

# O-DU High-Level Architecture v0.1

This section describes the O-DU architecture.

## O-DU Architecture

O-DU modules are developed as shown in the below diagram.

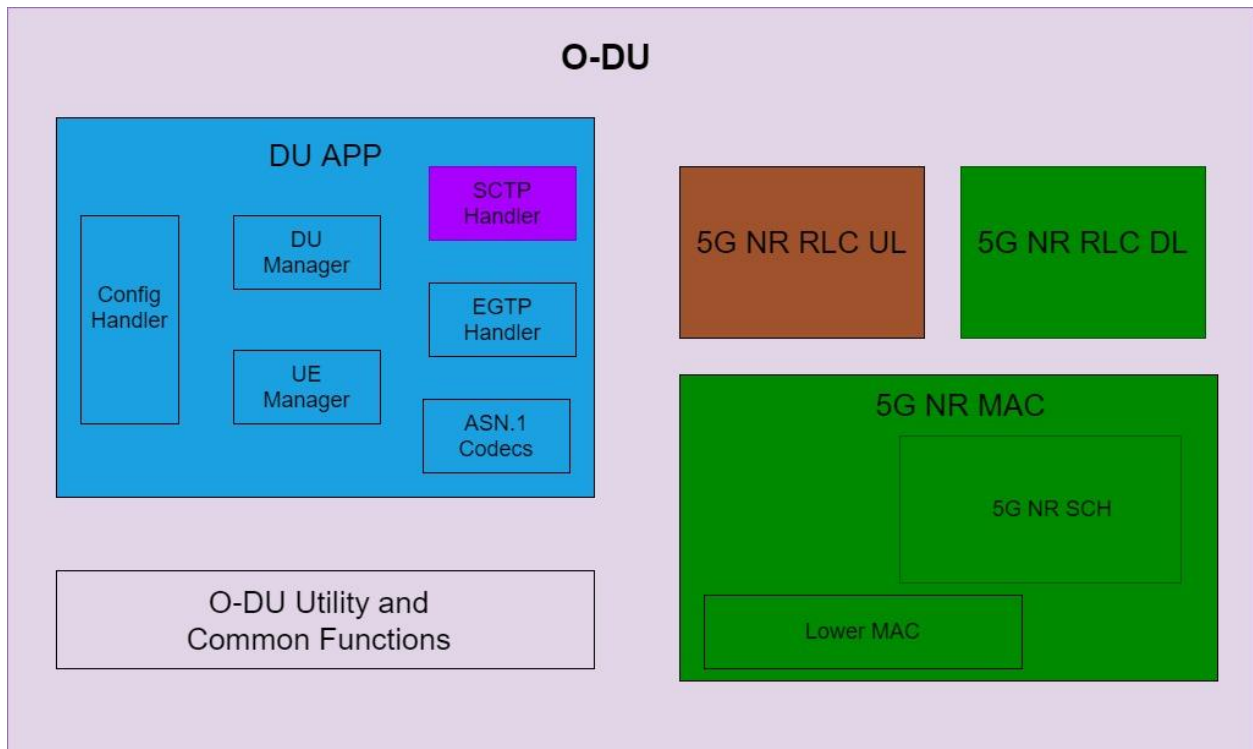


Figure 1: O-DU Architecture

## O-DU Thread Architecture

As shown in Figure 1, there are multiple entities within O-DU. Modules sharing a given color belong to one thread. O-DU architecture can be defined at a thread level as follows:

- Thread 1: O-DU thread
- Thread 2: DU APP inclusive of Config Handler, DU Manager, UE Manager, EGTP Handler and ASN.1 Codecs
- Thread 3: 5G NR RLC DL and MAC (inclusive of 5G NR SCH and Lower MAC)
- Thread 4: 5G NR RLC UL
- Thread 5: SCTP Handler

## O-DU Modules

### DU APP

This module configures and manages all the operations of O-DU.

It interfaces with external entities as follows:

- OAM: DU APP interacts with OAM on the O1 interface for configuration, alarms and performance management.
- O-CU: DU APP interacts with O-CU for RAN functionalities over the F1 interface which is built on SCTP. Control messages are exchanged on the F1-C interface and data messages on the F1-U interface.
- RIC: DU APP interacts with RIC on E2 interface over SCTP.

DU App submodules are as follows:

- **Config Handler** manages the configurations received on O1 interfaces and stores them within DU APP context.
- **DU Manager** handles all cell operations at the DU APP.
- **UE Manager** handles UE contexts at the DU APP.
- **SCTP handler** is responsible for establishing SCTP connections with O-CU, RIC.
- **EGTP handler** is responsible for establishing EGTP connection with O-CU for data message exchange.
- **ASN.1 Codecs** contain ASN.1 encode/decode functions which are used for System information, F1AP and E2AP messages.

### 5G NR RLC

This module provides services for transferring the control and data messages between MAC layer and O-CU (via DU App).

5G NR RLC UL and 5G NR RLC DL are the sub modules of this module that implement uplink and downlink functionality respectively.

### 5G NR MAC

This module uses the services of the NR physical layer to send and receive data on the various logical channels.

Functions of the 5G NR MAC module are as follows:

- **5G NR MAC** is responsible for multiplexing and de-multiplexing of the data on various logical channels.
- **5G NR SCH** schedules resources on UL and DL for cell and UE based procedures.
- **Lower MAC** interfaces between the MAC and the lower layers of the O-DU and implements all the messages of FAPI specification.

### O-DU Utility and Common Functions

These modules help in the working of O-DU and message exchanges between the O-DU modules.