

# Diskeeper Pro Premier Edition Terabyte Volume Engine® Performance Tests

## Overview

A rigorous set of laboratory tests was conducted here at Diskeeper Corporation to determine just how much better the Diskeeper® Pro Premier Edition Terabyte Volume Engine<sup>i</sup> defrag technology is over the already industry-leading defragmentation engine<sup>ii</sup> used in the Professional and Home editions of Diskeeper 2011. The improvement is significant across the entire range of disk volume sizes and number of files. On volumes with more than 100,000 files, the improvement is dramatic. The Terabyte Volume Engine is designed to execute on server volumes over 60GBs in size.

## Data

- The Terabyte Volume Engine is dramatically faster than the standard engine on all sizes of volumes from 40GB (the smallest tested) up, and all numbers of files from 50,000 (the least tested) up. In each test case, 10% of the files on the volume were fragmented, representing severe fragmentation impacting system performance heavily.

50,000 Files	Standard (hh:mm:ss)	TVE	Improvement
40GB	0:01:54	0:01:38	16%
60GB	0:01:55	0:01:43	12%
100GB	0:01:59	0:01:44	14%
250GB	0:02:19	0:01:50	26%
500GB	0:02:42	0:01:51	46%
1TB	0:03:31	0:01:38	115%

100,000 Files	Standard	TVE	Improvement
40GB	0:05:06	0:03:13	59%
60GB	0:05:11	0:03:14	60%
100GB	0:05:11	0:03:13	61%
250GB	0:06:01	0:03:22	79%
500GB	0:07:32	0:03:24	122%
1TB	0:08:37	0:03:28	149%

250,000 Files	Standard	TVE	Improvement
40GB	0:22:41	0:09:51	130%
60GB	0:23:56	0:09:58	140%
100GB	0:24:21	0:09:58	144%
250GB	0:25:09	0:10:01	151%
500GB	0:27:54	0:10:27	167%
1TB	0:29:35	0:10:07	192%

<sup>i</sup> A defragmentation "engine" is the process that performs file and free space defragmentation.

<sup>ii</sup> National Software Testing Labs (NSTL) performed independent product evaluations of Diskeeper and native Microsoft® Windows® disk defragmenters. Results concluded that the standard defragmentation engine of Diskeeper 2011 was far more thorough and up to five times faster.

500,000 Files	Standard	TVE	Improvement
100GB	0:58:38	0:19:04	208%
250GB	0:58:42	0:19:17	204%
500GB	1:03:52	0:18:16	250%
1TB	1:07:11	0:17:52	276%

1,000,000 Files	Standard	TVE	Improvement
500GB	2:21:37	0:34:29	311%
1TB	2:30:36	0:33:49	345%

2,000,000 Files	Standard	TVE	Improvement
500GB	6:21:37	1:10:09	444%
1TB	6:46:30	1:05:49	518%

- With the standard engine, the time required to defragment a terabyte volume increases geometrically (doubling and redoubling) as the number of files on the volume increases. With the Terabyte Volume Engine, the time increases linearly, meaning about the same number of minutes is required for each *additional* 250,000 files.

On a terabyte (1,000GB) volume:	Standard Engine Time	TVE Time	Improvement
250,000 files	00:29:35	00:10:07	192%
500,000 files	01:07:11	00:17:52	276%
one million files	02:30:36	00:33:49	345%
two million files	06:46:30	01:05:49	518%

- With the standard engine, the time to defragment *per gigabyte of volume size* is roughly constant on volumes up to 60GB. Above 60GB, the standard engine requires more and more time *per GB* to defragment the volume. The Terabyte Volume Engine, on the other hand, maintains a constant time to defragment per GB up to 1TB (1,000GB). Our Terabyte Volume Engine tests even showed a *decrease* in time per GB as volume sizes increased above 500GB.

## Summary

These tests conclusively show that the Terabyte Volume Engine included in Diskeeper 2011 Pro Premier Edition defragments volumes above 60GB in size dramatically faster than the industry leading standard engine included in other Diskeeper editions (and in earlier versions of Diskeeper). This benefits large-disk customers with faster defragmentation, lower overhead and dramatically lessened total cost of ownership (TCO). It is also apparent from these tests that, for volumes of 500GB and greater, with a million files or more, the performance and efficiency offered by the Terabyte Volume Engine is clearly a minimum requirement to maintain expected performance of Windows Server systems.