What is Open Radio Access Network (Open RAN)?

May 12, 2022

In news– With the accelerated deployment of 5G infrastructure, Open RAN is becoming increasingly critical for telecom service providers.

What is Open RAN?

- It is a key **part of a mobile network system that uses cellular radio connections to link individual devices to other parts of a network.**
- It **comprises antennae**, which transmits and receives signals to and from our smartphones or other compatible devices.
- The signal is then digitised in the RAN-base station and connected to the network.
- **In the traditional set-up, Radio Access Network is provided as an integrated platform of both hardware and software**.
- Therefore, it is difficult to mix vendors for the radio and baseband unit, and in most cases, they come from the same supplier.
- The idea of Open RAN is to change this, and **enable operators to mix and match components.**
- The **Open RAN architecture allows for the separation or disaggregation**, between hardware and software with open interfaces.

- **With Open RAN, telecom players would have the flexibility to use in-house solutions or solutions from multiple vendors for RAN services.**
- **Network flexibility is another advantage of the Open RAN architecture. Being software-centric, it is scalable, agile and best of networks** with improved network

performance using artificial intelligence and machine learning.

- Open RAN **would reduce a telecom operator's network deployment cost as it is interoperable** with other networks such as 4G.

Challenges-

- Open RAN is a new architecture, and not something that has been extensively tested.
- **Therefore, there are several challenges in the path to implement Open RAN such as latency issues**, operations and maintenance.
- Since interoperability is at the core of Open RAN, the issue of latency might not show up in controlled environment testing but at a later stage when the architecture is pushed to its limits.

- **Servicing and maintaining a multi-vendor architecture can also pose a big challenge for service providers.**

Radio access network (RAN)-

- It is a part of a mobile telecommunication system. It implements a radio access technology.
- Conceptually, **it resides between a device such as a mobile phone, a computer,** or any remotely controlled machine and provides connection with its core network (CN).
- Depending on the standard, mobile phones and other wireless connected devices are varyingly known as user equipment (UE), terminal equipment, mobile station (MS), etc.
- **RAN functionality is typically provided by a silicon chip residing in both the core network** as well as the user equipment.
- **Examples of radio access network types are:**
    - GRAN: GSM radio access network.
    - GERAN: essentially the same as GRAN but specifying

the inclusion of EDGE packet radio services.

- UTRAN: UMTS radio access network.
- E-UTRAN: The Long Term Evolution (LTE) high speed and low latency radio access network.

- It is also possible for a single handset/phone to be simultaneously connected to multiple radio access networks.
- **Handsets capable of this are sometimes called dual-mode handsets.** For instance it is common for handsets to support both GSM and UMTS (a.k.a. "3G") radio access technologies.
- Such devices seamlessly transfer an ongoing call between different radio access networks without the user noticing any disruption in service.