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What is a Block Header in Bitcoin?



2 comments



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6,369



The main way of identifying a block in the **blockchain** (</coins/guides/what-is-the-blockchain/>) is via its block header hash.

The **block header hash** (</coins/guides/what-is-a-block-header-in-bitcoin/>) is calculated by running the block header through the **SHA256 algorithm** twice (</coins/guides/how-does-a-hashing-algorithm-work/>).

A block header hash is not sent through the network but instead is calculated by each node as part of the verification process of each block.

The block header data is shown in the table below:

Size	Field	Description
4 bytes	Version	The Bitcoin Version Number
32 bytes	Previous Block Hash	The previous block header hash
32 bytes	Merkle Root	A hash of the root of the merkle tree of this block's transactions
4 bytes	Timestamp	The timestamp of the block in UNIX.
4 bytes	Difficulty Target	The difficulty target for the block.
4 bytes	Nonce	The counter used by miners to generate a correct hash.

The **Bitcoin** (</coins/guides/what-is-bitcoin/>) version number is used to keep track of upgrades and changes in the protocol. The previous block header hash is the linkage into the previous block and secures the chain.

The timestamp is the number of seconds since the first of January 1970 and the difficulty target of the block is the number of zeroes that must be found when hashing the block header in order to meet the required level of proof of work to maintain the block time at 10 minutes.



The nonce is the value that is altered by the miners to try different permutations to achieve the difficulty level required – the nonce has been appended by the extra nonce function which sits in the [coinbase transaction \(/coins/guides/what-is-a-coinbase-or-generation-transaction/\)](#) – or the first transaction of the [Merkle root \(/mining/guides/what-is-a-merkle-tree/\)](#) signifying who to pay the block reward to – an extra counter to add permutations to as the nonce number can be used well within a second by modern mining equipment.

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shahzad_waran ()

23 days ago

(/profile/shahzad_waran/)

This is one of the best posts about this topic I have seen so far, I searched internet but could not find such a good elaborative answer. Can I have a little bit more elaboration in terms of videos or any gifs?

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7 months ago

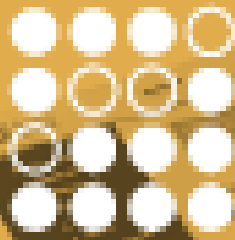
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number of seconds since the first of January 1970 minus leap seconds since that

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