Leverage TLC Technology to advance your corporate environment

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SanDisk

Santa Clara, CA
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Forward-Looking Statements

- During our meeting today we may make forward-looking statements.
- Any statement that refers to expectations, projections or other characterizations of future events or circumstances is a forward-looking statement, including those relating to market growth, industry trends, supply growth, future memory technology and future product launches
- This presentation contains information from third parties, which reflect their projections as of the date of issuance.
- Actual results may differ materially from those expressed in these forward-looking statements due to a number of risks and uncertainties, including the factors detailed under the caption “Risk Factors” and elsewhere in the documents we file from time to time with the SEC, including our annual and quarterly reports.
- We undertake no obligation to update these forward-looking statements, which speak only as of the date hereof.

CIOs Are Looking For A Break

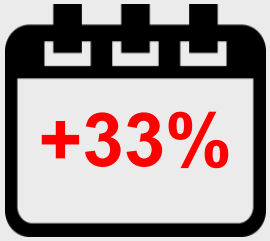
Flash Is Transforming IT

EMPLOYEE PRODUCTIVITY

35%

Source: http://www.sandisk.com/goto/SSDupgrade/Downloads/SanDisk_White_Paper_TCO.pdf

CALENDAR LIFE



Laptop lifespans are extended from 3 years to 4 if you swap the HDD with SSD

Source: http://www.sandisk.com/goto/SSDupgrade/Downloads/SanDisk_SSD_Deployment_White_Paper.pdf

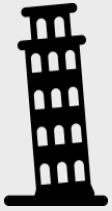
DURABILITY

86%

Reduction in IT Labor costs to fix hard disks or recover data

Source: http://www.sandisk.com/goto/SSDupgrade/Downloads/SanDisk_White_Paper_TCO.pdf

TIME LOST WITH HDD



169HR

ITALY

156HR

GERMANY

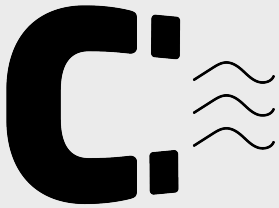
130HR

UK

Source: http://www.sandisk.com/goto/SSDupgrade/Downloads/Infographic_time_we_lose.pdf

Client SATA SSD Market Dynamics

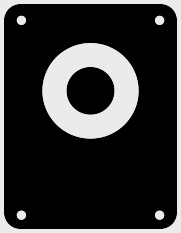
ATTACH RATE



Commercial SSD moving to **35% @'16**

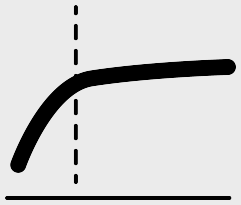
Source: SanDisk Internal

AVERAGE CAPACITIES



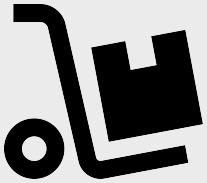
256GB is becoming mainstream

SATA REACHING A PLATEAU



How fast can it be**?**

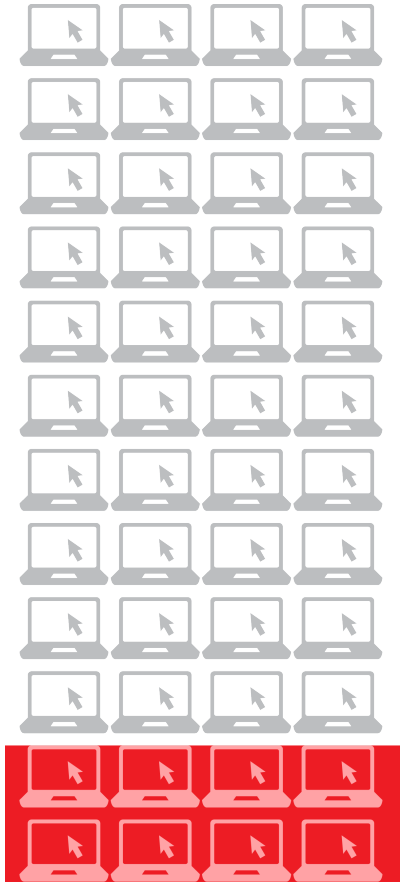
SUPPLY



Limited bit growth

Attach Rate – Bigger Than You Think…

16%
of Commercial
PC's use SSD's



2013

2X growth

in 3 years

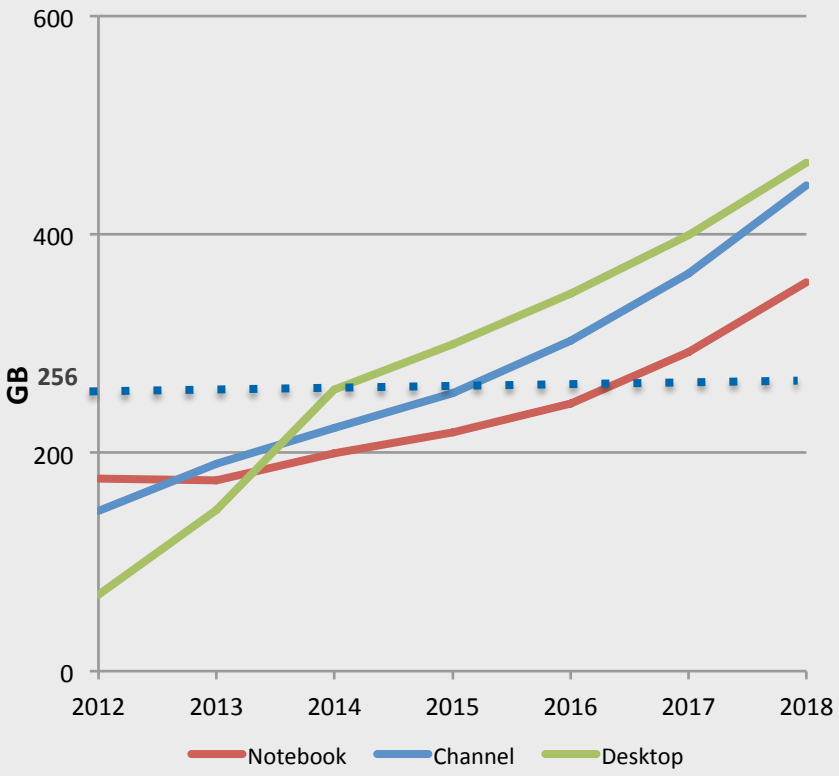
35%
of Commercial
PC's use SSD's

2016

Source: SanDisk Internal

More SSD 256GB Are Sold Than 128GB

AVERAGE SSD CAPACITY

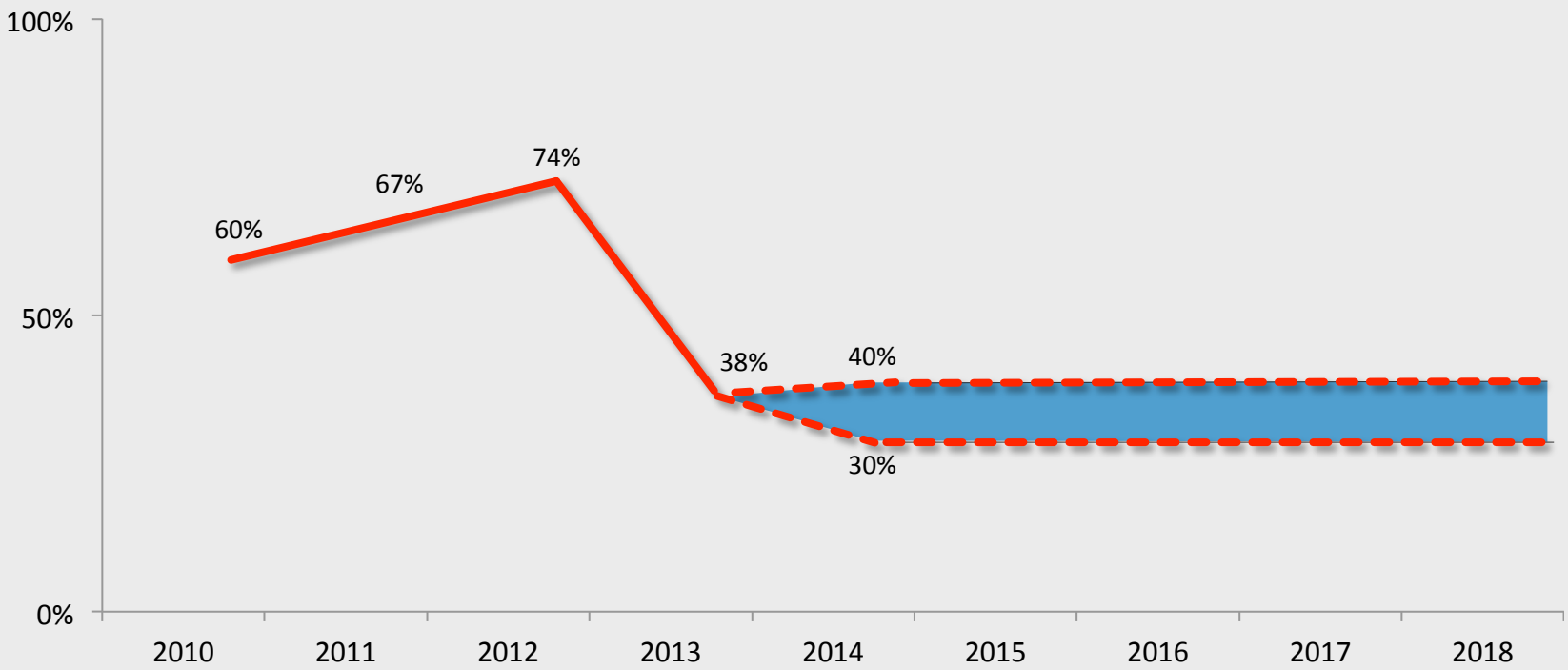


Forward Insights @ Q2'14

128GB capacity becomes a challenge

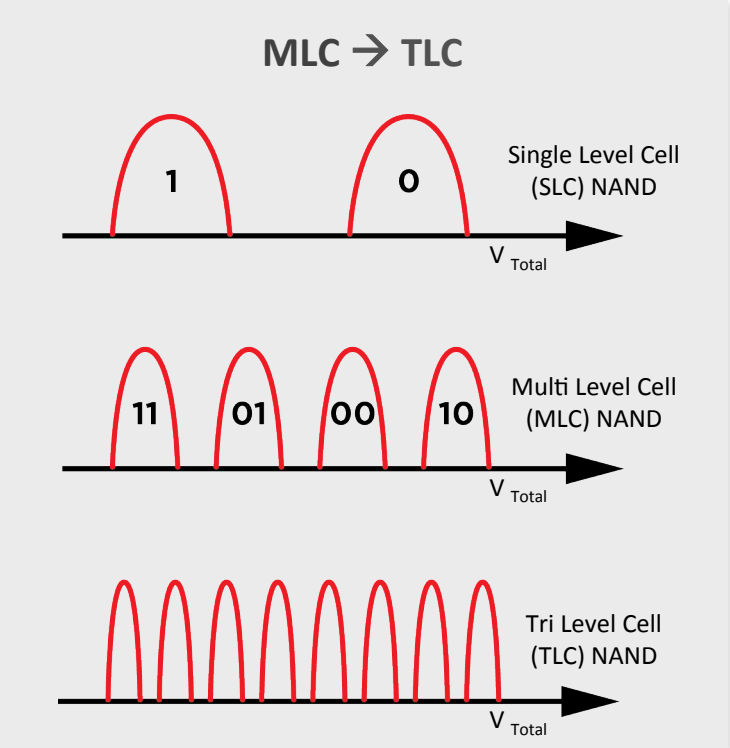
Expecting Modest Industry Bit Growth

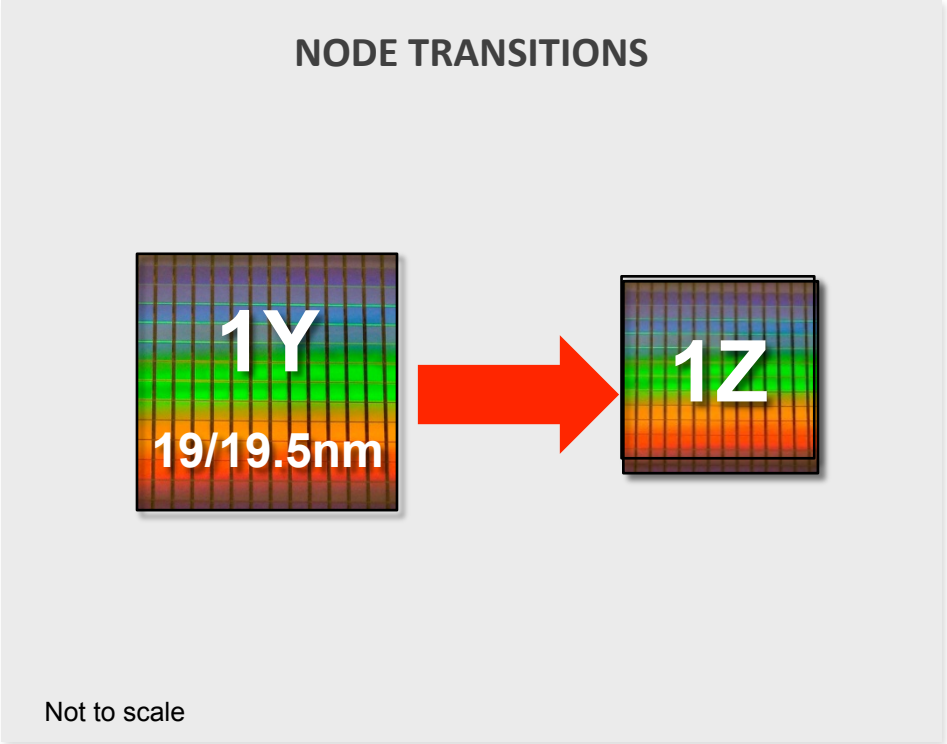
INDUSTRY BIT GROWTH RANGE



Source: SanDisk estimate

Means of Maximizing Bit Supply

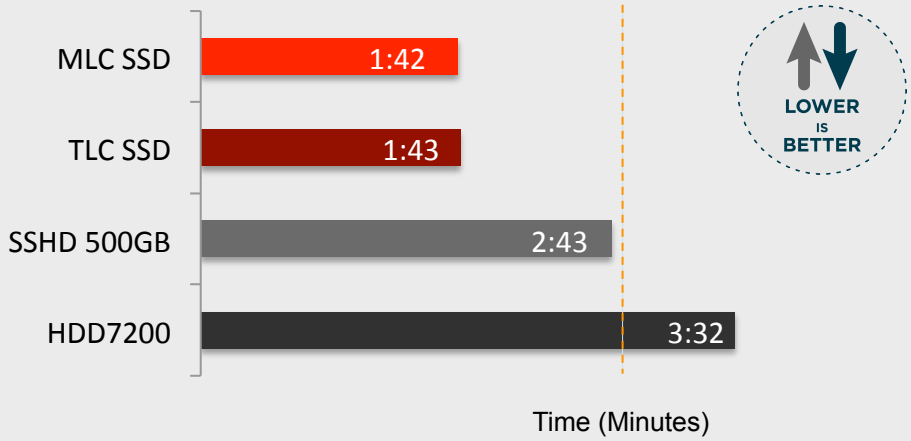




SATA 6Gbs SSDs Are Reaching A Plateau

At any scenario and at the corporate/user workload

SANDISK APPLICATION BENCHMARKS – TOTAL TIME

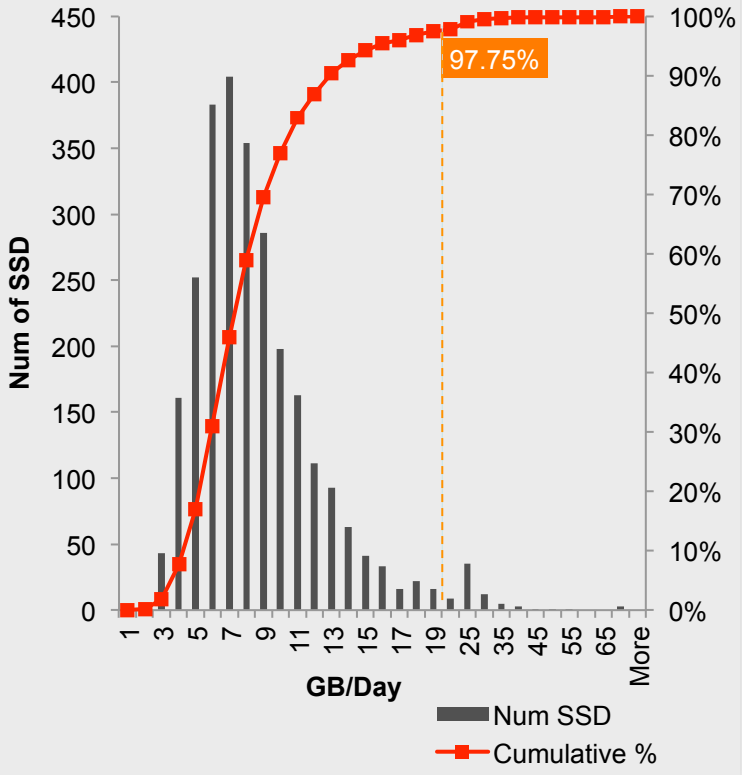


Application Launched

PDF	7 files of 6MB	**Photoshop**	22 files of 26MB	**Music Player**	1 file of 4MB playing in the background
Folder	6 files of 2MB	**Picasa**	22 files of 26MB		
Excel	14 files of 26MB	**ZIP**	12 files of 4GB		

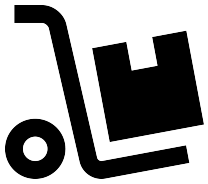
Results based on SanDisk internal testing. (i7-8GB DRAM)

GB/DAY HISTOGRAM

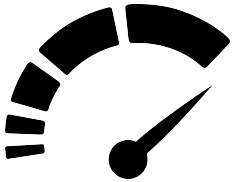


Source: SanDisk Internal SSD Deployment

Next Wave Of Computing SSD



Maximize Supply

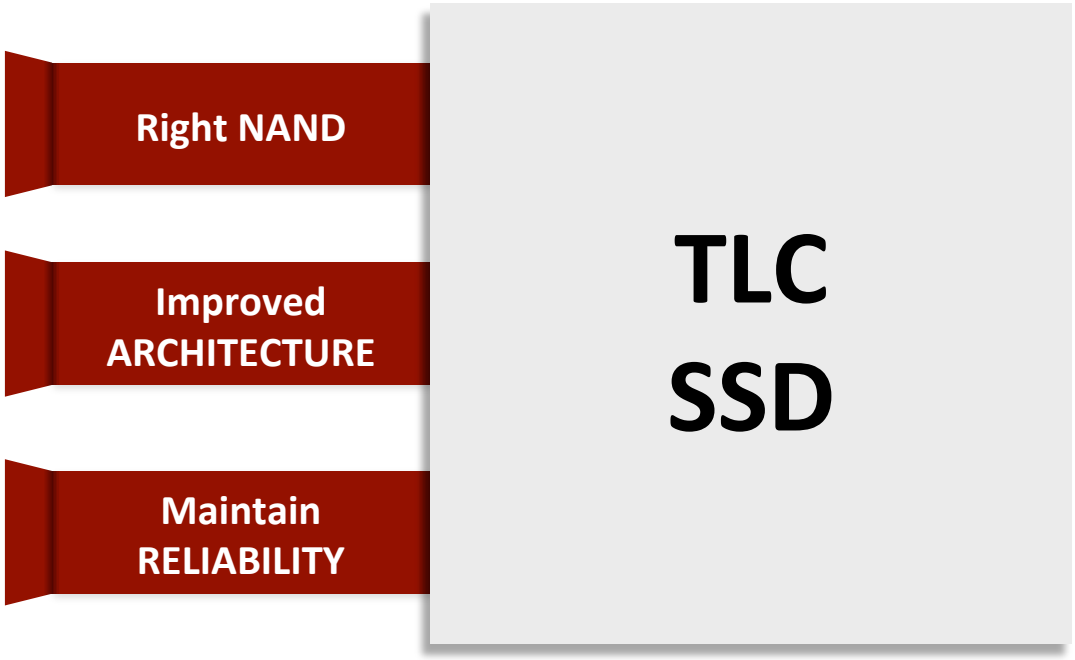


Consistent
User Experience

Available to all

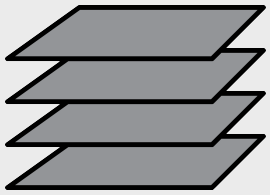
What are the critical elements we need in order to enable this?

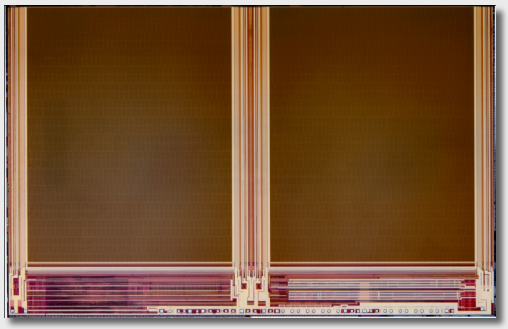
Bringing TLC SSD In Corporate



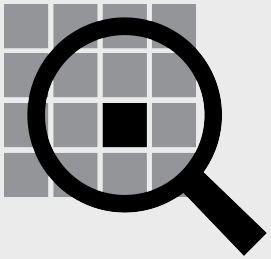
Picking Up The Right NAND

OF PLANES





STRICT BAD BLOCKS



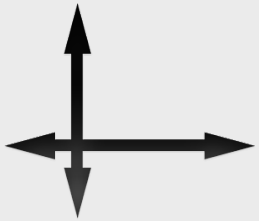
Bad blocks

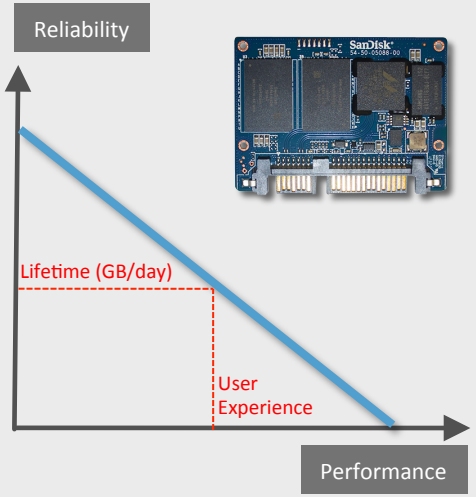
Spare Area

User Area, LBA count (IDEMA)

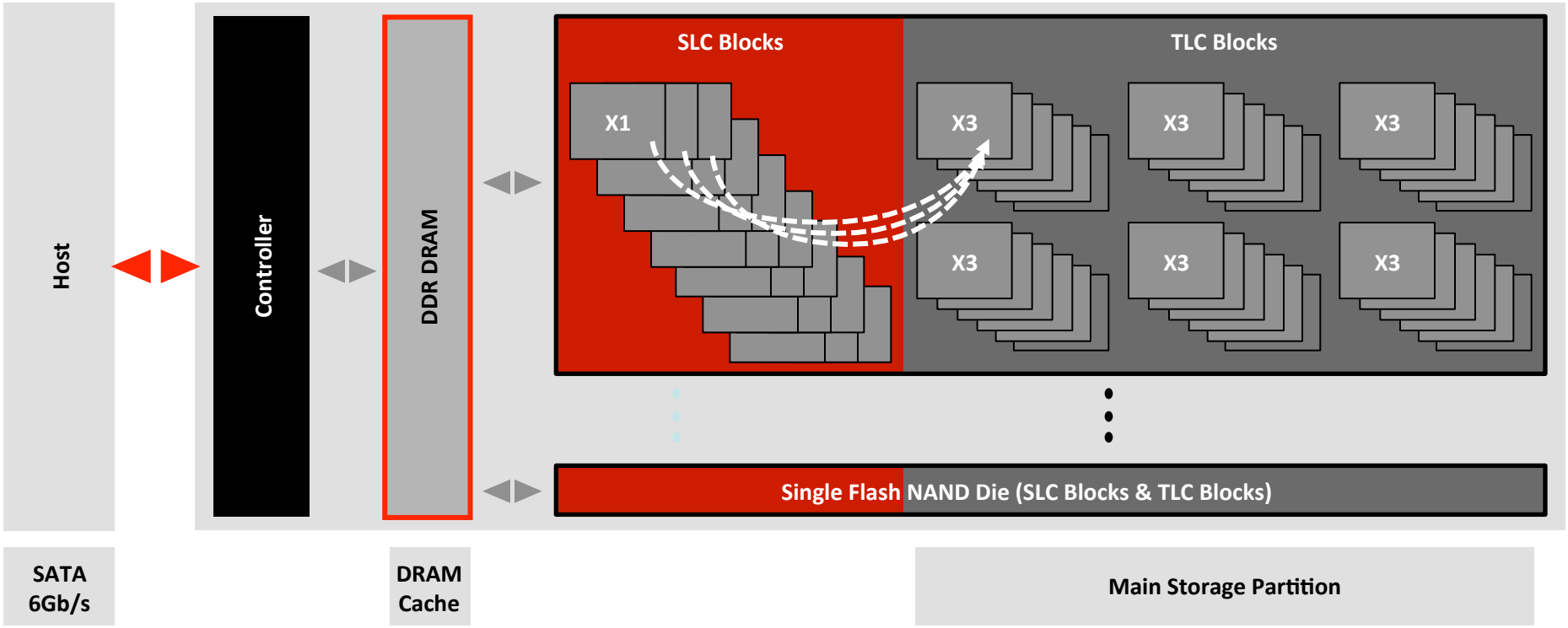
128G
~~120G~~
256G
~~240G~~

TRIM SELECTION

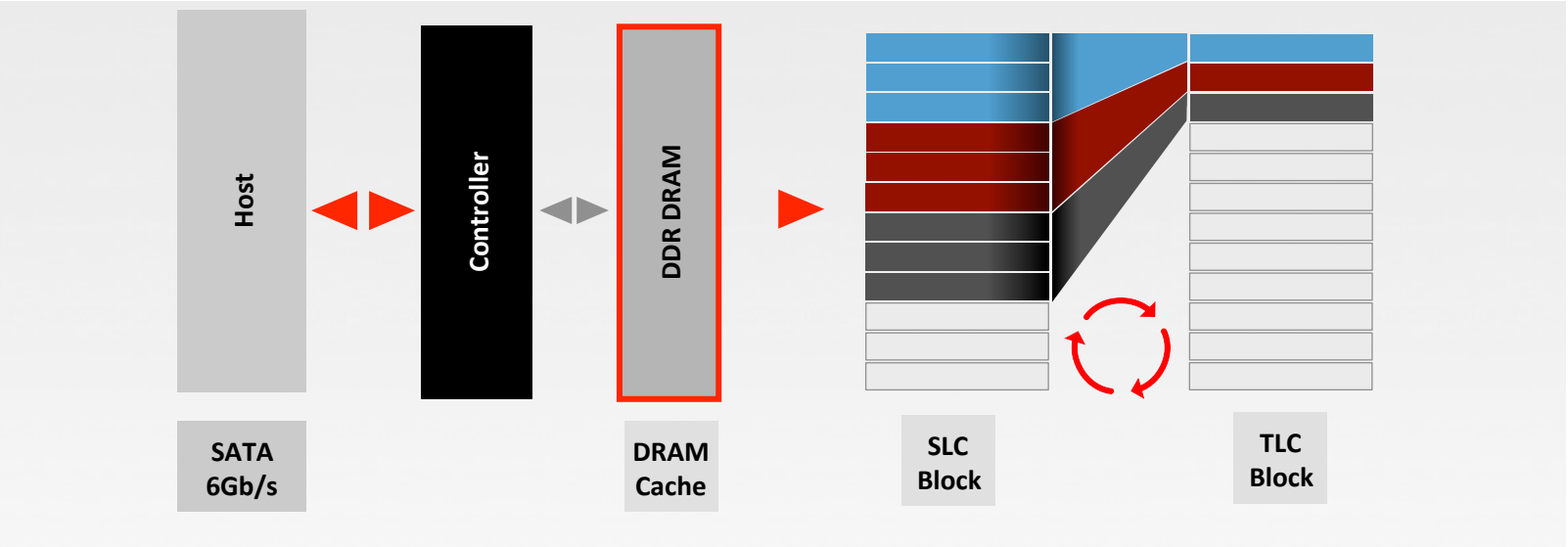




Architecture Of Tiered Caching

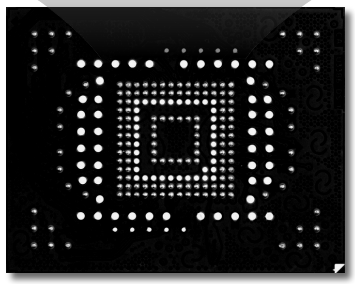


New ‘DMA’ Like Folding Mechanism



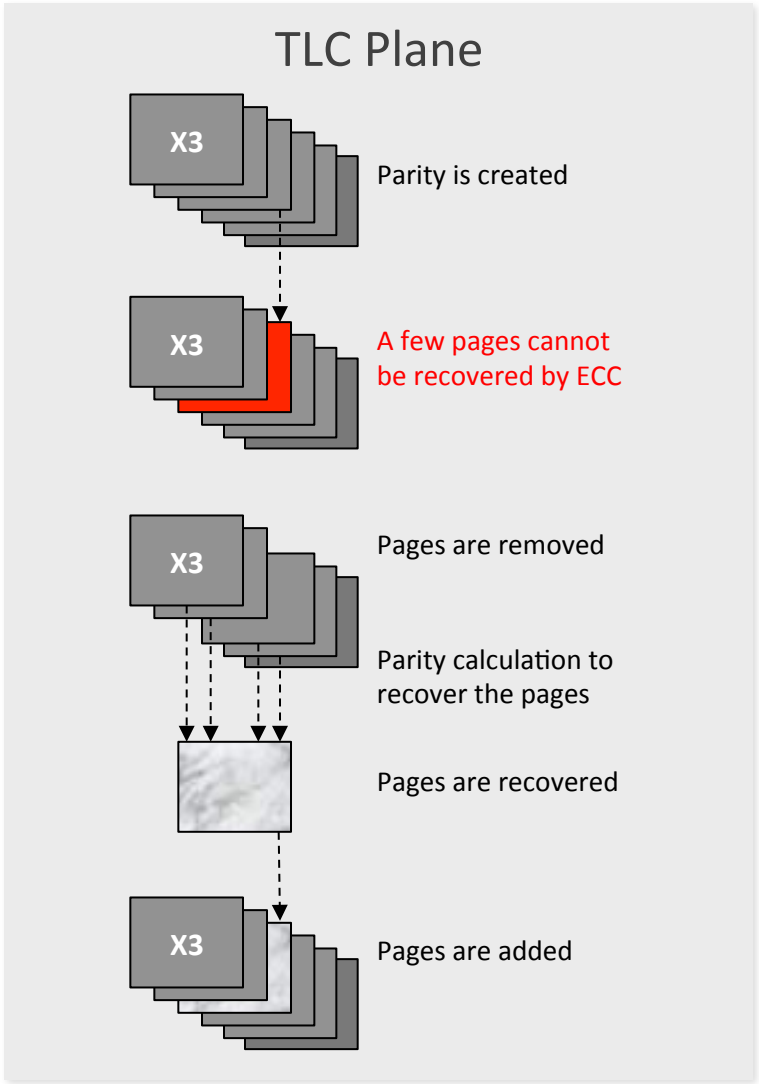
On Chip Copy allows efficient folding

- Minimal overhead
- Copy is done with minimal controller intervention



Maintain Reliability

Striping with distributed parity providing a last line of data protection

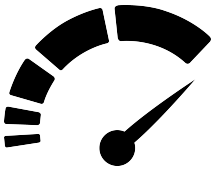


Benefits

- Minimal performance impact – HW engine
- Higher Reliability
- No user capacity loss

Wrap Up

Maximize Supply



Consistent
User Experience

Available to all

TLC SSD

- **Right NAND**
- **Improved ARCHITECTURE**
- **Maintain RELIABILITY**