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Power saving for base station of communication system



Overview

What are the standardized energy-saving metrics for a base station?

(1) Energy-saving reward: after choosing a shallower sleep strategy for a base station, the system may save more energy if a deeper sleep mode can be chosen, and in this paper, the standardized energy-saving metrics are defined as $R_{ie} = E_{SM=0} - E_{SM=i} = i E_{SM=0} - 0 E_{SM=3}$.

Can 3GPP reduce base station energy consumption in 5G NR BS?

Aiming at minimizing the base station (BS) energy consumption under low and medium load scenarios, the 3GPP recently completed a Release 18 study on energy saving techniques for 5G NR BSs . A broad range of techniques was evaluated in terms of the obtained network energy saving (NES) gain and their impact to the user-perceived throughput (UPT).

Why do base stations waste so much energy?

When there is little or no communication activity, base stations typically consume more than 80% of their peak power consumption, leading to significant energy waste . This energy waste not only increases operational costs, but also burdens the environment, which is contrary to global sustainability goals .

Can a base station sleep strategy reduce energy consumption in UDN systems?

The goal of this paper is to find a base station sleep strategy in UDN systems that reduces the total system energy consumption while being able to guarantee QoS.

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In response to the current widespread issue of high energy consumption in 5G base stations, this article conducts overall design, hardware design, and software design of ...

The research and application of energy-saving technology for 5G wireless networks are significant for the emission-reduction work of Communication Operators. The ...

A base station control algorithm based on Multi-Agent Proximity Policy Optimization (MAPPO) is designed. In the constructed 5G UDN model, each base station is considered

as ...

The intelligent power system can monitor the operating status of the power equipment of the communication base station in real time. When an abnormality is detected, ...

The Definition of Energy Saving MeasurementIntroduction to The Model Usage
AlgorithmThe Overview of GBRT AlgorithmNew Energy Saving FormulaThere are two parts in the energy saving calculation system and method of the main base station communication equipment. The first step is to select the appropriate modeling indexes to reduce index dimension based on the above algorithm from more than 100 indicators of network management through the chi-square test, Pearson correlation analysis and See more on [link.springer](https://link.springer.com) ACM Digital Library

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On the basis of ensuring smooth user communication and normal operation of base stations, it realizes orderly regulation of energy storage for large-scale base stations, ...

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With the rapid development of mobile communication, the major operators speed up the pace of network construction, the number of base stations increases significantly, the ...

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To further explore the energy-saving potential of 5 G base stations, this paper proposes an energy-saving operation model for 5 G base stations that incorporates ...

The Energy Saving Measurement System and Method of Main Base Station Communication Equipment February 2023 DOI: 10.1007/978-981-19-9968-0_125

Network energy-saving techniques tune the parameters and protocols of networks for interference mitigation, resource optimization, and energy saving. It is a prerequisite to understand key ...

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