



# New SSD Interfaces & Metrics of Merit

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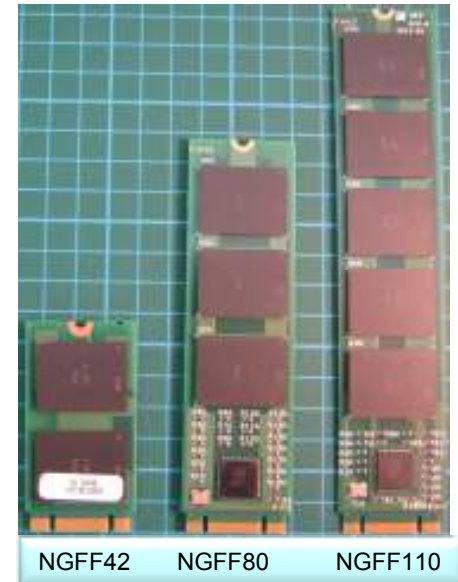
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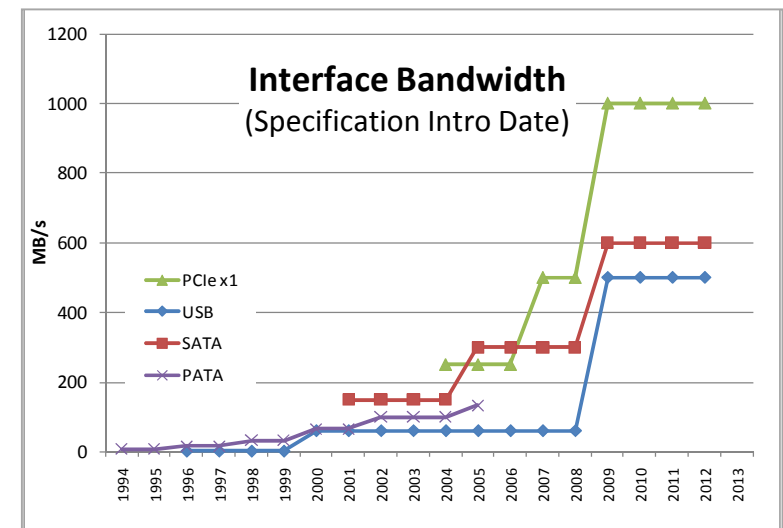
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# SSDs Drive Interface Transition

- With form factor transitions, interface transitions are easier
  - Legacy backward compatibility already mechanically compromised , so less of a constraint
- PCIe bandwidth scalability attractive to support SSD bandwidth capabilities
  - A traditional interface bandwidth doubling would be short lived and be insufficient by the time it was introduced



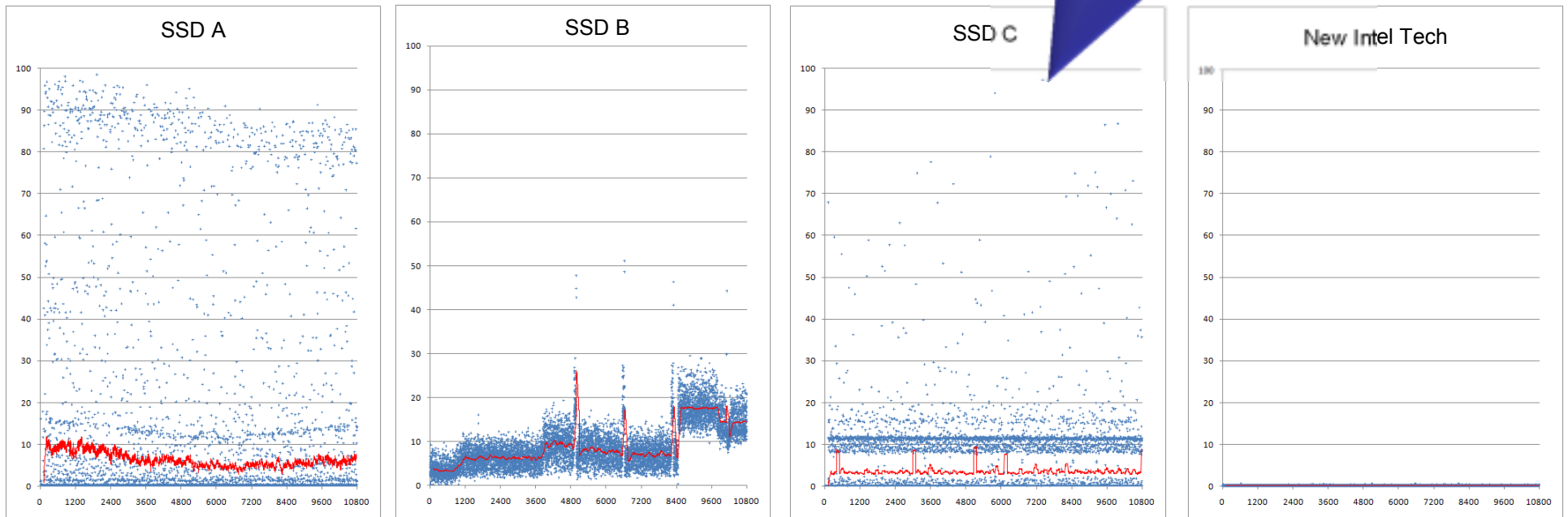
***PCIe is the SSD physical interface choice for the future***





# SSD Metrics of Merit Evolve (perf)

Lower is better (and less variable is better)

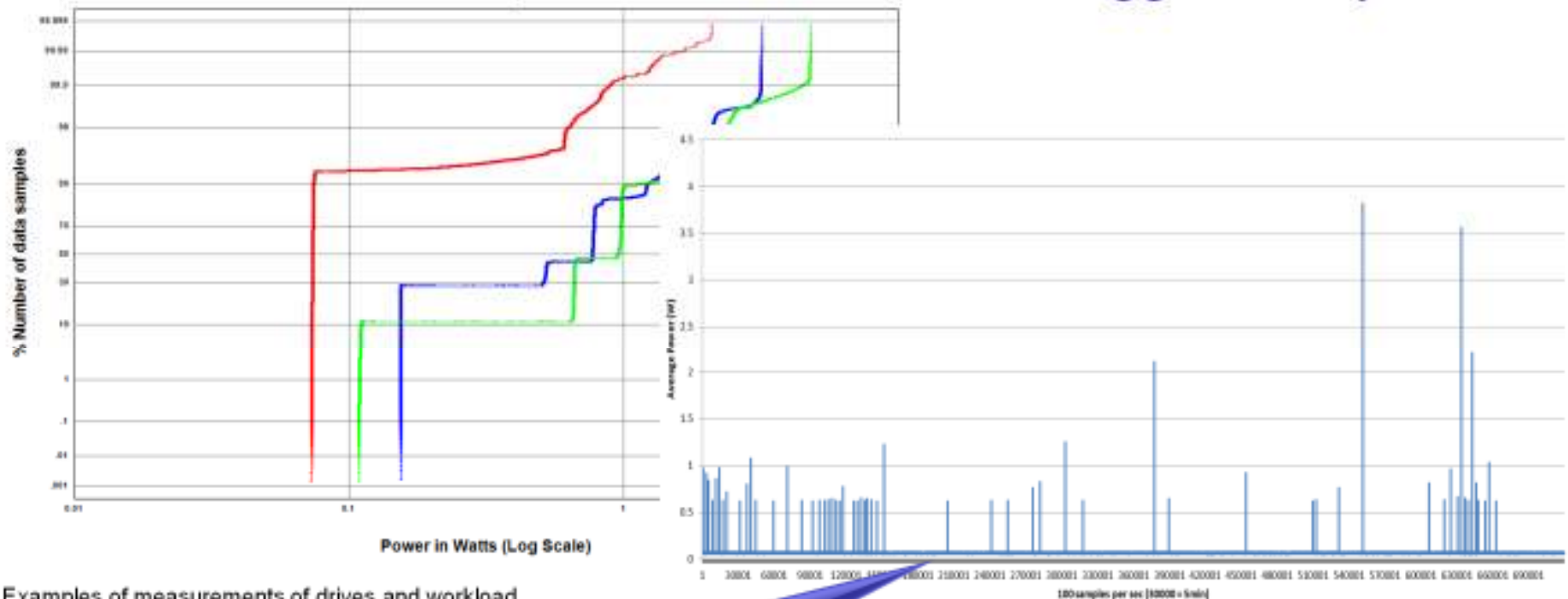


\* Examples of measured behaviors of maximum service times in 1-second intervals for sustained random workload.

***Performance uniformity and tight QoS can be as important as raw performance. The min performance is more significance than the max peak performance.***

# SSD Metrics of Merit Evolve (power)

- Wide range of device power efficiencies... *BUT* often it's the idle power that dominates
  - New sleek platforms will drive this aggressively



\* Examples of measurements of drives and workload

Flash Memory Summit 2012  
Santa Clara, CA

**Idle power is majority of total power**



## Summary

- SSDs are driving a storage interface transition
  - New form factors actually help this transition
- As SSDs mature, metrics of merit other than raw average IOPS more significant
  - IOPS and average performance will of course continue to grow further...
  - BUT, other factors will increasingly matter