



# Employing Storage QoS to Use Flash Resources Efficiently

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August 2015



Storage Budgets are not  
keeping pace

## Storage QoS

Why do we Need it?



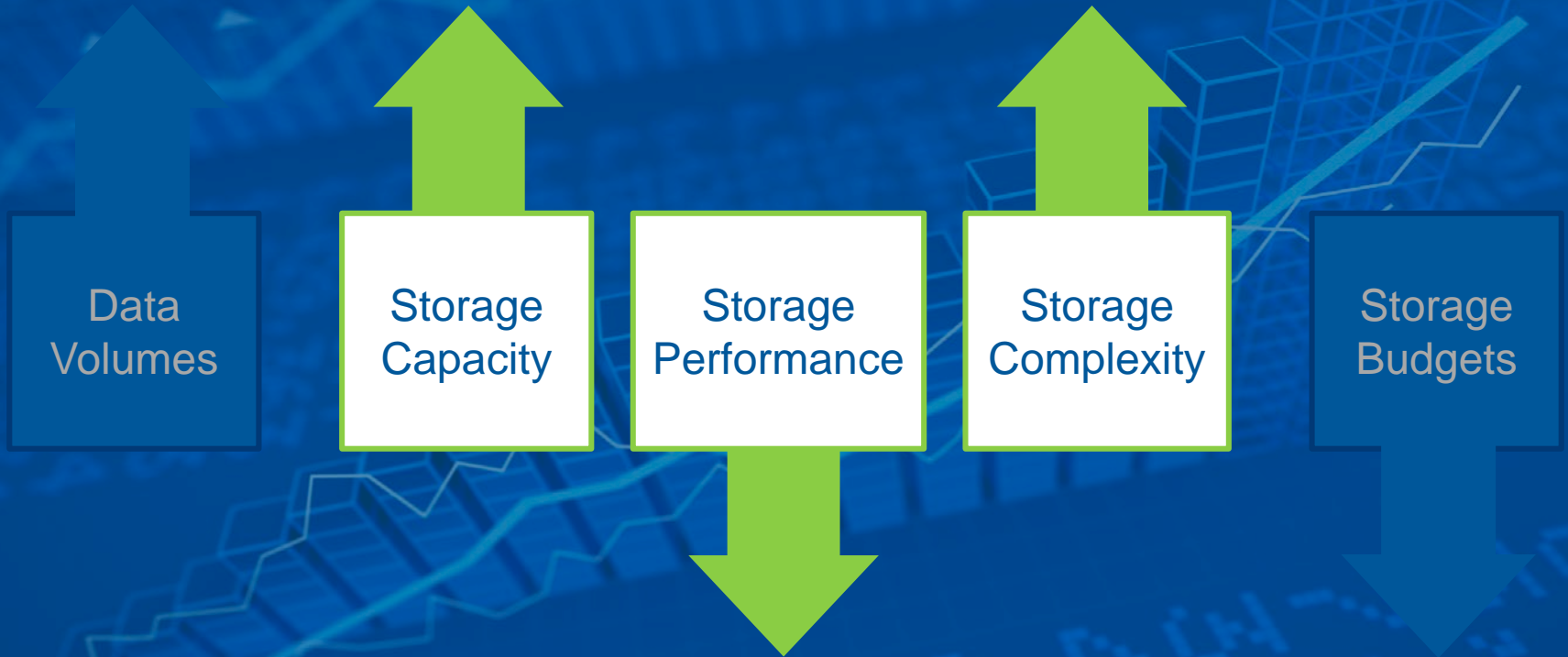
Data  
Volumes

Corporate data increasing at  
50% per year



Storage  
Budgets

# Which Means That



# Rip & Replace

## Single Vendor All-Flash Data Center





But! Flash with Storage QoS

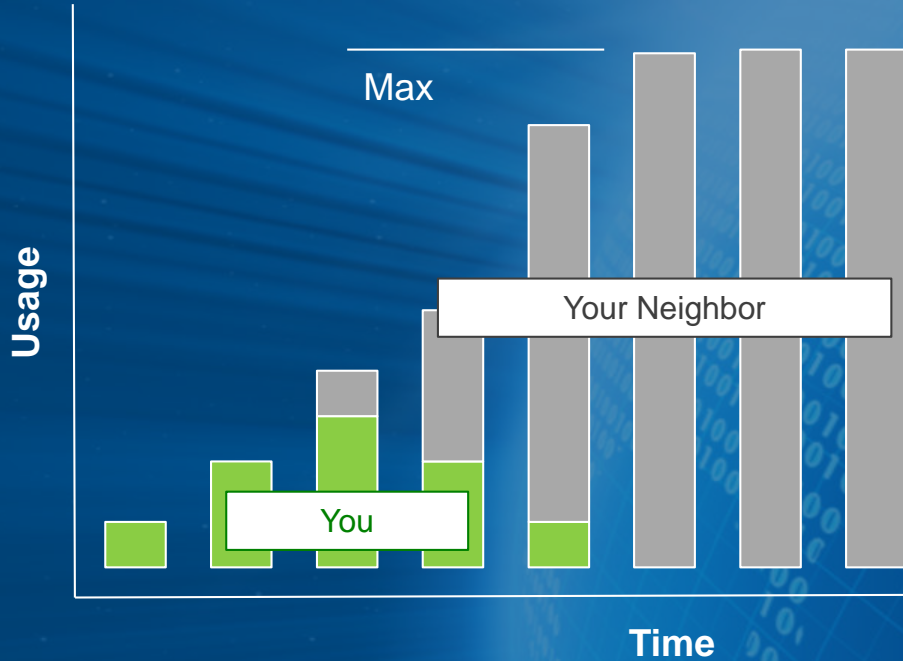
Optimized Use of Flash  
Cost-Effective with No Waste  
No Manual Data Migration



# Storage QoS

## What do we Actually Mean?

# Let's Compare with Home Internet



Result:



Neighbors Game of Thrones Download



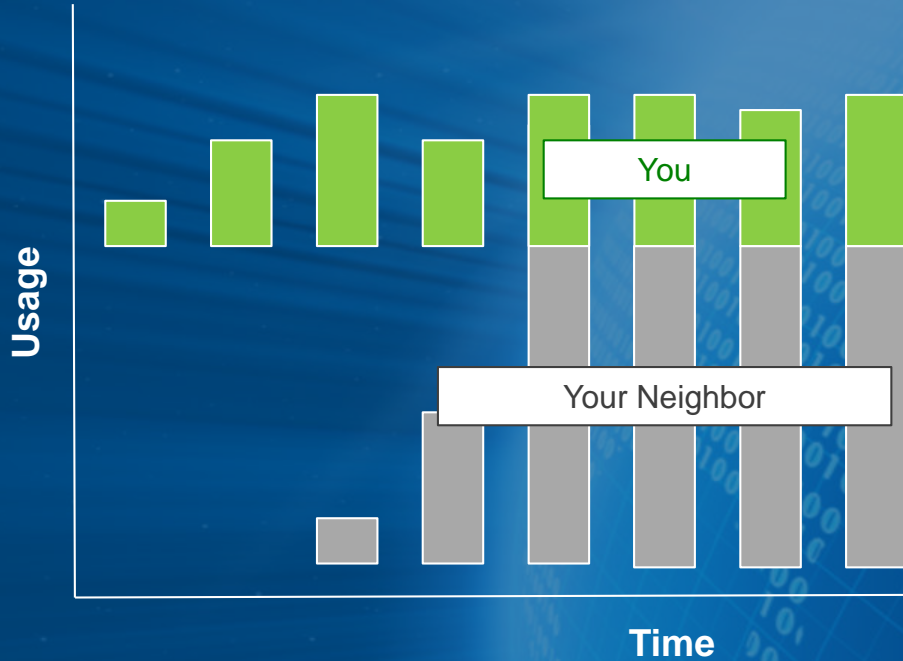
Your Work from the Home Office

# First Come Bandwidth Limits





# Bandwidth Limits



Result:

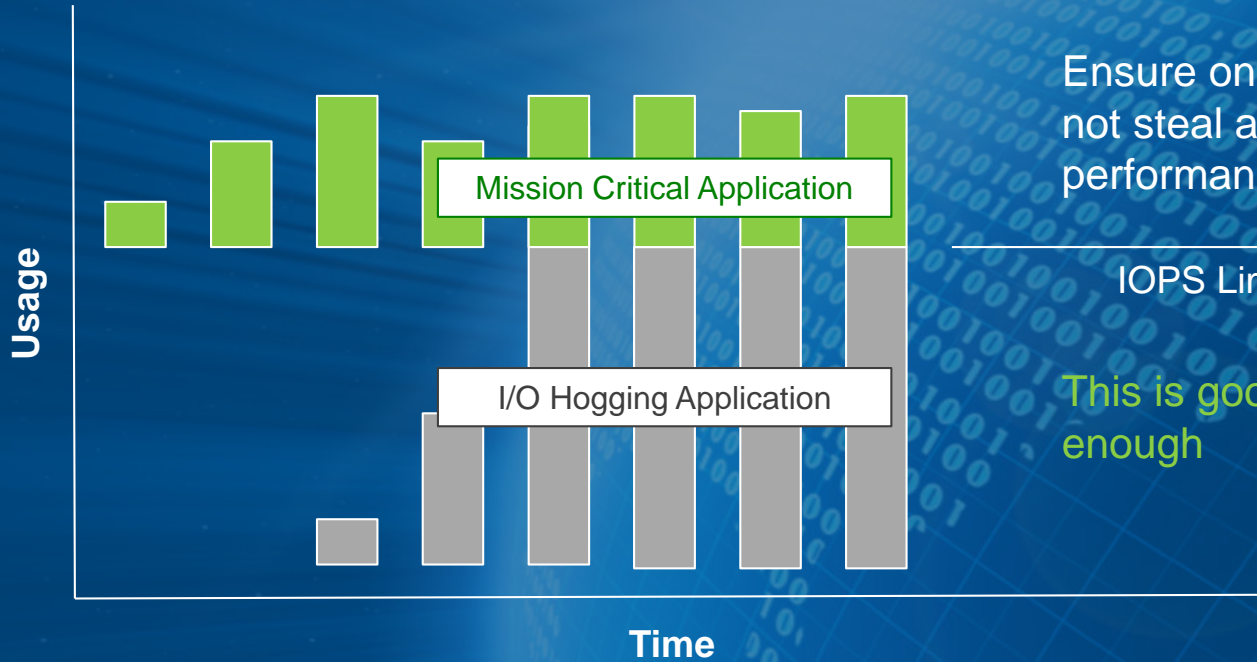


Neighbors Game of Thrones Download



Your Work from the Home Office

# Which is the Current State of Storage QoS

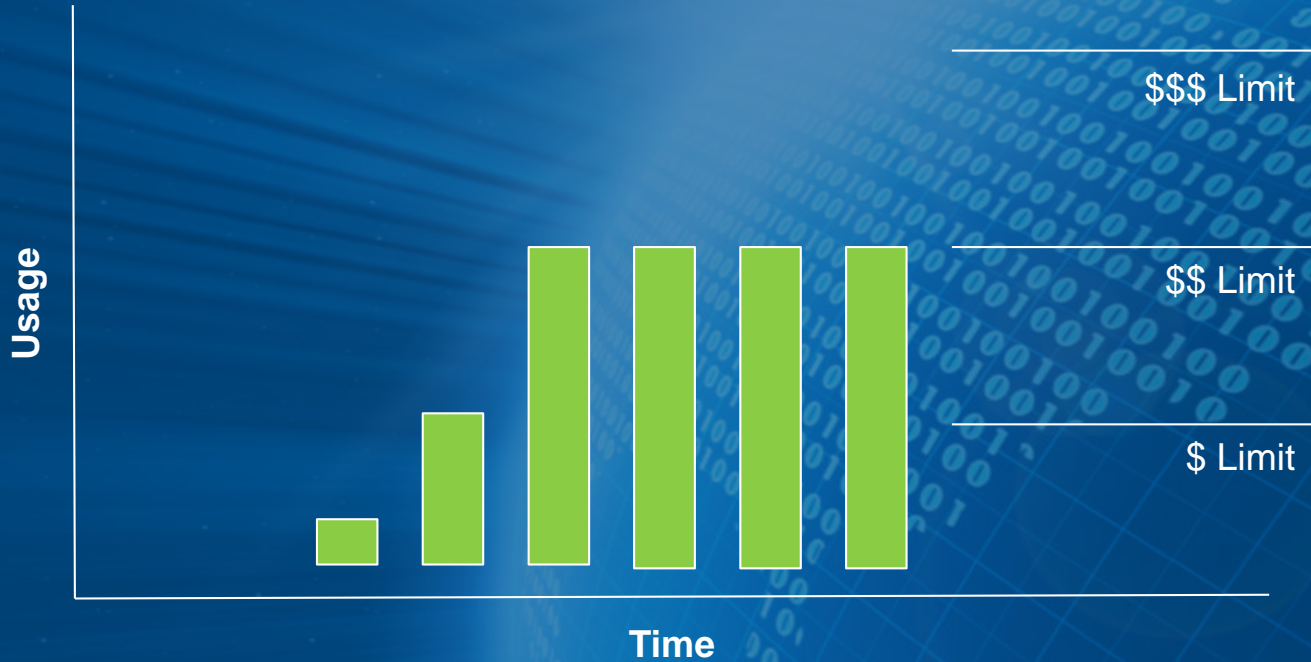


Ensure one application can not steal all the storage performance

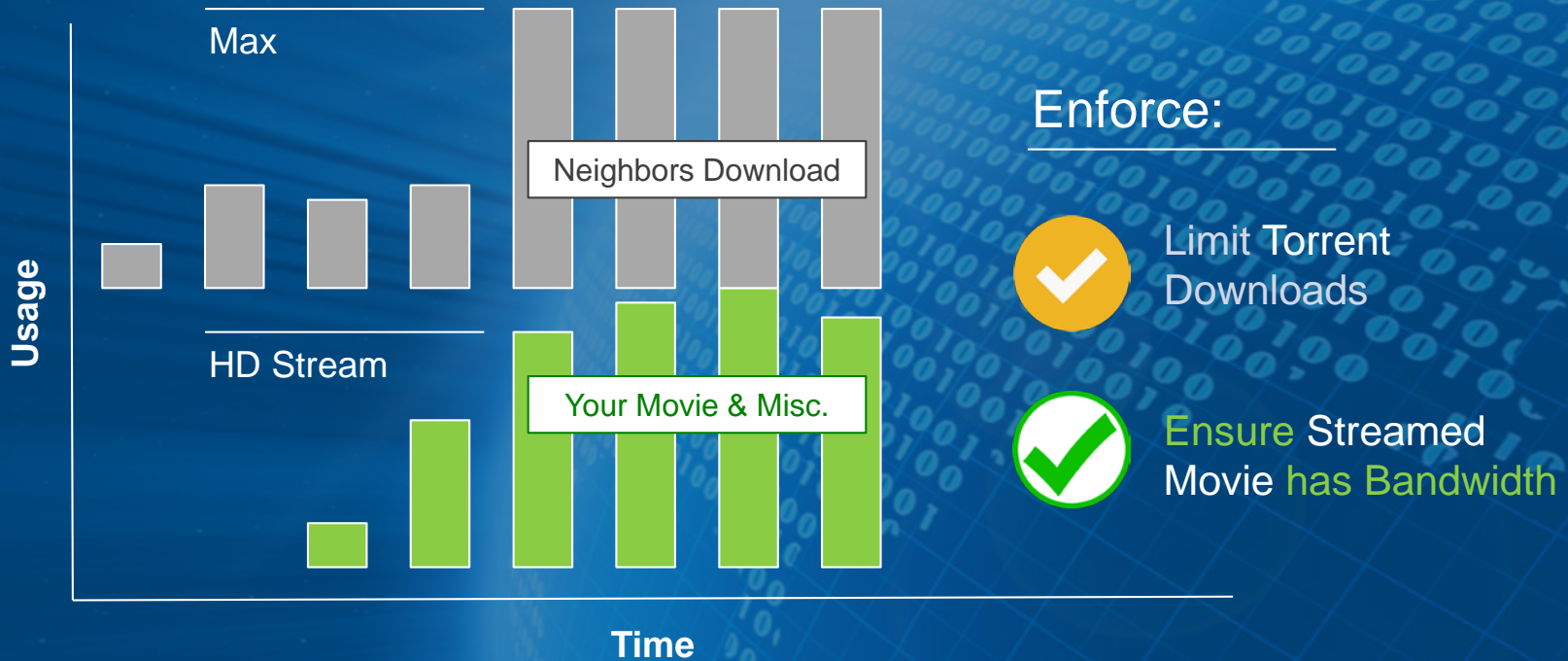
IOPS Limit

This is good, but it's not enough

# But Internet Found a Financial Opportunity



# And a Customer Satisfaction Opportunity



# Storage QoS Needs to Get Here

Define QoS Per Application

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Performance



Capacity



Protection



Profile All Storage Resources

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Flash Media



Hard Drives



Cloud



Utilize All Media to Deliver All QoS

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Active/priority data  
on high-  
performance flash

Stale/archive data  
on inexpensive hard  
drives



# Storage QoS

## Why is it Good for Flash?

# The Cost of Flash

## The Challenge

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The market is conditioned to think \$/GB

Concern of more performance than needed (1M+ IOPS PCIe)

Fear of flash endurance

## The QoS Solution

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**Automatic utilization.** Flash for active data only, stale on HDD

**Shared flash.** Flash becomes a resource that all apps can use

**Best usage.** Writes to high-endurance, reads to lower cost

# The Use of Flash

## The Challenge

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Customers manually deciding what apps, what data

Where to place flash? In the array, an appliance, direct attached?

## The QoS Solution

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**Automatic utilization.** Flash use decided by QoS settings

**Shared flash.** Place flash anywhere and data will move to it based on QoS settings



# The Deployment of Flash

## The Challenge

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Manual migration of application data to flash

Customers still see flash as disruptive

## The QoS Solution

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**Automatic utilization.** No manual provisioning/migration

**Hybrid data center.** Flash front-ends traditional storage systems, seamlessly

# ioFABRIC Vicinity

Flash-optimized software-defined storage  
delivering data center agility and ongoing cost savings through  
industry leading QoS-driven automation  
across existing and future storage investments

“Automation is the key to the  
next generation data center”

– George Crump, Storage  
Switzerland

“QoS means effectiveness,  
storage reuse means  
efficiency: the two main  
buying drivers in IT today”

– Mark Peters, ESG



Q&A

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