Table of Contents

SSD lifespan (TBW value) 1
Datacenter specifications for NVMe 1
Cell info 1
Tested SSD 1

SSD lifespan (TBW value)

TBW rating for client SSDs is based on 1-year data retention at 30C as per JEDEC#218 specifications

Usage	Power-on	Power-off (retention)
Client	40°C 8hrs/day	30°C 1year
Enterprise	55°C 24hrs/day	40°C 3mon

Datacenter specifications for NVMe

https://www.opencompute.org/documents/datacenter-nvme-ssd-specification-v2-0r21-pdf

Cell info

	SLC	MLC	3D MLC V-NAND	3D TLC V-NAND	3D QLC
Bits per cell	1	2	2	3	4
approx. P/E Cycles	100000	3000-10000	6000	2000	500

Available Reserved Space/Block Count - total reserved space for remapping bad blocks.

Remark:
256GB MLC
256GB * 3000 = **750 TB** total transfer (728 TB - 1200 TB in real life)

256GB TLC
256GB * 1000 = **250 TB** total transfer (300-800 TB in real life)

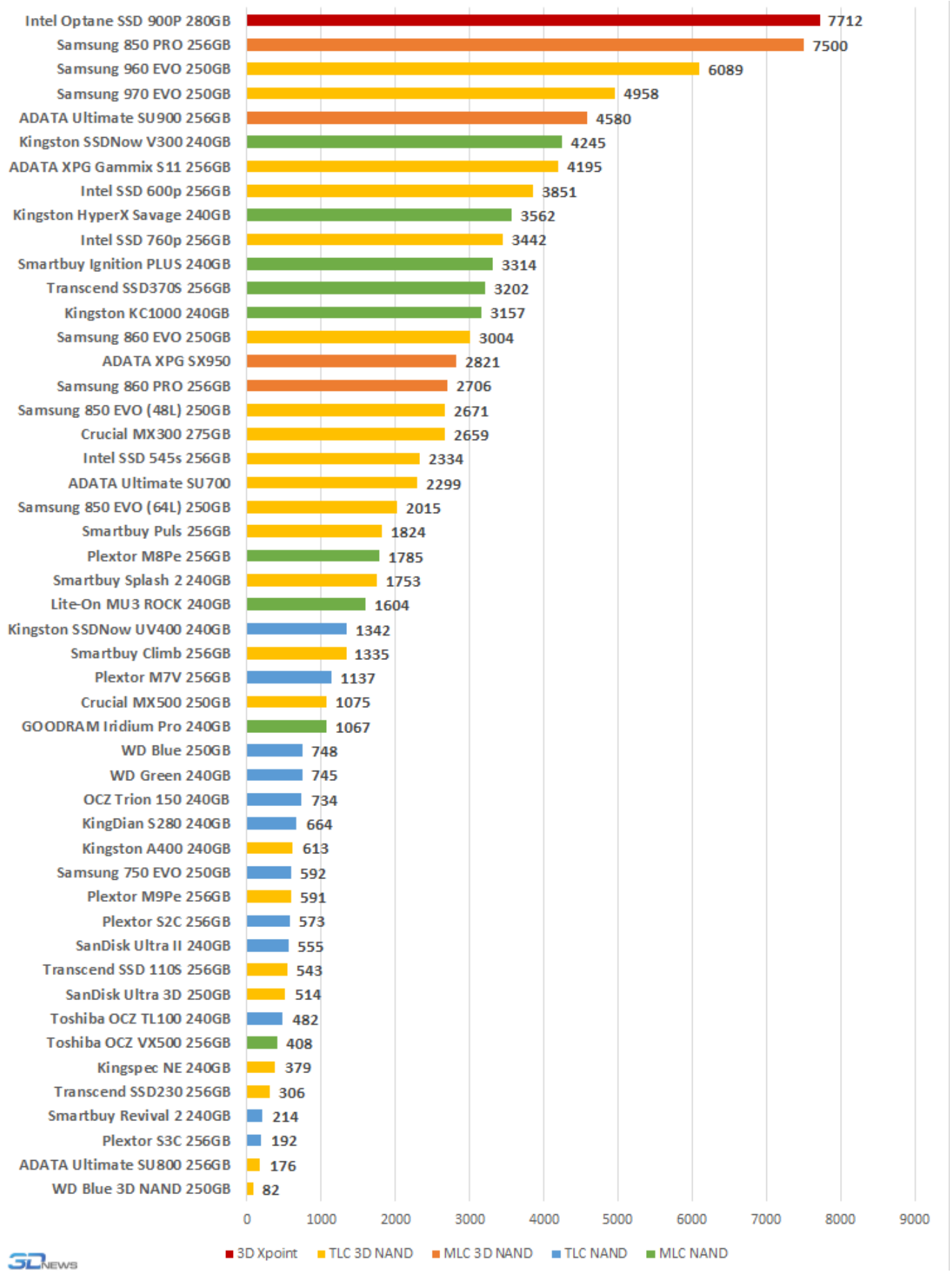
Wear Leveling - Dynamic, Static

Initial Bad Blocks
Later Bad Blocks - Bad blocks that are developed during the lifespan of the flash

Tested SSD

Name	Cell Type	Capacity	Data written
SanDisk SDSSDH2064G	MLC	64 GB	170 TB
Intel SSD 520	MLC	60 GB	181 TB
Samsung 840	TLC	120 GB	331 TB
Samsung 840	TLC	250 GB	760 TB

100 – (100 * Average Erase Count / NAND max PE)



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