Scanned Code Report

AUDITAGENT

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Code Info

Developer Scan

Scan ID 10	Date February 25, 2026
Organization RigoBlock	Repository v3-contracts
Branch fix/0x-adapter	Commit Hash f0c59f27...36ca352d

Contracts in scope

contracts/protocol/extensions/adapters/A0xRouter.sol

contracts/protocol/extensions/adapters/interfaces/IA0xRouter.sol

Code Statistics

Findings 0	Contracts Scanned 2	Lines of Code 248

Findings Summary

Total Findings

- High Risk (0)
- Medium Risk (0)
- Low Risk (0)
- Info (0)
- Best Practices (1)

Code Summary

This protocol provides an adapter contract, `A0xRouter`, that enables smart pools to execute token swaps through the 0x swap aggregator. It acts as a secure bridge between a pool's funds and the 0x protocol's `AllowanceHolder` and `Settler` contracts, allowing pools to access aggregated decentralized exchange liquidity.

The adapter is designed to be called via `delegatecall` from the main smart pool contract. Before executing a swap, it performs several critical security validations on the calldata provided by the 0x API. These checks include:
- Verifying the authenticity of the 0x Settler contract to prevent interactions with counterfeit contracts.
- Ensuring that the recipient of the swapped tokens is the smart pool itself.
- Confirming that the token being acquired has a valid price feed through an integrated oracle, which is essential for the pool's accounting and risk management.
- Enforcing a strict allowlist of permissible 0x actions, allowing only specific DEX-related functions while blocking potentially dangerous or arbitrary calls.

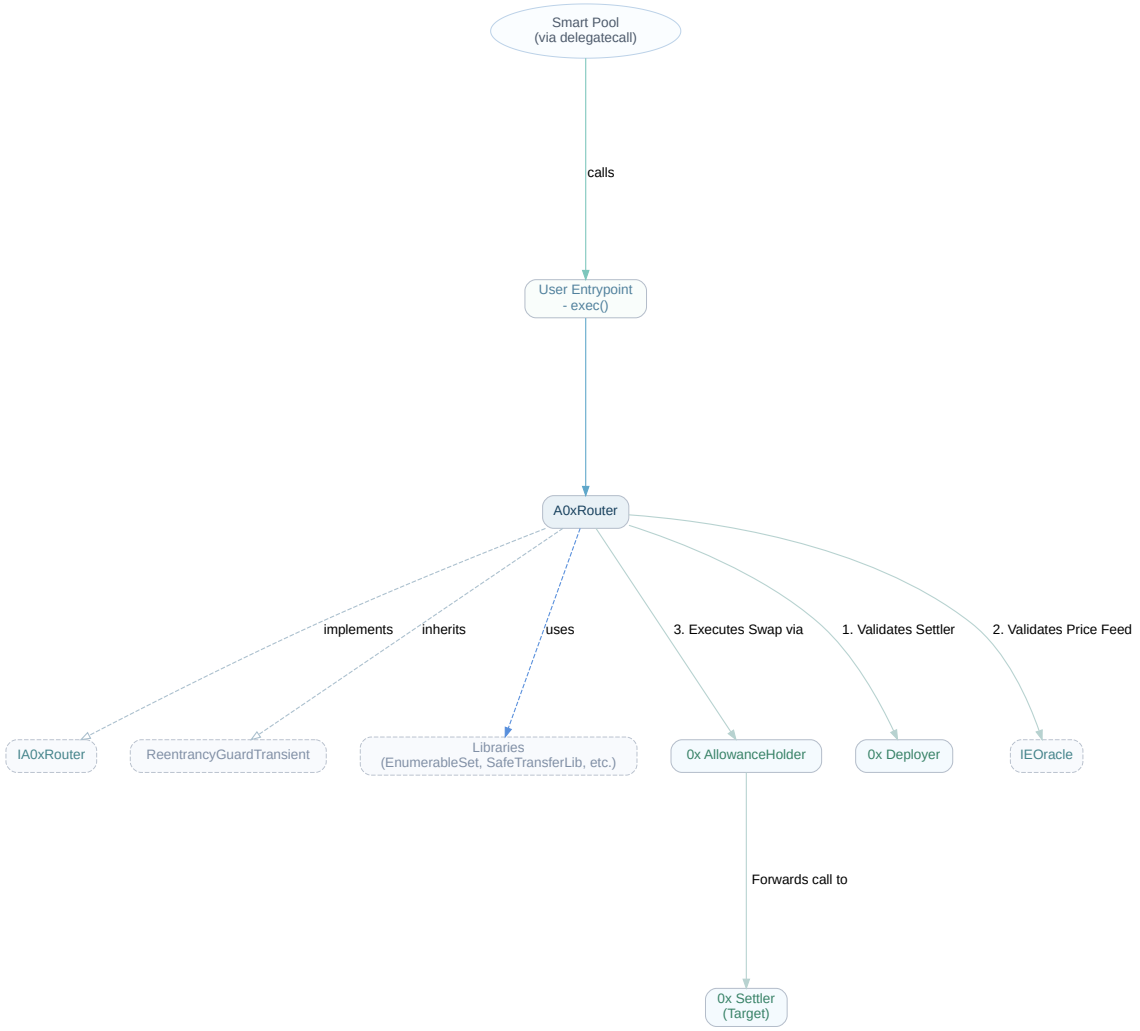
To facilitate the swap, the contract grants a temporary, maximum ERC20 approval to the 0x `AllowanceHolder` for the duration of the transaction. This approval is immediately reduced to a nominal amount upon completion to mitigate security risks associated with hanging approvals.

Actors and Entry Points

The primary actor is the **Smart Pool**, which executes swaps through this adapter.

- `exec(address operator, address token, uint256 amount, address payable target, bytes calldata data)`: Executed by a smart pool via `delegatecall` to perform a token swap using the 0x protocol. It validates the swap parameters and forwards the call to the 0x `AllowanceHolder`.

Code Diagram



1 of 1 Findings

contracts/protocol/extensions/adapters/A0xRouter.sol

Potential Denial of Service via Out-of-Bounds Read in Calldata Parsing

Best Practices

The `_checkActionsAllowed` function decodes multiple offsets from the user-provided `data` calldata to locate the `actions` array and the individual action selectors within it. The function does not perform any bounds checking to ensure that the calculated positions (`elPos`, `selectorPos`) are within the length of the `data` array before attempting to read from them.

```
function _checkActionsAllowed(bytes calldata data) private pure {
    // ...
    uint256 actionsOffset = abi.decode(data[100:132], (uint256));
    uint256 arrStart = 4 + actionsOffset;
    uint256 numActions = abi.decode(data[arrStart:arrStart + 32], (uint256));

    for (uint256 i; i < numActions; ++i) {
        uint256 elPos = arrStart + 32 + i * 32;
        // No check if elPos is within data.length
        uint256 elOffset = abi.decode(data[elPos:elPos + 32], (uint256));
        uint256 selectorPos = arrStart + elOffset + 64;
        // No check if selectorPos + 4 is within data.length
        bytes4 actionSelector = bytes4(data[selectorPos:selectorPos + 4]);
        _assertIsAllowedAction(actionSelector);
    }
}
```

A malicious pool operator could provide a crafted `data` payload with large or invalid offset values. This would cause the EVM to attempt an out-of-bounds read when decoding `elOffset` or slicing `actionSelector`, which would cause the entire transaction to revert. This constitutes a denial-of-service vector, as any swap attempt using such malicious calldata would fail, preventing legitimate swaps.

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