Connect More With Less

China Mobile outdoor successful story

Baicells

Contents

Brief information

1 Requirement and pain point

- Lack of dedicated transmission network.
- Existing multi-vendor(Huawei/ZTE/Ericsson/Nokia) networks, how to solve inter operation to achieve seamless coverage
- Need to fast deployment with broadband backhaul

中国移动 China Mobile

Top1 operator of China

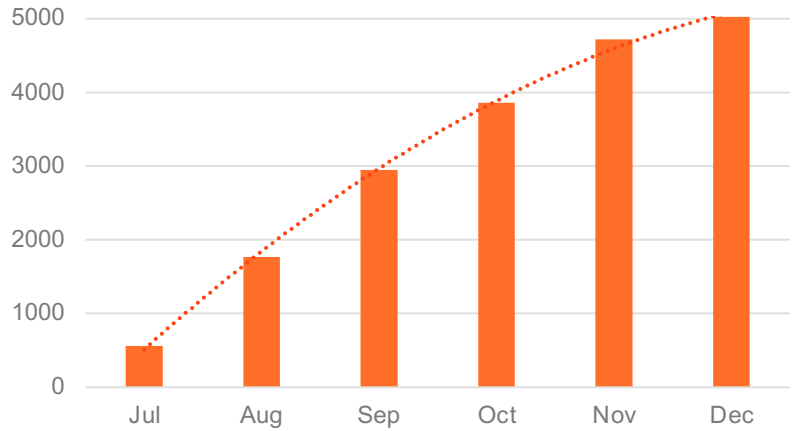
1.7 billion users

Top8 GDP city of global

2 Solve the problems

- Coverage Extension for Rural Area
- Capacity Expansion for Densely-Populated Area

3 5000+ Deployment in 6 moths

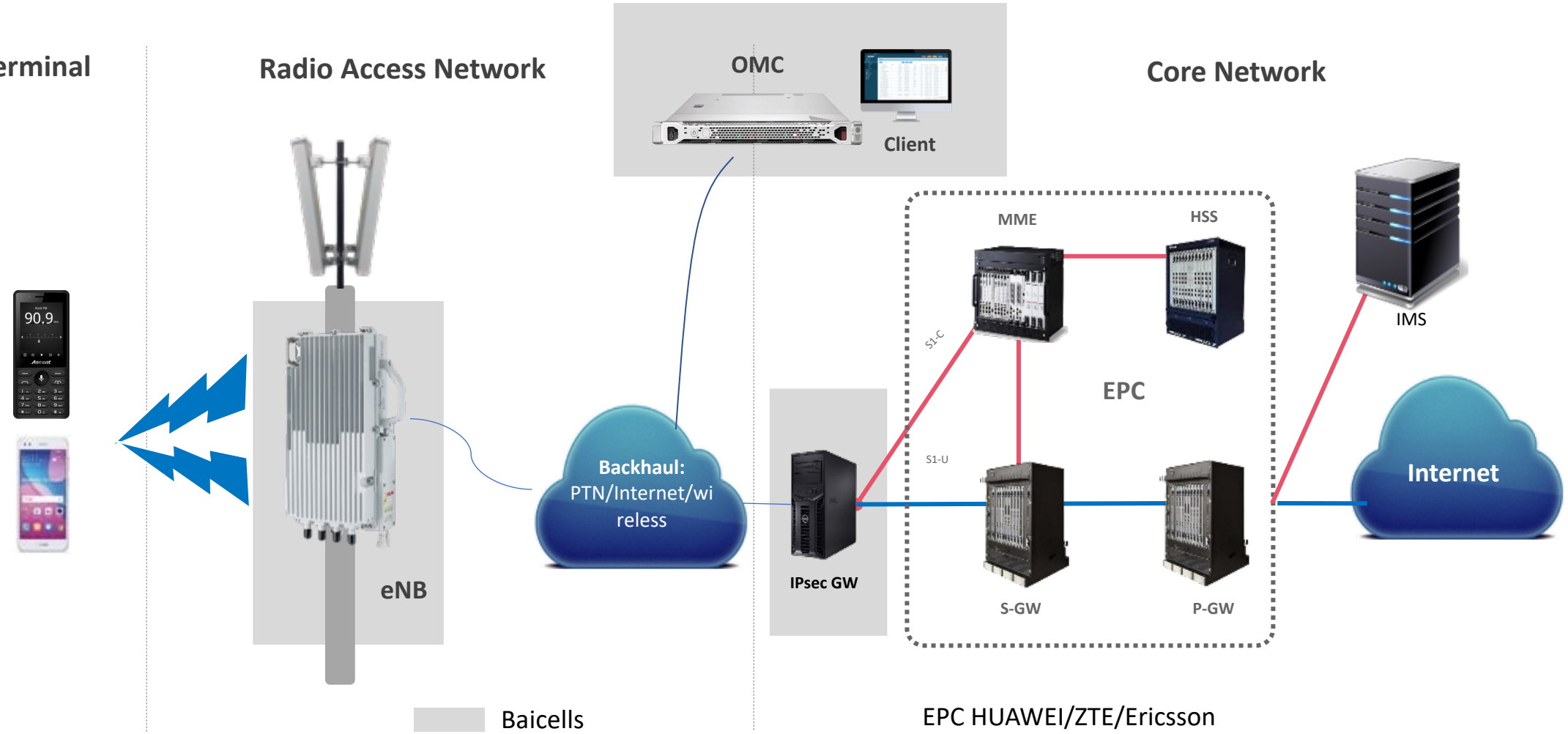


4 Result and benefit

- Quick response for single site commissioning within **2 weeks**
- **5000+** Nova249 B3/B8 Covered towns and rural areas in **21** cities and **122** counties of Guangdong Province in **6 months.**
- Solved the communication requirement of the about **1.3 million** people in Guangdong Province.

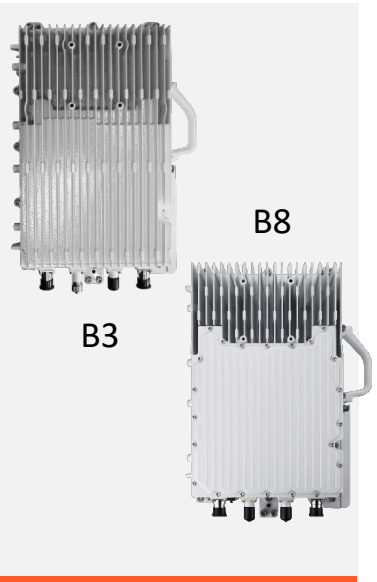
Contents

Baicells's Solution of China mobile LTE Project



- Baicells RAN capability makes our solution to be integrated with 3rd party core network.

Baicells's eNB Nova249 spec



Villages and Towns

Highlights:

- All-in-one and high-integrated, portable and 0 footprint
- Flexible backhaul: PTN/GPON/wireless/ microwave/satellite
- Baicells signature Plug-and-Play, fast deployment
- Perfect integrated with OMC/WCG/EPC of other vendors
- RET function AISG 2.0
- 256 users, 2x2MIMO, Peak rate is up to DL 150 and UL 50 Mbps
- Coverage distance <**15KM**

Model	Nova249 2x40W FDD outdoor eNB
Frequency band	B3/8
Bandwidth	Band3: 5/10/15/20 MHz Band8: 5/10 MHz
Carriers	Single carrier
Synchronization	GPS
Transmit power	30 to 49 dBm (combined, with 1 dB interval)
Antenna type	External2T2R high-gain antenna
RF connector type	mini-DIN 4.3-10
Backhaul	1 optical (SFP) and 1 RJ-45 Ethernet interface (1 GE)
Power supply	-40VDC ~ -57 VDC, nominal -48VDC
Power consumption	Typical 300W, maximum 360W
Dimension	B3:16.9 x 10.8 x 4.7 inches;430 x 275 x 120 millimeters B8:16.9 x 10.8 x 5.7 inches;430 x 275 x 145 millimeters
Weight	B3:28.0lbs / 12.7kg; B8: 34.2lbs / 15.5kg
Ingress Protection Rating	IP66
MTBF	≥ 150000 hours
MTTR	≤ 1 hour
Temperature	-40° F to 131° F / -40° C to 55° C
Humidity	5% to 95% RH

Baicells's Main function and features of WCG

Introduction

- Integrated SeGW, provide IPsec protection between small cells and EPC.
- Aggregate S1 link signaling and traffic between small cells and EPC.
- Unified access and management platform for the large number of small cells. Easy deployment for small cells.

Specification

Hardware	Performance
CPU: Xeon 4208 (8C-16T, 2.1GHz) *2	MAX. ACCESS SMALL CELLS: 5000
RAM: 32G	MAX. CONCURRENT ACCESS RATE (CAPS): 200/s
Hard Disk: 1TB * 2	THROUGHPUT: 5Gbps
Network port: 1GBE * 2, 10GB SFP+ * 2	

Highlights

- Decoupling between software and hardware, can be deployed both on X86 servers with bare metal mode and cloud with virtual machines mode.
- Provide standard S1 reference point, support different manufactures' small cells and EPC.
- Comply with 3GPP R16 standard.
- Supporting 3/4/5G interoperation.
- Support multiple PLMN for RAN sharing.
- Support the blacklist and whitelist of small cells, as well as group-based access control and management for small cells.
- Signaling Gateway can be deployed independently or jointly with SeGW.
- Support high reliability 1 + 1 redundant backup.
- It can smoothly evolve to support 5G small cell access.

Baicells's Main function and features of OMC

Introduction

The BaiOMC is an operation and maintenance center (OMC) system developed by Baicells for managing network devices. Operators use it to monitor, configure, maintain, and upgrade network devices.

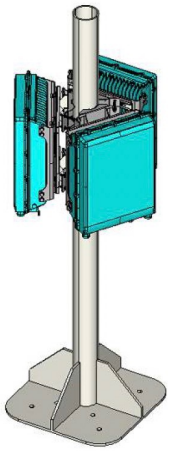
Specification

Hardware	Performance
Model: Dell R640 CPU: (6C6T, 1.9GHz) *2 RAM: 32G DDR4 ECC Hard Disk: 2.5" 1T *2 Server Disc Ethernet Ports: 4*GE RJ45	Capacity: 2000 eNBs

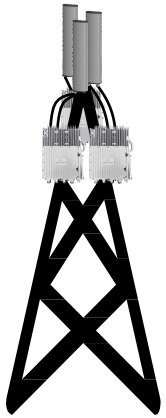
Highlights

- Monitor all network elements (Baicells), eNB, gNB, CPE, eGW, Power system
- Abundant alarms, faults
- KPI analysis and report
- Display on the map
- SAS-DP integrated
- plug and play
- Signaling trace for quickly identifying issues.
- Flexible deployed on cloud or server
- High stability with 1+1 backup.

Highlight1 Integration Solution with Nova249 Simplifies site

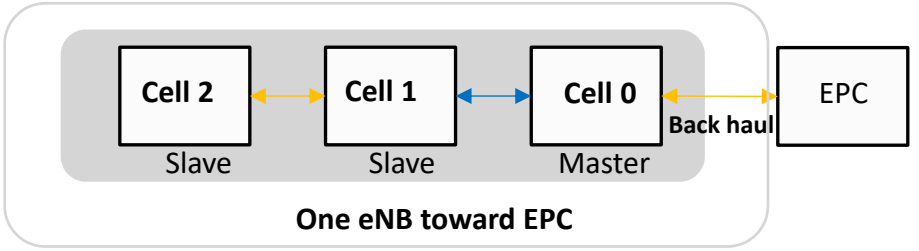


Mono-Pole



Tri-Angle tower

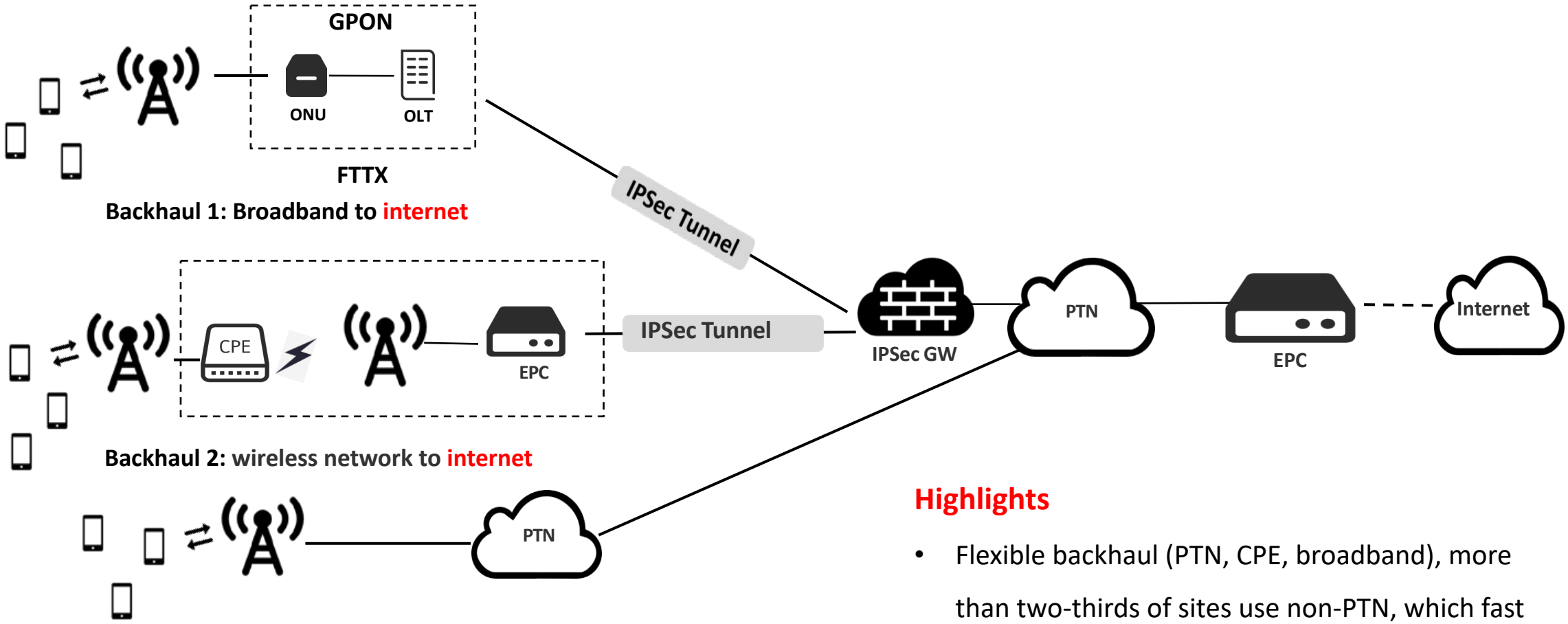
Wall mounted



Highlights:

- Compact design saves much installation space and 0 footprint saves rental cost.
- Support various of deployment method to easy installation.
- HaloD realize S111 3cells form 1 eNB towards EPC

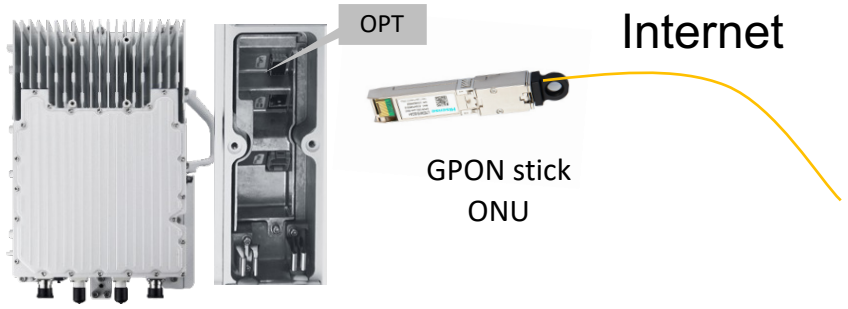
Highlight2 Multi-Flexible Backhaul Makes Deployment Easier



Highlights

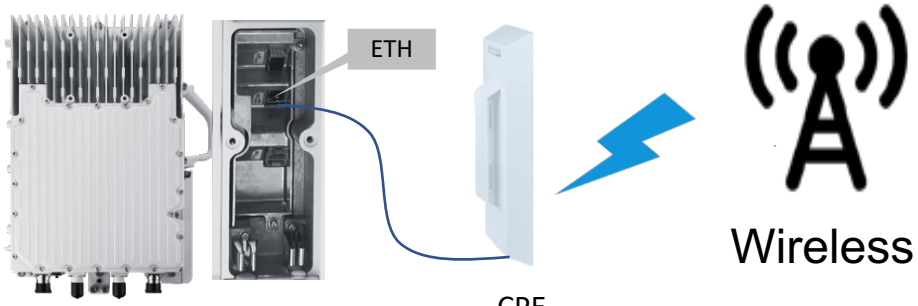
- Flexible backhaul (PTN, CPE, broadband), more than two-thirds of sites use non-PTN, which fast deployment can be achieved.

Highlight2 Multi-Flexible Backhaul Makes Deployment Easier



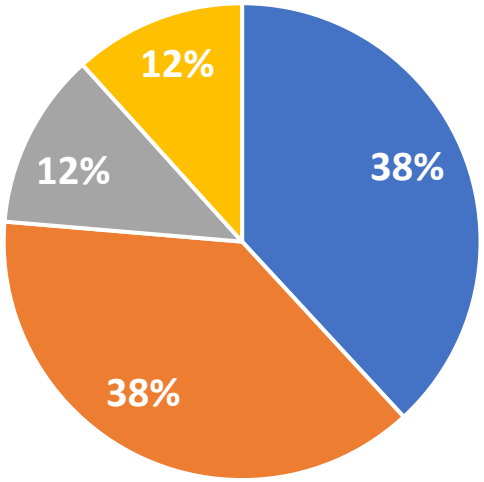
Nova249

Backhaul 1: Broadband (ONU) to internet

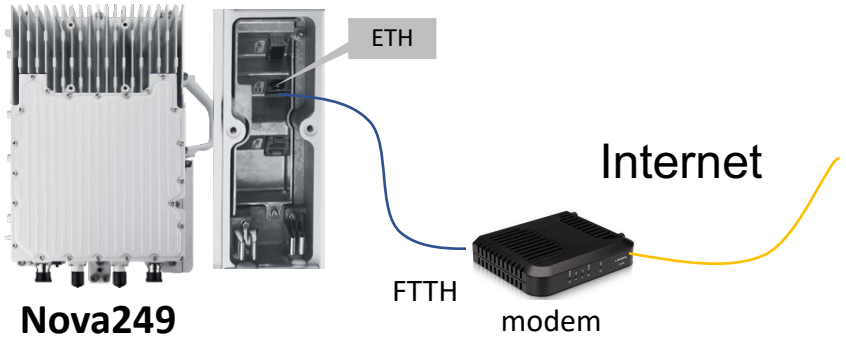


Nova249

Backhaul 3: wireless network to internet

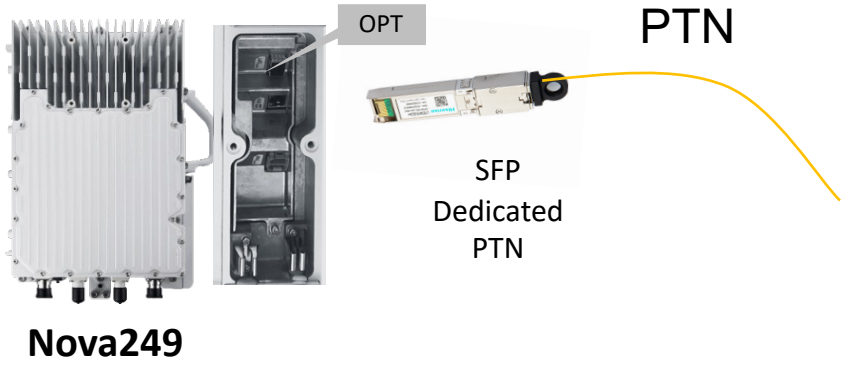


Backhaul Percentage



Nova249

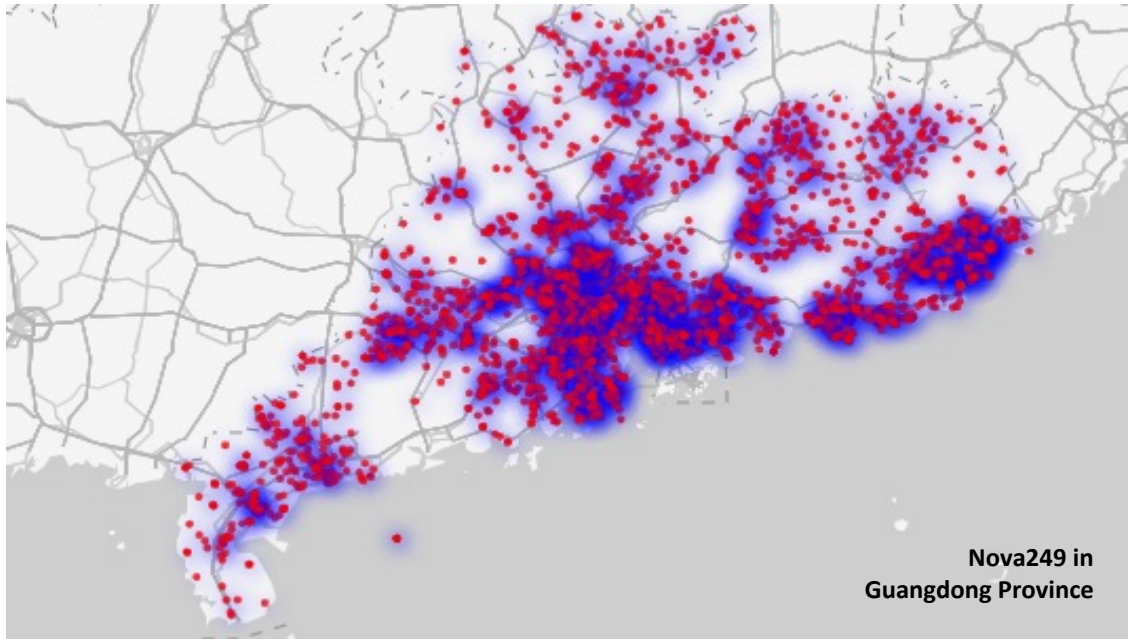
Backhaul 2: Broadband(Ethernet) to internet

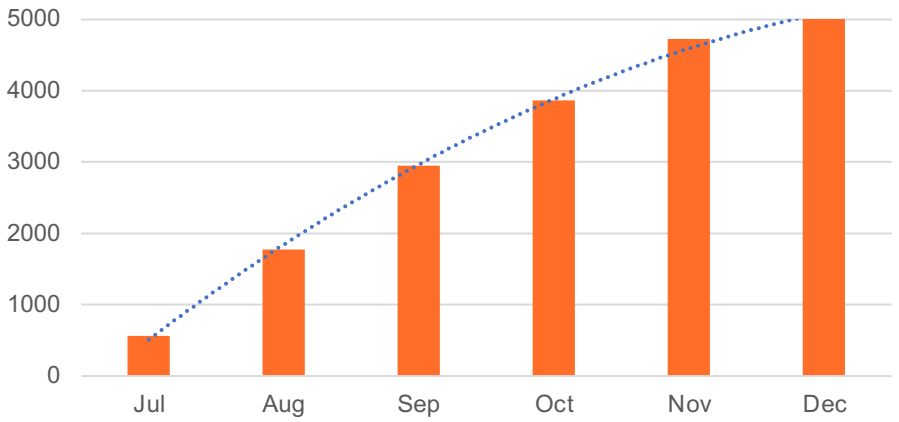


Nova249

Backhaul 4: Dedicated PTN Network

Highlight3 Thousands of eNBs fast deployment in six months

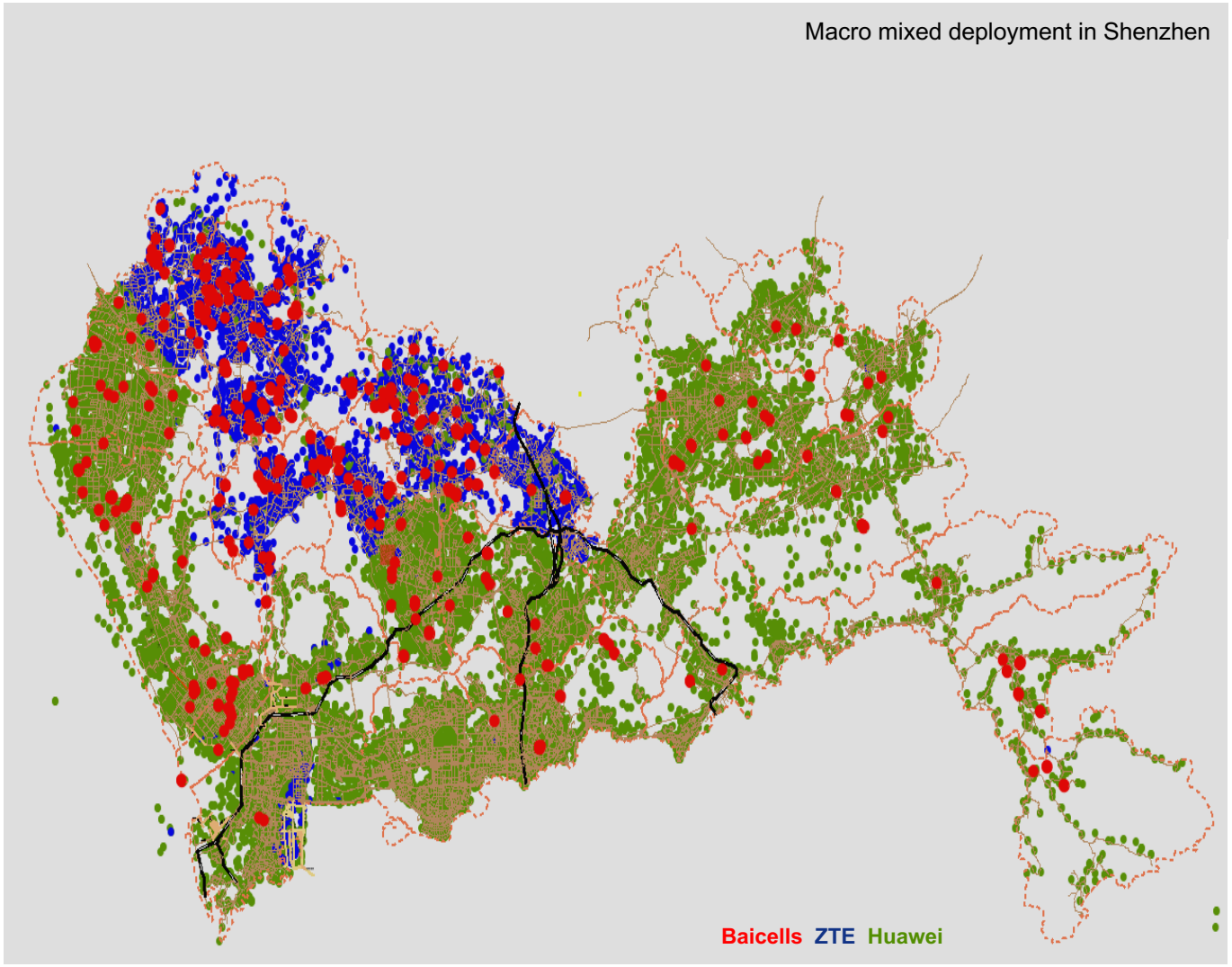


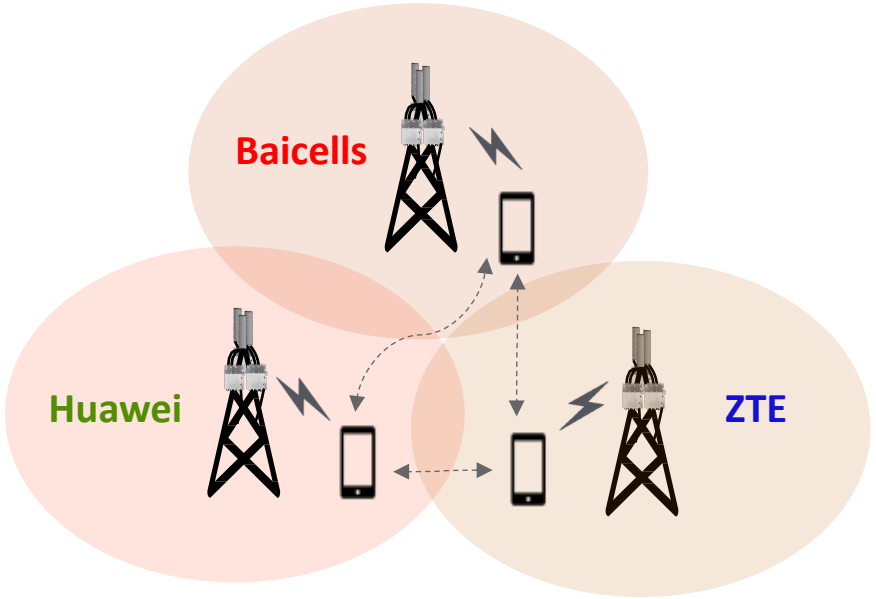


Highlights

- Simplified design, easy installation
- Quick response for single site commissioning within **two weeks**
- **5000+** Nova249 eNB deployed in **6 months**

Highlight4 Excellent mixed network deployment with other vendors





Highlights

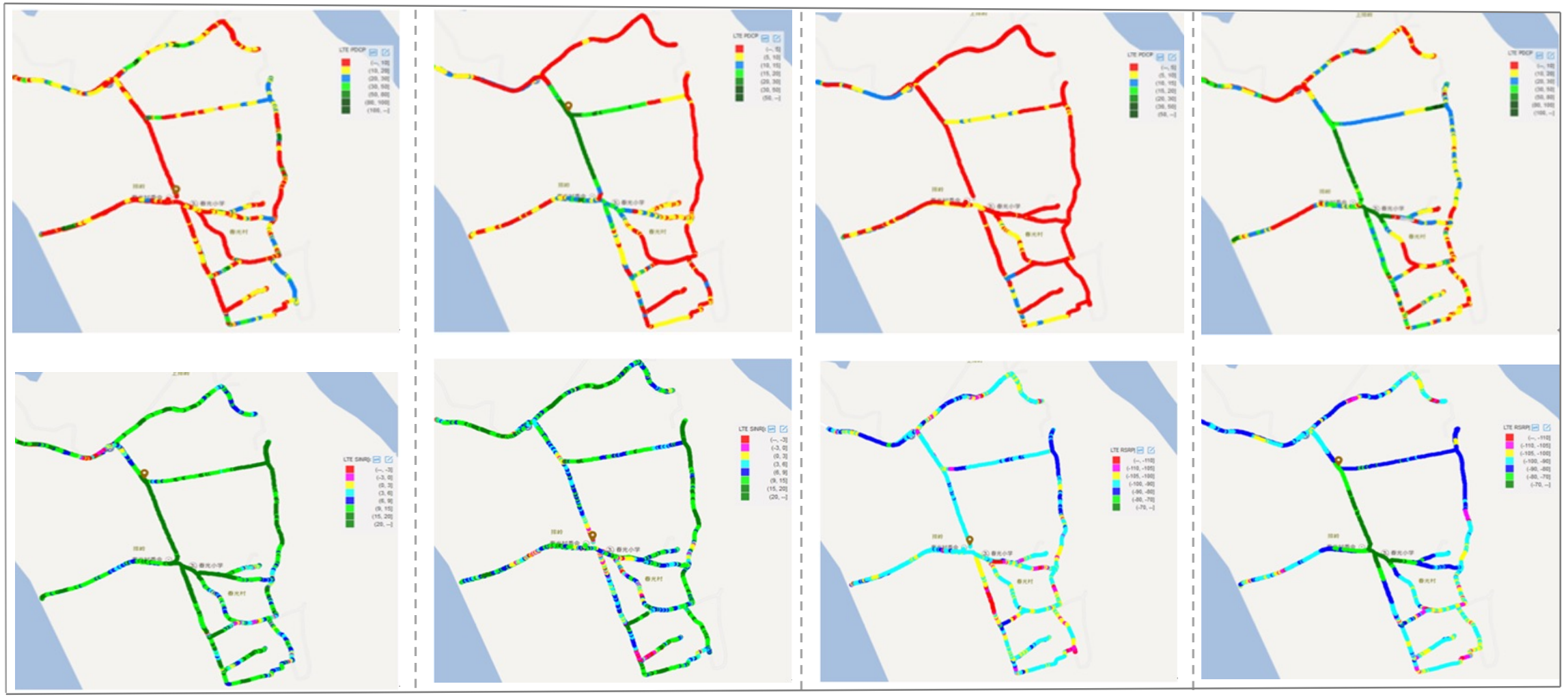
- Integrated in complicated network with Huawei/ZTE macro neighbor relation
- Seamless mobility(re-selection & handover) with Huawei and ZTE

Contents

Test result- Wireless quality and performance are greatly improved

Before

After



Coverage RSRP

⬆ 60%

Interference SINR

⬆ 50%

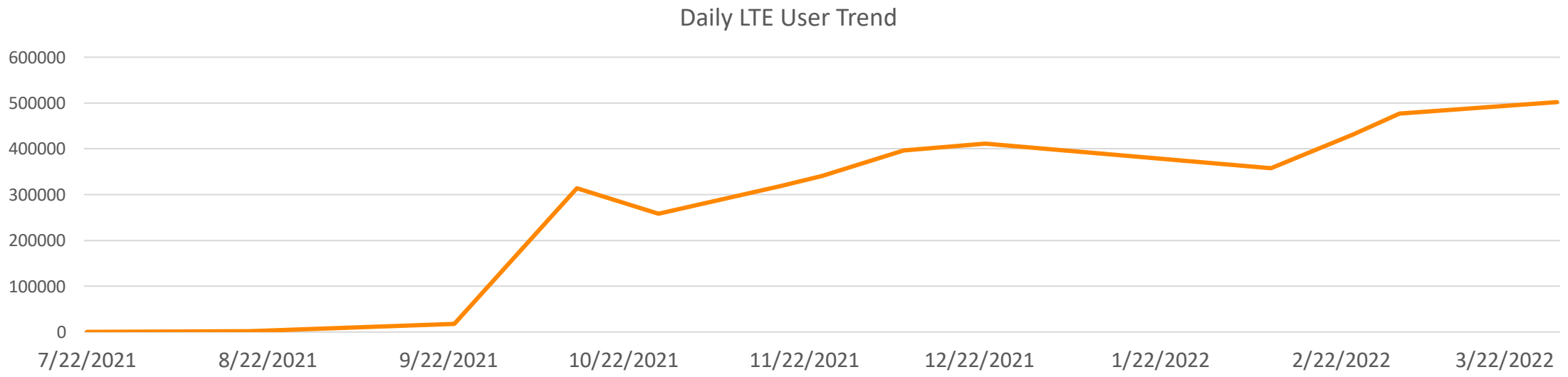
Throughput UL

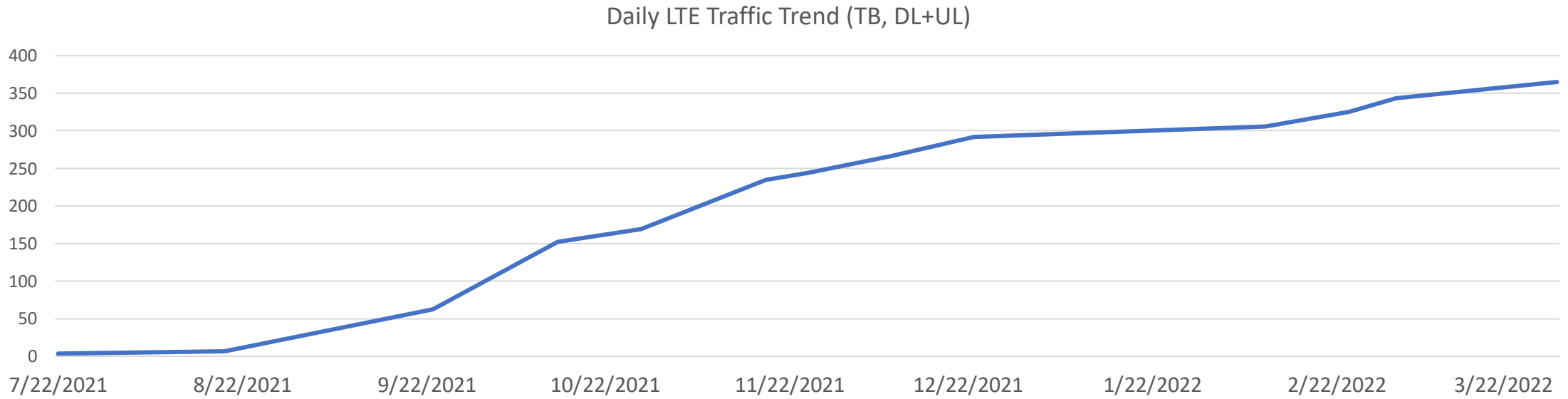
⬆ 55%

Throughput DL

⬆ 49%

Customer benefit





THANK YOU

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