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Avocado Chain Agnostic feature

08-04-2024 – 10-04-2024

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1. Project brief

Title	Description
Client	Instadapp
Project name	Avocado Chain Agnostic feature
Timeline	08–04–2024 – 10–04–2024
Initial commit	5a1527a5a688d7b229bf9a8120baa7e0fa8648cf
Final commit	33a8e778634197477709b4db89a50eb947fdd64a

Short Overview

Avocado wallets are smart contract wallets that support executing arbitrary actions given the signature of authorized signers. It enables users to perform multi–network transactions, with an in–built account abstraction utility.

The new feature introduces chain–agnostic signatures which users can sign once to execute actions on different chains.

Project Scope

The audit covered the following files:

📄 **AvoForwarder.sol**   📄 **AvocadoMultisig.sol**   📄 **AvocadoMultisigCore.sol**

📄 **AvocadoMultisigErrors.sol**   📄 **AvocadoMultisigEvents.sol**   📄 **AvocadoMultisigStructs.sol**

📄 **AvocadoMultisigVariables.sol**

2. Finding severity breakdown

All vulnerabilities discovered during the audit are classified based on their potential severity and have the following classification:

Severity	Description
Critical	Bugs leading to assets theft, fund access locking, or any other loss of funds to be transferred to any party.
High	Bugs that can trigger a contract failure. Further recovery is possible only by manual modification of the contract state or replacement.
Medium	Bugs that can break the intended contract logic or expose it to DoS attacks, but do not cause direct loss of funds.
Informational	Bugs that do not have a significant immediate impact and could be easily fixed.

Based on the feedback received from the Client regarding the list of findings discovered by the Contractor, they are assigned the following statuses:

Status	Description
Fixed	Recommended fixes have been made to the project code and no longer affect its security.
Acknowledged	The Client is aware of the finding. Recommendations for the finding are planned to be resolved in the future.

3. Summary of findings

Severity	# of Findings
Critical	0 (0 fixed, 0 acknowledged)
High	0 (0 fixed, 0 acknowledged)
Medium	0 (0 fixed, 0 acknowledged)
Informational	1 (1 fixed, 0 acknowledged)
Total	1 (1 fixed, 0 acknowledged)

4. Conclusion

During the audit of the codebase, 1 issue was found in total:

- 1 informational severity issue (1 fixed)

The final reviewed commit is 33a8e778634197477709b4db89a50eb947fdd64a

Deployment

Contract	Network	Address
AvocadoMultisig	Ethereum	0xEA4ebF3EC9f3bE577a04B02782D8683b2304B614
AvocadoMultisigSecondary	Ethereum	0x50bdE2DBF42172c85Fe358F0603eEd0b7eCbc2eF
AvoForwarderProxy	Ethereum	0x46978CD477A496028A18c02F07ab7F35EDBa5A54
AvoForwarder (Implementation)	Ethereum	0x073f71e7fc5A03dA2bD9AC84253665C2c575ae4D
AvoFactoryProxy	Ethereum	0xe981E50c7c47F0Df8826B5ce3F533f5E4440e687
AvoFactory (Implementation)	Ethereum	0x4Df8bB964B7Dd0567508F0f228b76B883FC06bBD
AvocadoMultisig	Polygon	0xEA4ebF3EC9f3bE577a04B02782D8683b2304B614

AvocadoMultisigSecondary	Polygon	0x50bdE2DBF42172c85Fe358F0603eEd0b7eCbc2eF
AvoForwarderProxy	Polygon	0x46978CD477A496028A18c02F07ab7F35EDBa5A54
AvoForwarder (Implementation)	Polygon	0x073f71e7fc5A03dA2bD9AC84253665C2c575ae4D
AvoFactoryProxy	Polygon	0xe981E50c7c47F0Df8826B5ce3F533f5E4440e687
AvoFactory (Implementation)	Polygon	0x4Df8bB964B7Dd0567508F0f228b76B883FC06bBD
AvocadoMultisig	Arbitrum	0xEA4ebF3EC9f3bE577a04B02782D8683b2304B614
AvocadoMultisigSecondary	Arbitrum	0x50bdE2DBF42172c85Fe358F0603eEd0b7eCbc2eF
AvoForwarderProxy	Arbitrum	0x46978CD477A496028A18c02F07ab7F35EDBa5A54
AvoForwarder (Implementation)	Arbitrum	0x073f71e7fc5A03dA2bD9AC84253665C2c575ae4D
AvoFactoryProxy	Arbitrum	0xe981E50c7c47F0Df8826B5ce3F533f5E4440e687
AvoFactory (Implementation)	Arbitrum	0x4Df8bB964B7Dd0567508F0f228b76B883FC06bBD
AvocadoMultisig	Aurora	0xEA4ebF3EC9f3bE577a04B02782D8683b2304B614
AvocadoMultisigSecondary	Aurora	0x50bdE2DBF42172c85Fe358F0603eEd0b7eCbc2eF
AvoForwarderProxy	Aurora	0x46978CD477A496028A18c02F07ab7F35EDBa5A54
AvoForwarder (Implementation)	Aurora	0x073f71e7fc5A03dA2bD9AC84253665C2c575ae4D
AvoFactoryProxy	Aurora	0xe981E50c7c47F0Df8826B5ce3F533f5E4440e687
AvoFactory (Implementation)	Aurora	0x4Df8bB964B7Dd0567508F0f228b76B883FC06bBD
AvocadoMultisig	Avalanche	0xEA4ebF3EC9f3bE577a04B02782D8683b2304B614
AvocadoMultisigSecondary	Avalanche	0x50bdE2DBF42172c85Fe358F0603eEd0b7eCbc2eF
AvoForwarderProxy	Avalanche	0x46978CD477A496028A18c02F07ab7F35EDBa5A54
AvoForwarder (Implementation)	Avalanche	0x073f71e7fc5A03dA2bD9AC84253665C2c575ae4D
AvoFactoryProxy	Avalanche	0xe981E50c7c47F0Df8826B5ce3F533f5E4440e687
AvoFactory (Implementation)	Avalanche	0x4Df8bB964B7Dd0567508F0f228b76B883FC06bBD
AvocadoMultisig	Base	0xEA4ebF3EC9f3bE577a04B02782D8683b2304B614

AvocadoMultisigSecondary	Base	0x50bdE2DBF42172c85Fe358F0603eEd0b7eCbc2eF
AvoForwarderProxy	Base	0x46978CD477A496028A18c02F07ab7F35EDBa5A54
AvoForwarder (Implementation)	Base	0x073f71e7fc5A03dA2bD9AC84253665C2c575ae4D
AvoFactoryProxy	Base	0xe981E50c7c47F0Df8826B5ce3F533f5E4440e687
AvoFactory (Implementation)	Base	0x4Df8bB964B7Dd0567508F0f228b76B883FC06bBD
AvocadoMultisig	Binance Smart Chain	0xEA4ebF3EC9f3bE577a04B02782D8683b2304B614
AvocadoMultisigSecondary	Binance Smart Chain	0x50bdE2DBF42172c85Fe358F0603eEd0b7eCbc2eF
AvoForwarderProxy	Binance Smart Chain	0x46978CD477A496028A18c02F07ab7F35EDBa5A54
AvoForwarder (Implementation)	Binance Smart Chain	0x073f71e7fc5A03dA2bD9AC84253665C2c575ae4D
AvoFactoryProxy	Binance Smart Chain	0xe981E50c7c47F0Df8826B5ce3F533f5E4440e687
AvoFactory (Implementation)	Binance Smart Chain	0x4Df8bB964B7Dd0567508F0f228b76B883FC06bBD
AvocadoMultisig	Blast	0xEA4ebF3EC9f3bE577a04B02782D8683b2304B614
AvocadoMultisigSecondary	Blast	0x50bdE2DBF42172c85Fe358F0603eEd0b7eCbc2eF
AvoForwarderProxy	Blast	0x46978CD477A496028A18c02F07ab7F35EDBa5A54
AvoForwarder (Implementation)	Blast	0x073f71e7fc5A03dA2bD9AC84253665C2c575ae4D
AvoFactoryProxy	Blast	0xe981E50c7c47F0Df8826B5ce3F533f5E4440e687
AvoFactory (Implementation)	Blast	0x4Df8bB964B7Dd0567508F0f228b76B883FC06bBD
AvocadoMultisig	Fantom	0xEA4ebF3EC9f3bE577a04B02782D8683b2304B614
AvocadoMultisigSecondary	Fantom	0x50bdE2DBF42172c85Fe358F0603eEd0b7eCbc2eF
AvoForwarderProxy	Fantom	0x46978CD477A496028A18c02F07ab7F35EDBa5A54
AvoForwarder (Implementation)	Fantom	0x073f71e7fc5A03dA2bD9AC84253665C2c575ae4D
AvoFactoryProxy	Fantom	0xe981E50c7c47F0Df8826B5ce3F533f5E4440e687
AvoFactory (Implementation)	Fantom	0x4Df8bB964B7Dd0567508F0f228b76B883FC06bBD
AvocadoMultisig	Fuse	0xEA4ebF3EC9f3bE577a04B02782D8683b2304B614

AvocadoMultisigSecondary	**Fuse**	0x50bdE2DBF42172c85Fe358F0603eEd0b7eCbc2eF
AvoForwarderProxy	**Fuse**	0x46978CD477A496028A18c02F07ab7F35EDBa5A54
AvoForwarder (Implementation)	**Fuse**	0x073f71e7fc5A03dA2bD9AC84253665C2c575ae4D
AvoFactoryProxy	**Fuse**	0xe981E50c7c47F0Df8826B5ce3F533f5E4440e687
AvoFactory (Implementation)	**Fuse**	0x4Df8bB964B7Dd0567508F0f228b76B883FC06bBD
AvocadoMultisig	**Gnosis**	0xEA4ebF3EC9f3bE577a04B02782D8683b2304B614
AvocadoMultisigSecondary	**Gnosis**	0x50bdE2DBF42172c85Fe358F0603eEd0b7eCbc2eF
AvoForwarderProxy	**Gnosis**	0x46978CD477A496028A18c02F07ab7F35EDBa5A54
AvoForwarder (Implementation)	**Gnosis**	0x073f71e7fc5A03dA2bD9AC84253665C2c575ae4D
AvoFactoryProxy	**Gnosis**	0xe981E50c7c47F0Df8826B5ce3F533f5E4440e687
AvoFactory (Implementation)	**Gnosis**	0x4Df8bB964B7Dd0567508F0f228b76B883FC06bBD
AvocadoMultisig	**Mode**	0xEA4ebF3EC9f3bE577a04B02782D8683b2304B614
AvocadoMultisigSecondary	**Mode**	0x50bdE2DBF42172c85Fe358F0603eEd0b7eCbc2eF
AvoForwarderProxy	**Mode**	0x46978CD477A496028A18c02F07ab7F35EDBa5A54
AvoForwarder (Implementation)	**Mode**	0x073f71e7fc5A03dA2bD9AC84253665C2c575ae4D
AvoFactoryProxy	**Mode**	0xe981E50c7c47F0Df8826B5ce3F533f5E4440e687
AvoFactory (Implementation)	**Mode**	0x4Df8bB964B7Dd0567508F0f228b76B883FC06bBD
AvocadoMultisig	**opBNB**	0xEA4ebF3EC9f3bE577a04B02782D8683b2304B614
AvocadoMultisigSecondary	**opBNB**	0x50bdE2DBF42172c85Fe358F0603eEd0b7eCbc2eF
AvoForwarderProxy	**opBNB**	0x46978CD477A496028A18c02F07ab7F35EDBa5A54
AvoForwarder (Implementation)	**opBNB**	0x073f71e7fc5A03dA2bD9AC84253665C2c575ae4D
AvoFactoryProxy	**opBNB**	0xe981E50c7c47F0Df8826B5ce3F533f5E4440e687
AvoFactory (Implementation)	**opBNB**	0x4Df8bB964B7Dd0567508F0f228b76B883FC06bBD
AvocadoMultisig	**Optimism**	0xEA4ebF3EC9f3bE577a04B02782D8683b2304B614

AvocadoMultisigSecondary	Optimism	0x50bdE2DBF42172c85Fe358F0603eEd0b7eCbc2eF
AvoForwarderProxy	Optimism	0x46978CD477A496028A18c02F07ab7F35EDBa5A54
AvoForwarder (Implementation)	Optimism	0x073f71e7fc5A03dA2bD9AC84253665C2c575ae4D
AvoFactoryProxy	Optimism	0xe981E50c7c47F0Df8826B5ce3F533f5E4440e687
AvoFactory (Implementation)	Optimism	0x4Df8bB964B7Dd0567508F0f228b76B883FC06bBD
AvocadoMultisig	Scroll	0xEA4ebF3EC9f3bE577a04B02782D8683b2304B614
AvocadoMultisigSecondary	Scroll	0x50bdE2DBF42172c85Fe358F0603eEd0b7eCbc2eF
AvoForwarderProxy	Scroll	0x46978CD477A496028A18c02F07ab7F35EDBa5A54
AvoForwarder (Implementation)	Scroll	0x073f71e7fc5A03dA2bD9AC84253665C2c575ae4D
AvoFactoryProxy	Scroll	0xe981E50c7c47F0Df8826B5ce3F533f5E4440e687
AvoFactory (Implementation)	Scroll	0x4Df8bB964B7Dd0567508F0f228b76B883FC06bBD
AvocadoMultisig	Polygon zkEVM	0xEA4ebF3EC9f3bE577a04B02782D8683b2304B614
AvocadoMultisigSecondary	Polygon zkEVM	0x50bdE2DBF42172c85Fe358F0603eEd0b7eCbc2eF
AvoForwarderProxy	Polygon zkEVM	0x46978CD477A496028A18c02F07ab7F35EDBa5A54
AvoForwarder (Implementation)	Polygon zkEVM	0x073f71e7fc5A03dA2bD9AC84253665C2c575ae4D
AvoFactoryProxy	Polygon zkEVM	0xe981E50c7c47F0Df8826B5ce3F533f5E4440e687
AvoFactory (Implementation)	Polygon zkEVM	0x4Df8bB964B7Dd0567508F0f228b76B883FC06bBD

INFORMATIONAL–01	Missing **chainAgnostic functionality of AvoMultisig in AvoForwader**	**Fixed at:** 4474b68

Description

The only method in **AvoForwarder** which interacts with **chainAgnostic** functions in **AvoMultsig** is executeChainAgnosticV1 function.

There are no methods for broadcasters to simulate, estimate gas usage of castChainAgnostic() and to verify the transactions using verifyChainAgnostic besides direct calls to multisigs.

Recommendation

It is recommended to implement functions **simulateChainAgnosticV1** and **verifyChainAgnosticV1** in **AvoForwarder**.

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