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Distributed base stations in communication networks

Overview

Abstract—We propose a concept system termed distributed base station (DBS), which enables distributed transmit beam-forming at large carrier wavelengths to achieve significant range extension and/or increased downlink data rate, providing a low-cost infrastructure for applications such as rural broadband.What is a base station?

Network Coverage: Base stations cover a given part of the earth. Various base stations are set up in such a way that forms a network to encompass all areas of the city, region or even an entire country.

Why are base stations important in cellular communication?

Base stations are important in the cellular communication as it facilitate seamless communication between mobile devices and the network communication. The demand for efficient data transmission are increased as we are advancing towards new technologies such as 5G and other data intensive applications.

What is a distributed collaborative optimization approach for 5G base stations?

In this paper, a distributed collaborative optimization approach is proposed for power distribution and communication networks with 5G base stations. Firstly, the model of 5G base stations considering communication load demand migration and energy storage dynamic backup is established.

What are the components of a base station?

The base station will have one or more RF antennas installed to transmit and receive RF signals from other devices. The block diagram of a base station typically includes the following key components: Baseband Processor: The baseband processor too deals with different communication protocols and interfaces with mobile network infrastructure.

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Afterward, a collaborative optimal operation model of power distribution and communication networks is designed to fully explore the operation flexibility of 5G base ...

The micro base station serves indoor blind spots with minimal power consumption. The macro base station exhibits greater potential for ...

Network coverage: Extended network coverage is achieved through base stations that

reach users with communication services even ...

In this paper, we build on these advances for design of a concept system that we term distributed base station (DBS), targeting significant improvements in communication link ...

Download scientific diagram , Distributed Base Station Architecture. from publication: The impact of base station antennas configuration on the ...

To solve the shortcomings of existing methods, this article applies the Convolutional Neural Networks (CNN) to the research on the positioning of wireless communication base ...

The calculation example analysis results show that communication load transfer can effectively reduce the power consumption of 5G base stations during low load periods and increase the ...

- Cellular Networks, Cells, and Cell Sites A cellular network or mobile network is a communication network where the last link is wireless. The network is distributed over land ...

Signal coverage quality and strength distribution in complex environments pose severe challenges, leading to the inadequacy of traditional two-dimensional base station ...

This paper develops a method to consider the multi-objective cooperative optimization operation of 5G communication base stations and Active Distribution Network (ADN) and constructs a ...

In this work, the Distributed Base Station (DBS) with Remote Radio Head (RRH) is considered as the envisioned architecture of the 5th Generation (5G) network. DBS network ...

Due to the unpredictability of natural disasters, whenever a catastrophe happens, it is vital that not only emergency rescue teams are ...

A progressive paradigm shift from centralized to distributed network architectures has been consolidated since the 4G communication standard, calling for novel decision ...

Base stations are one of the widely used components in the field of wireless communication and networks. It is an access point or ...

Cellular networks are now nearly universally deployed and are under ever-growing pressure to increase the volume of data deliverable to consumers. Understanding how base ...

With the advent of the 5G era, mobile users have higher requirements for network performance, and the expansion of network coverage has become an inevitable trend. ...

Network coverage: Extended network coverage is achieved through base stations that reach users with communication services even in remote or previously underserved ...

Based on this, a multi-objective cooperative optimization 5G communication base station operating model and active distribution network considering the system operation ...

A 5G base station, also known as a gNodeB (gNB), is a critical component of a 5G network infrastructure. It plays a central role in ...

Abstract Due to the high propagation loss and blockage-sensitive characteristics of millimeter waves (mmWaves), constructing fifth-generation (5G) cellular networks involves ...

On a Problem of Base Stations Optimal Placement in Wireless Networks with Linear Topology. In: Vishnevskiy, V., Kozyrev, D. (eds) Distributed Computer and ...

Abstract Topology synthesis in integrated design of wireless communication networks is considered. An iterative method has been developed for placing base stations of a ...

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