Truffle Deployment Guide (Sepolia + Ganache)

1. Install Dependencies

Install Truffle globally npm install -g truffle

Check version

truffle version

Initialize a new Truffle project

mkdir MetaCoin Truffle && cd MetaCoin Truffle

truffle init

Compile contracts

truffle compile

OR force recompile

truffle compile --all --reset

Clear build folder if needed

rm -rf build/

2. Setup for Sepolia Testnet (via Alchemy)

Install required packages

npm install dotenv @truffle/hdwallet-provider

Create .env file

PRIVATE KEY=your wallet private key

PROJECT_ID=your_alchemy_project_id



▲ Never commit your .env file to GitHub.

Configure truffle-config.js

require('dotenv').config();

```
const HDWalletProvider = require('@truffle/hdwallet-provider');
module.exports = {
 networks: {
  sepolia: {
   provider: () =>
    new HDWalletProvider({
      privateKeys: [process.env.PRIVATE KEY],
      providerOrUrl: https://eth-sepolia.g.alchemy.com/v2/${process.env.PROJECT_ID}`
    }),
   network_id: 11155111, // Sepolia chain ID
   confirmations: 2, // Wait for 2 confirmations
   timeoutBlocks: 500, // Timeout for blocks
   skipDryRun: true // Skip dry run before migrations
  }
 },
 compilers: {
  solc: {
   version: "0.8.21" // Match your contract version
  }
```

Deploy to Sepolia

};

truffle migrate --network sepolia --reset

- Example Output:
 - Contract deployed successfully
 - Transaction hash: 0xe6da60b6...

Contract address: 0x5261EDd120Dee3bF5D43767E3E61b33ec2E411fc

• Final cost: 0.0037 ETH

• block number: 9109831

block timestamp: 1756719996

account: 0xEeD653Df94ea5F4b884E4b335c1E61E49fb6fDcB

• balance: 0.038891111453615816

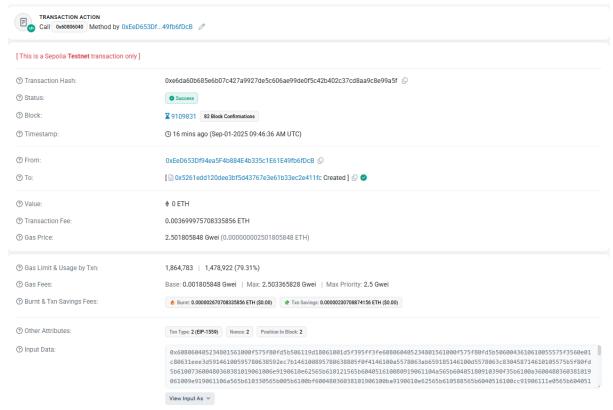
• gas used: 1478922 (0x16910a)

• gas price: 2.501805848 gwei

• value sent: 0 ETH

• total cost: 0.003699975708335856 ETH





3. Setup for Local Development (Ganache)

Start Ganache

- CLI (Ganache CLI) → default port: 8545
- **GUI (Ganache UI)** → default port: 7545

Configure in truffle-config.js

```
module.exports = {
  networks: {
    development: {
     host: "127.0.0.1", // Localhost
     port: 8545, // Ganache CLI port (or 7545 for Ganache UI)
     network_id: "*" // Match any network id
    }
}
```

Deploy to Ganache

truffle migrate --network development --reset

4. Useful Commands

- Check accounts
- truffle console --network sepolia
- truffle console --network development
- Run scripts
- truffle exec scripts/myScript.js --network sepolia
- Test contracts
- truffle test

5. Summary

• Installed Truffle & dependencies

- Setup .env for security
- Configured Sepolia (via Alchemy) with HDWalletProvider
- Configured Ganache (local dev)
- Successfully deployed contract to Sepolia testnet