C-RAN before 5G

WDM in the mobile access network

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Nov. 2017 | Transition to C-RAN

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What is C-RAN?

C - RAN

Radio Access Network

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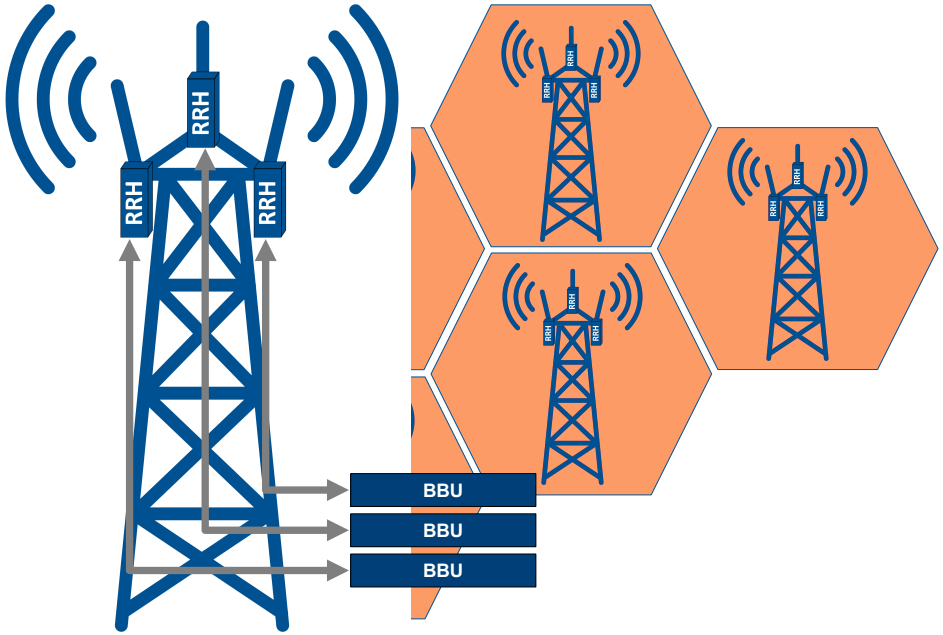
Radio Access Network



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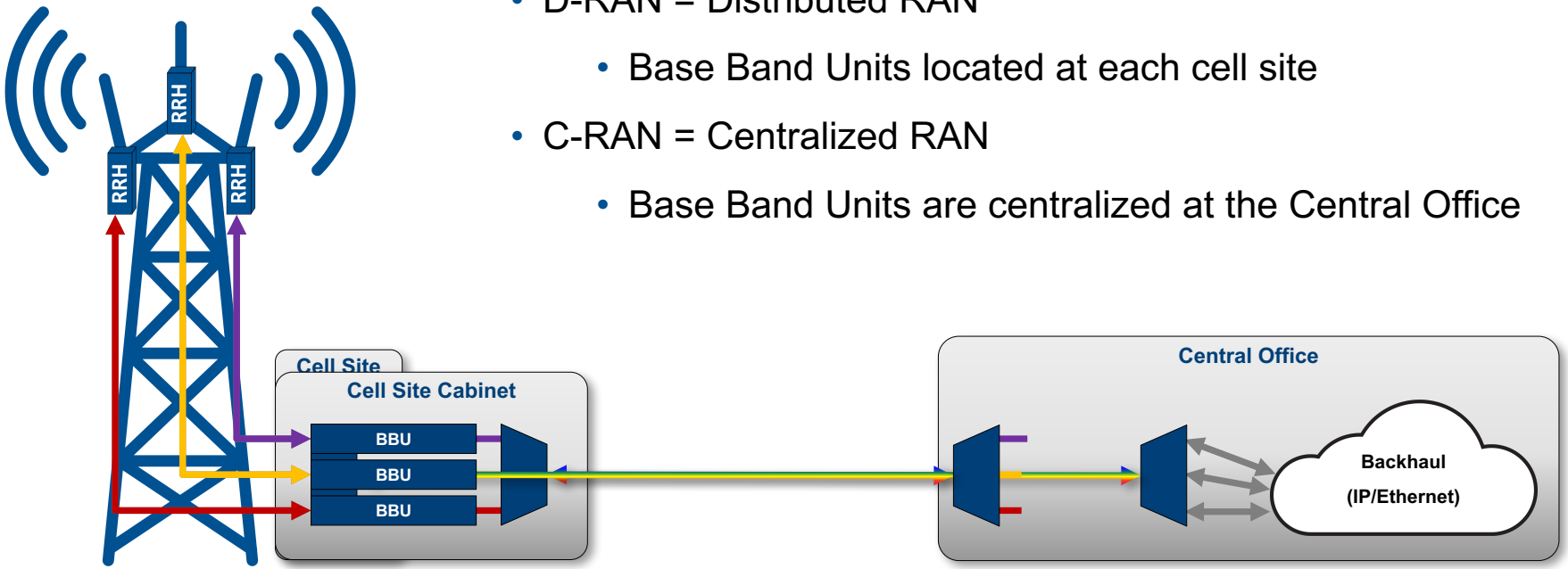
D-RAN vs. C-RAN



- D-RAN = Distributed RAN
  - Base Band Units located at each cell site
- C-RAN = Centralized RAN
  - Base Band Units are centralized at the Central Office

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What is C-RAN good for?

…C-RAN is also ideally suited to tackle today‘s challenges…

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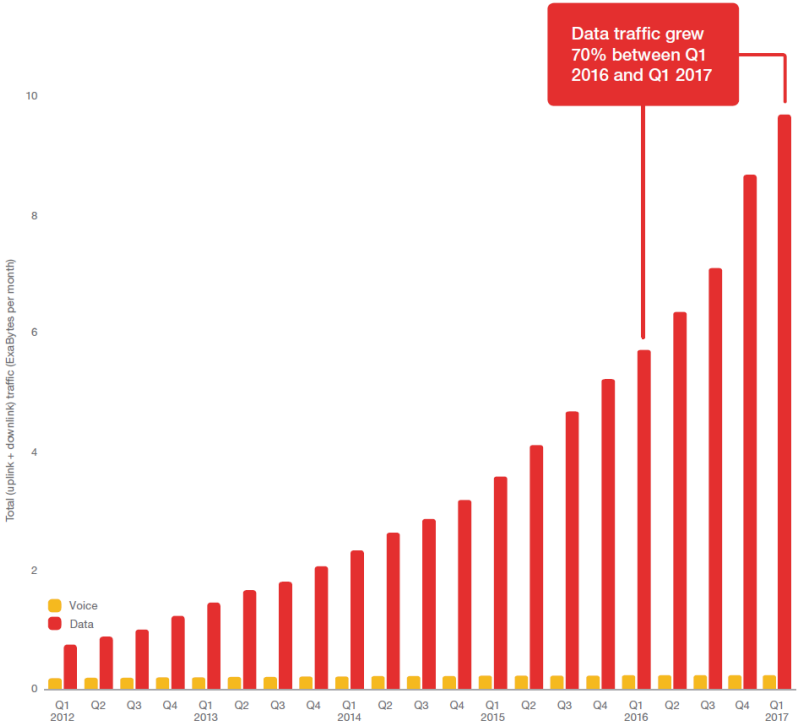
Mobile data traffic increase



Source: Ericsson Mobility Report June 2017

- 70% growth between Q1 2016 and Q1 2017
- Growth rate shows no signs of slowing
- This is achieved by using 5G?

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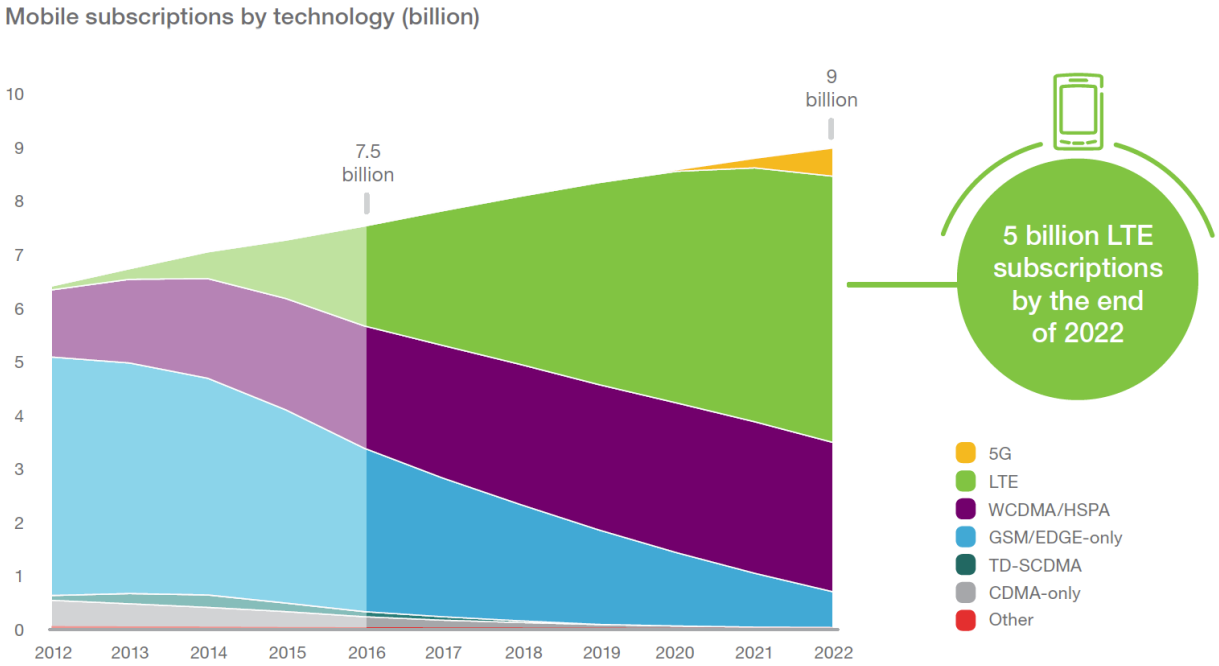
Mobile data traffic increase



Source: Ericsson Mobility Report June 2017

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CoMP – Coordinated Multipoint

- Better utilization of the network
- Better overall reception
- Less interference

Low latency required between the sites…

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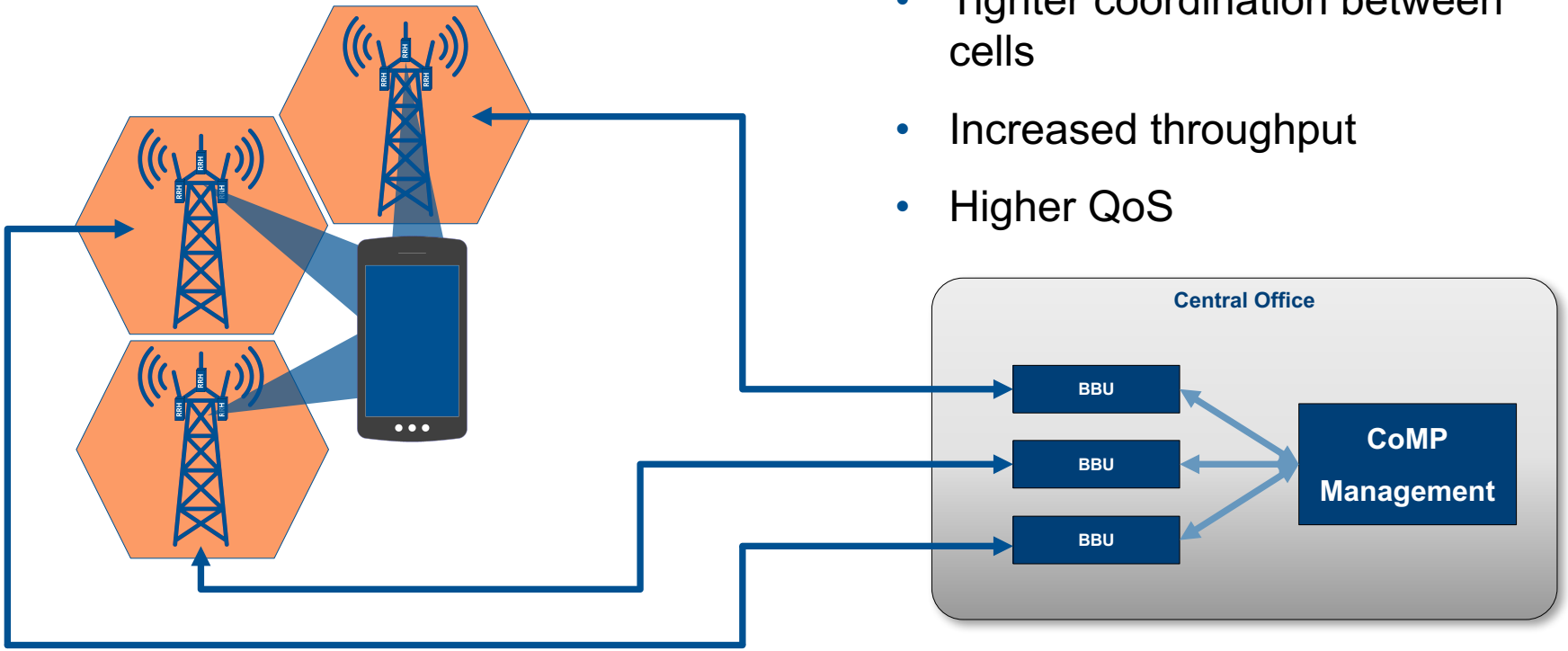
CoMP combined with C-RAN

- Tighter coordination between cells
- Increased throughput
- Higher QoS



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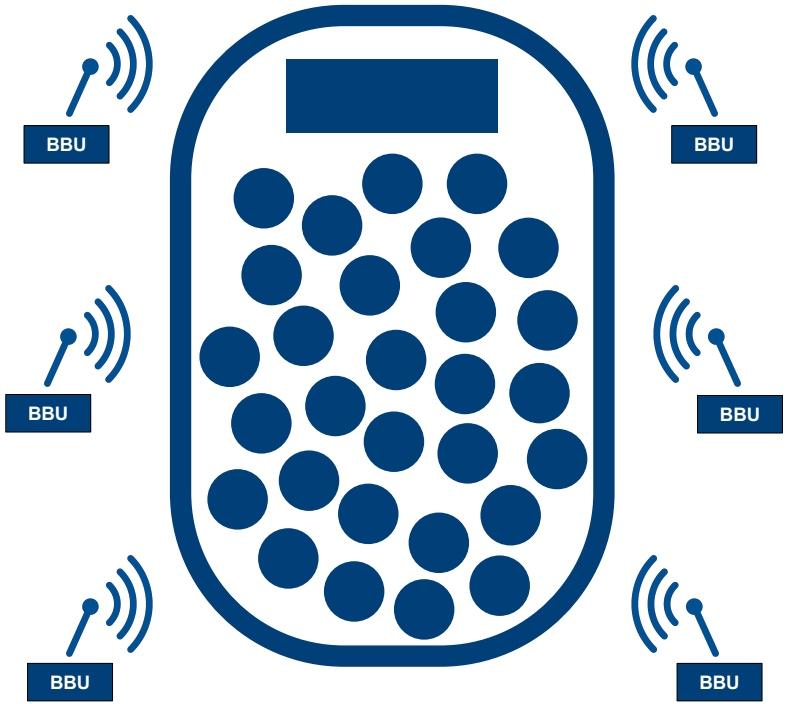
NFV – Network Functions Virtualisation



- Peak increase of traffic
- Dense network coverage
- Large number of BBU

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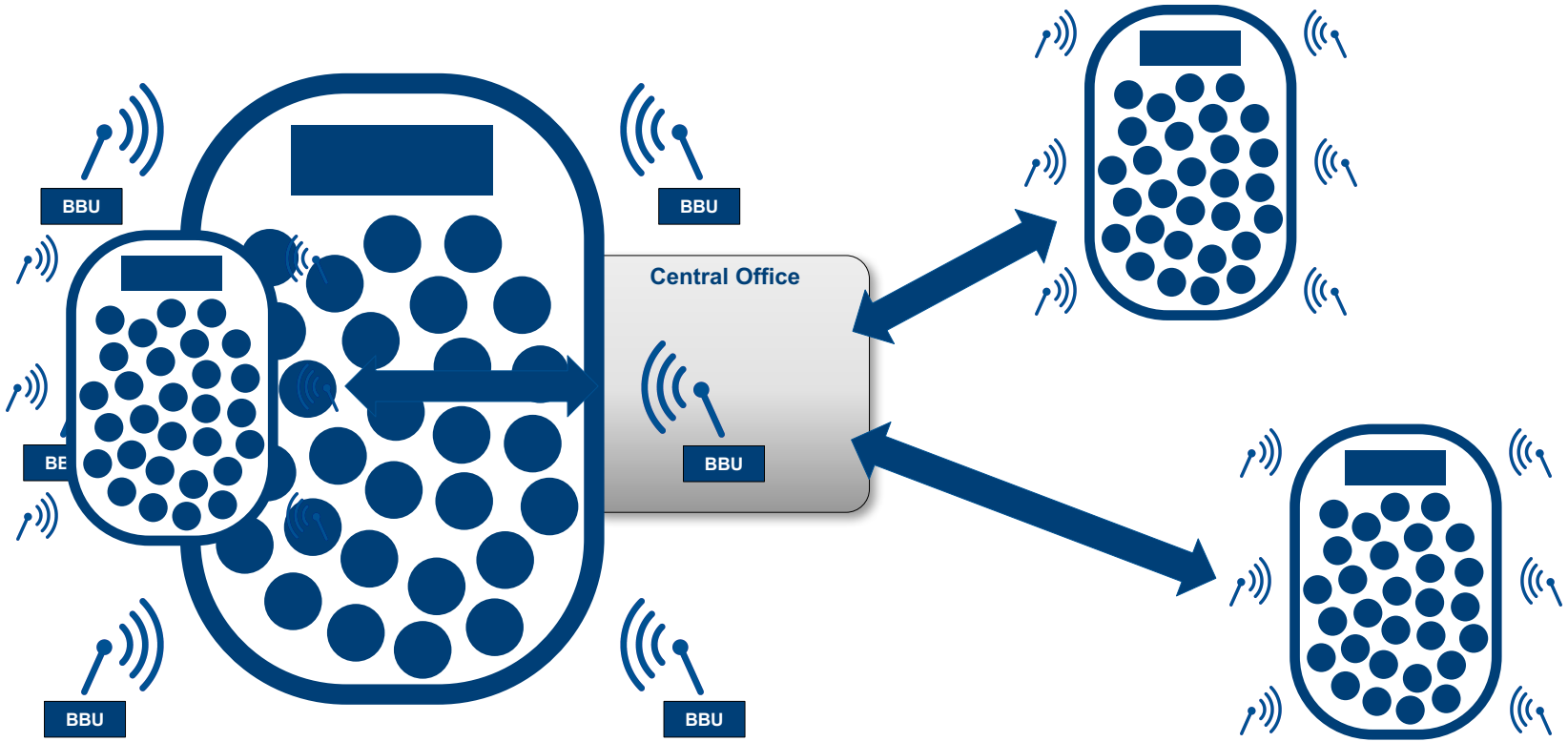
NFV – Network Functions Virtualisation



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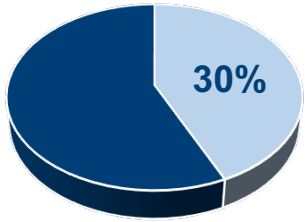
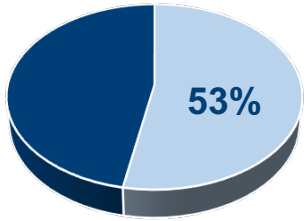
Reduced CAPEX and OPEX

A study of the China Mobile Communications Corporation shows:

- CAPEX are up to 30% less
  - Less equipment required (e.g. power, air conditioning, etc.)
  - Smaller Cell Site required



- OPEX are up to 53% less
  - Reduced power consumption
  - Less on-site maintenance
  - Lower site rent



These savings more than offset the cost of the investment

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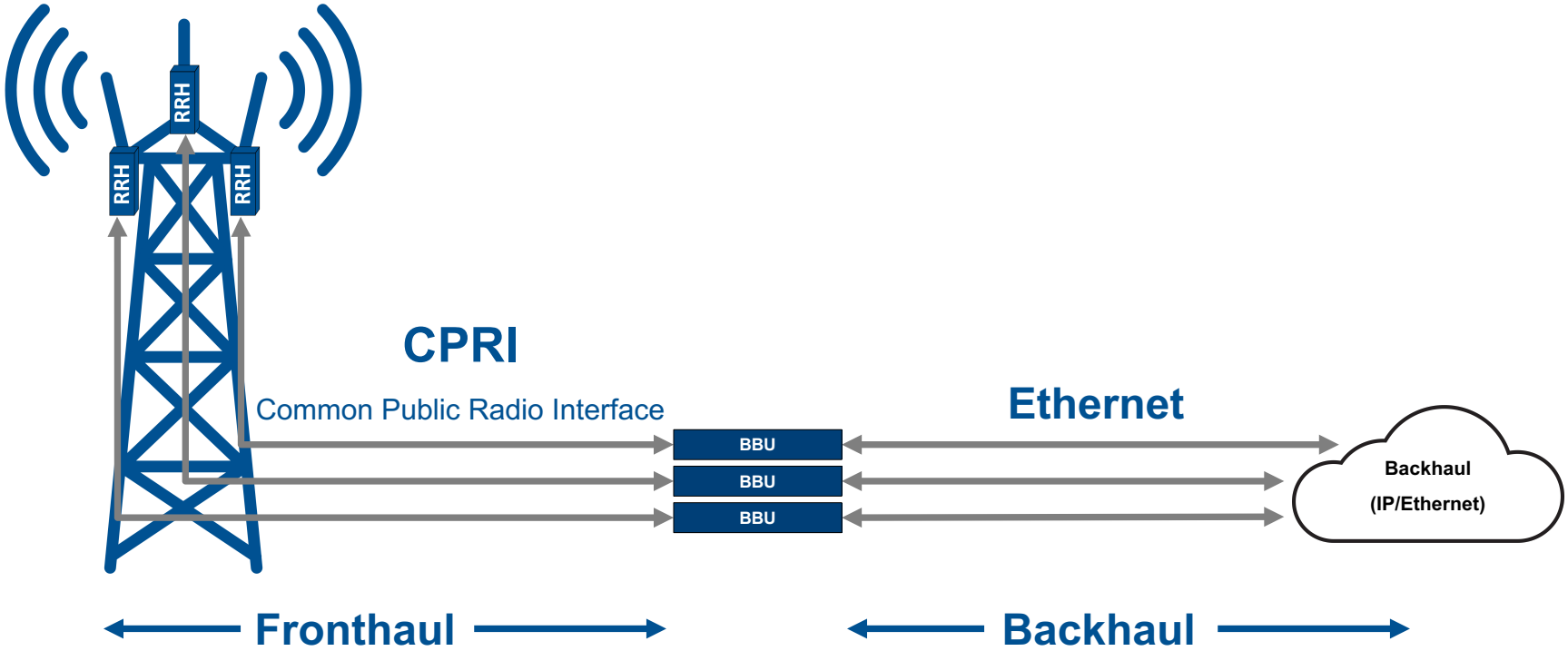
Challenges of C-RAN



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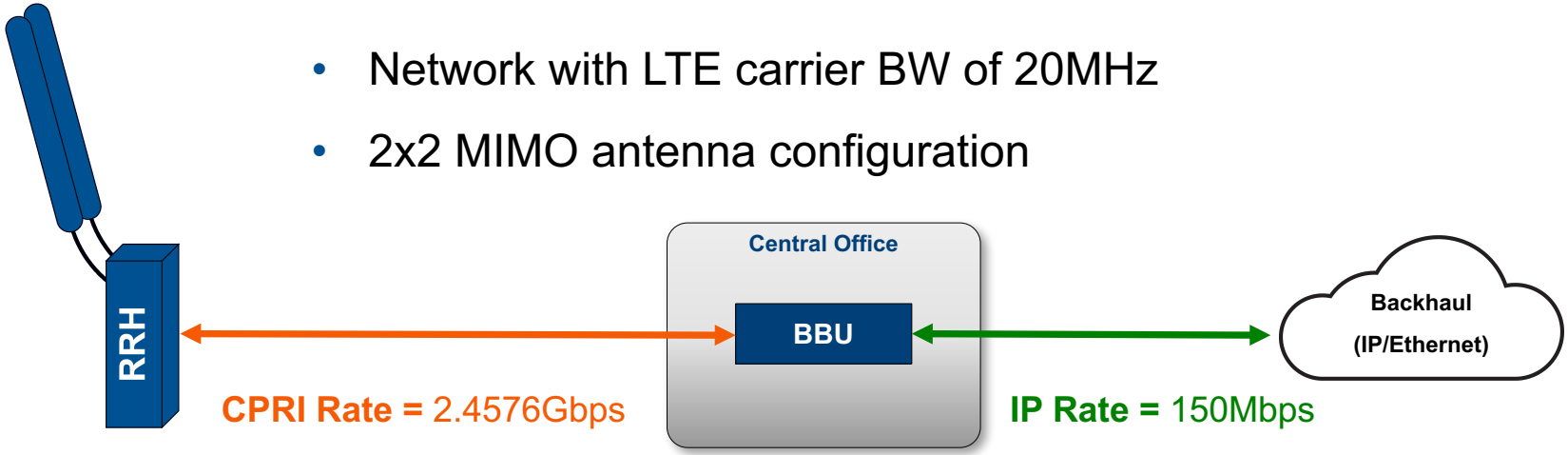
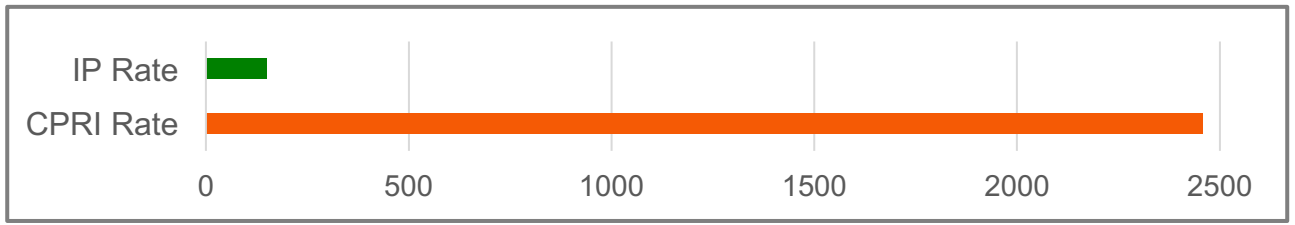
CPRI – Bandwidth Requirements

- Network with LTE carrier BW of 20MHz
- 2x2 MIMO antenna configuration





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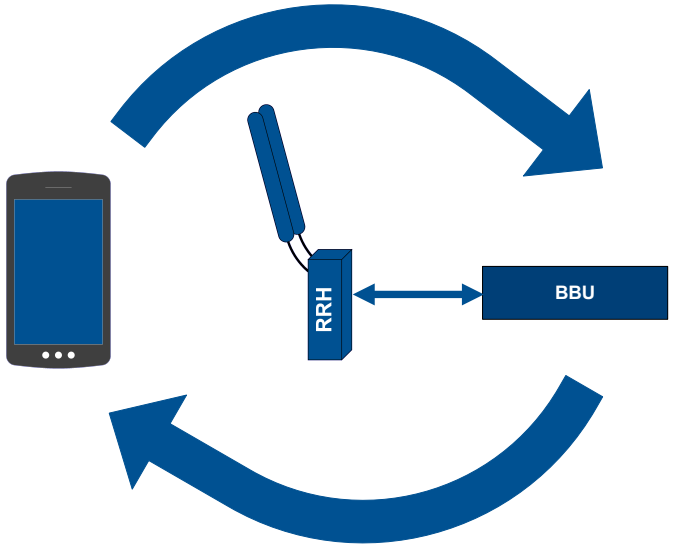
C-RAN – Latency Requirements

- Roundtrip ≤ 3ms
- BBU requires 2.75ms
- < 250µs for Fronthaul network



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C-RAN – Environmental Requirements

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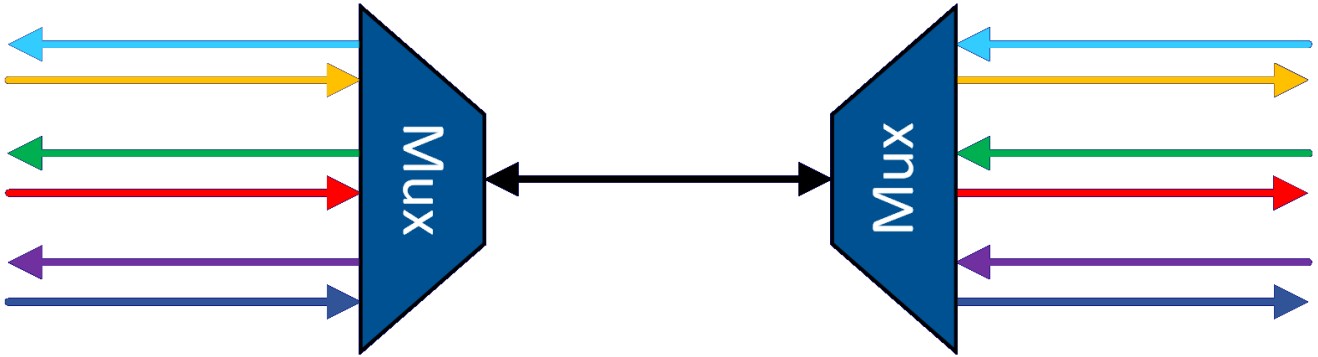
WDM the ideal solution for C-RAN

- Maximizes the fiber bandwidth
- No added latency
- Industrial temperature range -40°C to +85°C available



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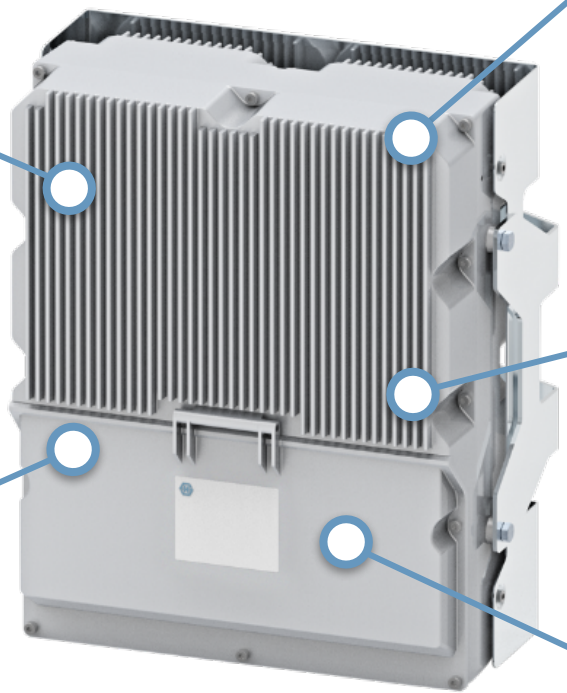
CUBO Converter – Outdoor Unit

Ruggedized Metal Housing

IP65 Protection

Mount Solutions

for pole and wall



Fansless cooling

Integrated

Management Module

1 or 2 Transponders

6 Client Ports per Transponder

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Prepared for 5G

Transition to C-RAN will speed up transition to…

…and make it less expensive.

Thank You!

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