C-DOT O-RAN Test and Integration Lab

Introduction

C-DOT, under guidance from the Department of Telecommunications, is setting up indoor and outdoor Open RAN test labs at its Delhi and Bengaluru campuses.

Govt of India's initiative towards Atmanirbhar Bharat and DOT's DCIS, TTDF schemes encourage individual startups, MSMEs to develop products for the 4G/5G ecosystem.

This lab would help domestic manufacturers to test their O-RAN based products for conformance to standards and interoperability with peer products of other manufacturers.

Setting up such a lab in India offers a huge geographical advantage for Indian and South Asian 5G players due to large number of startups and MSMEs working to develop O-RAN based products.

Background

Traditionally RAN solutions were from single OEMs. Now, there is a shift of the industry towards Open RAN based solutions. Open RAN refers to disaggregating the radio access networks into modular network functions that support open, standardized interfaces between them. Open RAN is implemented over general purpose COTS hardware, thus allowing an increased flexibility over traditional RAN architectures. It provides OPEX and CAPEX savings while promoting innovation.

Establishing an end-to-end test facility for Open RAN requires a huge CAPEX investment. It may be challenging to individually set up these test labs. Also, the test and measurement equipment may be underutilized. Hence, it was extremely beneficial to setup a common test facility that can be utilized by indigenous start-ups and MSMEs that are developing Open RAN products and services.

Test facility

C-DOT is an active member of O-RAN ALLIANCE.

C-DOT's first test facility for Open RAN Test and Integration has recently started in the C-DOT Delhi Campus. This facility currently offers end-to-end testing of RAN using COTS smartphones and 5G Core.

This facility shall be further enhanced to enable functional and conformance testing, end-to-end integration, and interoperability testing of Open RAN-based subsystems. It shall also facilitate the certification and badging of subsystems that conform to 3GPP and O-RAN alliance specifications.

The C-DOT Test bed is planned to be commissioned in multiple phases:

Initial Phase (already commissioned)

- The 5G testbed already supports individual start-ups, MSMEs etc. to test and check the technical feasibility of their integrated RAN solution in the End-to-End Test Network containing 5G-NSA and SA Core.

Further Phases (coming soon)

- The 5G testbed established in C-DOT, shall support individual start-ups, MSMEs etc. by facilitating standalone wrap around testing for O-RU, O-DU and O-CU

- The 5G testbed established in C-DOT, shall support individual start-ups, MSMEs etc. by facilitating integrated/ paired and end-to-end testing for O-RU, O-DU and O-CU

- The 5G testbed established in C-DOT, shall support performance testing

- Facilitate testing of non-RT RIC, near-RT RIC and SMO

- Provide end to end capability for verifying RIC xApps/rApps implementations and demonstrating use cases

- C-DOT shall facilitate the certification and badging of subsystems that conform to 3GPP and O-RAN alliance specifications

- C-DOT shall host 5G Open RAN challenges with Indian Industry stakeholders working in Open RAN products and solutions, to measure the maturity of ORAN vendor capability

- For users, IPs shall be protected. Non-disclosure agreements will be entered into

Quality of Testing Services

Our state-of-the-art 10,000+ square foot indoor lab and 5,000+ square foot outdoor lab include extensive investment in robust wired and wireless test equipment.

Decades of communications technology expertise, position C-DOT as the most trusted source for network equipment testing and software services.

C-DOT shall employ global standards to test devices in real network environments to ensure that customers' devices get high-quality testing facilities, giving them a competitive edge.