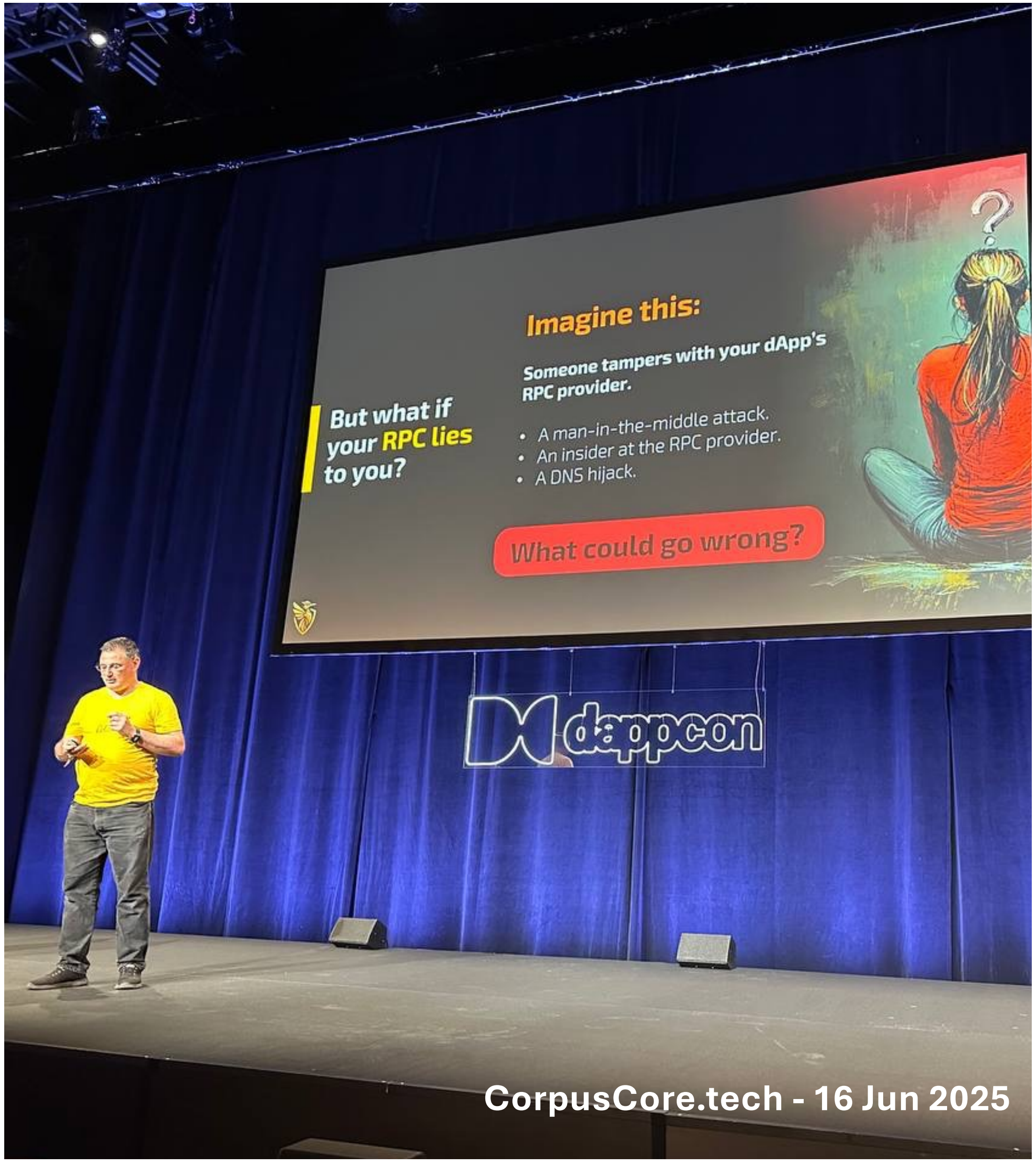
EIP-7919 Pureth

Glamsterdam headliner proposal

19 Jun 2025

Don’t trust, verify

- 🔒 eth_getBalance
- 🔒 eth_getTransactionCount (nonce)
- 🔒 eth_getStorageAt
- 🔒 eth_getCode
- 🔒 eth_call
- 🔒 eth_estimateGas
- ✅ **EIP-1186 eth_getProof**



But what if your RPC lies to you?

Imagine this:

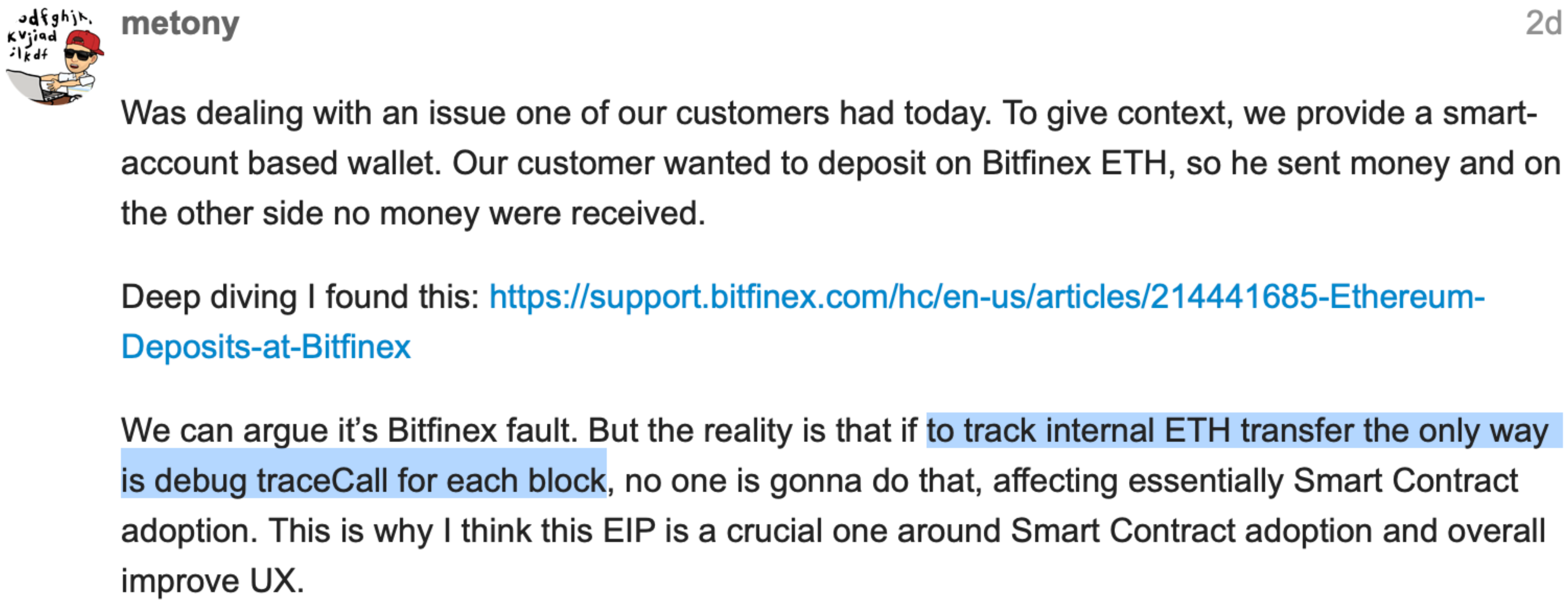
Someone tampers with your dApp's RPC provider.

- A man-in-the-middle attack.
- An insider at the RPC provider.
- A DNS hijack.

What could go wrong?

CorpusCore.tech - 16 Jun 2025

❌ ETH transfers



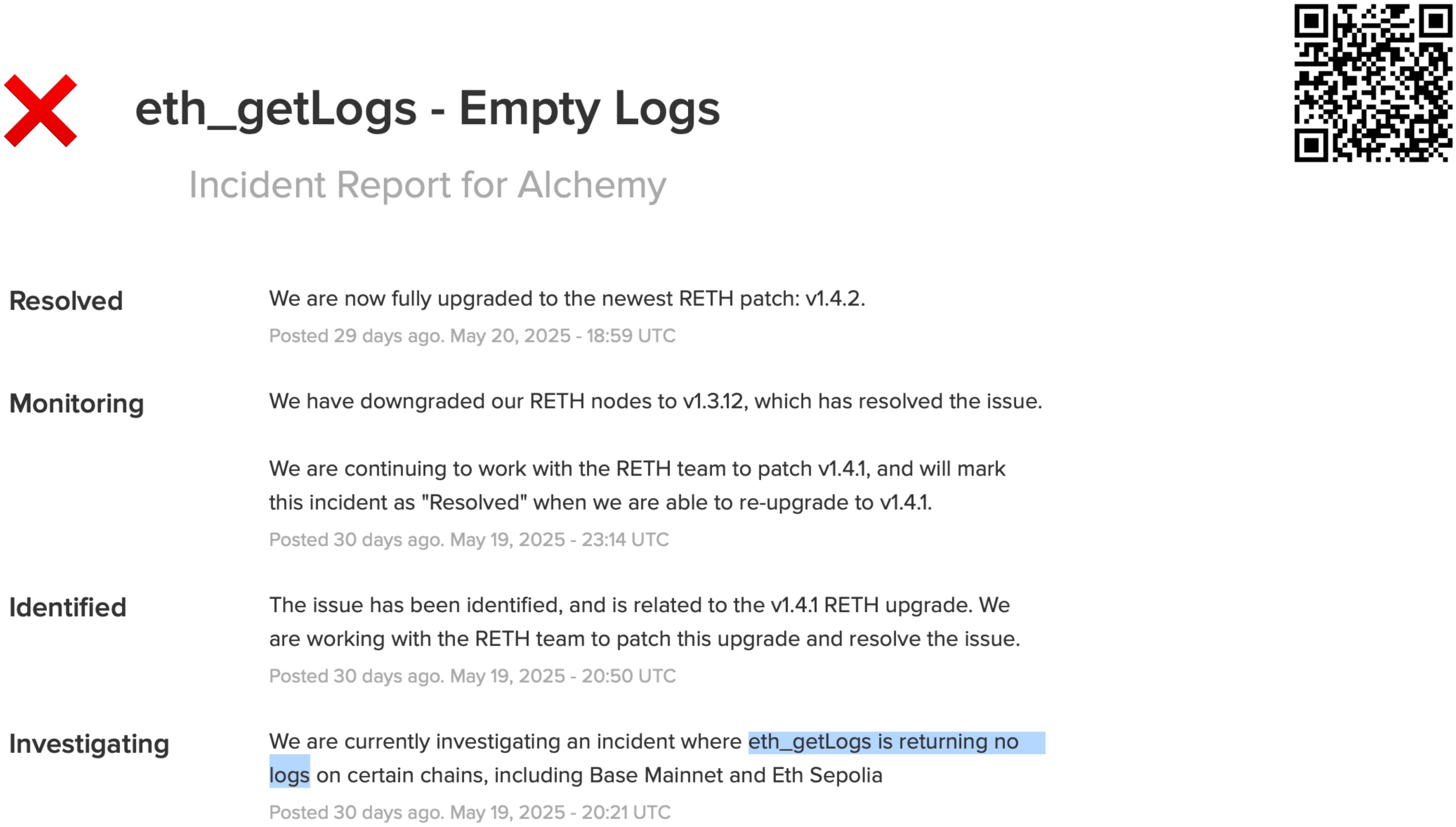
metony 2d

Was dealing with an issue one of our customers had today. To give context, we provide a smart-account based wallet. Our customer wanted to deposit on Bitfinex ETH, so he sent money and on the other side no money were received.

Deep diving I found this: https://support.bitfinex.com/hc/en-us/articles/214441685-Ethereum-Deposits-at-Bitfinex

We can argue it's Bitfinex fault. But the reality is that if to track internal ETH transfer the only way is debug traceCall for each block, no one is gonna do that, affecting essentially Smart Contract adoption. This is why I think this EIP is a crucial one around Smart Contract adoption and overall improve UX.

❌ SELFDESTRUCT ❌ EIP-1559 Priority fees ❌ Beacon withdrawals



❌ eth_getLogs - Empty Logs

Incident Report for Alchemy

Resolved

We are now fully upgraded to the newest RETH patch: v1.4.2.

Posted 29 days ago. May 20, 2025 - 18:59 UTC

Monitoring

We have downgraded our RETH nodes to v1.3.12, which has resolved the issue.

We are continuing to work with the RETH team to patch v1.4.1, and will mark this incident as "Resolved" when we are able to re-upgrade to v1.4.1.

Posted 30 days ago. May 19, 2025 - 23:14 UTC

Identified

The issue has been identified, and is related to the v1.4.1 RETH upgrade. We are working with the RETH team to patch this upgrade and resolve the issue.

Posted 30 days ago. May 19, 2025 - 20:50 UTC

Investigating

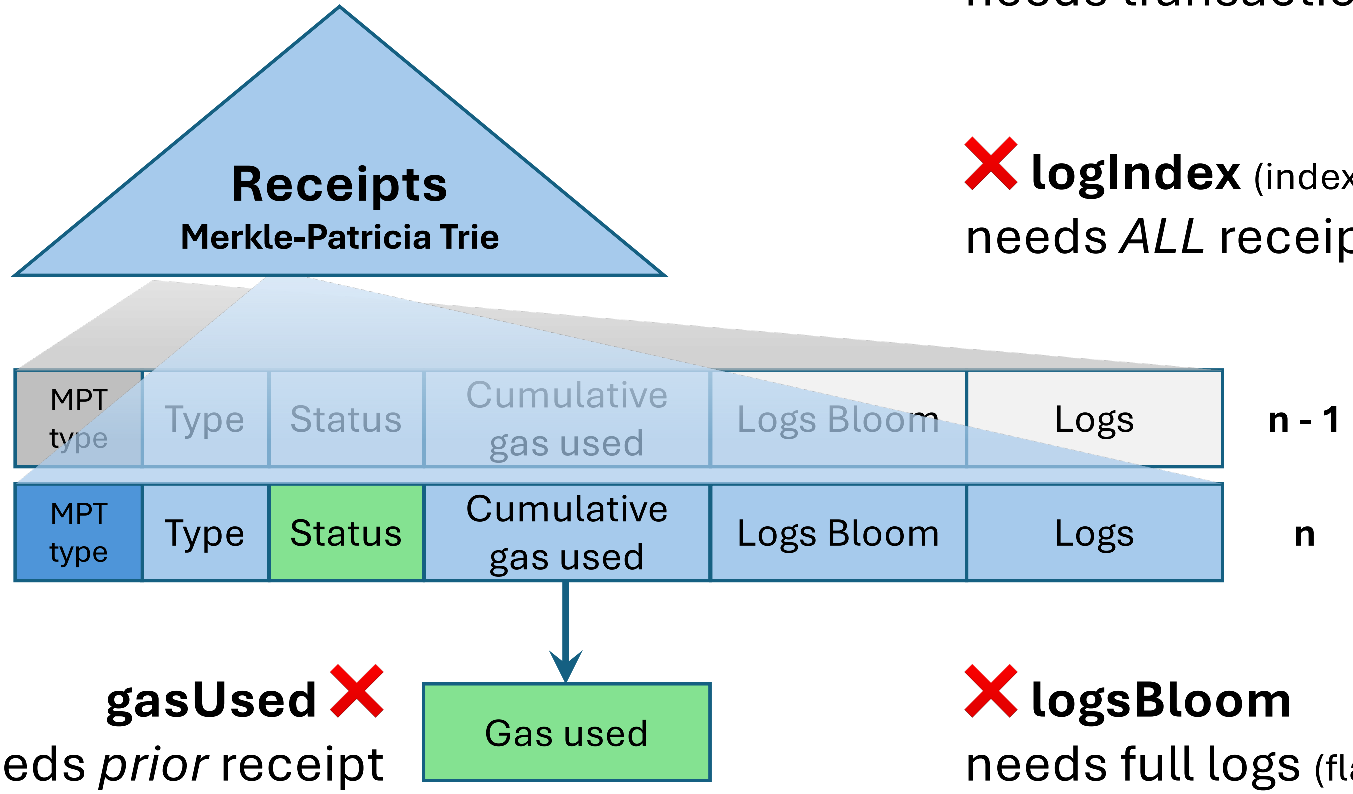
We are currently investigating an incident where eth_getLogs is returning no logs on certain chains, including Base Mainnet and Eth Sepolia

Posted 30 days ago. May 19, 2025 - 20:21 UTC

⚠ Inefficient receipts

❌ **from**
❌ **contractAddress**
❌ **authority**
needs transaction + ecrecover

❌ **logIndex** (index within block)
needs *ALL* receipts



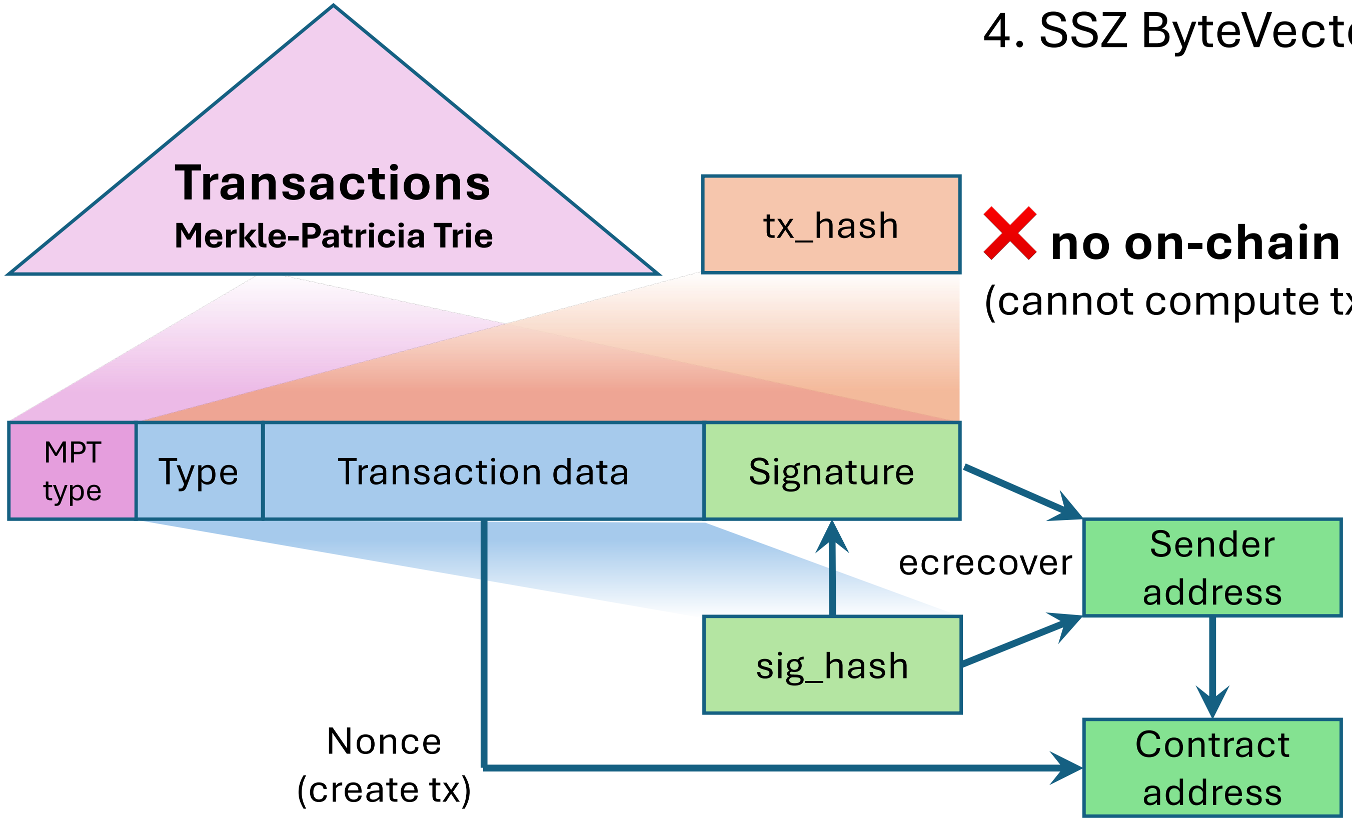
MPT type	Type	Status	Cumulative gas used	Logs Bloom	Logs	n - 1
MPT type	Type	Status	Cumulative gas used	Logs Bloom	Logs	n

gasUsed ❌
needs *prior* receipt

❌ **logsBloom**
needs full logs (flat hash)

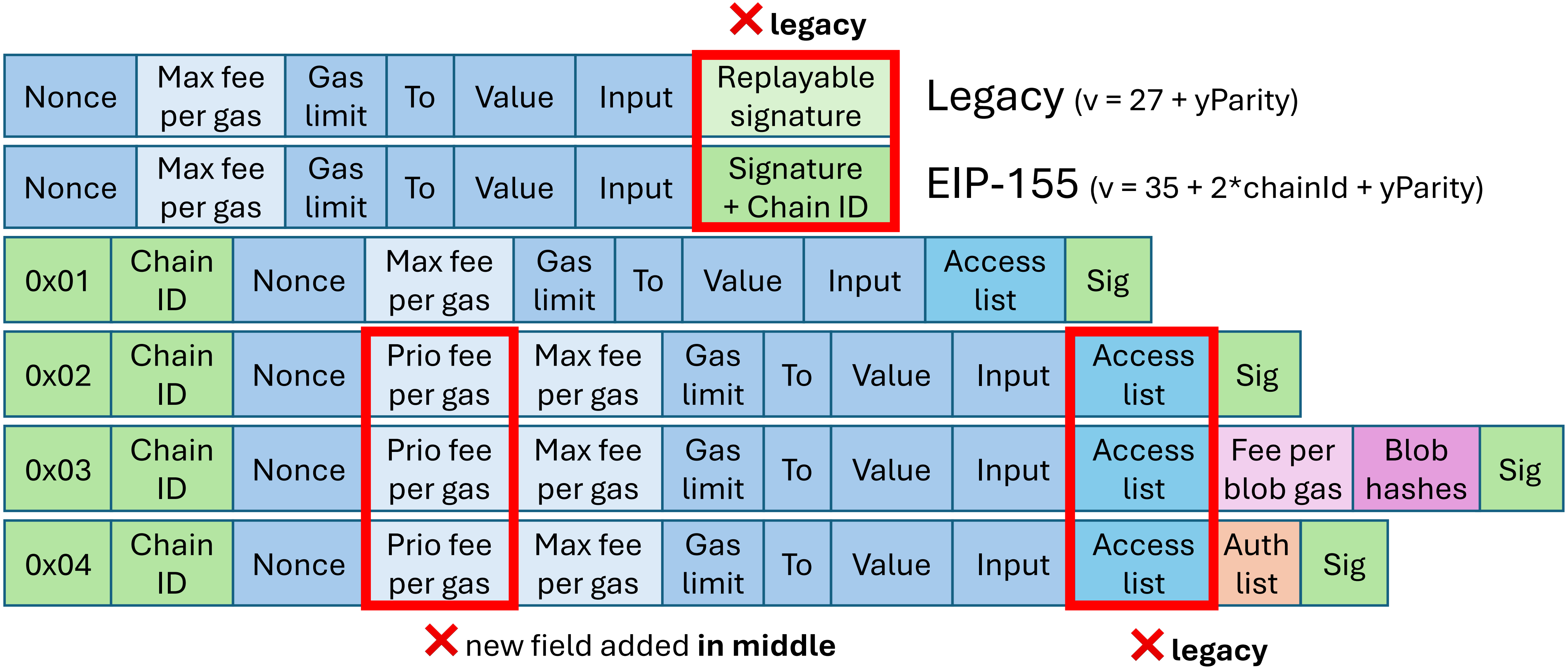
⚠️ Transaction hashes

1. sig_hash
2. tx_hash
3. transactions trie hash
4. SSZ ByteVector hash (CL)



❌ **no on-chain commitment**
(cannot compute txs_root from hashes)

⚠️ Inconsistent tx types



✗ **legacy**

Nonce	Max fee per gas	Gas limit	To	Value	Input	Replayable signature	Legacy (v = 27 + yParity)					
Nonce	Max fee per gas	Gas limit	To	Value	Input	Signature + Chain ID	EIP-155 (v = 35 + 2*chainId + yParity)					
0x01	Chain ID	Nonce	Max fee per gas	Gas limit	To	Value	Input	Access list	Sig			
0x02	Chain ID	Nonce	Prio fee per gas	Max fee per gas	Gas limit	To	Value	Input	Access list	Sig		
0x03	Chain ID	Nonce	Prio fee per gas	Max fee per gas	Gas limit	To	Value	Input	Access list	Fee per blob gas	Blob hashes	Sig
0x04	Chain ID	Nonce	Prio fee per gas	Max fee per gas	Gas limit	To	Value	Input	Access list	Auth list	Sig	

✗ new field added **in middle**

✗ **legacy**

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Minimal scope:

1. **EIP-7745 log index**
2. **Logs for ETH transfers**
3. **MPT hashes -> SSZ**
4. **ExecutionPayload -> SSZ**

No changes:

- State trie, EVM
- Signature schemes
- Networking, database
- Internal data structures

Synergies with **block level access lists** and **ePBS / FOCIL**

EIP-7919 Pureth

- **UX**
  - Verifying RPC improves security and enables anonymous access
  - More efficient data structures reduce need for indexers
- **L1**
  - New log index scales to high gas limits
  - Better RPC latency for transactions, receipts, logs, engine
- **L2**
  - Inherit security, privacy, and performance gains from L1
  - Lower gas cost to prove L2 log on L1