Gray Glacier Upgrade Announcement

Posted by Tim Beiko on June 16, 2022

The Ethereum network will be undergoing a scheduled network upgrade at **block 15,050,000**, which is expected to occur on **Wednesday, June 29, 2022**. The exact date is subject to change due to variable block times and time zones. **Please upgrade your node before Monday, June 27, 2022 to account for variable block times.**

What is Gray Glacier?

The Gray Glacier network upgrade changes the parameters of the Ice Age/Difficulty Bomb, pushing it back by 700,000 blocks, or roughly 100 days. This has also been done in the Byzantium (https://blog.ethereum.org/2017/10/12/byzantium-hf-announcement/), Constantinople (https://blog.ethereum.org/2019/02/22/ethereum-constantinople-st-petersburg-upgrade-announcement/), Muir Glacier (https://blog.ethereum.org/2019/12/23/ethereum-muir-glacier-upgrade-announcement/), London (https://blog.ethereum.org/2021/07/15/london-mainnet-announcement/) and Arrow Glacier (https://blog.ethereum.org/2021/11/10/arrow-glacier-announcement/) network upgrades. No other changes are introduced as part of Gray Glacier.

With Ropsten now transitioned to proof-of-stake (https://blog.ethereum.org/2022/05/30/ropsten-merge-announcement/), the difficulty bomb only affects the Ethereum mainnet. This means Gray Glacier will not be deployed on any testnet.

Client Versions

In order to be compatible with the Gray Glacier upgrade, node operators will need to update the client version that they run to one of the ones listed below:

Client	Version Number	Download Link
Besu	22.4.3	Download (https://github.com/hyperledger/besu/releases/tag/22.4.3)
Erigon	2022.06.03-alpha	Download (https://github.com/ledgerwatch/erigon/releases/tag/v2022.06.03)
go-ethereum (geth)	Camaron (v1.10.19)	Download (https://github.com/ethereum/go-ethereum/releases/tag/v1.10.19)
Nethermind	v1.13.3	Download (https://github.com/NethermindEth/nethermind/releases/tag/1.13.3)

Upgrade Specification and EIPs

The full specification for the upgrade can be found in the `execution-specs` repository under `gray-glacier.md` (https://github.com/ethereum/execution-specs/blob/master/network-upgrades/mainnet-upgrades/gray-glacier.md).

A single EIP is included in the upgrade: EIP-5133: Delaying Difficulty Bomb to Mid September 2022 (https://eips.ethereum.org/EIPS/eip-5133).

As an Ethereum user or ether holder is there anything I need to do?

If you use an exchange, a web wallet service, a mobile wallet service, or a hardware wallet you do not need to do anything unless you are informed to take additional steps by your exchange or wallet service.

As a node operator or miner, what do I need to do?

Download the latest version of your Ethereum client, as listed in the table above.

What happens if I am a miner or node operator and I do not participate in the upgrade?

If you are using an Ethereum client that is not updated to the latest version (listed above), your client will sync to the pre-fork blockchain once the upgrade occurs. You will be stuck on an incompatible chain following the old rules and you will be unable to send Ether or operate on the post-upgrade Ethereum network.

What is a network upgrade in Ethereum-land?

A network upgrade is a change to the underlying Ethereum protocol, creating new rules to improve the system. The decentralized nature of blockchain systems makes a network upgrade more difficult. Network upgrades in a blockchain require cooperation and communication with the community, as well as with the developers of the various Ethereum clients in order for the transition to go smoothly.

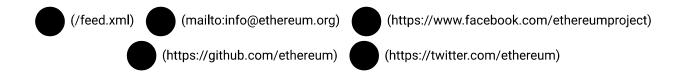## What happens during a network upgrade?

After the community comes to an agreement concerning which changes should be included in the upgrade, changes to the protocol are written into the various Ethereum clients, such as Besu, Erigon, go-ethereum and Nethermind. The protocol changes are activated at a specific block number. Any nodes that have not been upgraded to the new rule set will be abandoned on the old chain where the previous rules continue to exist.

Why "Gray Glacier"?

While we generally use Ethereum conference city names for execution layer network upgrades, upgrades that only delay the difficulty bomb/ice age use glacier names instead.

Gray Glacier (https://en.wikipedia.org/wiki/Gray_Glacier) was chosen because it *literally merges* into another glacier, just like how Ethereum's execution layer will soon be merged with the Beacon Chain!

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