

# **Can synchronous motors be used in 5G base stations**





## Overview

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A solution is considered to be RAN based if it can fulfill the synchronization requirements of the RAN network without synchronization support from the transport.

Transport-based solutions, in which synchronization is distributed over the transport network, rely on two key technologies: frequency synchronization over the.

Several aspects need to be considered when selecting the most appropriate synchronization solution(s), including installation and operation costs, synchronization.

What happens if a 5G synchronized base station fails?

Any failure to deliver precise and accurate time synchronization leads 5G services to systemic failure. A faulty synchronized base station can cause significant disruption as it interferes with the 5G operations of other operators and creates broader problems across networks.

Why is time synchronization important in 5G?

Network synchronization is key to optimal radio network performance. While there is no change to fundamental synchronization requirements in the move from 4G to 5G, wider use of TDD radio technology and growing demand for new network architectures that support demanding 5G use cases have made the need for time synchronization more critical in 5G.

Which synchronization requirements are relevant for 5G networks?

The two main types of synchronization requirements that are relevant for 5G networks are those that depend on the radio network operation and those that depend on the supported services (application-driven requirements).

How much does 5G synchronization cost?

According to a report by Kearney (April 2020), the synchronization cost is estimated between 3-5% of the total 5G network rollout cost, i.e., \$1.5-2.5



billion in 2027 and can in many cases require a large forklift upgrade of old infrastructure to enable PTP network synchronization.

Why is 5G synchronization so difficult?

And there are other advanced technologies that come with 5G, like dynamic spectrum sharing (DSS), carrier aggregation and massive MIMO—all requiring good timing to operate correctly. These technologies give rise to complexities in network synchronization not seen in earlier generation networks.

What is the alternative to GNSS 5G synchronization?

An alternative method to GNSS 5G synchronization solutions is network-based timing based on packet switching technology, mainly Precision Time Protocol (PTP or IEEE1588v2), supported by Synchronous Ethernet (SyncE). PTP solutions don't share the same disadvantages as GNSS-based timing in terms of safety, robustness and ease of deployments.



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Time synchronization also enables mainstream features and services to emerge in 5G networks. For example, carrier aggregation (CA) uses multiple radio frequencies to ...

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5G deployment use cases can be categorized into three broad areas: enhanced mobile broadband (eMBB), ultra-reliable and low-latency communications (URLLC), and massive ...

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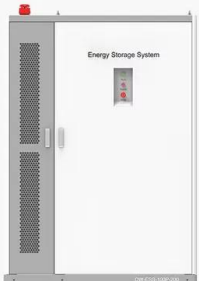
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The distribution of synchronization to radio access nodes can be addressed locally, with locally deployed Global Navigation Satellite System (GNSS) receivers, the ...

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IP54
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### **5G TDD Synchronisation Q& A**

5G NR as soon as possible. That is a more efficient use of the spectrum, and can also make way fo Alternatively, they could possibly be migrated out of the band or switched of, ...

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### [An Introduction to 5G and How MPS Products Can Optimize ...](#)

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SyncE and PTP are used for clock synchronization in 5G networks. SyncE ensures frequency synchronization and phase alignment, while PTP provides highly precise time ...

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To obtain a fully flexible and multi-frequency base station, these narrow filters need to come with support for remote tuning. This can technically be done with small motors that are used to ...

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Small cells are smaller and cheaper than a cell tower and can be installed in a variety of areas, bringing more base stations closer to users. A large number of base stations increases the ...

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### **Blog: 5 key synchronisation challenges specific to 5G base stations ...**

In this post we will identify the critical challenges in macro base station synchronisation and what needs to be considered when selecting synchronisation solutions.

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Compared with traditional 3G and 4G networks, 5G network, as a new network, can provide higher-speed mobile service coverage. In 5G networks, base stations need to achieve ...

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