


# Performance and Memory

For every release of LemonTree, we run a set of tests with different test-models to examine the change of both the memory consumption and the total diff /merge times.

This page shows the results of these tests.

 As shown by the test results, our goal is to continuously both improve the performance and decrease the memory consumption of LemonTree. Nevertheless, changes to the supported feature-set may impact both performance and memory consumption negatively. The Remarks section under the test results notes such changes.

## Test Case Description

The test results provided on this page are based on a fixed set of test models, which we diff with every released version of LemonTree.


Details on the used test models can be found here:

[Test Case Description](#)

## Measurement Methods

To understand the measurement methods we have used to compile this data or conduct measurements on your own model for a comparison, please refer to this page:

[Measurement Methods](#)

 By applying our measurement methods to your own models, you can calculate comparison values to approximate how LemonTree will perform for your models based on the data below.

### 3.2 Or Newer

## Environment

Our test machine has the following setup:

- Operating System: Microsoft Windows 10 Enterprise N
- Processor: Intel(R) Xeon(R) CPU E3-1245 v5 @ 3.50GHz, 3504 Mhz, 4 Core(s), 8 Logical Processor(s)
- Memory: 64 GB

## Test results

Small Model				
LT Version	1) Loading models	2) Premerge calculation	3) Writing merge file	Max RAM usage
3.3.0 (latest release)	3s	0s	0s	740 MB
3.2.1	4s	0s	0s	651 MB
3.2.0	3s	0s	0s	890 MB
3.1.4	3s	0s	0s	947 MB
3.1.3	4s	0s	0s	881 MB
Medium Model				
LT Version	1) Loading models	2) Premerge calculation	3) Writing merge file	Max RAM usage
3.3.0 (latest release)	1m4s	8s	12s	6.364 MB
3.2.1	54s	7s	11s	6.846 MB
3.2.0	1m2s	7s	11s	6.374 MB
3.1.4	58s	7s	12s	6.831 MB
3.1.3	1m1s	8s	10s	6.250 MB
Large Model				
	1) Loading models	2) Premerge calculation	3) Writing merge file	Max RAM usage
3.3.0 (latest release)	2m14s	3m47s	17m41s	14.827 MB
3.2.1	2m6s	3m46s	16m52s	15.254 MB
3.2.0	2m9s	3m35s	15m58s	15.041 MB
3.1.4	2m10s	3m32s	15m50s	14.986 MB
3.1.3	1m56s	3m48s	14m50s	13.013 MB
EAExample				
	1) Loading models	2) Premerge calculation	3) Writing merge file	Max RAM usage
3.3.0 (latest release)	8s	9s	2m23s	1.563 MB
3.2.1	8s	7s	2m19s	1.573 MB
3.2.0	8s	8s	2m6s	1.288 MB
3.1.4	7s	8s	2m6s	1.748 MB
3.1.3	8s	8s	2m6ss	1.336 MB
Tagged Value Model				
	1) Loading models	2) Premerge calculation	3) Writing merge file	Max RAM usage
3.3.0 (latest release)	1m11s	14s	3m5ss	7.799 MB
3.2.1	1m10s	13s	3m12s	7.271 MB
3.2.0	1m6s	18s	2m44s	7.133 MB
3.1.4	1m5s	13s	2m47s	6.974 MB
3.1.3	1m6s	13s	2m46s	6.764 MB
TV Model (Triple Size)				
	1) Loading models	2) Premerge calculation	3) Writing merge file	Max RAM usage
3.3.0 (latest release)	3m13s	41s	11m43s	19.500 MB
3.2.1	3m23s	42s	11m52s	18.720 MB
3.2.0	3m12s	49s	10m15s	16.919 MB
3.1.4	3m8s	39s	11m21s	18.636 MB
3.1.3	3m12s	39s	10m40s	17.743 MB

## Remarks

The new test machine consumes significantly more memory for the "Large Model" and the "TV Model (Triple Size)" - even with LemonTree versions which have completed the same merges on the old test hardware with significantly less memory usage.

We currently assume that this is because the garbage collector isn't triggered as often on this machine because of excess available RAM - or, in layman's terms - if the RAM is available, LemonTree is going to use it. This speeds up the merge in total. However, we don't have any insight yet how much of the performance gain is due to the change in processing power, and how much is due to the additional RAM. This circumstance is still under investigation.