

	Polkadot	Kusama	Westend	Rococo
Constants (per para):				
<i>max_upward_queue_size [bytes] [1]</i>	1048576	4194304	8388608	8388608
<i>max_upward_message_num_per_candidate [2]</i>	16	128	512	1024
<i>page_size [bytes] [3]</i>	65536	65536	131072	32768
<i>MessageQueue::MaxStale [4]</i>	8	16	48	96
Implied Values (per para):				
<i>max_upward_message_size [bytes] [5]</i>	65531	65531	131067	32763
<i>max_upward_queue_count (1 Byte msgs) [6]</i>	174762	699050	1398101	1398101
Additional Stats (approximated):				
<i>Queue Page ItemHeader size [bytes]</i>	5	5	5	5
<i>Max upward queue pages [7]</i>	16	64	64	256
<i>Max upward queue unstale pages [8]</i>	8	48	16	160
<i>Max combined stale msgs [bytes] [9]</i>	524288	1048576	6291456	3145728
<i>Max combined unstale msgs [bytes] [10]</i>	524288	3145728	2097152	5242880
<i>Min relay blocks to fill the queue [11]</i>	2	1	2	2
<i>Total size across 100 Paras [bytes] [12]</i>	104857600	419430400	838860800	838860800
<i>Total size across 100 Paras [MiB] [13]</i>	100	400	800	800
Italic values are on-chain and set in the configuration pallet				
See 6271 for context.				

[1] Doc: Total size of messages allowed in the parachain -> relay-chain message queue before which no further messages may be added to it.

[2] Doc: The maximum number of messages that a candidate can contain. This parameter affects the upper bound of size of `CandidateCommitments`.

[3] Doc: The MessageQueue pallet's page size.

Note: Also called HeapSize.

[4] The maximum amount of stale pages in the MQ pallet before reaping can happen.

[5] Doc: The maximum size of an upward message that can be sent by a candidate. This parameter affects the upper bound of size of `CandidateCommitments`.

Note: This is calculated by the MQ pallet by subtracting the ItemHeader overhead from the PageSize.

[6] Doc: Total number of individual messages allowed in the parachain -> relay-chain message queue.

Note: It is possible to send zero sized messages. However, we ignore this fact and just penalize in favour of non-empty messages by assuming at least 1 byte.

[7] A lower bound on the number of pages which will be in the upward message queue when no further messages may be added due to the limits imposed by the HostConfiguration.

Note this is a lower bound since with suboptimal message sizes (e.g. $\text{page_size} / 2 - \text{ItemHeader}::\text{size}() + 1$) then pages will not be properly filled and there will be more of them at the HostConfig limit.

[8] Doc: The maximal number of un-stale pages that can occur. This should be >0 to ensure that the `reap_page` call works.

[9] Doc: The combined maximal size of all stale messages that can occur.

Note: This ignores the 5 byte ItemHeader overhead for

[10] Doc: The combined maximal size of all un-stale messages that can occur.

[11] The minimal number of blocks in that a parachain can fill up its UMP queue.

[12] Doc: The total size that the Relay will have to allocate in the MQ pallet to all UMP queues combined.

Note: We often assume 100 parachains as intermediate scaling limit.

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