

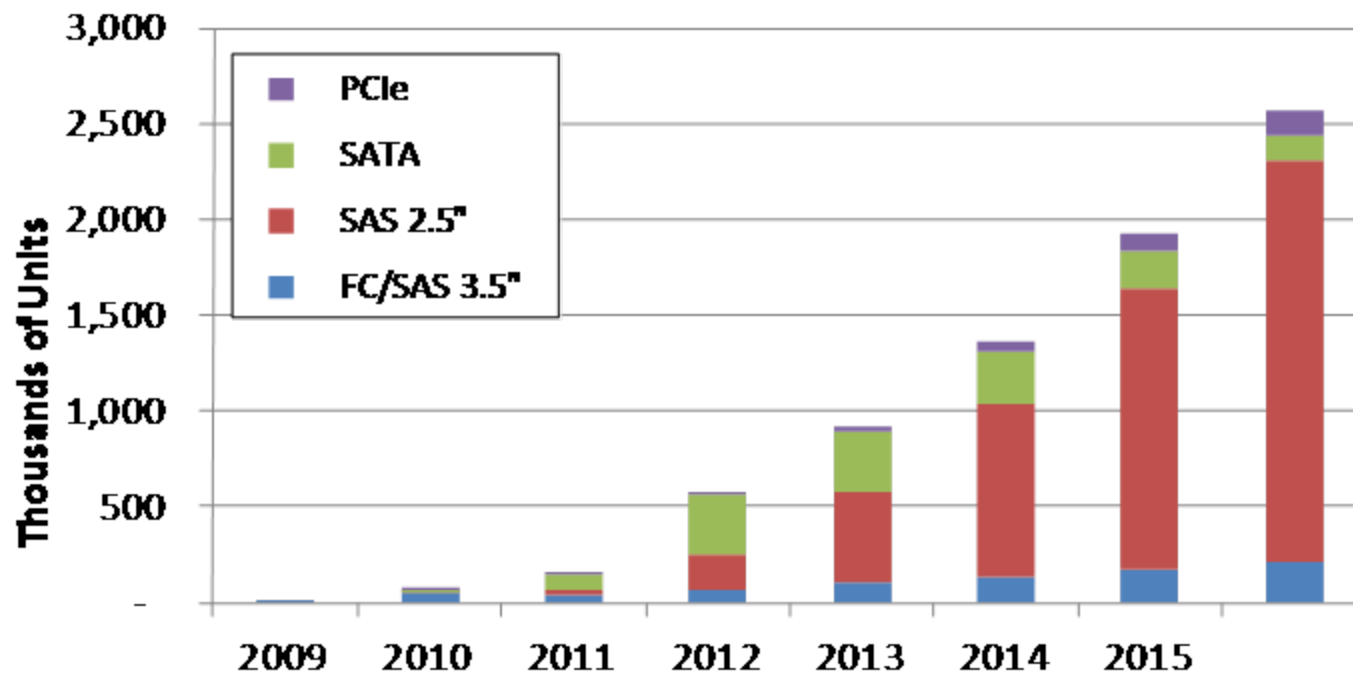


SAS Anchors the Enterprise

SAS is the preferred SSD Interface for Storage Systems



Storage-attached SSD Units



Forward-Insights 11-2011

T10/STA Standards Update

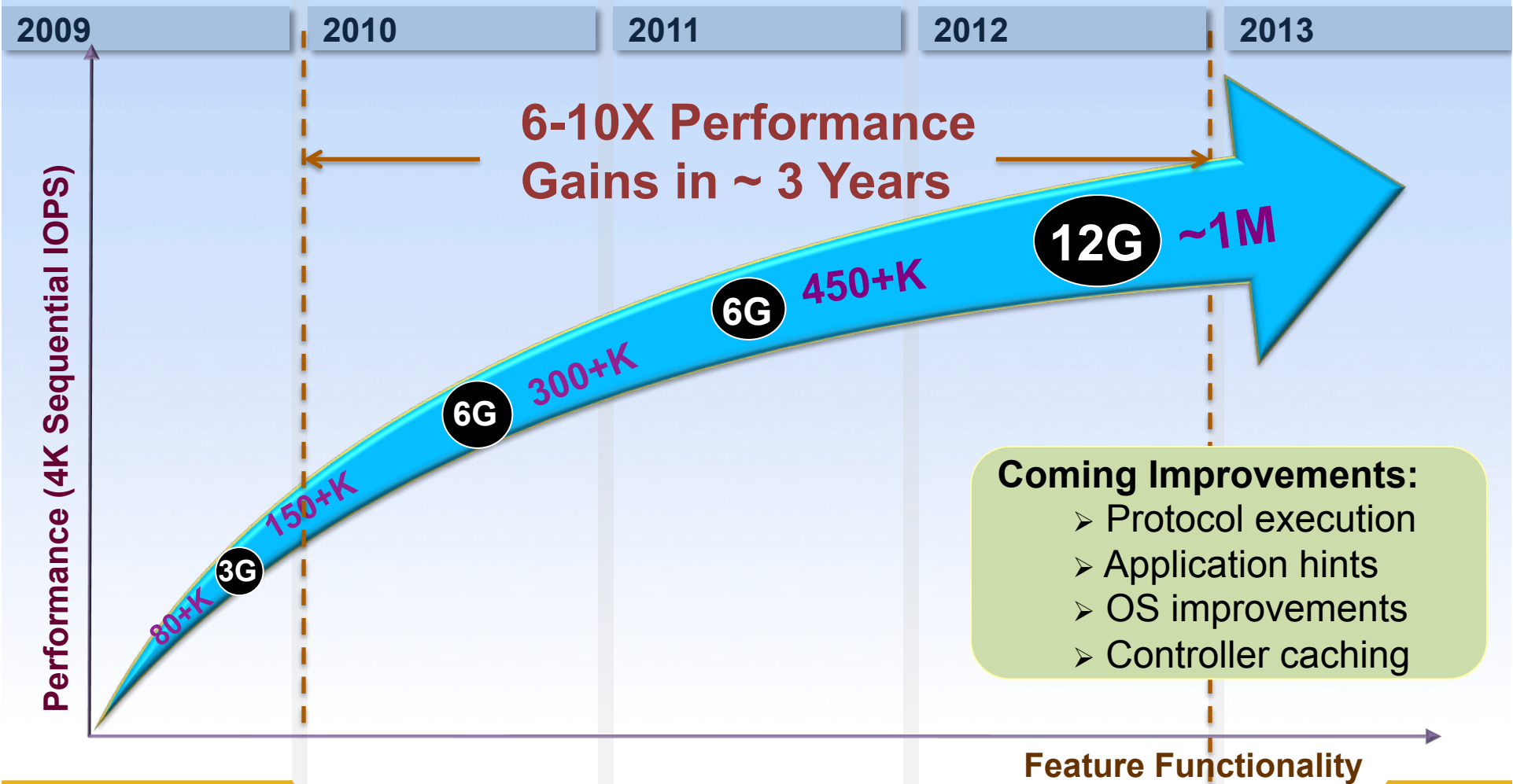


- ◆ Performance Enhancements
 - 12Gb/sec SAS (2013 Product Shipments)
 - Copy Offload
- ◆ Power management
 - Ability to adjust power consumption vs performance
- ◆ Multi-function (SAS/PCIe) serviceable bay
 - SFF-8639 Connector
- ◆ SCSI over PCIe (SOP-PQI)
 - Direct attached devices (e.g. SSDs)
 - HBAs, RAID controllers, and Bridge devices
- ◆ New device types – SMR, SSD Commands & Hints

SAS Projections – Existing Standards



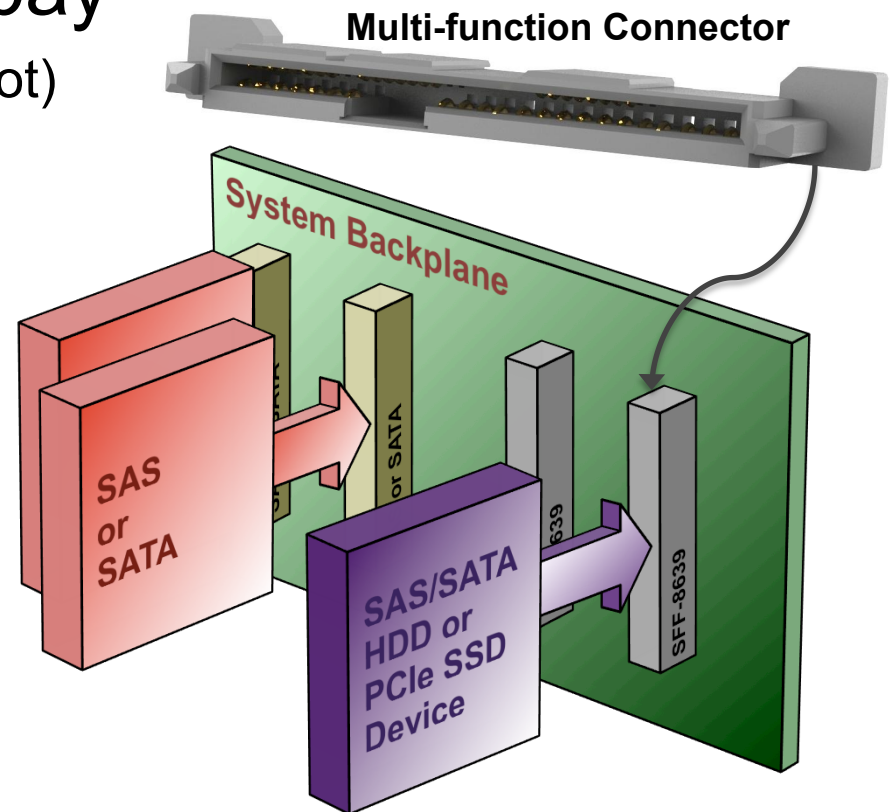
Single-chip SAS controller performance



Multi-Function Slot

◆ Multi-function SAS/PCIe bay

- High performance (up to 25W per slot)
- Hot swap, serviceability (SAS)
- High availability (2 fault domains)
- Supports a range of devices (system dependent)
 - 12Gb/s SAS
 - 6Gb/s SATA
 - MultiLink SAS (4 SAS Ports)
 - PCIe SSDs (emerging)
- Leverages legacy SCSI/SAS S/W investment



SAS Advantages



- ◆ Preserves Storage Investment – Logical SCSI
- ◆ Broad Open Industry Standards Support
- ◆ Dynamic Platform for Storage Innovation
- ◆ Class Drivers Personalize non-HDD devices
- ◆ Enterprise Proven – RAS (Hot Plug)
- ◆ Multi-Host, High Queue Depths, Concurrency
- ◆ Depth & Breath of Infrastructure
- ◆ Ease of integration with existing management infrastructures & features
- ◆ Compliments PCIe Attached Storage