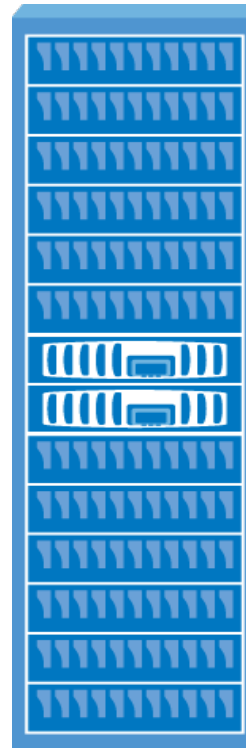# STORAGE ARCHITECTURE Changes with Flash

Amandeep Singh

Storage Architect

Current Storage Architecture.

42U

Dual Controller Architecture

Current Storage Challenges

- Too many arrays for Management and support
- Too much space and Power Consumption
- Tons of capacity for desired Performance
- NFS volumes and NFS datastore.
- FC infrastructure barely used.
- Limited HA.
- Application tied to NFS.

How to overcome Challenges

- Improve hardware utilization.
- Build Heterogeneous Environment (multiple storage vendors)
- VMDK datastore over FC
- Improve Monitoring, Capacity Planning
- Reduce RPO, RTO, ROI, OPEX, CAPEX
- Minimize application integration with backend storage
- Newer Storage Technologies (All Flash, Tiering, Storage virtualization)
- Storage hardware Refresh/Migration

Storage Architecture (Moving Forward)

Block Storage-3par 8u
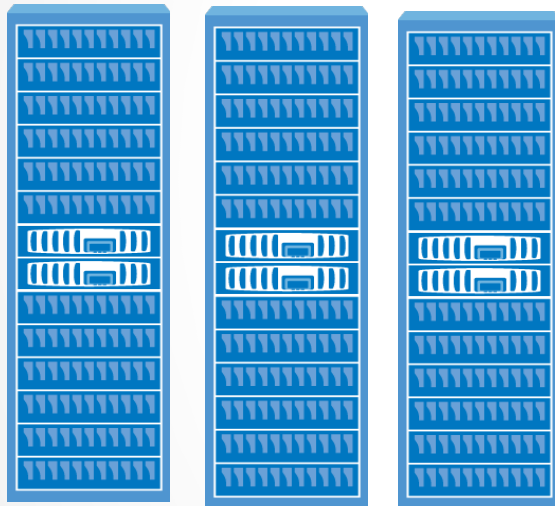
42u+42u+42u=126u
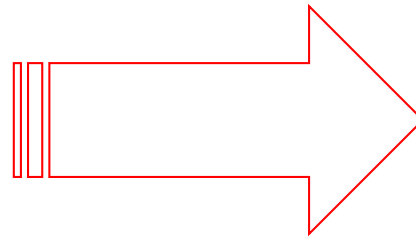
CONFIGURATION LAYOUT

■ 1.92TB SSD SFF

8U

So 126u space will drop to 36u

Collapse Existing Arch with better architecture and start moving vmdk workload.

Pros and Cons.

- Pros
  - Storage Virtualization
  - Efficient utilization of storage resources (better ROI)
  - Tiering (SSD, SAS, SATA)
  - Storage VMotion between arrays still exist (for individual instances)
  - Data Mobility – Transparent to Compute (VMDK level)
  - Enhanced HA with certain configurations
  - Storage Hardware refresh made easy
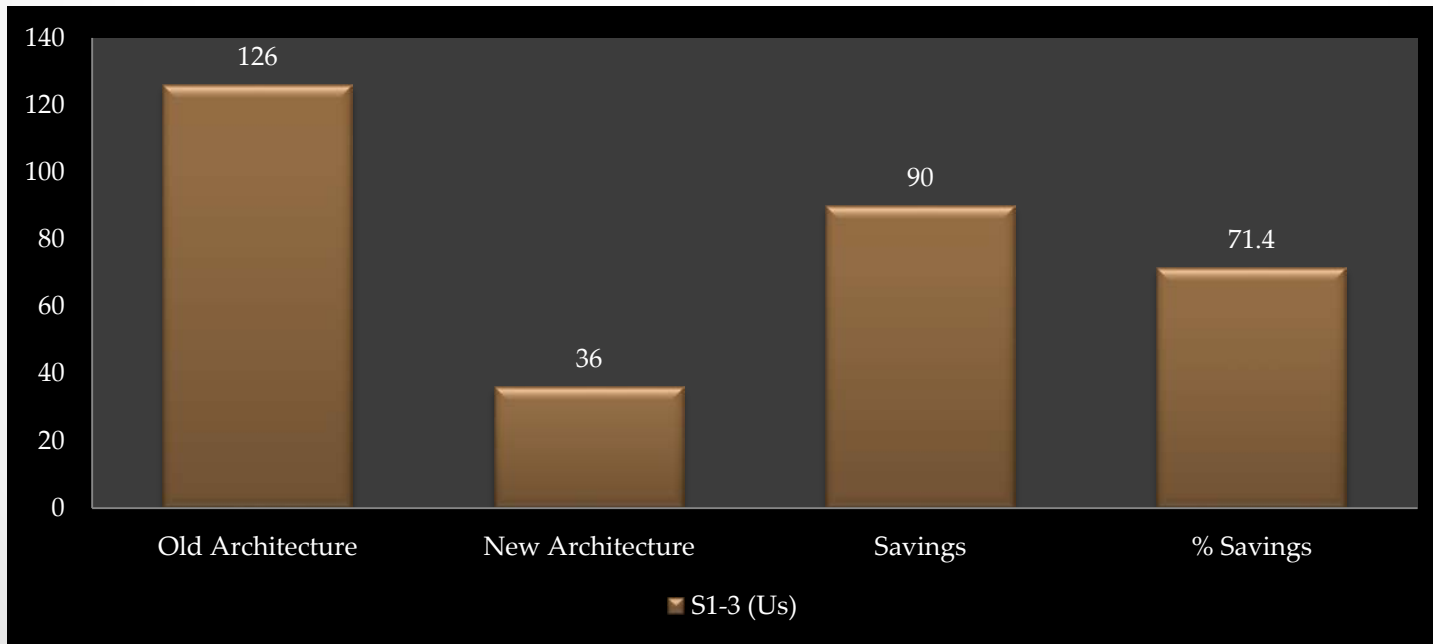
- Cons
  - Heavy Write workloads are still tricky.

Power Savings.

- Power Savings ~70%
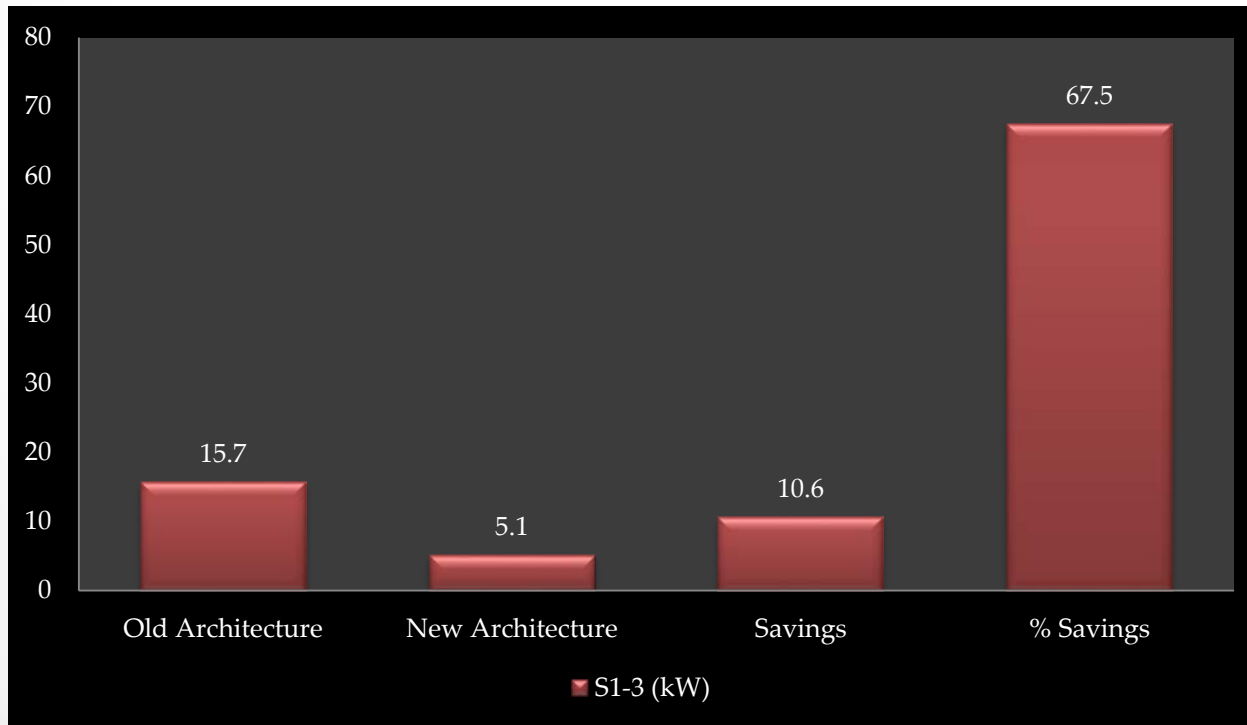
Space Savings.

- Space Savings ~71%

$$ Savings.

$$ Savings 34%