

# How to create and use a SimpleAccount with permissionless.js

[SimpleAccount](#) is the original reference sample implementation of an ERC-4337 made by the Eth-Infinity team. Despite being a reference implementation, it is widely used in production. It allows for a single EOA signer to sign user operations for the account. This guide will show you how to create and use a SimpleAccount with permissionless.js.

## Steps

### Create the clients

First we must create the public, bundler, and (optionally) paymaster clients that will be used to interact with the SimpleAccount.

...

```
export const publicClient = createPublicClient({ transport: http("https://CHAIN.infura.io/v3/API_KEY"), });

export const paymasterClient = createPimlicoPaymasterClient({ entryPoint, transport: http("https://api.pimlico.io/v2/CHAIN/rpc?apikey=API_KEY"), });
```

...

### Create the SimpleAccount

For a full list of options for creating a SimpleAccount, take a look at the reference documentation page for [signerToSimpleSmartAccount](#). You can create a SimpleAccount with the canonical module addresses by specifying the factory address the account will be deployed from. You can also pass an address to use an already created SimpleAccount.

...

```
const simpleAccount = await privateKeyToSimpleSmartAccount(publicClient, { privateKey: "0xPRIVATE_KEY",
factoryAddress: "0x9406Cc6185a346906296840746125a0E44976454",
entryPoint: "0x5FF137D4b0FDCD49DcA30c7CF57E578a026d2789", // global entrypoint address: "0x..." // optional, only if you
are using an already created account });
```

...

### Create the smart account client

The smart account client is a permissionless.js client that is meant to serve as an almost drop-in replacement for viem's [walletClient](#).

...

```
const smartAccountClient = createSmartAccountClient({ account: simpleAccount,
entryPoint: "0x5FF137D4b0FDCD49DcA30c7CF57E578a026d2789", chain: sepolia, bundlerTransport: http(
"https://api.pimlico.io/v1/CHAIN/rpc?apikey=API_KEY"), middleware: { sponsorUserOperation:
paymasterClient.sponsorUserOperation, // optional } });
```

...

### Fetch the gas prices (optional)

If you're using Pimlico as your bundler, fetch the required gas price to use beforehand and pass it in as `maxFeePerGas` and `maxPriorityFeePerGas` parameters. Other providers might have different requirements for fetching the gas price.

...

```
export const pimlicoBundlerClient = createPimlicoBundlerClient({ transport: http("https://api.pimlico.io/v1/CHAIN/rpc?apikey=API_KEY"), entryPoint: "0x5FF137D4b0FDCD49DcA30c7CF57E578a026d2789", });

const smartAccountClient = createSmartAccountClient({ account: simpleAccount,
entryPoint: "0x5FF137D4b0FDCD49DcA30c7CF57E578a026d2789", chain: sepolia, bundlerTransport: http(
"https://api.pimlico.io/v1/CHAIN/rpc?apikey=API_KEY"), middleware: { gasPrice: async () =>
(await pimlicoBundlerClient.getUserOperationGasPrice()).fast, // use pimlico bundler to get gas prices sponsorUserOperation:
paymasterClient.sponsorUserOperation, // optional } });
```

...

## Send a transaction

Transactions using `permissionless.js` simply wrap around user operations. This means you can switch to `permissionless.js` from your existing `viem` EOA codebase with minimal-to-no changes.

...

```
const txHash = await smartAccountClient.sendTransaction({ to: "0xd8da6bf26964af9d7eed9e03e53415d37aa96045",  
value: parseEther("0.1"), });
```

...

This also means you can also use `viem` `Contract` instances to transact without any modifications.

...

```
const nftContract = getContract({ address: '0xFBA3912Ca04dd458c843e2EE08967fC04f3579c2', abi: nftAbi, publicClient,  
walletClient: smartAccountClient, });
```

```
const txHash = await nftContract.write.mint()
```

...