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How to reduce power-intensive base stations?

To address the issue of power-intensive base stations, proposed a combined approach involving base station sleep and spectrum allocation. This approach aims to discover the most efficient operating state and spectrum allocation for SBS to minimize power consumption and network disturbance.

Can a new base station architecture improve multiuser network performance?

This paper proposes a new base station (BS) architecture employing multiple MAs for improving the multiuser network performance. First, the uplink multiple access channel (MAC) is modeled to capture the characteristics of the variation of wireless channels caused by the movement of MAs at the BS.

How does distributed execution affect base station control?

In the distributed execution phase, each actor network makes decisions independently based only on its own network and observations, and although each actor executes independently, the whole system is able to obtain a better base station control strategy because their strategies are based on the results of global optimization. Fig. 2.

How does the number of base stations affect network performance?

Comparative analysis of performance with respect to the number of base stations. With an increase in the number of SBSs, both the network coverage and spectrum reuse ratio also increases. From Fig. 5 (d), it is evident that as the quantity of SBSs increases, so does the quantity of active SBSs.

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.

What is base station dormancy?

In response to the problem of high network energy consumption caused by the dense deployment of SBS, the base station dormancy technique is seen as an effective solution, as it does not require changes to the current network architecture and is relatively simple to implement. This technique was first proposed in the IEEE 802.11b protocol.

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Apr 4, 2025 ABSTRACT- In this research work, the classifications of the device that controls the energy supply sources of the mobile communication base station are presented. The device is ?

Huijue differentiated the communication base station backup power equipment in functionality: intelligent power distribution, power metering, RS-485/4G monitoring, remote control, and ?

Aug 1, 2025 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 ?

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Mar 2, 2021 The distributed energy storage composed of backup battery energy storage in communications base stations can participate in auxiliary market services and power demand ?

In today's 5G era, the energy efficiency (EE) of cellular base stations is crucial for sustainable communication. Recognizing this, Mobile Network Operators are actively prioritizing EE for ?

Aug 26, 2023 Multiuser Communications with Movable-Antenna Base Station: Joint Antenna Positioning, Receive Combining, and Power Control Zhenyu Xiao, Senior Member, IEEE, ?

Aug 1, 2025 However, the deployment of numerous small cells results in a linear increase in energy consumption in wireless communication systems. To enhance system efficiency and ?

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As global mobile data traffic surges 35% annually, legacy communication base station management struggles to balance energy efficiency with service quality. Did you know a single ?

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Mar 31, 2024 With the maturity and large-scale deployment of 5G technology, the proportion of energy consumption of base stations in the smart grid is increasing, and there is an urgent ?

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