CIG

5G Small Cell O-DU Platform SC-60

Platform Briefing

VERSION1.2

Apr. 2020

Introduction

O-RAN Alliance has defined reference distributed architecture to enable next generation RAN infrastructure, consisting of DU and RU. CIG has developed a series of hardware platform specially targeted for 5G small cell deployment for indoor 5G coverage and capacity enhancement. The platform is fully programmable based on general purpose ARM Processor and FPGA. A 3-tier architecture is adopted to carry out the gNB functionality, i.e. SC-60 O-DU, SC-70x O-RU and SC-640 O-Bridge. The number of each component can be flexibly configured to meet various application demands.

The O-DU is the center of the platform. Partial or all 5G air interface functions can be implemented within the O-DU, including L1, L2 and L3, according to the networking requirements.

Highlights

- 3GPP and O-RAN compliant
- 5G evolvable, LTE compatible
- Cost effective high performance 16-core NXP ARM Processor and FPGA
- Flexible capacity with configurable processing modules
- Flexible functions with optional CU accommodation and various low layer split
- Compact, easy for installation and maintenance

Specification

Dimension (W x H x D)	483mm x 43.6mm x 430mm
Front haul Interfaces (FH-x)	8 * 25Gbps (2 * DU modules), SFP28
Mid haul Interface (DU-x)	8 * 10Gbps (2 * DU modules), SFP+
Backhaul Interfaces (CU-x)	4 * 10Gbps (2 * DU modules), SFP+
Power Supply	DC: -48V
Power Consumption	320W (Typical full loading)
Weight	≤7KG

Features

<table>
<tr><td>Radio access technology</td><td colspan="2">
- 5G NR support
- Sub6G and mmWave (future releases) support
- 3GPP Option 2 high layer split, CU optional
- O-RAN Option 7-2x low layer split, eCPRI support
</td></tr>
<tr><td rowspan="2">Performance and Capacity

<i>Note: Performance and capacity numbers depend on 3rd party software optimization</i></td><td>1 or 2 DU modules</td><td>Each DU module supporting:
- 2 * 100MHz 4T4R (4 DL / 2 UL layers) or 4 * 100MHz 2T2R (2 DL / 2 UL layers) in FR1
- (Future releases) 4 * 100MHz 4T4R (4 DL / 2 UL layers) in FR1
- (Future releases) 2 * 400MHz 2T2R (2 DL / 2 UL layers) in FR2
- Up to 64 O-RU with O-bridge/O-RU cascading</td></tr>
<tr><td>Cell performance</td><td>
- 1.8Gbps DL / 0.6Gbps UL peak data rate per 4T4R (4 DL / 2 UL layers) cell
- Up to 256 active users per cell</td></tr>
<tr><td>Timing</td><td colspan="2">
- Timing from GPS/Beidou/IEEE 1588v2
- Providing timing for O-RU with SyncE and IEEE 1588v2
- 10MHz and 1PPS clock out</td></tr>
<tr><td>Interfaces</td><td colspan="2">1 or 2 DU modules, each supporting:
- 4 * 25Gbps SFP28 for fronthaul (to O-Bridge, or O-RU while downgraded to 10G)
- 4 * 10Gbps SFP+ for midhaul (to external CU)
- 2 * 10Gbps SFP+ for backhaul (to Core, provided together with CU module)
- Management and timing interfaces</td></tr>
<tr><td>Hardware</td><td colspan="2">
- Each DU module: 2*NXP LX2160A 16C 2.2GHz CPU + 1*FPGA
- 16GB DDR4 2666 for each LX2160A
- 6GB DDR4 2666 for each accelerator FPGA
- 600W 48V DC power with redundant input
- 5 * fans with N:1 protection and speed control
- Integrated BMC</td></tr>
</table>

Configuration

Configuration Type	Chassis	Modules
1	SC-60C (with CU module)	1 * DU module
2	SC-60C (with CU module)	2 * DU modules
3	SC-60A (without CU module)	1 * DU module
4	SC-60A (without CU module)	2 * DU modules

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