Predictions 2015 and Beyond

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2015 Predictions

This is pretty easy

- PCIe (Peripheral Component Interconnect Express) 4 will be delayed again to late 2016
- Larger disk drives ensure vendors rethink their controller design
- Hardware RAID (redundant array of independent disks) will be on life support
  - RAID will be done in software like Linux MD RAID stack
- Fewer SSD companies than we have today
  - Likely down to really 4 to 6 paralleling disk companies in the 1980/90s
- People will again begin thinking about performance issues as was done in the late 1980s through middle of the 1990s

2016-2018 Predictions

A bit harder

- Resource allocation and management of non-volatile memories will be in development with some initial releases in Linux and MS Windows
- World will look like late 1990s with competing interfaces out of servers
  - PCIe and others or new interfaces
- Storage eco-system will be changing significantly with changes to both software stack and technologies (from primary storage to archive)
  - Vague statement but that is about all I want to say about the types of hardware that will be available storing data

Beyond 2018

Now it gets interesting

Prediction 1: PCIe

- PCIe future development will be gone by 2020
  - Intel controls PCIe and is coming out with a new interconnect
    - http://newsroom.intel.com/community/intel_newsroom/blog/2014/06/23/intel-re-architects-the-fundamental-building-block-for-high-performance-computing
    - http://www.scientificcomputing.com/blogs/2014/06/intels-new-omni-scale-fabric-platform-taking-i/o-interconnect-challenges-extreme-scale-hpc
- This is disruptive given PCIe has been the bus of choice for almost 20 years

- ECC (Error Correction Code)/Erasure codes will be used from host to storage for all devices by 2020
    - RAID as we know it 1,5,6 will have moved to declustered with ECC or
    - Move to ECC in the file system without knowledge of storage system
    - This will be true for both disk and archival technology
        - Outside chance ECC will move to support networking by 2022
            - This will require major changes in the stack and network interface cards (NICs) so that is why it is not a sure thing