Demartek®

NVMe over Fabrics is Headed Our Way

August 2016

About Demartek

◆ Industry Analysis and ISO 17025 accredited test lab

◆ Lab includes enterprise servers, networking & storage (DAS, NAS, SAN, 10/25/40/100GbE, 8/16/32GFC)

◆ We prefer to run real-world applications to test servers and storage solutions (databases, Hadoop, etc.)

◆ Demartek is an EPA-recognized test lab for *ENERGY STAR Data Center Storage* testing

◆ Website: www.demartek.com/TestLab

SNIA Emerald™ RECOGNIZED TESTER

NVMe Background

◆ NVM Express® (NVMe™) is a high-performance host controller interface
  – Designed for solid-state storage
  – Block device interface
  – Uses the PCIe bus

NVMe History & Roadmap

NVMe 1.0
Mar 2011

Queueing Interface
Command Set
End-to-End Protection
Security
PRPs

NVMe 1.1
Oct 2012

Multi-Path I/O
Namespace Sharing
Reservations
Autonomous Power Transition
Scatter-Gather Lists

NVMe 1.2
Nov 2014

Host Memory Bufffer
Replay Protected Area
Active/Idle Power & RTD3
Temperature Thresholds
Namespace Management
Controller Memory Buffer
Live Firmware Update
Atomicity Enhancements
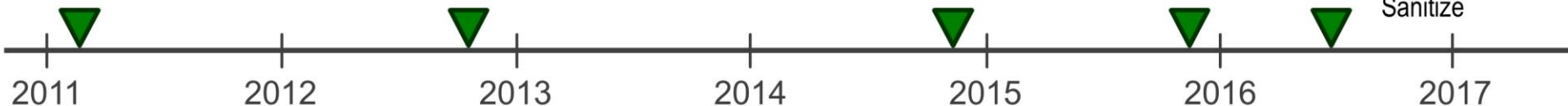
NVMe-MI 1.0
Nov 2015

Management Interface

NVMe Fabrics
Jun 2016

NVMe over Fabrics

NVMe 1.3
2H 2016

Directives
Virtualization
Mobile
Sanitize

2011   2012   2013   2014   2015   2016   2017

Released   **Future**
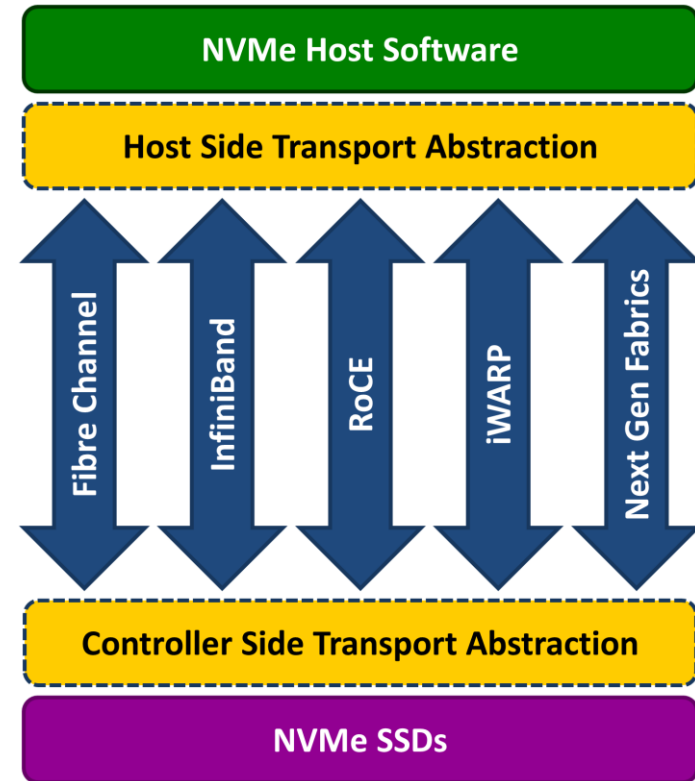
Demartek
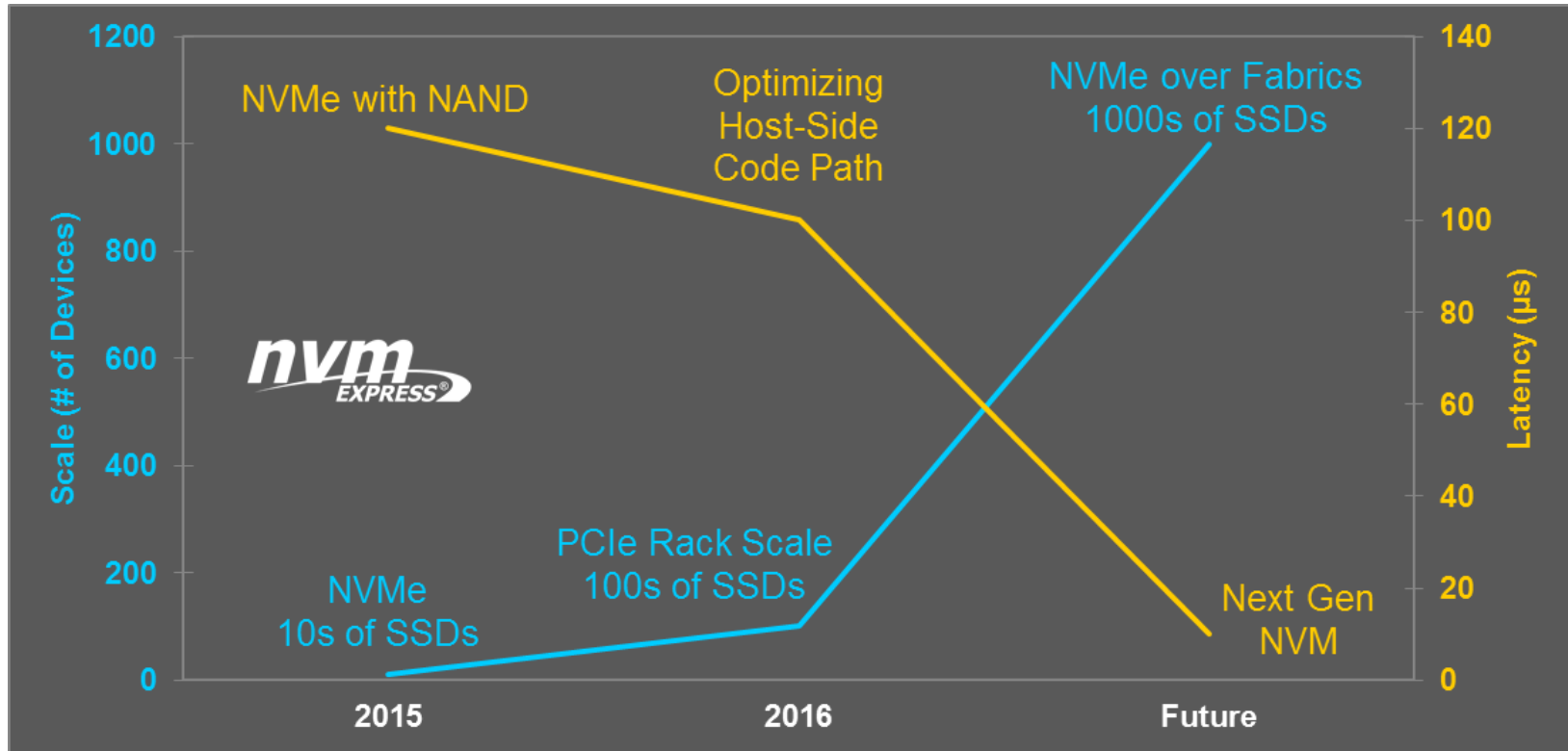Real-world, Hands-on Research & Analysis

NVMe over Fabrics

Common architecture using a storage networking fabric

◆ **Extends NVMe over distance within a datacenter**

◆ **Scales to large numbers of devices**

◆ **Fabrics today include:**

    – **RDMA (InfiniBand, RoCE, iWARP)**

    – **Fibre Channel (FC-NVMe)**

NVMe Host Software

Host Side Transport Abstraction

Fibre Channel

InfiniBand

RoCE

iWARP

Next Gen Fabrics

Controller Side Transport Abstraction

NVMe SSDs

◆ **Demartek**
Real-world, Hands-on Research & Analysis

Why do we need NVMe over Fabrics?

Fabric Technical Requirements

◆ **Credit-based flow control**

   – **Native to Fibre Channel, InfiniBand & PCI Express**

◆ **Low-latency fabric**

◆ **Pass data directly to/from hardware fabric adapter**

◆ **Scale to large numbers of devices**

◆ **Support for multi-host, multi-port & multi-path**

Hot Topic at FMS 2016

◆ **Many product demonstrations**

◆ **Much discussion in the sessions**

Demartek FMS presentations

www.demartek.com/flashmem

Demartek Free Resources

◆ Demartek SSD Zone
  www.demartek.com/SSD

◆ Demartek iSCSI Zone
  www.demartek.com/iSCSI

◆ Demartek FC Zone – www.demartek.com/FC

◆ Demartek SSD Deployment Guide
  www.demartek.com/Demartek_SSD_Deployment_Guide.html

◆ Demartek commentary: "Horses, Buggies and SSDs"
  www.demartek.com/Demartek_Horses_Buggies_SSDs_Commentary.html

◆ Demartek Video Library -
  http://www.demartek.com/Demartek_Video_Library.html

Performance reports, Deployment Guides and commentary available for free download.

Thank You!

Demartek public projects and materials are announced on a variety of social media outlets. Follow us on any of the above.

Sign-up for the Demartek monthly newsletter, *Demartek Lab Notes*.
www.demartek.com/newsletter