



# Solid-State Drives and Caching in the Client Segment

## Caching Goes Mainstream

Presenter: Charles Brady Foster, Technical Marketing Engineer,  
Intel® Corporation  
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Configurations: Power Testing – Mobile Devices: Intel® Sandy Bridge D2 2.4GHz 4+2 D2, Intel® QM67 Express Chipset B2, 4GB (2x2GB) DDR3 1066 7/7/20, Intel® Emerald Lake CRB Fab2, 1280 X 1024 32-bit color, Windows\* 7 Ultimate 64-bit 6.1 Build 7600, Chipset driver 9.2.0.1025, Intel® Rapid Storage Technology 10.5.0.1017, BIOS CPT062, Intel® SSD 311 Series FW 2M3 maximized mode, Intel® X25M-80GB FW 2M3, Intel® X25M-40GB FW 2M3, Hitachi 320GB WD5000BUDT. Performance Testing – Intel® Core™ i5-2500 6MB L3 Cache 3.3GHz, Intel® DZ68DB Express Chipset, 4GB (2x2GB) DDR3 1333 9/9/24, Intel® HD Graphics 200 and driver 8.15.10.2361, 1920 x 1200 32-bit color, Windows\* 7 Ultimate 64-bit 6.1 Build 7600, Chipset driver 9.2.0.1030, Intel® Rapid Storage Technology 10.5.0.1027, BIOS DBZ6810H.86A.0018.2011.0505.1114, Intel® SSD 311 Series FW 2M3 maximized mode, Intel® SSD 320 Series FW 302, Seagate\* 1TB ST31000528AS. For more information go to <http://www.intel.com/performance>

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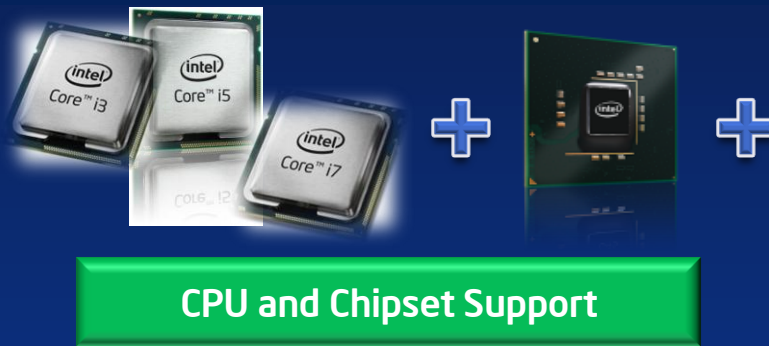
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- Caching Configuration
- Flexible Setup
- Flexible SSD Utilization
- The User Experience – Performance and Power

# Caching Configuration

- System Setup



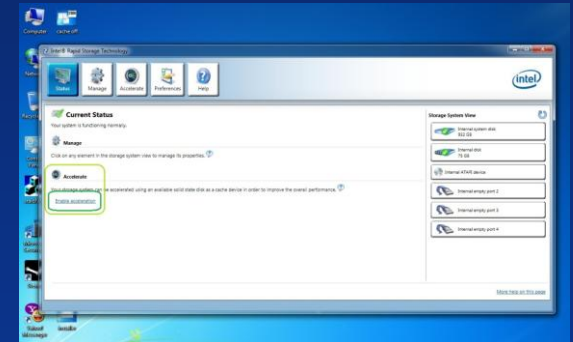
- What does it do?
  - Frequently used data cached to SSD
  - Static data stored to HDD
  - Customer ease-of-use

# Flexible Setup

- Options for storage element capacities

**HDD** + **SSD**  
500GB 1TB 2TB      20GB 40GB 64GB

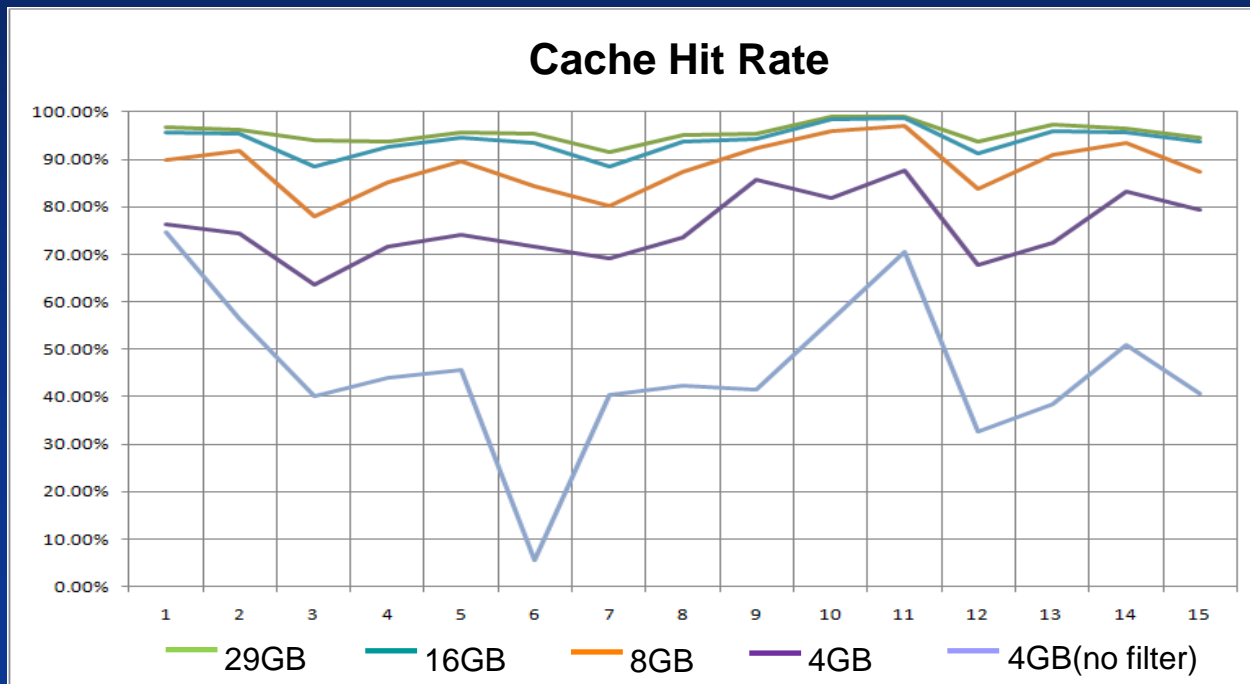
- Graphical User Interface



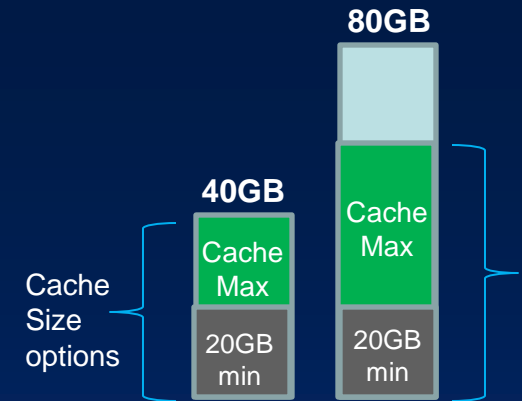
- Ability to enable/disable caching as necessary

# The Right Cache Size

- Study of 15 Users
  - Desktop and Notebook Systems
  - Some Consumer, Some Business
- Average of 45 days traced Microsoft Windows\* 7 actual usage



# Flexible SSD Utilization

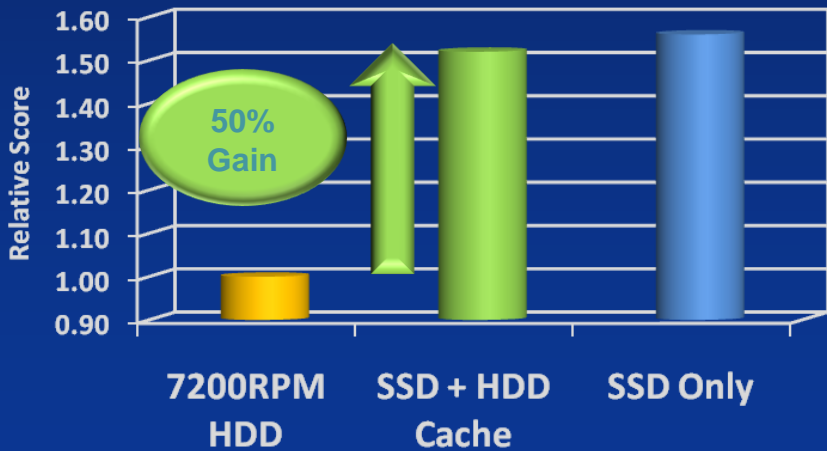


- Cache Size Options
  - Min cache size for general system requirements
  - Larger cache option
- Remaining Partition
  - Recovery OS
  - Other

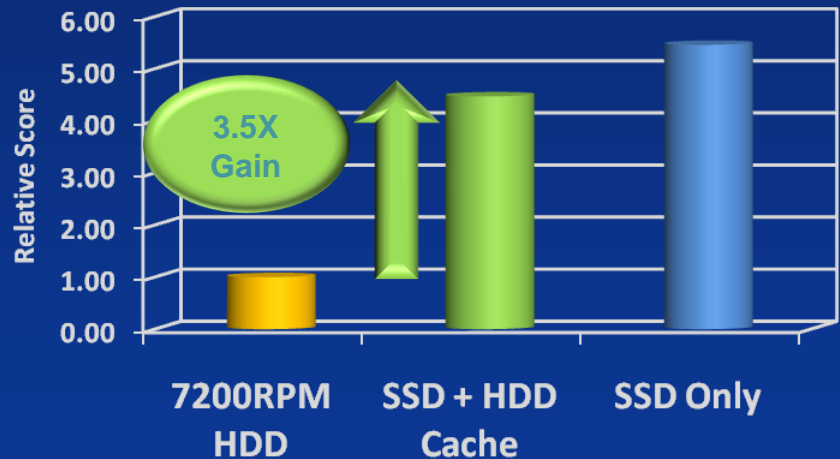
# User Experience – Performance

Specification	Seagate* 1TB 7200RPM HDD	Intel® SSD Series 311 20GB + HDD	Intel® SSD Series 320 80GB
Storage Capacity	1 TB	1 TB	80 GB
Transfer Rate (Read MB/s)	~125 <sup>1</sup>	200	270
Transfer Rate (Write MB/s)		105	90
Read Access (us)	~12660 <sup>2</sup>	65	75
Write Access (us)	~13660 <sup>2</sup>	75	90

PCMark Vantage\* System Test



PCMark Vantage\* HDD Test

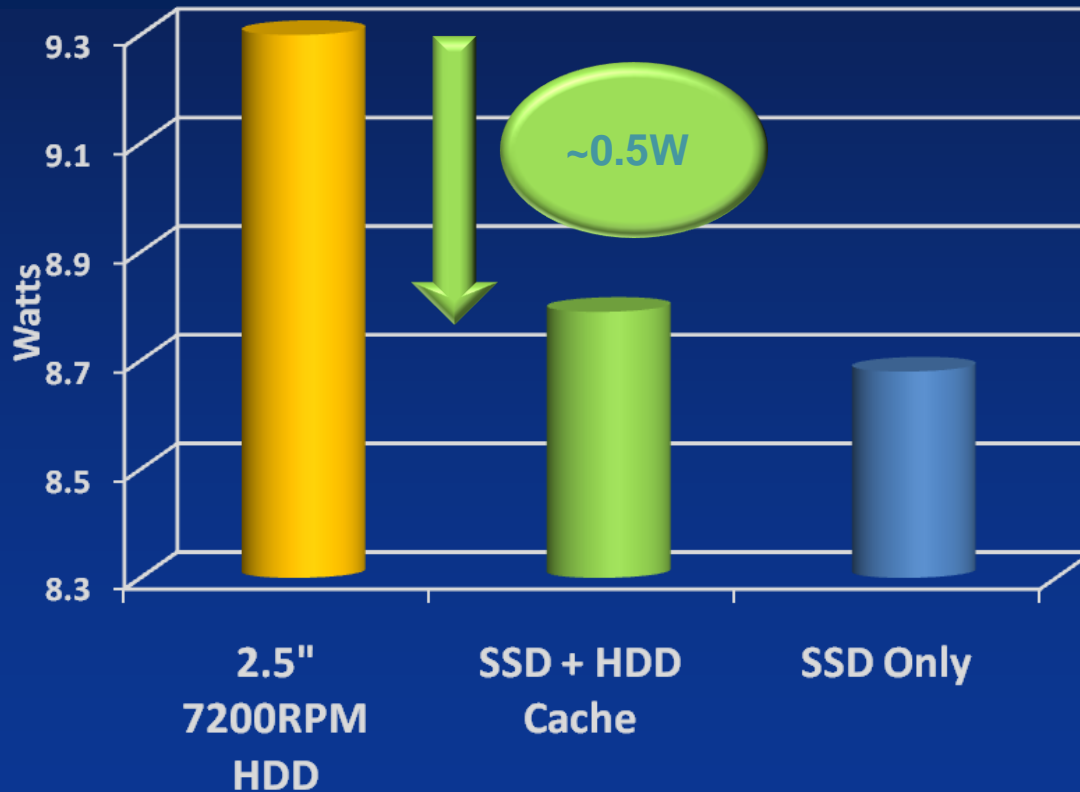


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# User Experience – Power

## System Power (Mobile)



- Caching - Seamlessly Pairing SSD with Larger Capacity HDD
- User Options in Setting Up Cache
- Small Capacity SSD
- SSD-Like Performance and Power