NVMe VMware vmklinux Driver

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Agenda

- Status Update
- Driver Architecture
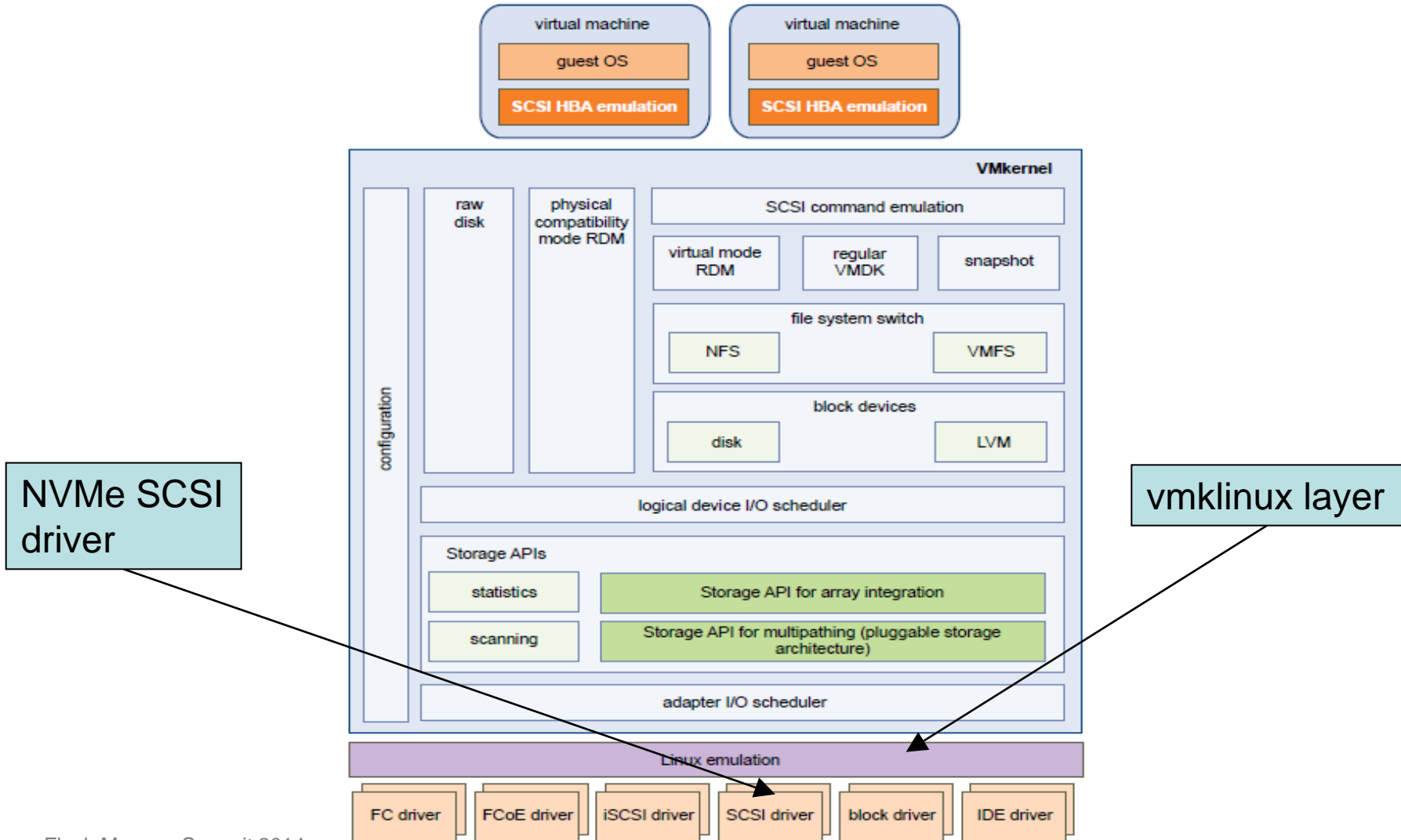- Driver Features
- Future

Status Update

Release 1.0

- Q2 2014 (released)
- Supports ESXi vmkernal 5.0 (beta and release)*
- vmklinux interface *
- SCSI device driver
- Passed 5.0 certification process for local storage with SSD based on PMC NVMe controller

First release
Joint development between VMware and PMC started in Q3 2013

*Other names and brands may be claimed as the property of others.

VMware Storage Architecture

Driver Architecture

Vmkernel SCSI Layer

NVMe SCSI Driver

Initialization(pci probe)

ScsiAddHost

Admin queue setup and Nvme hw initalization

Interrupt setup

IO queues configuration

Scsi scan device

I/O Services

NvmeScsiCommand

NvmeScsiAbort

NvmeQueue_ProcessCq (processing IO completion)

PnP/PM,Error Recovery

Timeout mechanism

shutdown

Char device management

passthrough

reset

Hot add/remove NS

System Features Overview

Features	Supported
NVM Express version	1.0e
ESXi versions	5.0 (beta and release)
NUMA Optimized Queues	Dedicated IO queues per NUMA node Single Admin Queue for all CPU cores
Interrupt	MSI-X only(coalescing not supported)
Queue Arbitration / Priority	Round Robin only 1:1 mapping between Submission and Completion queues
Pass Through	Yes(both Admin and IO)
Multiple Namespaces	Up to 8, Mapped to Bus 0, Tgt 0, LUN 0-7
Registry Parameters	Name Space, Max Transfer Size, Admin Queue Size, IO Queue size
End-to-End Protection	No
NVMe reset	Yes (using ioctl)

Future Features

Need your contribution to write the future

Useful Information

- ## Register with Sourceforge
  - https://sourceforge.net/user/registration

- ## Subscribe to the project update
  - http://sourceforge.net/projects/nvmevmklinuxdriver/

- ## Driver Source Code
  - http://nvmevmklinuxdriver.sourceforge.net/

Thank You!

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