Hardhat 3 is here

What's new and why you should use it

Principles

1. Extensibility
2. Ease of use
3. Reliability

Changes

1. Ethereum
2. Node
3. Solidity tooling

Why Hardhat 3?

- Comprehensive Testing Support
- Highly performant
- Multi-chain support
- Easy deployments

Solidity Tests

```solidity
contract CounterTest is Test {
    Counter counter;

    function setUp() public {
        counter = new Counter();
    }

    function test_InitialValue() public view {
        require(counter.x() == 0, "Initial value should be 0");
    }
}
```

Multi-chain support

```
import { network } from "hardhat";

const { viem } = await network.connect({
  network: "hardhatOp",
  chainType: "op",
});

const publicClient = await viem.getPublicClient();

const l1Gas = await publicClient.estimateL1Gas({
  account: "0x...",
  to: "0x...",
  value: 1_000_000_000_000_000_000_000n,
});
```

Simultaneous network connections

```typescript
import { network } from "hardhat";

const { viem: baseViem } = await network.connect({
  network: "base",
  chainType: "op",
});

const { viem: opMainnetViem } = await network.connect({
  network: "opmainnet",
  chainType: "op",
});

await baseViem.deployContract("Token");
await opMainnetViem.deployContract("Token");
```

HARDHAT IGNITION

Ignition Module

```javascript
import { buildModule } from "@nomicfoundation/hardhat-ignition/modules";

export default buildModule("MyModule", (m) => {
  const parent = m.contract("Parent", ["P"]);
  const child = m.contract("Child", ["C"]);

  m.call(parent, "addChild", [child]);

  return { parent, child };
});
```

Code Coverage

```
> npx hardhat test --coverage
# ...
| Coverage Report          |        |             |                 |                        |
| ------------------------ | ------ | ----------- | --------------- | ---------------------- |
| File Path                | Line % | Statement % | Uncovered Lines | Partially Covered Lines |
| contracts\Counter.sol    | 40.00  | 40.00       | 15-17           | -                      |
| ------------------------ | ------ | ----------- | --------------- | ---------------------- |
| Total                    | 40.00  | 40.00       |                 |                        |
```

Batteries included

Gas Statistics

```
> npx hardhat test --gas-stats
# ...
```

```
┌─────────────────────────────────────────────────────────────────┐
│                      Gas Usage Statistics                         │
└─────────────────────────────────────────────────────────────────┘

┌─────────────────────────────────────────────────────────────────┐
│ contracts/Counter.sol:Counter                                     │
├──────────────────┬──────────┬──────────┬──────────┬───────┬──────┤
│ Function name    │ Min      │ Average  │ Median   │ Max   │ #calls│
├──────────────────┼──────────┼──────────┼──────────┼───────┼──────┤
│ inc              │ 44774    │ 44774    │ 44774    │ 44774 │ 1    │
│ incBy            │ 28047    │ 29757    │ 28047    │ 45147 │ 10   │
│ x                │ 23466    │ 23466    │ 23466    │ 23466 │ 1    │
├──────────────────┼──────────┼──────────┴──────────┴───────┴──────┤
│ Deployment Cost  │ Deployment Size                                │
├──────────────────┼────────────────────────────────────────────── │
│ 263088           │ 1003                                           │
└──────────────────┴────────────────────────────────────────────── ┘
```

Keystore

- Encrypted secrets by default
- No need for .env files

Improved Performance

Production ready

Migrating your Project

Adapt your **hardhat.config.ts**

```ts
import hardhatToolboxViemPlugin from "@nomicfoundation/hardhat-toolbox-viem";
import { defineConfig } from "hardhat/config";

export default defineConfig({
  plugins: [hardhatToolboxViemPlugin],
  solidity: "0.8.28",
});
```

Adapt your **network connections**

```
/ Hardhat 2
describe("suite", function () {
  it("some test", async function () {
    const blockNumber = await hre.network.provider.send("eth_blockNumber");
  });
});


/ Hardhat 3
const { provider } = await hre.network.connect();

describe("suite", function () {
  it("some test", async function () {
    const blockNumber = await provider.send("eth_blockNumber");
  });
});
```
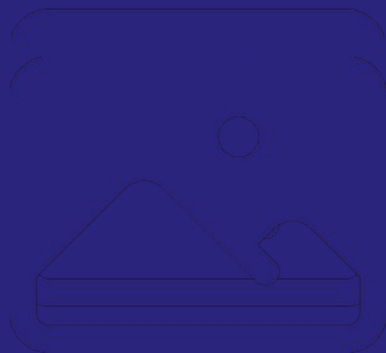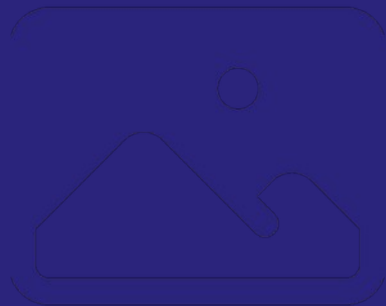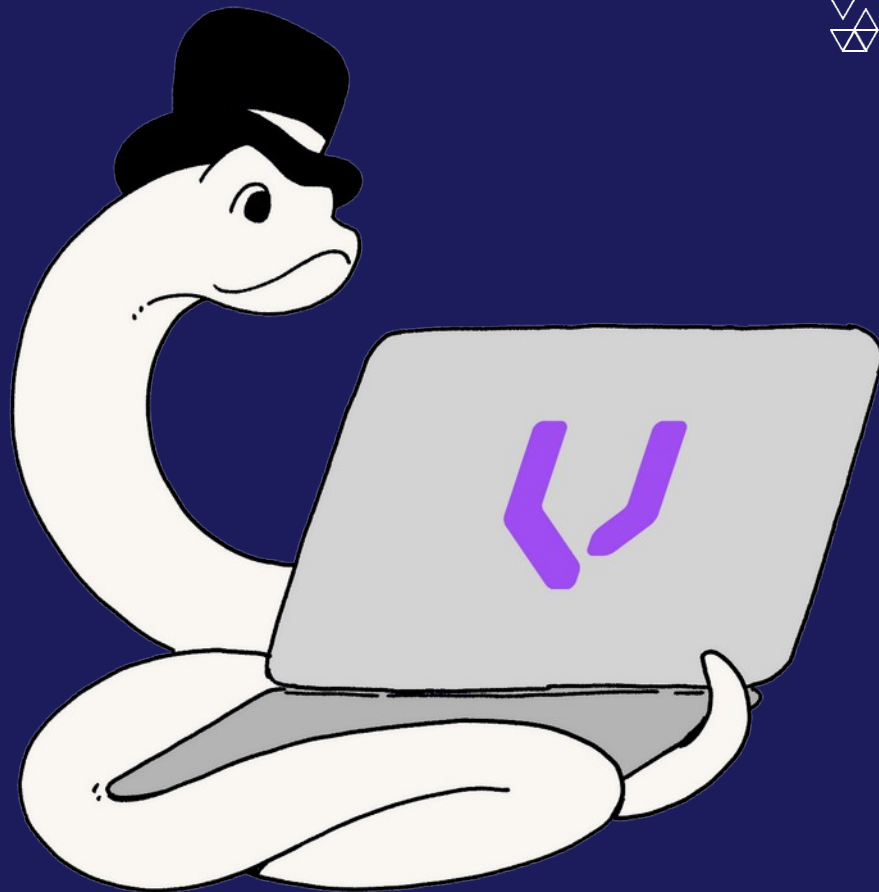
Gas Snapshots

- Gas statistics are available today
- Take Gas snapshots and test gas usage regressions

Vyper Support

- Bring `hardhat-vyper` to Hardhat 3
- Support projects with vyper contracts

Bun support

More *Performance*

Learn more