Safe and ERC-4337

Safe has adopted a modular and flexible approach to integrating the ERC-4337, allowing users to turn their Safe account into an ERC-4337 smart account.

Safe ERC-4337 compatibility is provided viaSafe Modules and the Fallback Handler. This means the functionality is not implemented directly in the Safe Smart Account, but in theSafe4337Module(opens in a new tab) contract, which can be enabled in any Safe account at the Safe deployment time or afterward.

Safe4337Module

This module is an extension to the Safe Smart Account that acts both as a Fallback Handler, meaning that the Safe Proxy contract will fallback to this contract when its functions are called in the proxy, and a Safe Module, having the right to execute Safe transactions once it's enabled in a Safe account.

It implements the ERC-4337 interface, including the functions to validate and execute theUseOperation (s), and it's limited to theEntryPoint address.

â¹ï¸ This module must only be used with Safev1.4.1(opens in a new tab) or newer.

UserOperation validation

The Safe Proxy contract receives a call to thevalidateUserOp function from theEntryPoint and forwards it to theSafe4337Module . The module validates theUserOperation by checking that the Safe owner(s) signed theUserOperation hash and returns the result. It also executes a module transaction to pay the fees back.

UserOperation execution

After successful validation, theEntryPoint calls theexecuteUserOp function, forwarding it again to the module, which executes a module transaction with the target and data specified in theUserOperation .

Overview Supported Networks