

# Should the optical module be placed in BBU or AAU



## AI Overview

In modern 5G networks, optical modules are typically installed in both AAUs and DUs, while BBUs mainly handle centralized processing and connect via fiber. Optical Module Placement Overview

**BBU (Baseband Unit):** The BBU serves as the core processing unit, handling baseband signal processing, modulation, encoding, and network control. It is usually located in a centralized site such as a telecom shelter or data center and connects to AAUs or RRUs via fiber optics using CPRI or eCPRI interfaces. While BBUs manage signal processing, they do not directly host optical modules for transmission; instead, they rely on optical modules in the fronthaul to connect to remote units.

**AAU (Active Antenna Unit):** The AAU integrates the RRU and antenna, supporting 5G features like massive MIMO and beamforming. Optical modules are installed in AAUs to handle high-speed optical transmission between the AAU and the DU or BBU. In 5G pre-transmission applications, colored optical modules in AAUs enable WDM (Wavelength Division Multiplexing), allowing multiple optical signals to share a single fiber without interference, which reduces link costs and simplifies deployment.

**Practical Deployment**

**Distributed Sites:** The BBU is placed in the machine room at the base of the tower, while the AAU is mounted on the tower or rooftop. Optical modules in the AAU transmit physical layer data to the DU or BBU over fiber.

**Centralized or Co-located Deployment:** In 5G, DUs and CUs may be centralized, but AAUs still require optical modules for high-speed fronthaul connections. The optical modules in AAUs handle bidirectional transmission and WDM functions, supporting multiple sectors and high-bandwidth requirements.

**Summary**

**BBU:** Centralized processing, connects via fiber; optical modules are generally not installed here for fronthaul transmission.

**AAU:** Located near the anten...

## Article Content

How is the optical module applied in the base station?

The base station is logically divided into two parts: BBU and RRU. RRU is responsible for sending and receiving signals, while BBU is responsible for signal processing.

Passive WDM in 4G/5G forward transmission

When using the system, the optical modules of standard wavelengths (commonly used 1550nm or 1310nm) of BBU/DU or RRU/AAU (commonly known as gray light module or white light

BBU, RRU, AAU: Roles and Connectivity in Telecom

- Connectivity: - Connected to the BBU via fiber optic cables and to the antenna via RF cables. - Key Features: - Reduces signal loss and improves network efficiency. - Often used in 4G LTE...

An Introduction to 5G and How MPS Products Can Optimize a Base

This article described the basics of 5G and introduced two MPS parts — the MPQ8645 and MP87190 — that can be used to improve the AAU or BBU architecture within a 5G base cell station.

Understand AAU, RRU, BBU in one article

All in all, compared with RRU, AAU has more functions of antenna and some functions of BBU. Compared with RRU, AAU is larger in size, larger in area, heavier in weight, consumes more

What are the functions and differences between AAU and RRU in a ...

After entering 4G, the traditional integrated macro base station has been completely replaced by the BBU+RRU+antenna model, and some BBUs have been placed in one computer room to form a BBU

BBU Subrack Installation Guide | PDF | Optical Fiber

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Typical Application Of 25G Colored Optical Modules In

The design scale is twice that of ordinary base stations, usually requiring 12 colored optical modules. • Ordinary BTS (Base Transceiver Station)

Typical Application Of 25G Colored Optical Modules In 5G Networks

Colored optical modules are installed on AAUs and DUs, and the WDM function is implemented by passive equipment, enabling a single optical fiber to provide connections from

Optical fiber fronthaul segment in open radio access 5G networks ...

In Semi-active WDM, a passive WDM module can be installed in Active Antenna processing unit (AAU) site, no need for power supply and active WDM module at BBU site.

Difference Between AAU, RRU, and BBU

AAU, RRU, and BBU are key components in a telecom network, particularly in modern wireless communication systems like 4G and 5G. Here's a breakdown of each:

Do you know how optical modules are used in base stations?-ETU

The base station is logically divided into two parts: BBU and RRU. RRU is responsible for signal transmission and reception, and BBU is responsible for signal processing.

CoMP-Aware BBU Placements for 5G Radio Access

This paper proposes a model for BBU placement in C-RAN deployment over a 5G optical aggregation network. The model aims to minimize

(PDF) On the Placement of BBU Hotels in an Optical

We discuss the placement of BBU-Hotels over optical access/aggregation networks for 5G backhaul, comparing OTN and Overlay

What Is a Baseband Unit?

The BBU and the RF processing unit (or RRU) are both components of a typical telecom station. Positioned within the equipment room, the BBU is

Connecting the RRU AAU Optical Cable

Field optical cables meet these requirements well, so field optical cables are widely used for connection between base station BBU/DU and RRU/AAU. The connection between the antenna

5G commonly used terminology

The RRU is usually extended to a place close to the antenna. The BBU and the RRU are connected by optical fiber, and the RRU and the antenna

Baseband Unit | Glossary | EXFO

A baseband unit (BBU) is a unit that processes baseband in telecomm systems. A typical wireless telecom station consists of the baseband processing unit and the RF processing unit (remote radio

Understanding BBU, RRU, and AAU in telecom networks

Below is a breakdown of the BBU (Baseband Unit), RRU (Remote Radio Unit), and AAU (Active Antenna Unit)—their roles, placement, connectivity, and relevance

## 5G Network & LTE Fronthaul

Most of the AAU of 5G base stations are deployed outdoors. In order to resist harsh environments such as high temperature and low temperature, it is necessary to use industrial-grade optical modules or

### BBU, RRU, AAU: Roles and Connectivity in Telecom

The differences between AAU, RRU, and BBU, along with their roles and connectivity in a telecom network.. \* BBU (Baseband Unit) - Function: - Acts as the brain of the base station. - Handles ...

### Resilient BBU placement in 5G C-RAN over optical aggregation

We formulate and solve the survivable BBU placement problem over an optical aggregation network using an integer linear program (ILP). As an extension of our work in , in this

### HISILICON Optical Modules in the field of communication base stations

Distributed site will base station bbu and rru separate, rru hanging in the tower, bbu placed in the room, and the equipment connecting bbu and rru is the optical module and optical fiber.

### Which Optical Modules Are Commonly Used In 4G

In this blog,ETU-LINK will talk about 4G base stations and common types of optical modules. The base station can be divided into two modules: the RRU for

## Contact Us

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