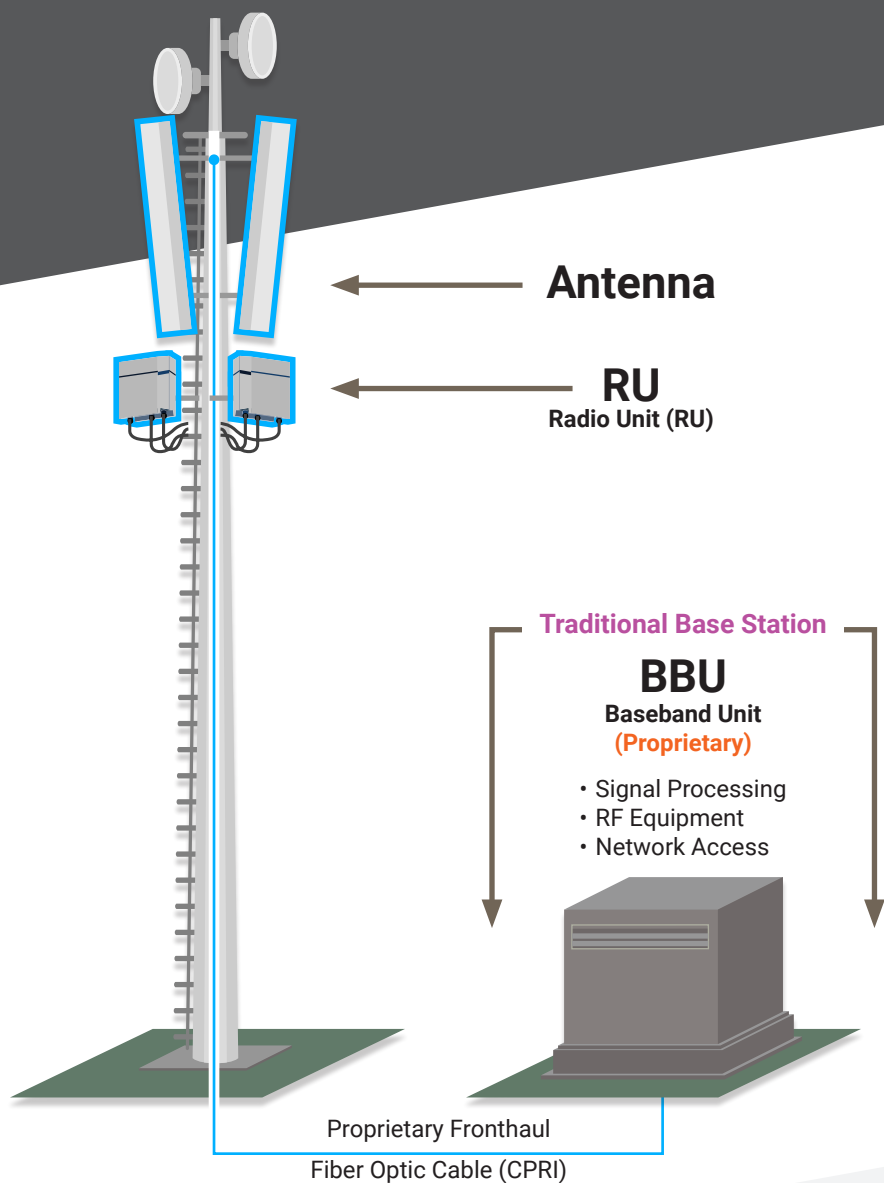# What is Open RAN?

Open Radio Access Networks, or Open RAN, refers to a disaggregated approach to deploying mobile networks by using open and interoperable protocols and interfaces, which allows for increased flexibility over traditional RAN systems. Open RAN can be implemented with vendor-neutral hardware and software-defined technology based on open interfaces and industry-developed standards.

Antenna ←

RU
Radio Unit (RU) ←

Traditional Base Station

BBU
Baseband Unit
(Proprietary)

• Signal Processing
• RF Equipment
• Network Access

Proprietary Fronthaul
Fiber Optic Cable (CPRI)

TRADITIONAL RAN

In a traditional RAN system, the radio, hardware and software are proprietary. This means that nearly all of the equipment comes from one supplier and that operators are unable to, for example, deploy a network using radios from one vendor with hardware and software from another vendor.

Mixing and matching cell sites from different providers typically leads to a performance reduction. The result is that most network operators, while supporting multiple RAN vendors, will deploy networks using a single vendor in a geographic region.

This can create vendor lock-in with high barriers to entry for new innovators.

Proprietary	**Closed & Embedded Interfaces**	**Pre-Defined Functionality**	**Single Vendor**
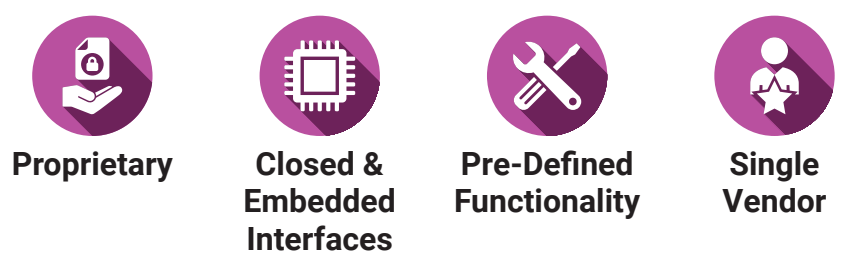
OPEN RAN

Open RAN is not a technology, but rather an ongoing shift in mobile network architecture that allows networks to be built using subcomponents from a variety of vendors. The key concept of Open RAN is "opening" the protocols and interfaces between the various subcomponents (radios, hardware and software) in the RAN. As a technical matter this is what the industry refers to as a disaggregated RAN. The benefits of this approach include increased network agility and flexibility, increased innovation and cost savings.

There are three primary elements in the RAN:

1 **The Radio Unit (RU)** is where the radio frequency signals are transmitted, received, amplified and digitized. The RU is located near, or integrated into, the antenna.

2 **The Distributed Unit (DU)** is where the real-time, baseband processing functions reside. The DU can be centralized or located near the cell site.

3 **The Centralized Unit (CU)** is where the less time-sensitive packet processing functions typically reside.

It is the interfaces between the RU, DU and the CU that are the main focus of Open RAN. **By opening and standardizing these interfaces (among others in the network), and incentivizing implementation of the same, we move to an environment where networks can be deployed with a more modular design without being dependent upon a single vendor. Making these changes can also allow the DU and CU to be run as virtualized software functions on vendor-neutral hardware.**

Software Defined	**Unbundled & Open Interfaces**	**Programmable & Flexible**	**Multi-Vendor Friendly**

1 **RU**
Radio Unit (RU) integrated into Active Antenna

3 **CU**
Centralized Unit (CU)

Open RAN Base Station

2 **DU**
Distributed Unit (DU) centralized or at cell site
• Signal Processing
• Network Access

Open Midhaul

Open Fronthaul
Fiber Optic Cable (eCPRI Split 7.2x)