

What is tx.origin auth?

tx.origin authentication is the insecure practice of using Solidity's `tx.origin` (the original externally-owned account that started the transaction) to authorize callers, instead of `msg.sender` (the immediate caller). It is exploitable by phishing: if an owner is tricked into calling a malicious contract, that contract calls the victim contract, where tx.origin is still the owner, so the check passes and the attacker acts with the owner's authority. The fix is to use `msg.sender` for authorization. It maps to SWC-115.

HOW IT WORKS

01 How it works and example

Vulnerable check and the phishing setup:

```
function withdraw(address to) public {
  require(tx.origin == owner); // unsafe
  to.call{value: address(this).balance}("");
}
```

The attacker lures the owner into calling the attacker's contract (for example, an innocent-looking function). That contract calls withdraw(attacker). Inside, tx.origin is still the owner, so the check passes and funds go to the attacker. Documented for defensive context.

USE MSG.SENDER

Authorization must use `msg.sender` (the immediate caller), never `tx.origin`. With msg.sender, the malicious intermediate contract, not the owner, is the caller, and the check correctly fails.

HOW TO DEFEND

- Use `msg.sender` for all authorization, not tx.origin.
- Reserve `tx.origin` for niche cases (such as detecting whether the caller is a contract at all), and even then with caution.
- Use a vetted access-control library that does this correctly.
- Audit for any tx.origin comparison used in a permission check.
- Educate developers that tx.origin carries the original signer's authority through the whole call chain.

SOURCES

- [1] SWC Registry: Smart Contract Weakness Classification
- [2] Solidity docs: Security considerations
- [3] MITRE CWE-287: Improper Authentication

Get your smart contracts audited before they go on-chain.

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