Huawei RAN2020 Strategy -

From SingleRAN to CloudRAN

11-13 APRIL
SHENZHEN

HAS 2016
Global Analyst Summit

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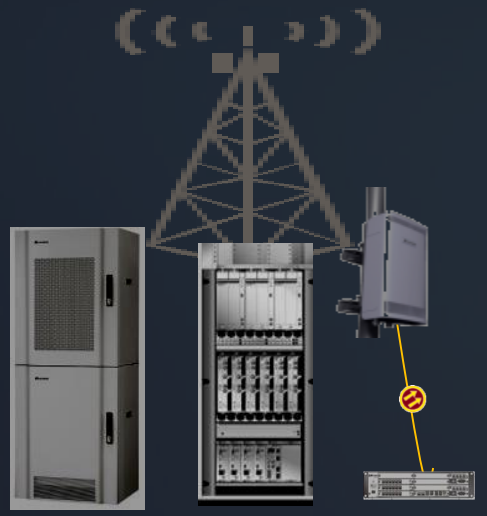
Yang Chaobin

Huawei Wireless Network

RAN2020 Strategy - From SingleRAN™ to CloudRAN™

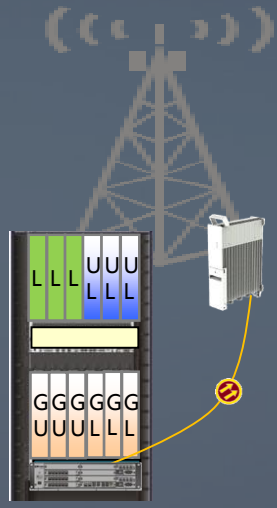
Traditional RAN



GSM UMTS

- Dedicated Product for Different RAT

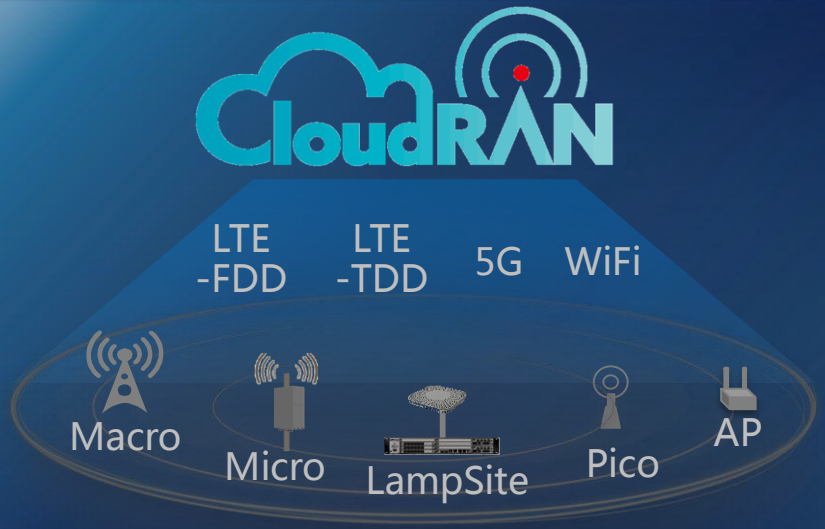
2007 SingleRAN™



GSM&UMTS&LTE

- One Radio
- One Baseband
- One Transport
- One O&M

2016 CloudRAN™



Common Architecture

Flexible Connectivity @ Diversified Service

- **Multi-RAT**
- **Multi-Band**
- **Multi-Layer**

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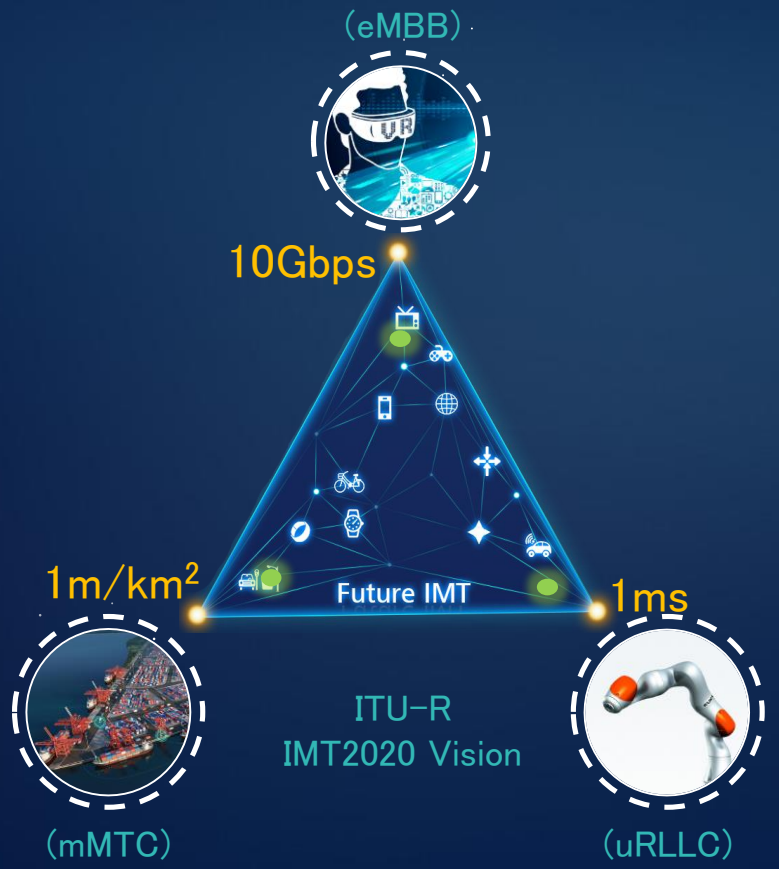
Key Driver1:
Diversified Services Need Flexible Connectivity



Diversified User Experienced Data Rate	200bps~ 10Gbps
Diversified E2E Latency	hours~ 1ms
Diversified Connectivity Density	Not Relevant ~1M/km²

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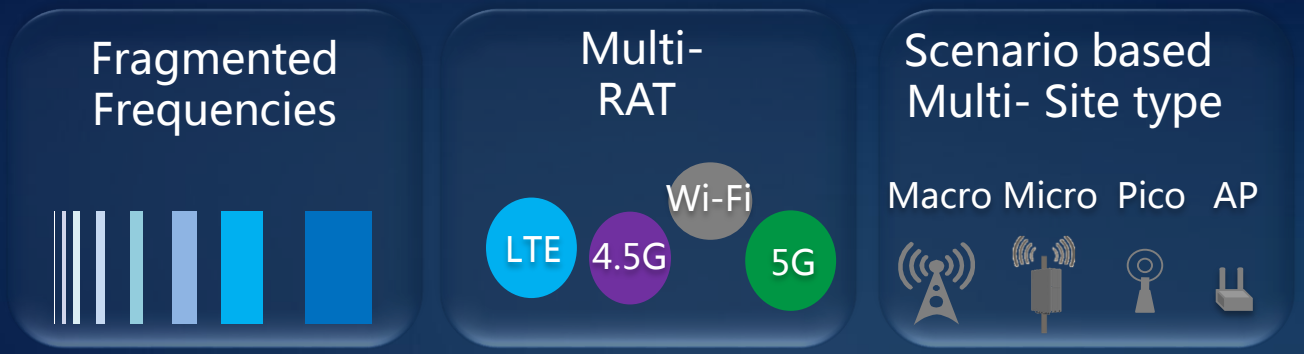
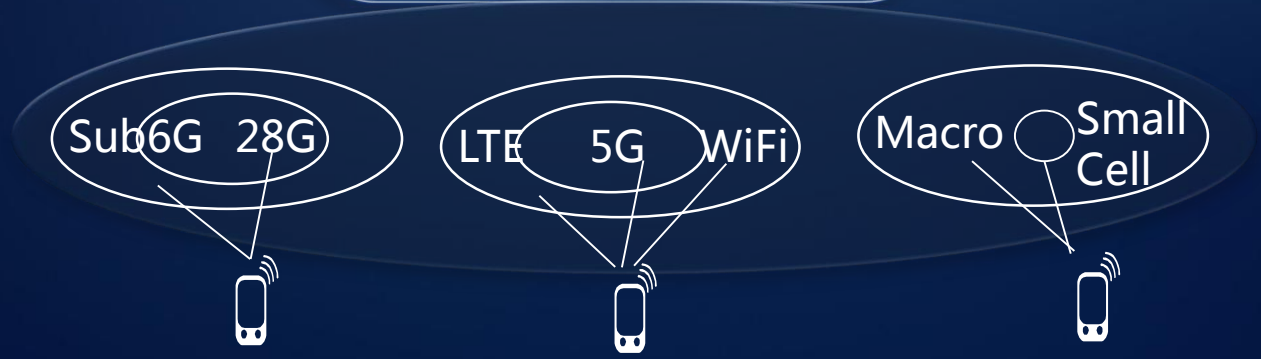
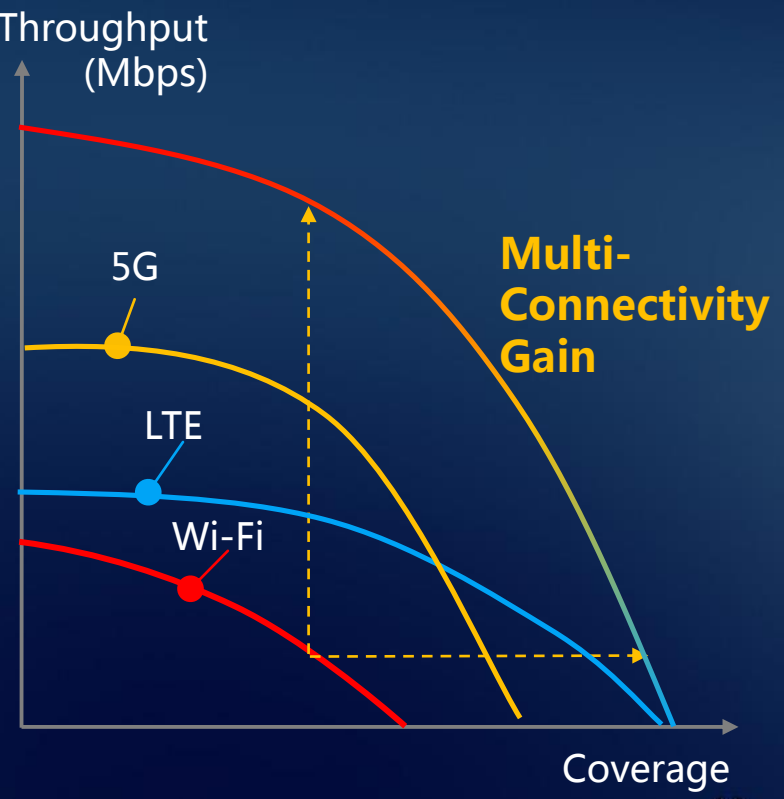
Key Driver2:
Multi-Connectivity is Key for High Speed and Reliability



Multi-Connectivity becomes Common

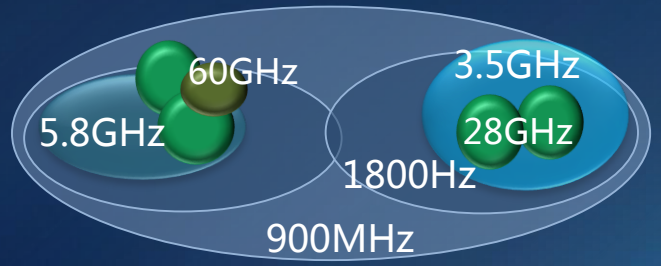


MC Significantly Enhance User Throughput



Key Driver3:
Resources in Large Area Needs to be Well Coordinated

Complex HetNet



- Unbalanced Traffic
- Mobility Challenge

Ultra Dense Sites

35% → **80%**

Diversified Services

- On-demand QoS
- Various Scenarios

Centralized Resource Management over Multi-RAT/Band/Layer

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Key Driver 4:
Increasing Diversity of Business Needs Network Scalability

Revenue /Year

1$ 100$ 600$ 1000$

Fragment Verticals

Industry ~10X

Applications ~10000X

Massive Customized Requirements

Burst Service

Active users/cell @Urban Metro

50~1000

Connected Cars/km^2

10~1000

Scalable Network for

- On-demand Deployment
- New RAT Fast Introduction
- Scalable to Meet Growing Demand
- New Services Fast TTM

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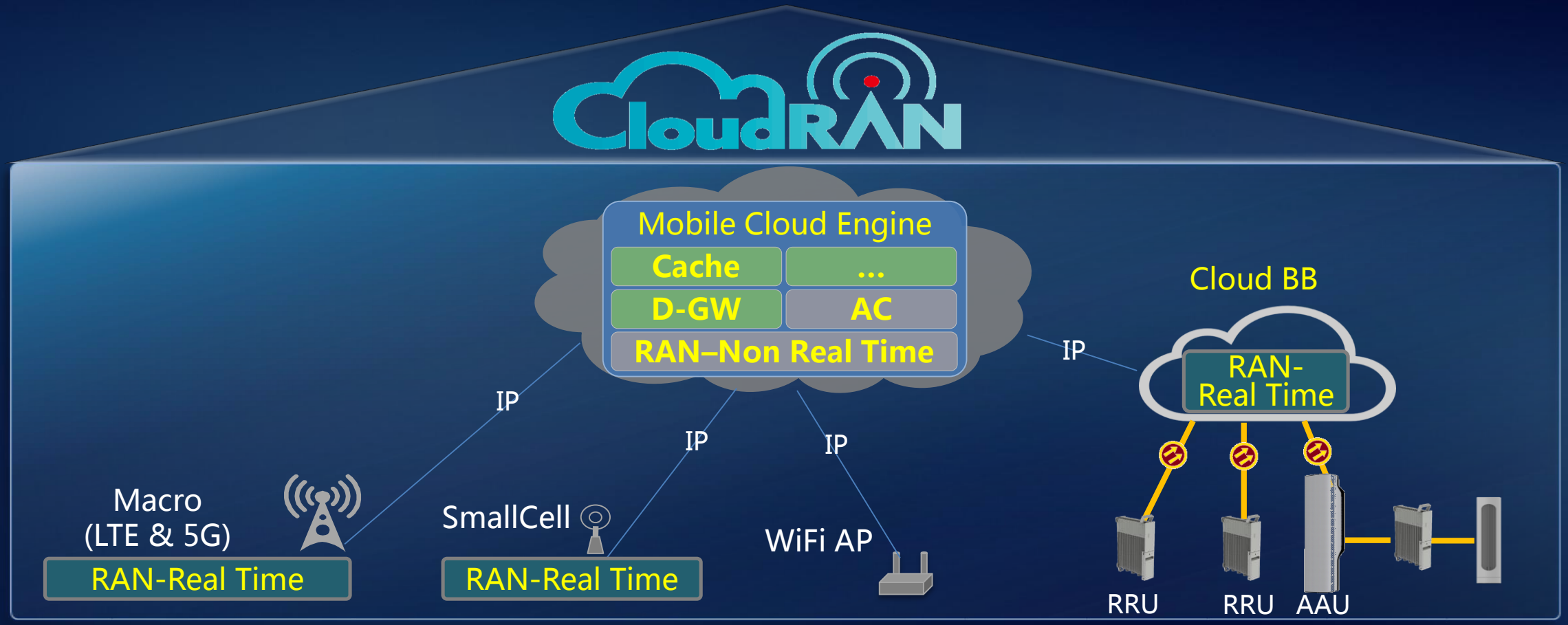
CloudRAN™
Centralize What Can, Distribute What Must



Common Network Architecture across Different Technologies & Layers

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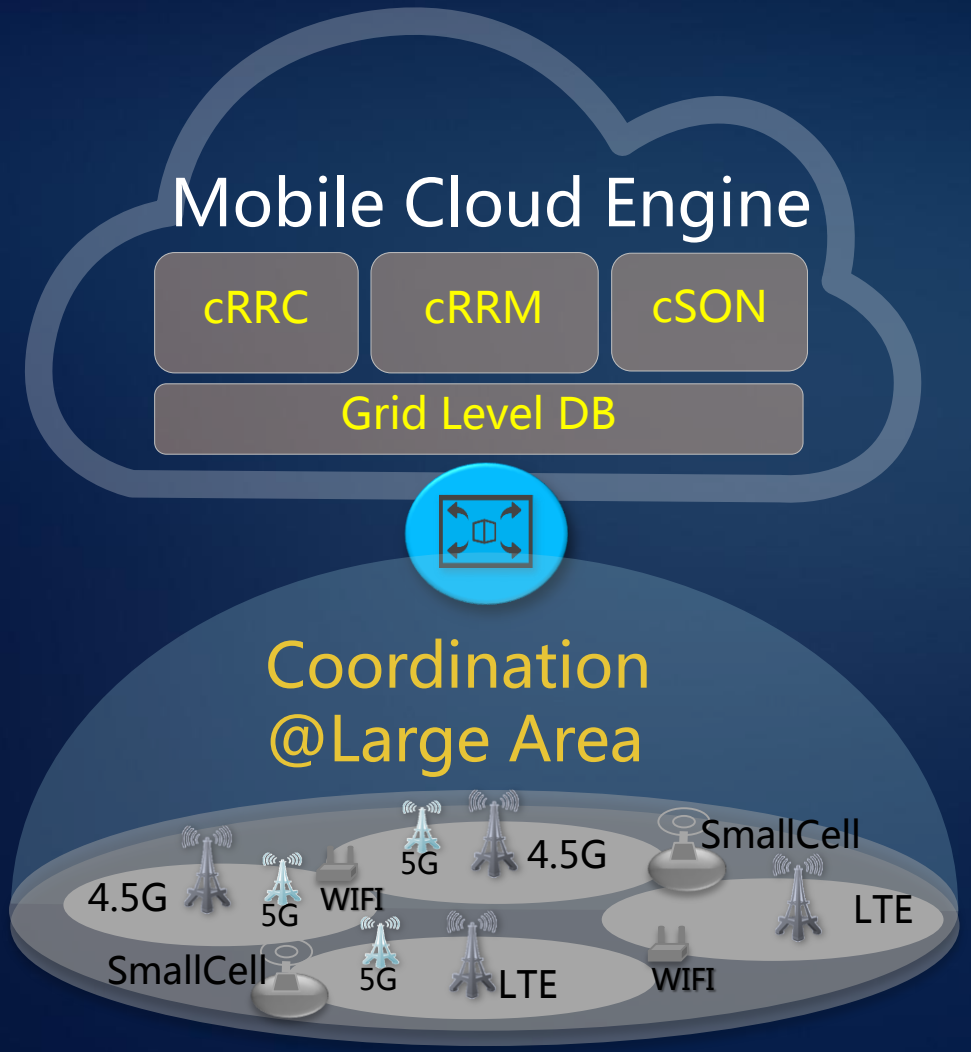
CloudRAN™ Enables Centralized Coordination



Centralized Coordination

cRRC:

- Faster New RAT Introduction

cRRM:

- Higher Efficiency by Recourse Balancing

cSON:

- Centralized Capacity, Coverage and Transmission Optimization

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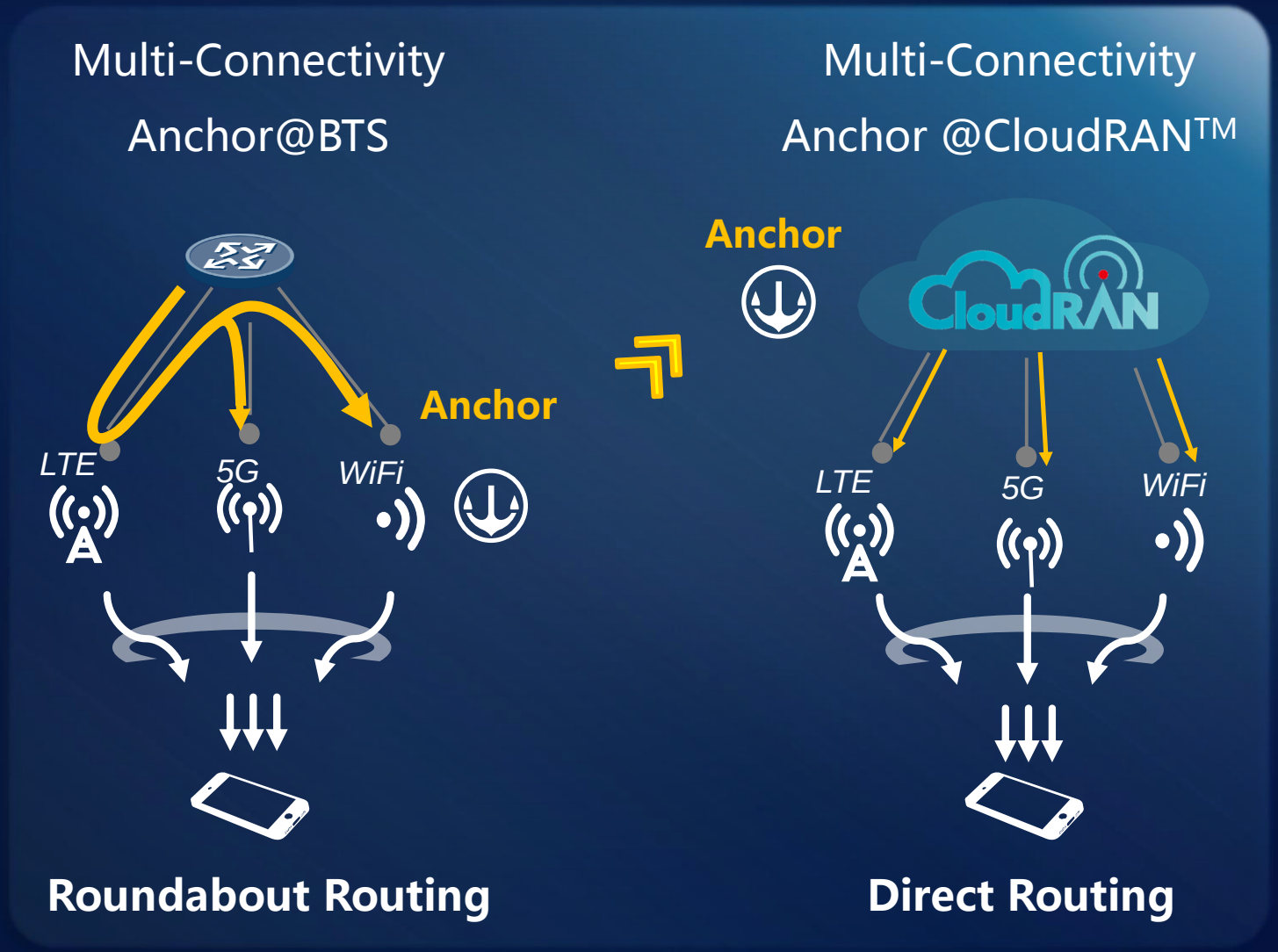
CloudRAN™ Secure Multi-Connectivity

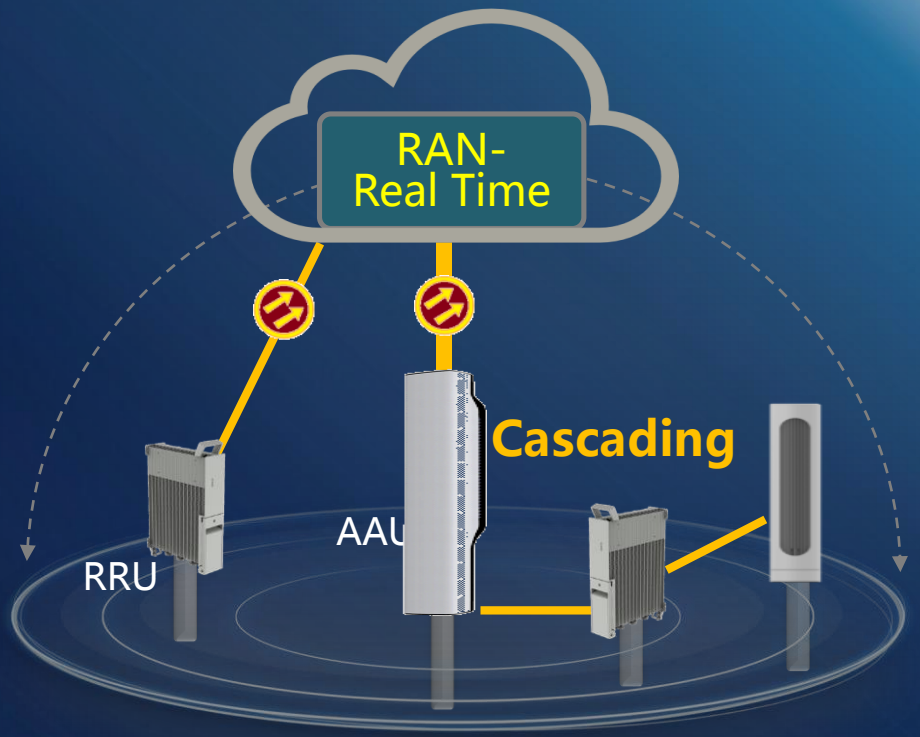


Multi-Connectivity Anchor Hosted in CloudRAN™

- Direct Routing save Transmission Expense
- Synchronization among Multi-Connectivity
- Load and Channel Quality based Steering

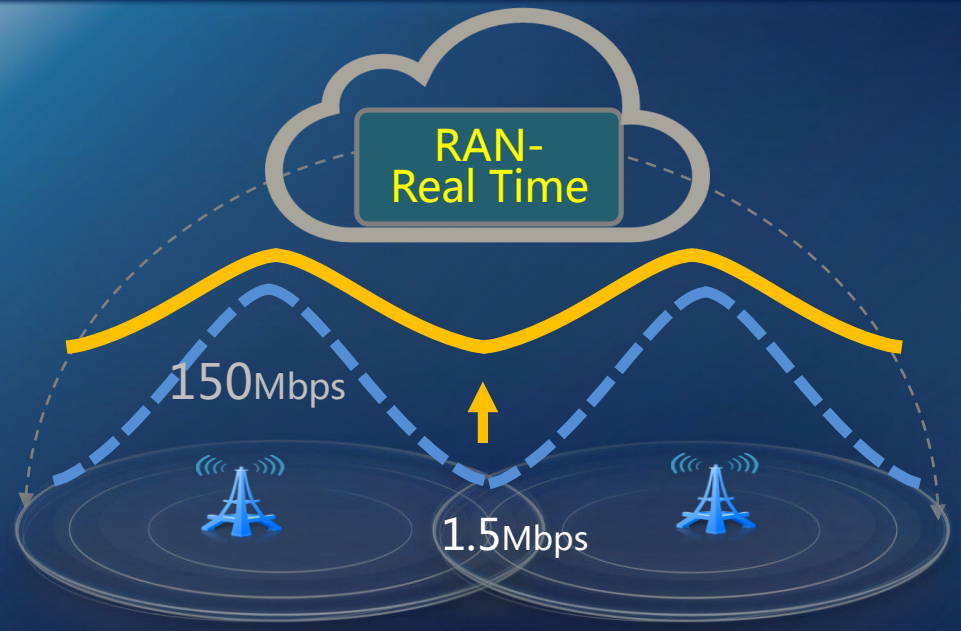
Cloud BB:
Centralized RAN-Real Time Part with Dark Fiber

Cloud BB over Rich Dark Fiber for Fast Site Adding



- Fast Site Adding by Radio Module Cascading
- No Need RF Planning by aSFN Cell Combination

Real Time Joint Processing for No-Edge Experience



Real time Coordination	CoMP	Inter-Site CA	D-MIMO
Gain@ Cell Edge	2.2x	2x	2x

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CloudRAN™ Make Slicing a Reality through Guaranteed QoS

Slicing Request

Slicing Designing

1 Request Mapping

Service Request

Network Request

2 Component Selection

RAN-Real Time

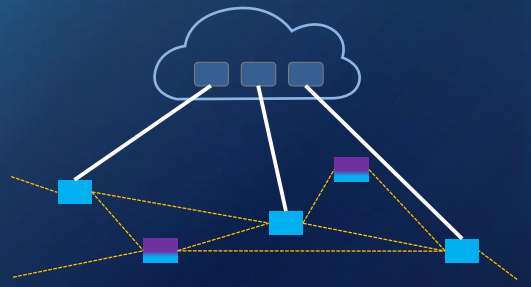
RAN-non Real Time

X Feature

...

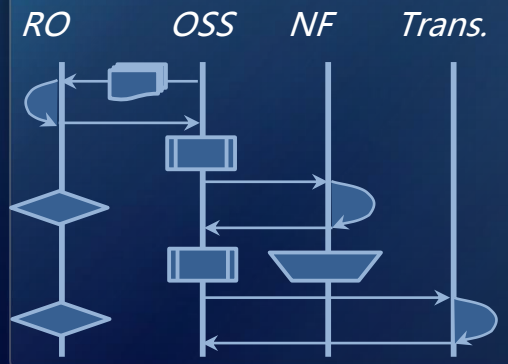
Functions & Features

3 Topology Generation



RAN & Transmission

4 Workflow Definition



Slicing Deployment

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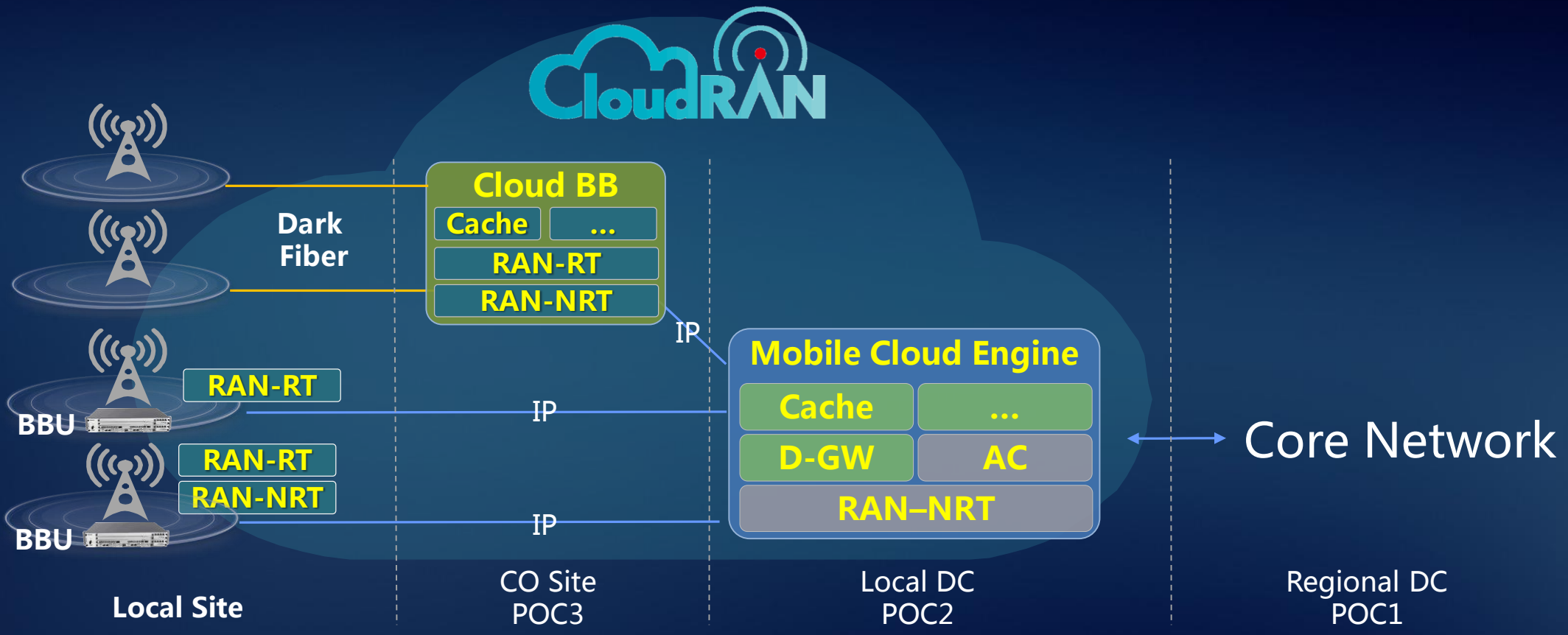
CloudRAN™ on-demand Deployment



- Flexible deployment depending on availability of fiber and service needs.
- On-demand deployment to increase RAN resource efficiency @ Multi-band, Multi-RAT, Multi-Layer
- MCE close to the end user for better service experience

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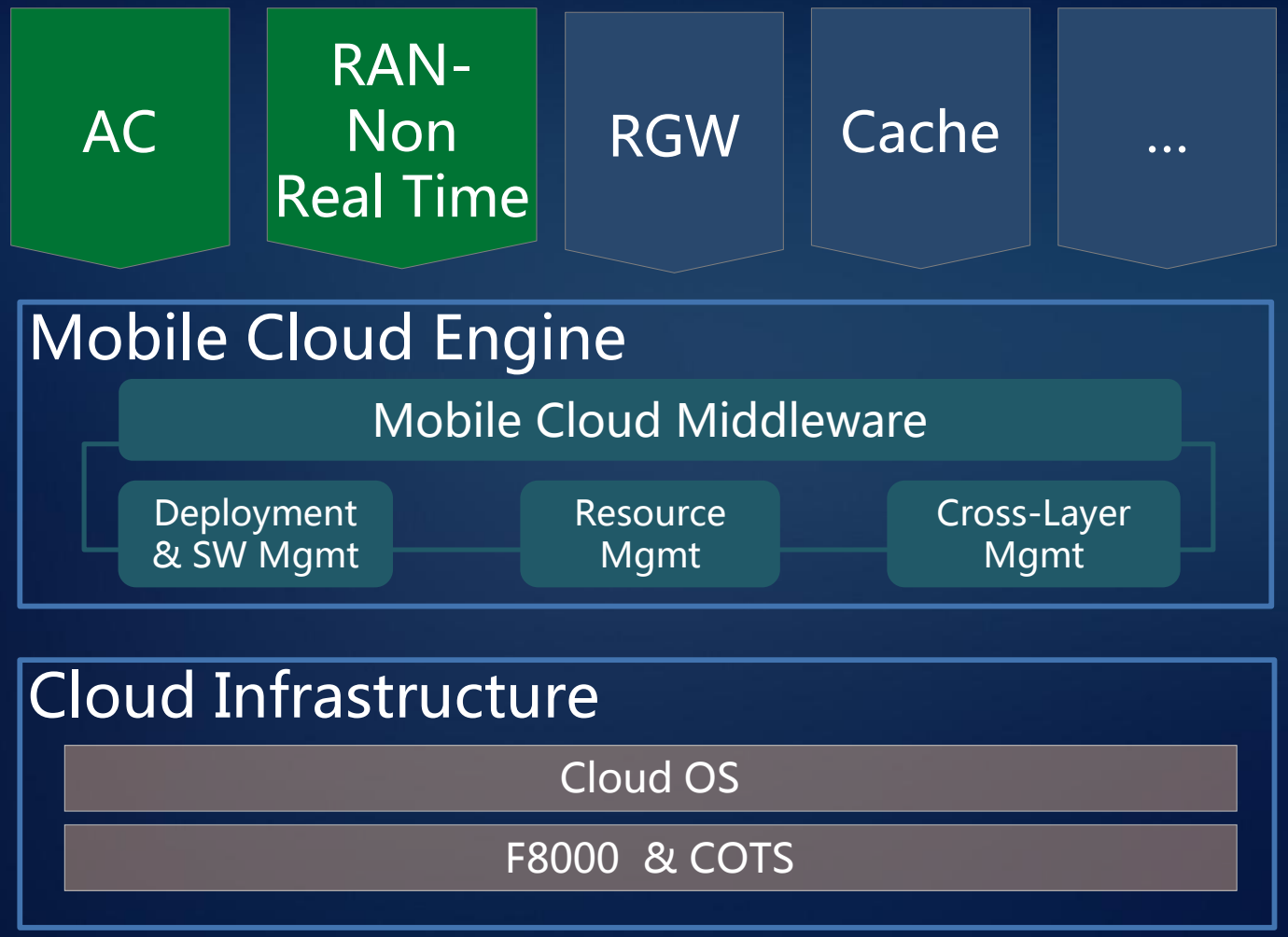
Mobile Cloud Engine in Detail



Carrier-Grade Reliability

- Cross DC Disaster Recovery
- Fast Fault Detection and Healing

Cloud Native Architecture

- On-Demand Deployment
- Scale-in and Scale-out
- Independent Feature Upgrade

Simplify OAM & Integration

- One-Click installation & Deployment
- Cross-Layer Trouble Shooting

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Two Phases for CloudRAN™ Introduction

Architecture Ready for 5G

Phase I

Introducing CloudRAN™ in LTE Network to Support

- LTE Dual Connectivity
- LTE and WiFi Link Aggregation (LWA)
- License Assisted Access(LAA)

Phase 2

Introducing CloudRAN™ to Support

- 5G New RAT

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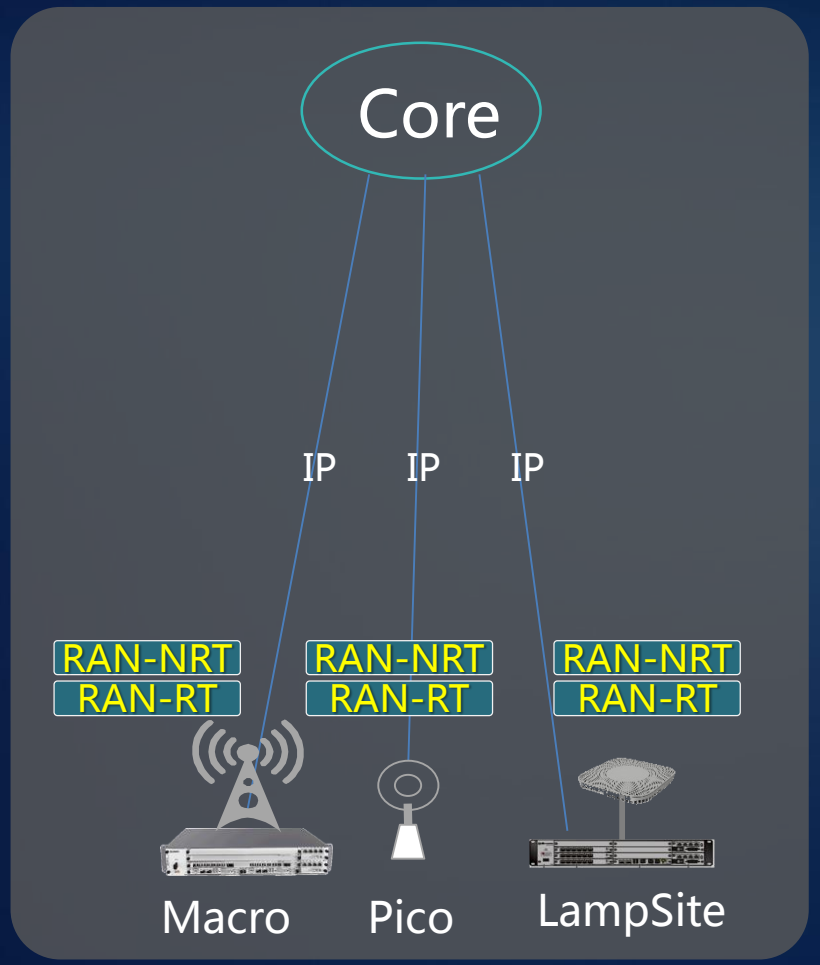
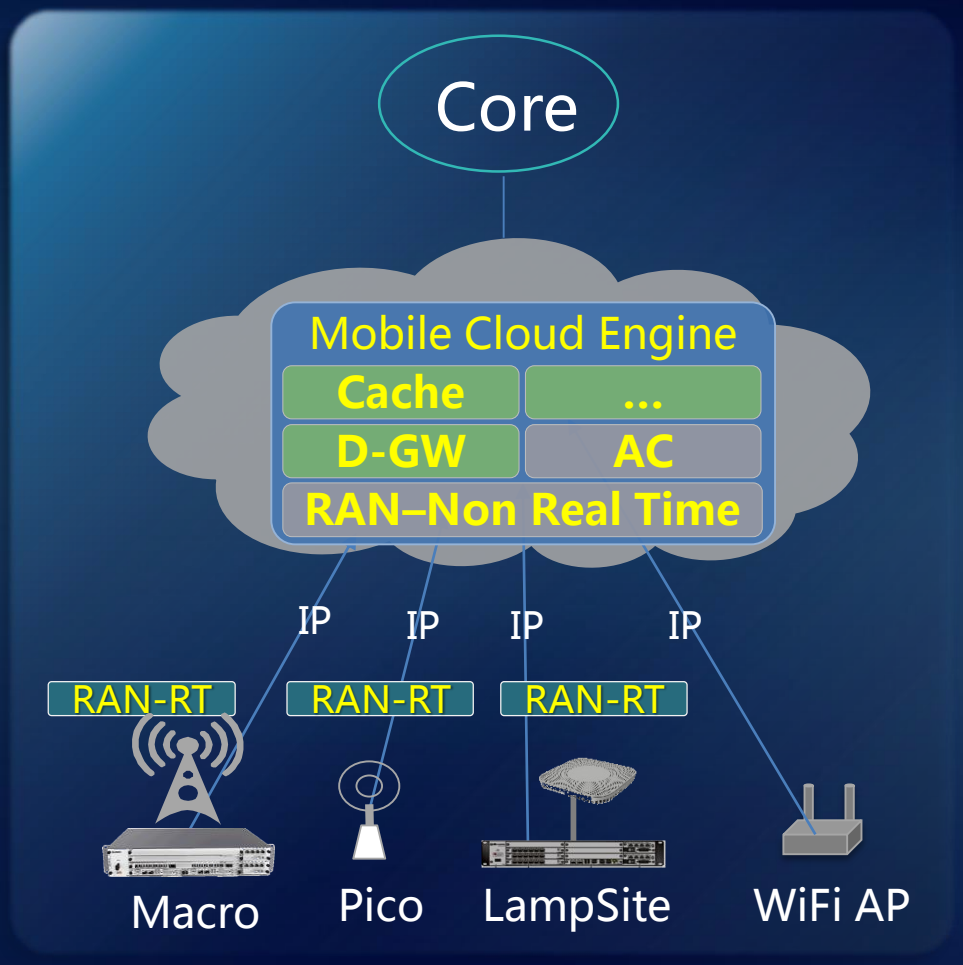
Upgrade Existing SingleRAN to CloudRAN™



Existing Base Station

Mobile Cloud Engine

Software Upgrade



CloudRAN™

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Thank you

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