

Preparing for Pectra breaking changes

This page outlines breaking changes related to the Ethereum Pectra (Prague-Electra) hard fork for chain operators and node operators on OP Stack chains. If you experience difficulty at any stage of this process, please reach out to [developer support\(opens in a new tab\)](#).

This page will be updated continuously with information on upgrade runbooks and timelines as they come. This based on the last Ethereum ACDC on Jan 23rd 2025. These dates are subject to change based on howdevnet-6 goes. Ethereum L1 clients are expected to have a release out by Feb 3rd.

- The Pectra upgrade for Holesky L1 proposed activation is onWed, Feb 12 at 09:32:48 UTC (1739352768)
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- The Pectra upgrade for Sepolia L1 proposed activation is onWed, Feb 19 at 15:48:48 UTC (1739980128)
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- The Pectra upgrade for Ethereum L1 will be activated inMarch
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What's included in Pectra?

Pectra contains a variety of EIPs, some of which apply to the OP Stack; others do not. The following EIPs are included in Pectra as outlined in the [Pectra Devnet 5 notes\(opens in a new tab\)](#):

- [EIP-2537: Precompile for BLS12-381 curve operations\(opens in a new tab\)](#)
- [EIP-2935: Save historical block hashes in state\(opens in a new tab\)](#)
- [EIP-6110: Supply validator deposits on chain\(opens in a new tab\)](#)
- [EIP-7002: Execution layer triggerable withdrawals\(opens in a new tab\)](#)
- [EIP-7251: Increase the MAX_EFFECTIVE_BALANCE\(opens in a new tab\)](#)
- [EIP-7549: Move committee index outside Attestation\(opens in a new tab\)](#)
- [EIP-7623: Increase calldata cost\(opens in a new tab\)](#)
- [EIP-7685: General purpose execution layer requests\(opens in a new tab\)](#)
- [EIP-7691: Blob throughput increase\(opens in a new tab\)](#)
- [EIP-7702: Set EOA account code\(opens in a new tab\)](#)
- [EIP-7840: Add blob schedule to EL config files\(opens in a new tab\)](#)

For chain operators

The OP Stack is dividing the Pectra upgrade into two parts:

1. Make the necessary upgrades to make sure OP Stack chains do not break when the L1 Pectra upgrade activates.
2. We will release new versions of the OP Stack to ensure that OP Stack chains remain functional after the L1 Pectra upgrade. If you're are running a fault proof enabled chain, you will need to follow additional steps outlined below.
3. Upgrade OP Stack chains to support Pectra's new features that apply to L2s.
4. We will implement all the features of Pectra that apply to L2s and will release a new version of the OP Stack that includes these features. We will provide more information as engineering work wraps up. We are tracking the spec work in this [issue\(opens in a new tab\)](#)
5. .

These following steps are necessary for every chain operator:

Update to the latest releases

The software is currently being tested and we expect the releases to be cut by the end of this week (Jan 27th to 31st). * op-node * atvTBD * op-geth * atvTBD * op-batcher * atvTBD

Verify Your Configuration

Make the following checks to verify that your node is properly configured.

- op-node
- andop-geth
- will log their configurations at startup
- Check that the Pectra time is set toactivation-timestamp
- in the op-node startup logs
- Check that the Pectra time is set toactivation-timestamp
- in the op-geth startup logs

For fault proof enabled chains

Since the Pectra upgrade changes the derivation rules, you will need to upgrade theop-program version used in the fault proof system to support these changes. Theop-program version used is specified via thefaultGameAbsolutePrestate setting, deployed as part ofFaultDisputeGame andPermissionedDisputeGame contracts.

Make sure the Superchain Registry is up to date

The newop-program release will pull the configurations from the[superchain-registry\(opens in a new tab\)](#). This is important because the op-challenger uses theop-program and it needs to be aware of your chain's configuration. If your chain that not in the superchain-registry, please[open a PR to add your chain to the superchain-registry\(opens in a new tab\)](#).

Generate a new absolute prestate

Once we have a finalized release of theop-program, we will provide a release tag for you to use to generate the absolute prestate. You will check out that release tag in the monorepo and run themake reproducible-prestate [command\(opens in a new tab\)](#) to generate the absolute prestate.

Deploy new dispute game contracts

You will then take the absolute prestate and deploy newFaultDisputeGame andPermissionedDisputeGame contracts with that value.

Update the DisputeGameFactory

You will then need to update theDisputeGameFactory to use the point to the newFaultDisputeGame andPermissionedDisputeGame contracts by callingDisputeGameFactory.setImplementation. We will provide an upgrade task and script to facilitate this upgrade.

Update your op-challenger

Finally you will need to update yourop-challenger to the new release version that will be provided soon.

For OP Stack forks

We are working on a PR that will include the ability to sync L1 after the Pectra upgrade. The commits from the PR will need to be applied to your chain before Pectra goes live on L1. We will provide a link to the PR after it is complete.

For node operators

Node operators will need to upgrade to the respective releases before the activation dates.

These following steps are necessary for every node operator:

Update to the latest release

The software is currently being tested and we expect the releases to be cut by the end of this week (Jan 27th to 31st). * op-node * atvTBD * op-geth * atvTBD

Verify Your Configuration

Make the following checks to verify that your node is properly configured.

- op-node
- andop-geth
- will log their configurations at startup
- Check that the Pectra time is set toactivation-timestamp
- in the op-node startup logs
- Check that the Pectra time is set toactivation-timestamp
- in the op-geth startup logs