



**MAVENIR**<sup>™</sup>  
Trust the Future

# Open RAN Infrastructure for 5G

September 2021


# Who is Mavenir?

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One Network. Any Cloud. All Software.

Mavenir is building the future of networks and is a pioneer in advanced technology, focusing on the vision of a single, software-based automated network that runs on any cloud.

As the industry's only end-to-end, cloud-native network software provider, Mavenir is focused on transforming the way the world connects. Our services accelerate software network transformation for 250+ CSPs in over 120 countries, which serve more than 50% of the world's subscribers.







# Building the Future of Networks with Cloud-Native Software

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- > Virtualizing networks and transitioning to 5G
- > Embracing disruptive and innovative technology and business models
- > Enabling adoption of cloud-native, web-scale technologies
- > Delivering service agility, flexibility, and velocity
- > Driving NFV evolution to achieve web-scale economics
- > Offering solutions to increase and protect revenue and reduce costs
- > Integrating analytics and artificial intelligence (AI) across the network for optimization

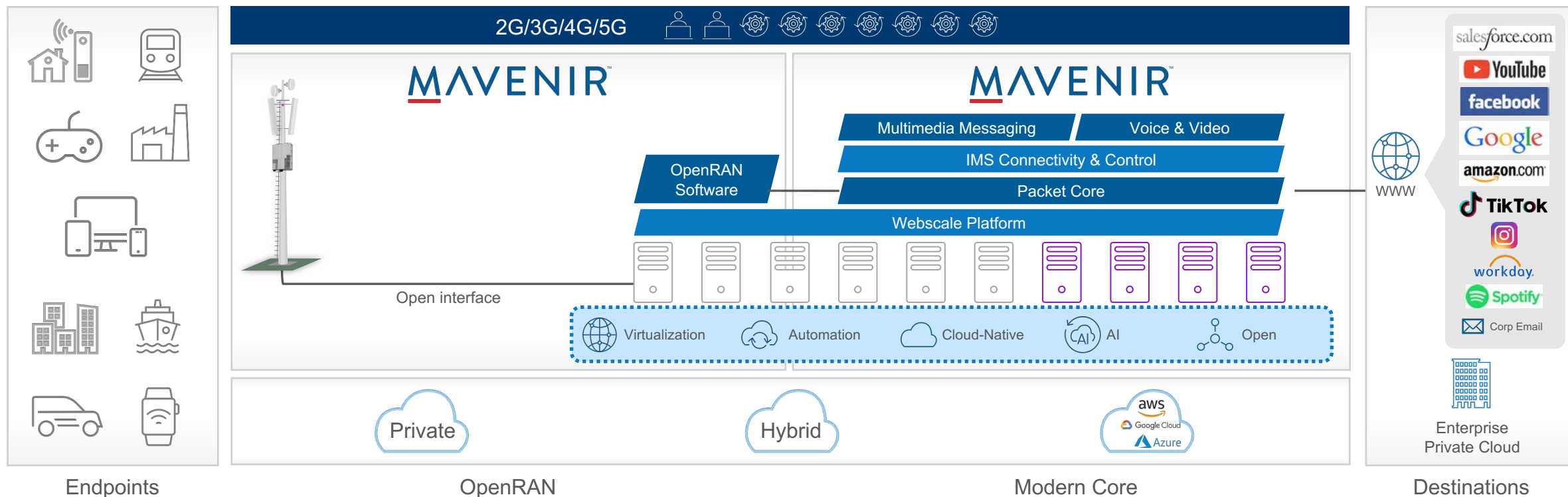


# Software-Driven Approach Significantly Reduces Cost and Increases Flexibility

- ✓ Automated / software driven 
- ✓ Virtualized applications on commercial-off-the shelf hardware 
- ✓ Public, private or hybrid cloud 
- ✓ Efficient resource utilization 



- > Low total cost of ownership
- > Flexible / unlimited scaling
- > Ready for 5G

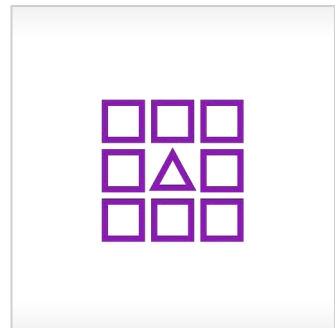


# Mavenir's Web-Scale Platform Enables Seamless Cloud Deployment

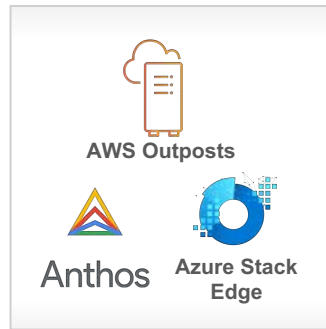
## Key Considerations Driving Cloud Architecture



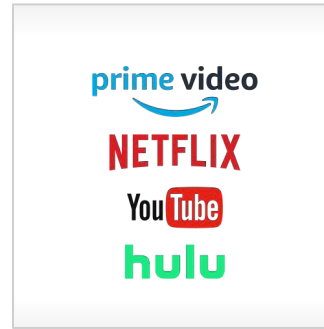
Latency / Location



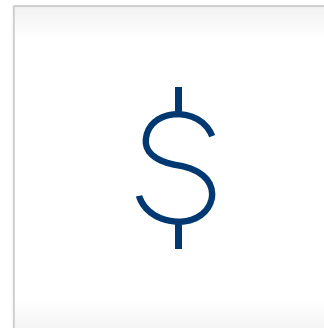
Differentiation



Edge



Cloud Content



Pricing

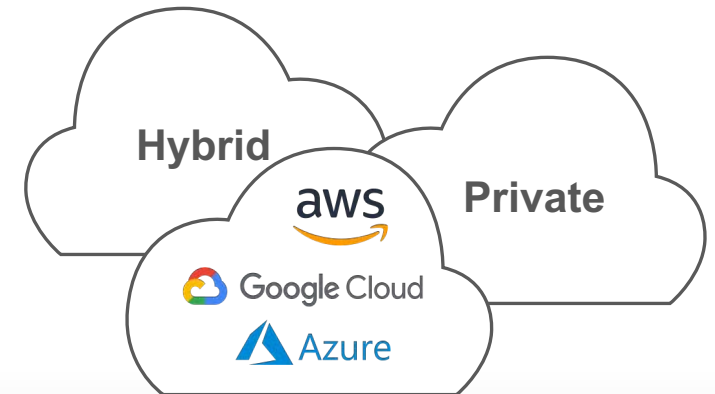


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## Web-Scale Platform

Common platform that abstracts applications from underlying infrastructure

2G 3G 4G 5G





# *Open RAN will help build a more robust and diverse supply chain*

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- > To be clear, Open RAN is not a technology
  - a shift in how we design and build mobile networks using open and interoperable subcomponents from multiple vendors.
- > It is limited to two incumbents who have locked up the market with proprietary system.
- > In contrast, the Open RAN ecosystem numbers more than 60 companies,
- > Importantly, Open RAN not only increases competition,
  - but also brings significant cost savings, increased security, and futureproofed networks
  - Local innovation



**New technologies  
are coming soon**

Expectations uncovered

3



**Medical research  
aspects**

Sensational discovery

4



**Best healthy eating  
advices**

Which one is effective?

7

# TODAY'S NEWS

Sept 2021



**Today:** Sunny/Mild

BUSINESS • POLITICS • ECONOMICS • SCIENCE • ENGINEERING • MEDICINE • INDUSTRY • ECOLOGY • TECHNOLOGY

## TOP NEWS

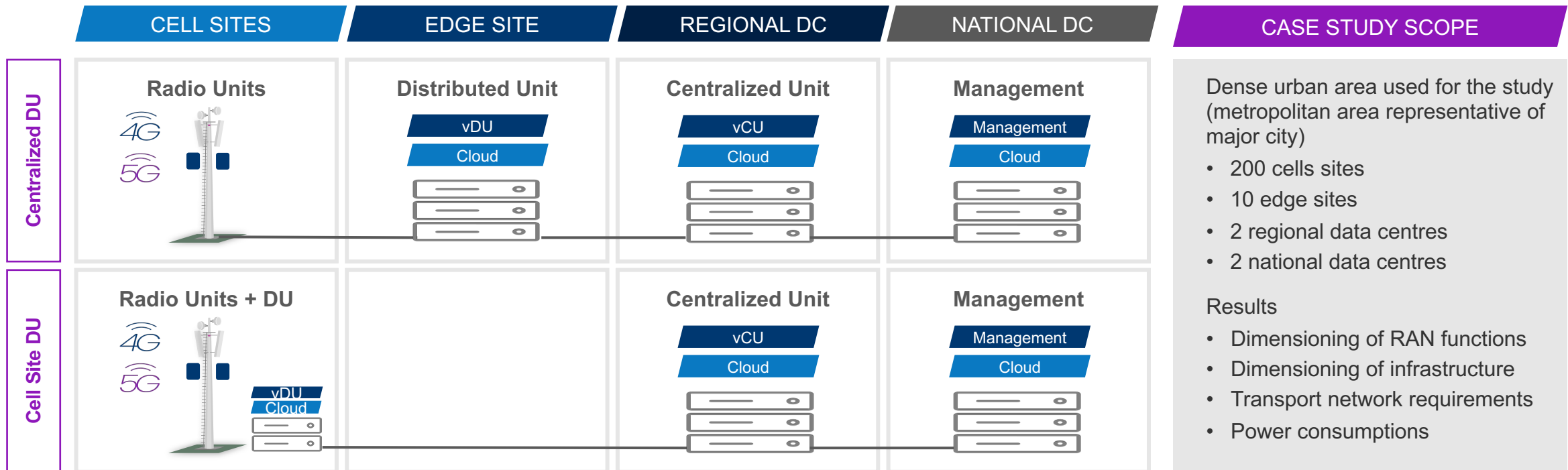
### OpenRAN and 5G: Not All Providers are Created Equal

- Security
- Power Consumption
- Interoperability
- System Integration
- NSA vs SA integration
- Brown Field vs Green Field
- Long term specifications



# Open vRAN Case Study

A case study based on a typical dense urban setting.  
Two scenarios have been considered (centralized & cell site DUs).





# Radio Site Spectrum

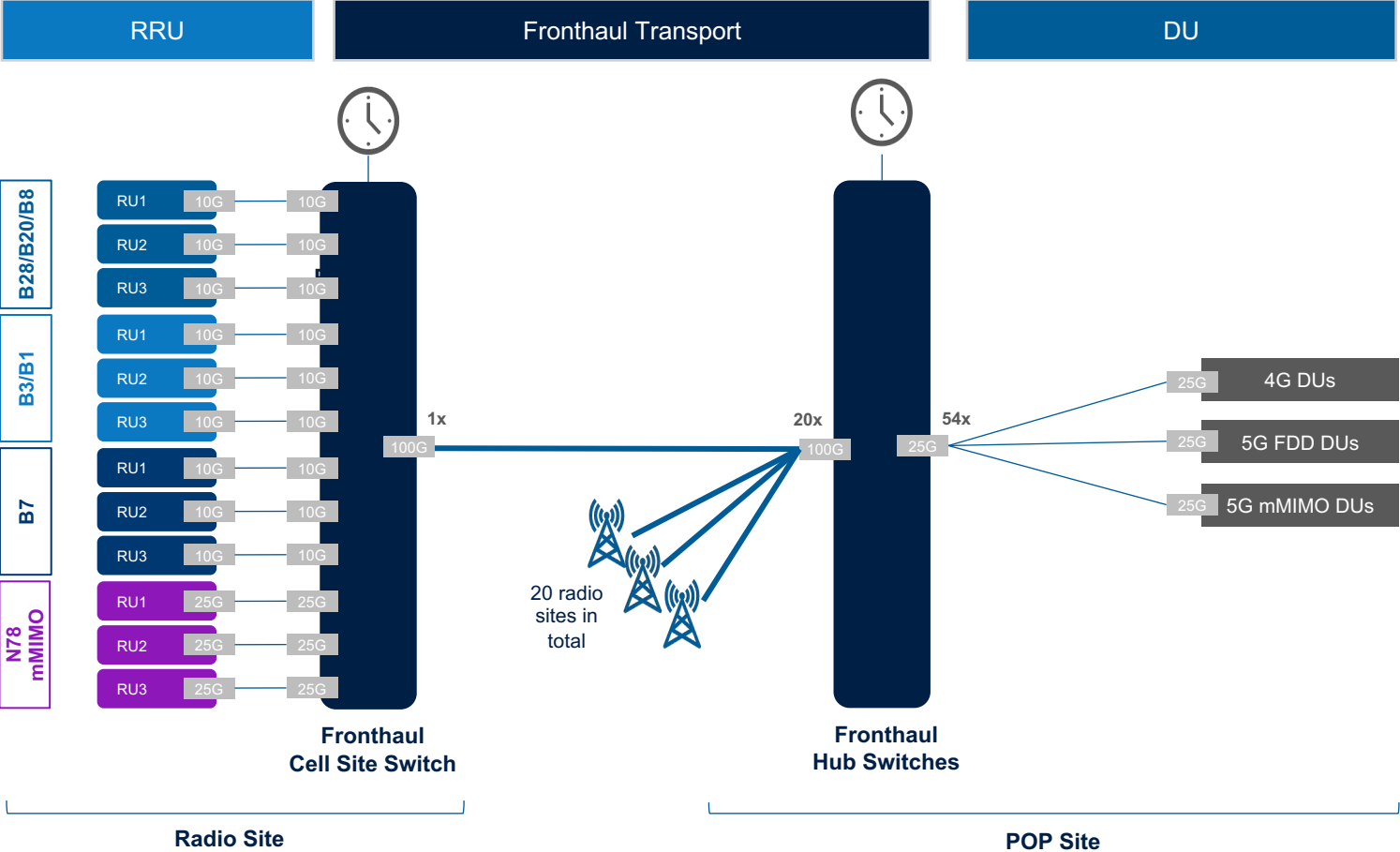
Spectrum allocation and radio configurations used for the case study

	B28B 700 MHz	B20 800 MHz	B3 1800 MHz	B1 2100 MHz	B7 2600 MHz	n78 3500 MHz
Bandwidth	5 MHz	10 MHz	20 MHz	15 MHz	15 MHz	80 MHz
4G	X	X	X	X (DSS)	X	
5G				X (DSS)		X

Radio Configuration	2T4R 2x40W	2T4R 2x40W	4T4R 4x40W	4T4R 4x40W	4T4R 4x40W	64T64R 200W
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	Per sector	Per site
Total 4G carriers	5	15
Total 5G carriers	2	6

# Fronthaul Transport

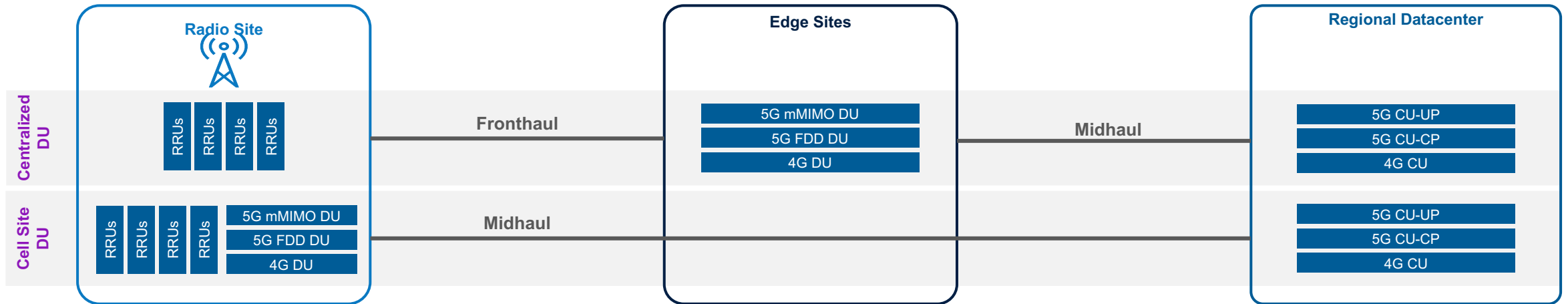


## Requirements

- Grey interfaces on RRUs
- Deployment of FH switch on radio site to aggregate all ports from the different RRUs
- Deployment of FH hub switch in Edge Sites to aggregate all 100G interfaces coming from the different radio sites and to provide 25G interfaces to the DU servers
- Cell Site FH Switch key requirements
  - 9x 10G interfaces
  - 3x 25G interfaces
  - 1x 100G interfaces
  - External GPS input (prime reference), TSN features, Calls C, PTP + SyncE distribution, secondary clock via FH link from Edge site
- FH Hub Switches key requirements
  - 20x 100G interfaces
  - 54x 25G interfaces
  - TSN features, PTP + SyncE distribution, Class C

# Dimensioning Inputs

Instances to dimension and assumptions used



## Assumptions used

### Radio Site

- Average 4G users per site (RRC connected): 500
- 5G users per site: 30% of 4G
- User traffic pooling factor between sectors: 40%

### Fronthaul

- Modulation: 256 QAM DL and 64 QAM UL
- PRB loading: 100%
- FH compression: BFP9 for 4G, BFP9 for 5G
- Modulation compression for mMIMO
- Fronthaul traffic pooling: none

### Edge Location

- 20 Radio Sites per Edge Location
- Midhaul Traffic pooling in POP: 20%

### Regional Datacenter

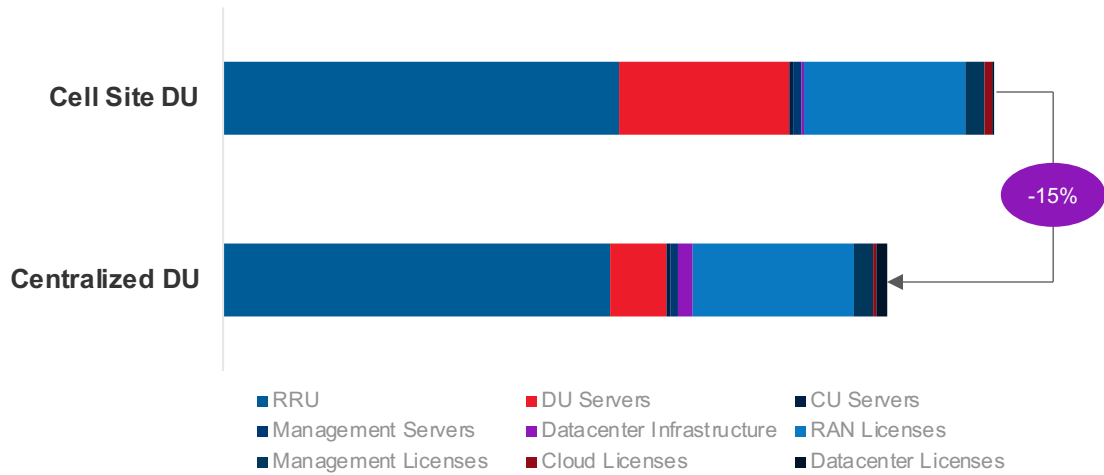
- Control Plane: total average number of users (RRC connected) per Regional Datacenter
- User Plane: total average throughput per Regional Datacenter
- MH traffic pooling factor in Edge DC: 50%

# Open vRAN Case Study

## Key Results

The study demonstrates that greater cost savings can be achieved with a centralized DU architecture in dense urban areas.

Capex comparison







Thank **You**



# Contact

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[John.Baker@mavenir.com](mailto:John.Baker@mavenir.com)



+1 682 208 7209



[www.mavenir.com](http://www.mavenir.com)



1700 International Parkway  
Richardson, TX 75081