

# Smart device and base station communication





## Overview

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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.

Can a programmable metasurface build a smart base station framework for 6g?

Here, we propose a large-scale 2-bit millimeter-wave programmable metasurface to build an integrated smart base station framework for 6G communications. The meta-array is composed of  $30 \times 30$  meta-elements, each with two embedded positive-intrinsic-negative (PIN) diodes.

How a beamforming system enables smart communication of new types of base stations?

The independent and reconfigurable capabilities in manipulating the propagation directions of four streams have facilitated the smart communication of the new types of base stations. We summarize the properties of the proposed beamforming system in Table 1.

What is a wireless base station?

A base station represents an access point for a wireless device to communicate within its coverage area. It usually connects the device to other networks or devices through a dedicated high bandwidth wire of fiber optic connection. Base stations typically have a transceiver, capable of sending and receiving wireless signals;



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Application of smart power usage on the ...

Dec 26, 2024 · The advantages of the application of smart power usage on communication base stations are as follows: Real-time monitoring: ...

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smart millimeter-wave base station for 6G application based ...

Jan 16, 2025 · Here, we propose a large-scale 2-bit millimeter-wave programmable metasurface to build an integrated smart base station framework for 6G communications. The meta-array is ...

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Application of smart power usage on the communication base station

Dec 26, 2024 · The advantages of the application of smart power usage on communication base stations are as follows: Real-time monitoring: through the installation of sensors and ...

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Collaborative optimization of distribution network and 5G base stations

Sep 1, 2024 · 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 ...

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Smart Power of Communication Base Station

Using 5G Internet of things technology, combined with data analysis, to improve the traditional power management level, and to achieve the visible, measurable, controllable, and linkage of ...

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Smart base station: Design & Development Services , JCOM IoT

Nov 25, 2025 · Discover our Smart Base Station service that enhances communication architecture with cutting-edge design and development. Optimize connectivity and ...

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Analysis of 5G Smart Communication Base ...

Feb 22, 2023 · With the continuous development of mobile communication and satellite navigation technologies, the positioning requirements of 5G ...

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Base Stations

Jul 23, 2025 · Base stations are important in the cellular communication as it facilitate seamless communication between mobile devices and the network communication. The demand for ...

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Integrated Sensing and Communication Enabled Multiple Base Stations

Oct 6, 2023 · Driven by the intelligent applications of sixthgeneration (6G) mobile communication systems such as smart city and autonomous driving, which connect the physical and cyber ...

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What Is a Home Base Station for Smart Devices?



Oct 9, 2025 · Define the smart home base station: the central brain that manages device communication, local automation, and specialized IoT protocols like Z-Wave.

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#### Integrated Sensing and Communication enabled Multiple Base Stations

Oct 12, 2023 · Driven by the intelligent applications of sixth-generation (6G) mobile communication systems such as smart city and autonomous driving, which connect the ...

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