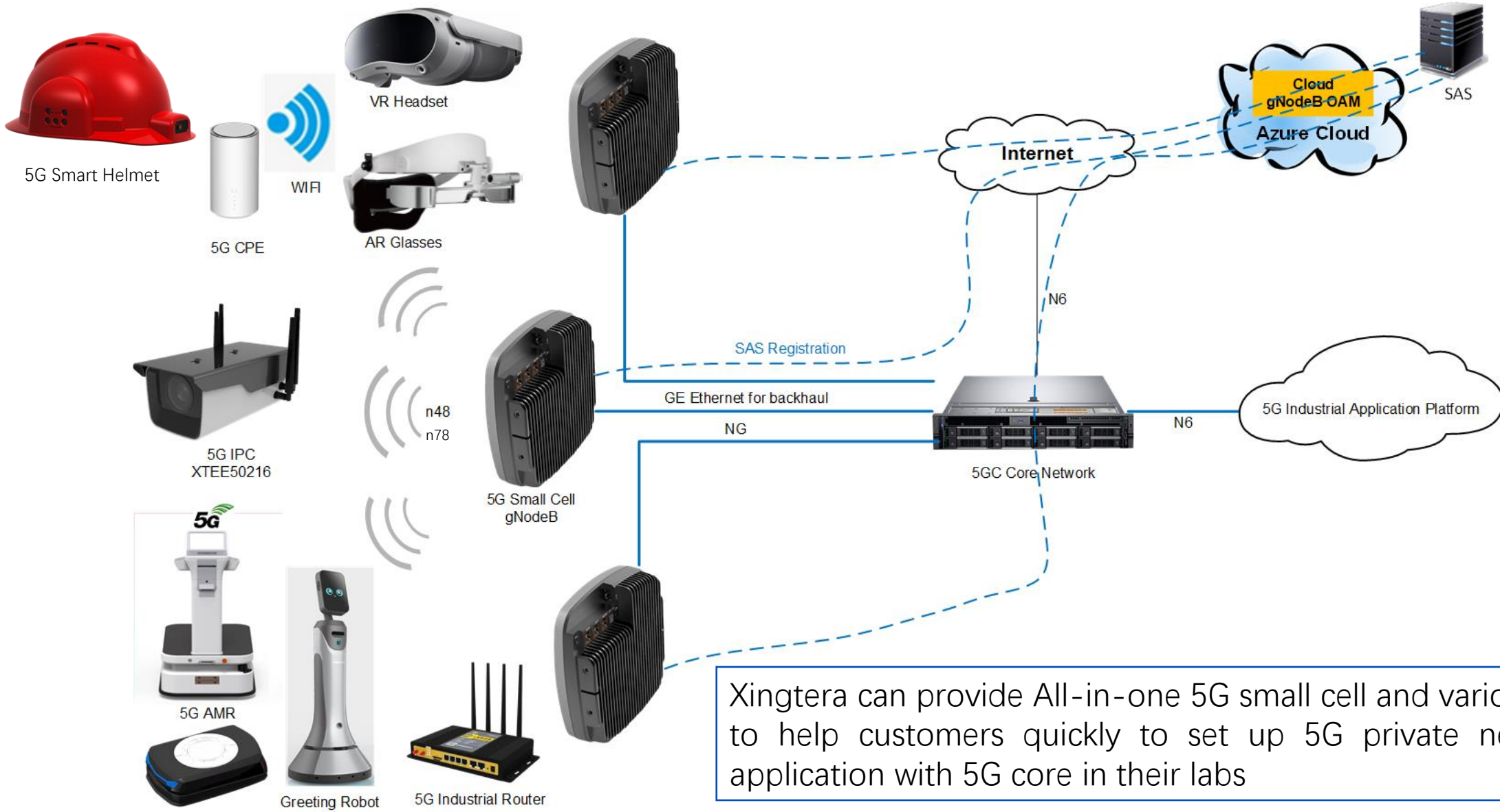
Cost Effective 5G Core Solution

CPU: Intel®Celeron®Jasper Lake
Network Card: 4X Intel i226-V (2.5Gbps)
Memory: 8GB
HDD: 256G SST
Main Frequency: 2.0GHz
Power Consumption： 10W
Dimension: 155*135.6*52.5mm(W*D*H)
Weight： 1.3kg

Network Elements: AMF, SMF, UPF, NRF, NSSF, UDM, AUSF, PCF

Capacity: Support 200 active Subscribers, 4 gNodeB, 2Gbps throughput.

Agile 5G Starter Kit



Xingtera can provide All-in-one 5G small cell and various 5G CPEs to help customers quickly to set up 5G private network and application with 5G core in their labs

Real Time Video Surveillance based on 5G IP Camera

Platform Client

Static IP address

Internet/Intranet

IP Camera
Management Platform

5G

5G IP Camera

5GC

gNodeB

4G/5G Network

- 1080P Video 4Mbps Uplink
- Latency Less than 100ms

Smoke and Fire Detection

PPE Detection

Intrusion detection

Xingtera provide 5G IP camera and camera backend management platform end to end solution

Smart Logistics Solution Based On 5G AMR(Autonomous Mobile Robot)

GE Ethernet for backhaul

NG

N6

5GC Core Network

AMR RMS/iWES

5G Small Cell

5G

5G AMR

5G AMR need a seamless and continuous 5G coverage in warehouse and factory in order to keep real time communication with RMS(Robots Management System)

- Bi direction Latency less than 50ms
- Data rate more than 100Kbps per AMR

4G/5G Smart Helmet Solution Improves Operation Safety

- **Product overview:** the Smart Helmet is a product integrated with multiple IoT technologies, such as wireless communication, GPS positioning, camera and other functional modules. While meeting the requirements of construction work safety, the Smart Safety helmets also support the functions of taking photos, positioning, calling, alarm, audio and video uploading, etc.
- **2 types of users:**
  - Front-line operations, to achieve the safety, standardization and convenience of front-line workers
  - Background management empowers enterprises to digital transformation and upgrading and refined operations, and realizes online personnel, intelligent scheduling, and refined management

Intelligent safety production command and dispatch platform

4G/5G

Smart Hard Hat

4G communication GPS positioning camera

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Front-line construction: improve work efficiency

Back-office management: improve management level

Security

Normalization

Convenience

AR Remote Expert System Application in 5G Network

5G Small Cell

GE Ethernet for backhaul

NG

5GC Core Network

N6

AR Application Platform on Public Cloud

5G

Remote Guidance: Voice, image, text, picture, file, AR mark and data analysis

5G

5G CPE

WIFI

AR Glasses

On-site worker wear AR glasses equipped with AR Expert System

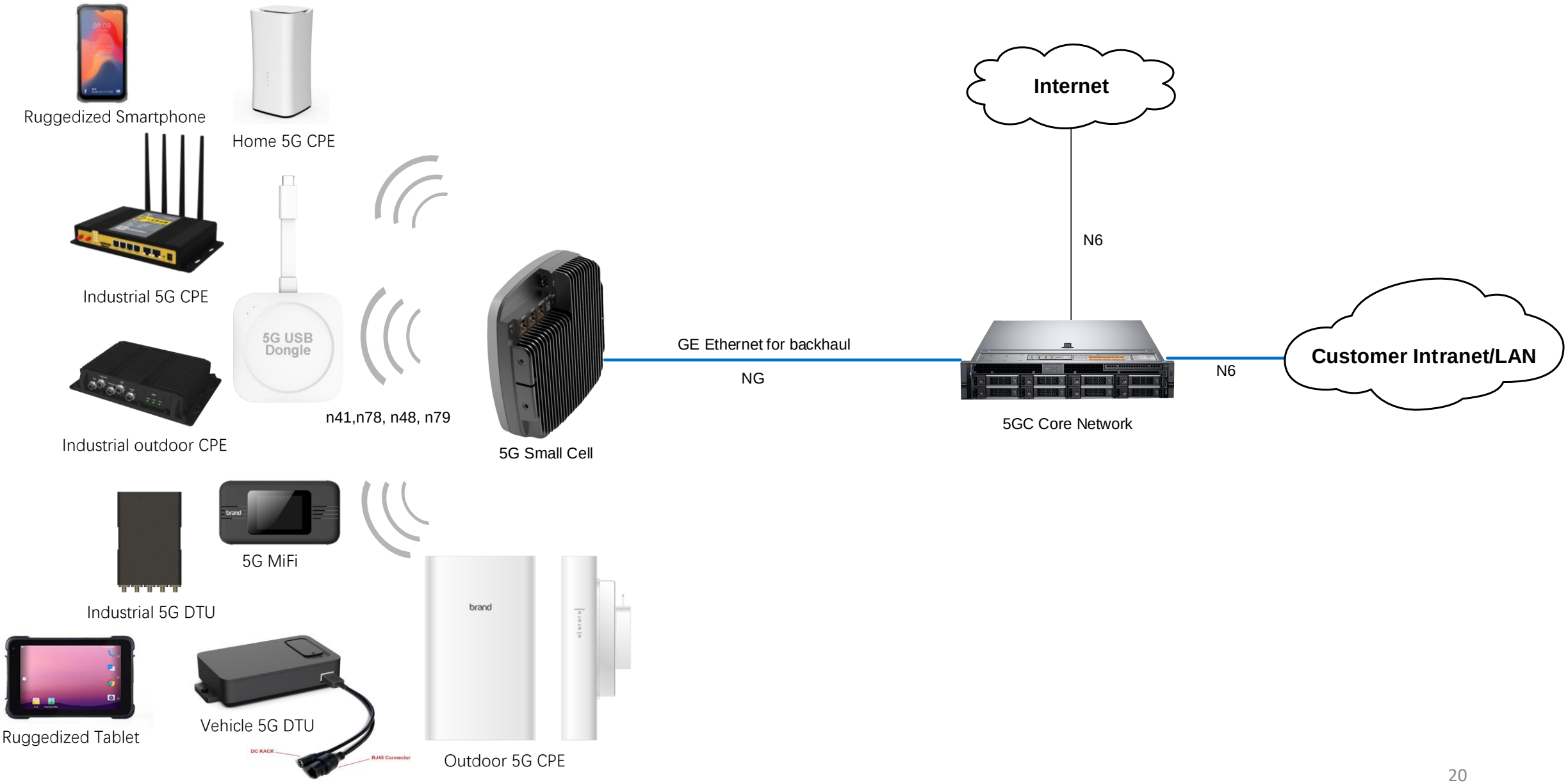
Audio and video interaction

- 1080P AR Uplink 1Mbps, Downlink 4Mbps
- Latency less than 100ms

Remote Expert

Use a computer, or a smart phone/tablet to guide the on-site worker anytime and anywhere, one or multiple experts can provide guidance, remote experts can jointly work on the issues

Diversified CPEs to Meet Customers' Requirements



Let’s Win Together!

Xingtera Inc.