

EIP 2930: Optional access lists

[Return to Ethereum ERCs](#)

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Table 1: Data sheet for Optional access lists

Title	Optional access lists
EIP	2930
Requires	2718, EIP 2929: Gas cost increases for state access opcodes
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Status	final
Created	2020-08-29
Description	https://github.com/ethereum/EIPs/blob/master/EIPS/eip-2930.md
Specification	https://github.com/ethereum/EIPs/blob/master/EIPS/eip-2930.md#Specification
Category	Core

Simple Summary

Adds a transaction type that contains an access list, a list of addresses, and storage keys that the transaction plans to access. Accesses outside the list are possible but become more expensive.

Abstract

We introduce a new [EIP 2718: Typed Transaction Envelope](#) transaction type, with the format **0x01 || rlp([chainId, nonce, gasPrice, gasLimit, to, value, data, accessList, signatureYParity, signatureR, signatureS])**.

The **accessList** specifies a list of addresses and storage keys; these addresses and storage keys are added into the `accessed_addresses` and `accessed_storage_keys` global sets (introduced in [EIP-2929](#)). A gas cost is charged, though at a discount relative to the cost of accessing outside the list.

Motivation

This EIP serves two functions:

1. Mitigates contract breakage risks introduced by [EIP-2929](#), as transactions could pre-specify and pre-pay for the accounts and storage slots that the transaction plans to access; as a result, in the actual execution, the SLOAD and EXT* opcodes would only cost 100 gas: low enough that it would not only prevent breakage due to that EIP but also “unstuck” any contracts that became stuck due to [EIP 1884](#).
2. Introduces the access list format and the logic for handling the format. This logic can later be repurposed for many other purposes, including block-wide witnesses, use in ReGenesis, moving toward static state access over time, and more.

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