When Good Flash Goes Bad

Fixing Flash Performance Problems in Your Data Center
Who Is Storage Switzerland?

About Storage Switzerland

Storage Switzerland is an analyst firm focused on the storage, virtualization and cloud marketplaces. Our goal is to educate our readers on the various technologies and techniques available to help their applications scale further, perform better and be better protected.

Top Posts

- Product Analysis: OCZ’s Affordable, Enterprise-grade SSDs for Hyper-scale Cloud Data Centers
- The Dirty Little Secret of Storage TCO
- Fresh Posts Who is Storage Switzerland? http://you...
- Unstructured Data is distracting Backup Administrators
- Briefing Note: Removing Tape Pain with B&L Associates Vertices and VaultLedger

- Analyst firm focused on storage, cloud and virtualization
- Knowledge of these markets is gained through product testing and interaction with end users and suppliers
- The results of this research can be found in the articles, videos, webinars, product analysis and case studies on our web site:

http://storageswiss.com
George Crump is the founder of Storage Switzerland, the leading storage analyst focused on the subjects of big data, solid state storage, virtualization, cloud computing and data protection. He is widely recognized for his articles, white papers, and videos on such current approaches as all-flash arrays, deduplication, SSDs, software-defined storage, backup appliances, and storage networking. He has 25 years of experience designing storage solutions for data centers across the US.
Agenda

• What Can Go Wrong With Flash?
• Addressing Flash Performance Issues
• Summary
What Can Go Wrong With Flash?

- Does Not Perform like the Vendor Promised
- Wears out too Quick
- Can’t Scale beyond Initial Use Case
Causes of Poor Flash Performance

● Bad Application
● Bad Network
● Bad Flash Hardware
● Bad Flash Software
Fixing Application Performance

● **Number 1 Challenge:** Proving the Application *is* the Problem
Fixing Application Performance

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- Remove Queries that are no longer needed
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- Remove Queries that are no longer needed
- Remove Index that are no longer needed
Fixing Application Performance

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- Remove Queries that are no longer needed
- Remove Index that are no longer needed
- Remove Batch Jobs or Reports that aren’t needed
Causes of Poor Network Performance
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- Networking Problems with Hyper-Converged Solutions
Causes of Poor Network Performance

- Networking Problems with Hyper-Converged Solutions
- Networking Problems with Shared Storage Solutions
Fixing Networking Performance
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- Upgrade Bandwidth
  16GB FC, 10GB+ Ethernet
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- **Implement a Deterministic Network**
  Data Center Bridging
  Fibre Channel
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- **Leverage QoS for Prioritization**
  Storage QoS is a Requirement
  Network QoS Should be Too
  Eventually we need end-to-end QoS Integration
Fixing Networking Performance

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- Combine Server Flash and Shared Flash
Causes of Bad Flash Hardware
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- In The Software Defined Data Center Hardware Matters

*Especially for Flash Storage*
Causes of Bad Flash Hardware

- In The Software Defined Data Center Hardware Matters
  Especially for Flash Storage

- The Problems with ‘Off The Shelf’ Storage Hardware
  - Not Enough Processing Power
  - Not Enough Internal I/O Paths
  - Not Enough Hard Drives
Fixing Bad Flash Hardware
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- Purpose Built Flash Hardware
  Expensive but Fast
Fixing Bad Flash Hardware

- **Purpose Built Flash Hardware**
  - Expensive but Fast

- **Scale-out Flash Hardware**
  - Hard to start small
  - Needs Parallel Workloads
Fixing Bad Flash Hardware

- **Purpose Built Flash Hardware**
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- **Scale-out Flash Hardware**
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- **Thoughtfully Designed Commodity Hardware**
  - Dedicated I/O Paths
  - NVMe Support
Causes of Bad Flash Software

- Inability to turn on/off certain Software Features
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- Concerns about Deduplication’s Ability to Scale
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- Concerns about Deduplication’s Ability to Scale
- Lack of Feature Completeness leads to Additional Software Purchases
Summary

- Best Method is to “fix” the problem before it happens
- Develop a Performance Planning Process
- Most Performance Mistakes can be fixed by augmenting the Solution – But it will cost $
You Can’t Teach A Kid To Ride a Bike at a Seminar

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