Mempool Limits

Definitions

Given any two transactions Tx0 and Tx1 where Tx1 spends an output of Tx0, Tx0 is a *parent* of Tx1 and Tx1 is a *child* of Tx0.

A transaction's *ancestors* include, recursively, its parents, the parents of its parents, etc. A transaction's *descendants* include, recursively, its children, the children of its children, etc.

A mempool entry's *ancestor count* is the total number of in-mempool (unconfirmed) transactions in its ancestor set, including itself. A mempool entry's *descendant count* is the total number of in-mempool (unconfirmed) transactions in its descendant set, including itself.

A mempool entry's *ancestor size* is the aggregated virtual size of in-mempool (unconfirmed) transactions in its ancestor set, including itself. A mempool entry's *descendant size* is the aggregated virtual size of in-mempool (unconfirmed) transactions in its descendant set, including itself.

Transactions submitted to the mempool must not exceed the ancestor and descendant limits (aka mempool *package limits*) set by the node (see `-limitancestorcount`, `-limitancestorsize`, `-limitdescendantcount`, `-limitdescendantsize`).

Exemptions

CPFP Carve Out

CPFP Carve Out if a transaction candidate for submission to the mempool would cause some mempool entry to exceed its descendant limits, an exemption is made if all of the following conditions are met:

1. The candidate transaction is no more than 10,000 virtual bytes.
2. The candidate transaction has an ancestor count of 2 (itself and exactly 1 ancestor).
3. The in-mempool transaction's descendant count, including the candidate transaction, would only exceed the limit by 1.

Rationale: this rule was introduced to prevent pinning by domination of a transaction's descendant limits in two-party contract protocols such as LN. Also see the mailing list post.

This rule was introduced in PR #15681.

Single-Conflict RBF Carve Out

When a candidate transaction for submission to the mempool would replace mempool entries, it may also decrease the descendant count of other mempool

entries. Since ancestor/descendant limits are calculated prior to removing the would-be-replaced transactions, they may be overestimated.

An exemption is given for a candidate transaction that would replace mempool transactions and meets all of the following conditions:

1. The candidate transaction has exactly 1 directly conflicting transaction.
2. The candidate transaction does not spend any unconfirmed inputs that are not also spent by the directly conflicting transaction.

The following discounts are given to account for the would-be-replaced transaction(s):

1. The descendant count limit is temporarily increased by 1.
2. The descendant size limit temporarily is increased by the virtual size of the to-be-replaced directly conflicting transaction.