OApp Configuration

Child OApp contract configurations are considered active once the OApp owner callssetPeer for each LayerZero pathway.

If you provide no changes to your application's configuration prior to setting peers, the protocol will interpret your empty OApp configuration as the default configuration.

Default Configuration

The default configuration varies between different chains based on the unique properties of each chain, and which providers run production assets for those networks.

- Security Stack
- : Varies per chain pathway
- Executor
- : LayerZero Labs
- Message Library Version
- :ULN302
- Block Confirmations:
- Varies per chain pathway

To check the default configuration, you can call the source LayerZero Endpoint to return the default configuration for that destination Endpoint.

tip Thecreate-lz-oapp npx package provides a hardhat task to check the default configuration for each pathway!

npx hardhat lz:oapp:config:get:default

Custom Configuration

To use non-default protocol settings, thedelegate (defaulted to the OApp owner) must callsetConfig from the OApp's Endpoint.

info ThesetDelegate function in LayerZero's OApp allows the contract owner to appoint a delegate who can manage configurations for both the Executor and ULN. This delegate, once set, has the authority to modify configurations on behalf of the OApp owner. In general, you will start by defining your config based on the following function set in the Endpoint:

/// @dev authenticated by the _oapp function

setConfig (address _oapp , address _lib , SetConfigParam [ ]

calldata _params)

external

onlyRegistered (_lib)

{ _assertAuthorized (_oapp) ;

IMessageLib (_lib) . setConfig (_oapp , _params) ; } TheSetConfigParam struct is where you set custom parameters for a givenconfigType and the remote chain'seid (endpoint ID):

struct

SetConfigParam

{ uint32 dstEid ; uint32 configType ; bytes config ; } Configuration types are categorized by their respective components, such as ULN and Executor, for more targeted adjustments.

CONFIG_TYPE_ULN

2 ; CONFIG_TYPE_EXECUTOR =

1 ; Eachconfig is encoded and passed as an ordered bytes array in yourSetConfigParam struct.

Setting your Configuration

To fine-tune your OApp's communication abilities, you can modify both the Security Stack (set of DVNs) and Executor configurations in a singlesetConfig call. This customization enhances control over message handling and execution across different blockchains.

To correctly invokesetConfig with both configurations, you need to call the endpoint on the chain you are setting configurations for. Here's how you can do it:

1. Define parameters

// Using ethers v5

const oappAddress =

'YOUR_OAPP_ADDRESS' ;

// Replace with your OApp address const messageLibAddress =

'YOUR_LIB_ADDRESS' ;

// Replace with your message library address

const provider =

new

ethers . providers . JsonRpcProvider (YOUR_RPC_URL) ; const signer =

new

ethers . Wallet (YOUR_PRIVATE_KEY , provider) ; const endpointContract =

new

ethers . Contract (YOUR_ENDPOINT_CONTRACT_ADDRESS ,

YOUR_ENDPOINT_ABI , signer) ;

const setConfigParams =

[...] ;

// Array of SetConfigParam structs, encoded as needed 1. Sending the transaction

const tx =

await endpointContract . setConfig (oappAddress , libAddress , setConfigParams) ; await tx . wait ( ) ;

Setting Multiple Configurations

To fine-tune your OApp's communication abilities, you can modify both theSecurity Stack (DVN) andExecutor configurations in a singlesetConfig call. This customization enhances control over message handling and execution across different blockchains.

To invokesetConfig with both configurations:

const tx =

await endpointContract . setConfig (oappAddress , messageLibraryAddress ,

[setConfigParamUln , setConfigParamExecutor ,]) ;

await tx . wait ( ) ; For detailed, step-by-step instructions on configuring your Executor and DVN (Decentralized Verifier Networks), please refer to their respective sections:Executor Configuration andSecurity Stack Configuration . These guides will walk you through the process, ensuring your OApp Config is properly set.

Resetting Configurations

See the attached links for specific implementation details on how to reset configurations forExecutors and yourSecurity Stack .

Snapshotting Configurations

See the attached links for specific implementation details on how to snapshot configurations for Executors and your Security Stack . Edit this page

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