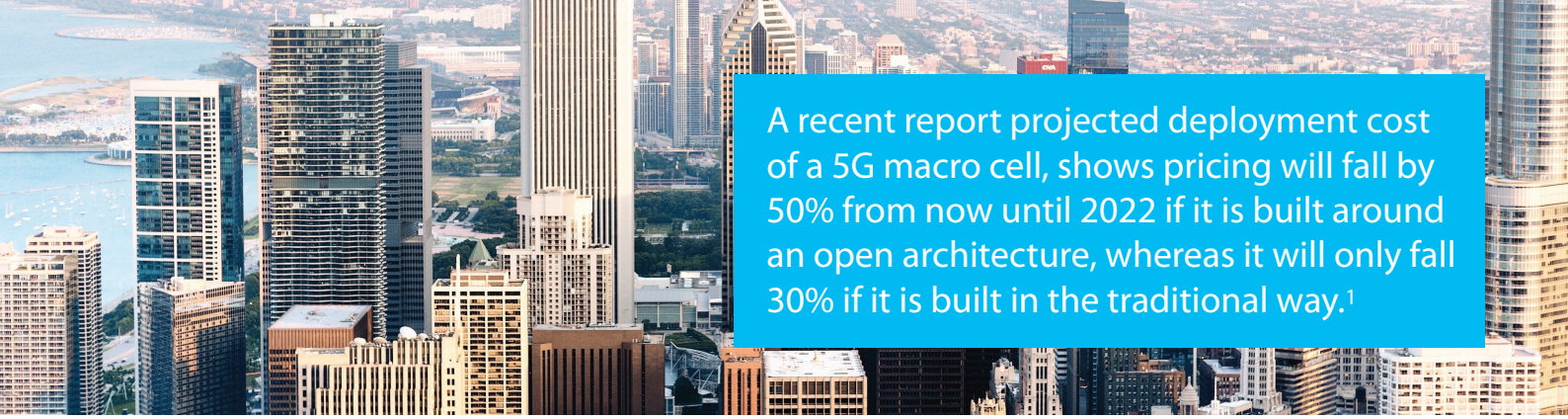
OPEN RAN SOLUTION

Remote Radio Unit
Open Radio Gateway

Comba



A recent report projected deployment cost of a 5G macro cell, shows pricing will fall by 50% from now until 2022 if it is built around an open architecture, whereas it will only fall 30% if it is built in the traditional way.[1]

Top drivers for open architectures in the radio access network (RAN)

One of the biggest trends in the networking industry has been towards disaggregation – unbundling the components of the network into smaller, simpler components and virtualizing capability to reduce cost and increase agility.

In the RAN research, 76 tier one operators have detailed plans focusing particularly on the use of new or open architectures for RAN deployments until 2025. They indicated 4 main drivers which push them towards open RAN[2]:

- Total cost of ownership (TCO)
- Driving price competition
- To wrest control of the technology agenda from vendors
- To access a wider base of innovation than just five major OEMs.

A pioneer hardware supplier in the Open RAN ecosystem

Evolving along with the RAN technology, Comba's best-in-class remote radio unit (RRU) is structured with the following high efficiency, high power product features to offer open interfaces to the baseband unit (BBU) and the operation and management (OAM) interface to simplify interoperability between suppliers.

Multiple technology
2G/3G/4G and upgradable to 5G

Multi-TRX radio technology
2T4R, 4T4R and 8T8R

High power
Max. power up to 160W

High capacity
Max. 2 LTE carrries
5/10/15/20MHz

High integration
Volume 15L/15kg

Flexible fronthaul rate
CPRI up to Rate 9
eCPRI 10Gbps/ 25Gbps

Digital Intermediate frequency (IF)
High-Low power RF transceiver with digital technology design

Highly integrated transceiver
reduces RRU size, power consumption and cost

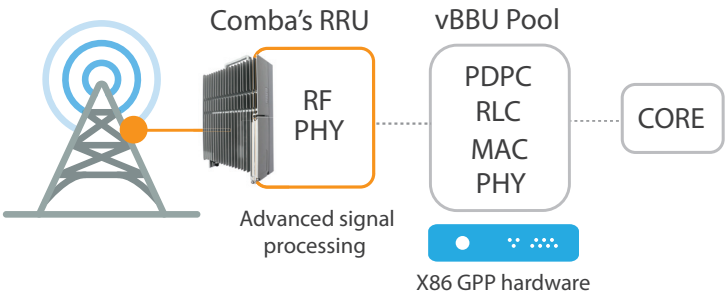
Adaptive frequency domain equalization algorithm
reduces ripple < 1dB

Power amplifier protection technology

Sources: 1& 2 - Open RAN architecture set to disrupt 5G landscape, 2 May 2019, Rethink Reports

Lowering cost, improving performance

RRU technology with support for simultaneous operation of multiple air-interface protocols becomes an emerging end-product requirement.



In Open RAN, interface not only lies between BBU and RRU, but also lies in the layers within the BBU and RRU.

How Comba's RRU performs in Open RAN?

High energy efficiency
achieves 33% overall unit efficiency
achieves > 50% PA efficiency

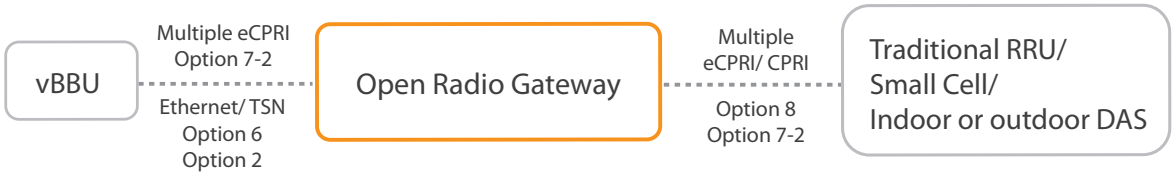
Modular design
supports global major frequency bands

RAN functional split 7-2x
significantly reduces 5G fronthaul bandwidth

eCPRI
flexible fronthual topology to support Open RAN deployment

Opening interface within legacy hardwares

To enhance existing RAN performance, Comba's open radio gateway is designed to bridge up traditional hardwares with open interface, facilitating network functions from radio resource control, synchronization, switching, to hardware management.



Comba's Open RAN solution enables multi mode base stations to support multiple standards such as GSM, UMTS, LTE and 5G, offering numerous benefits for both operators and infrastructure OEMs.

BENEFITS

To Operators

Reducing operating expenses
- saving rental costs by reusing cell sites
- saving line costs by reusing backhaul

Lowering capital expenses
- only software or extensive upgrades needed for new networks

Optimizing long-term total cost of ownership
- low site maintenance cost due to highly reliable RRU
- ability to future proof networks

To Infrastructure OEMs

Reducing R&D expenses
- universal base station approach for multiple standards

Agility
- fast adaptability to evolving standards and bug fixes via programmable hardware

Differentiating from competition
- simpified product line management
- charging premium for future-proof equipment

Abbreviations

CPRI – Common Public Radio Interface
DC – Direct Current
eCPRI – evolved Common Public Radio Interface
MAC – Media Access Control
PDCP – Packet Data Convergence Protocol
PHY – Physical Layer
PA – Power Amplifier
RF – Radio Frequency, Radio Function
RLC – Radio Link Control
RRU – Remote Radio Unit
vBBU – virtual Base Band Unit
vEPC – virtual Evolution Packet Core
TSN – Time Sensetime Network

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