



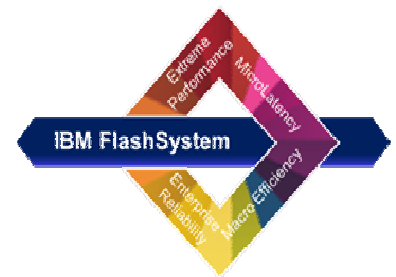
## Transformation For Growth

2014 Consultants &  
System Integrators Interchange

September 17-19, 2014 The Lalit, Jaipur



Compete in  
the Era of  
SMART.



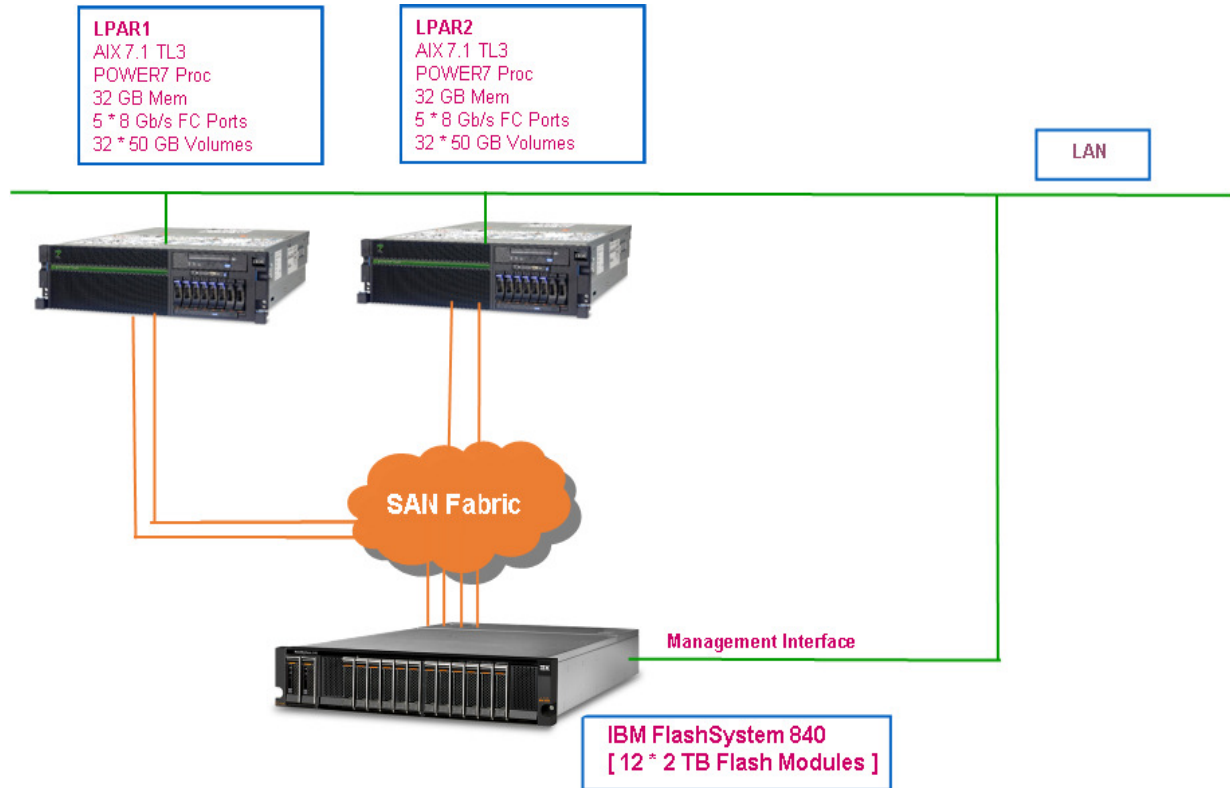
# Experience Center

*Enterprise Performance Solution with  
FlashSystem*

## **Demo Objectives**

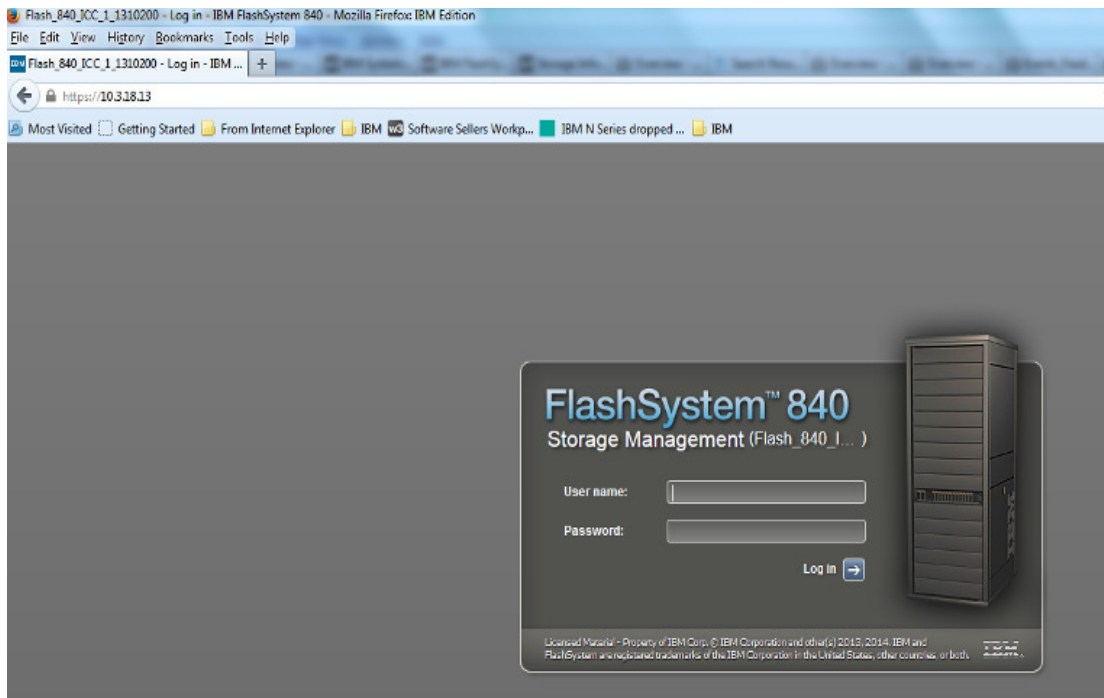
1. Experience extreme Performance of FlashSystem for Read and Write intensive Application Workloads (Simulated)
2. Experience the impact to Application Latency when Extreme I/O's are triggered on FlashSystem

# Demo Environment Details



# Login to FlashSystem

- Open a browser window and connect to the FlashSystem UI with credential and password
- URL: `https://172.21.19.223`



# Check FlashSystem Configurations

Go to Monitoring → System,  
Verify the Capacity Configuration details of FlashSystem



# Verify Hosts and Volume details

Go to Hosts→Hosts and Hosts→ Volume by Host

Observe the Power Servers [Workload Generating App Server]

Observe the Volumes assigned

The screenshot shows the IBM FlashSystem 840 management console. The breadcrumb navigation at the top reads "Flash\_840\_ICC\_1\_1310200 > Hosts > Hosts". The page title is "IBM FlashSystem 840".

Below the navigation bar is a table with the following data:

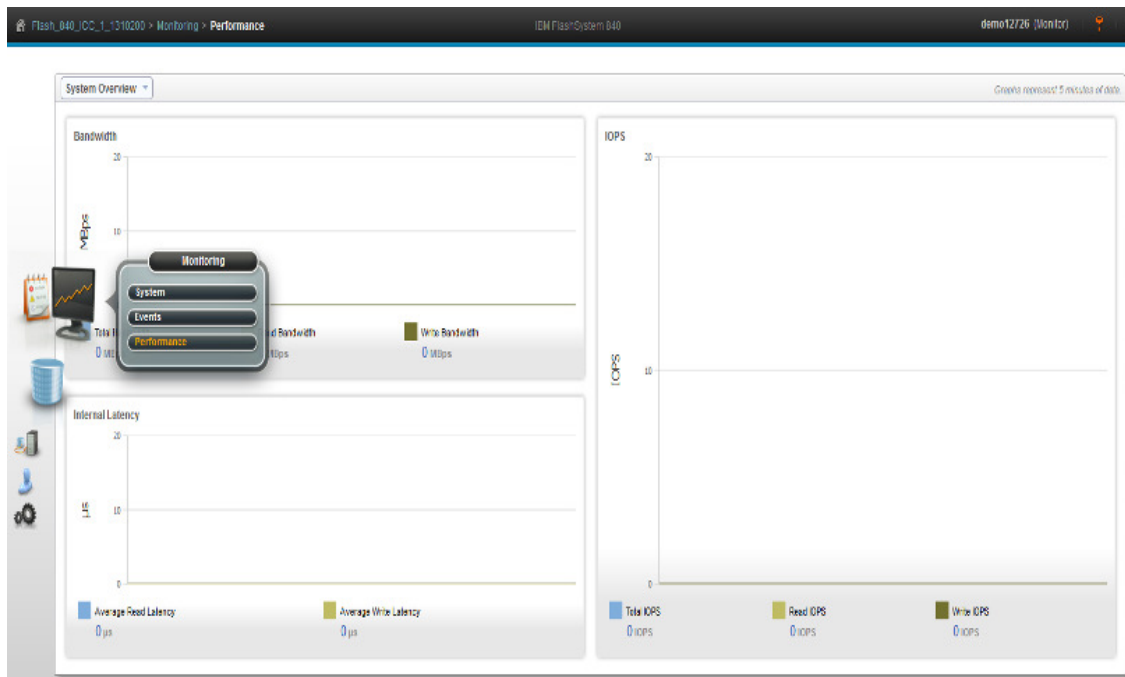
Name	State	Host Ports	Host Mappings
host1	Offline	2	Yes
host2	Offline	2	Yes
SVC	Offline	4	Yes

Below the table is a navigation menu with three options: "Hosts", "Hosts", and "Volumes by Host". The "Hosts" option is currently selected.

# Start Monitoring FlashSystem Performance

Open Real Time Performance Monitoring Window on the FlashSystem Management UI

Go to Monitoring → Performance



## Test Case One

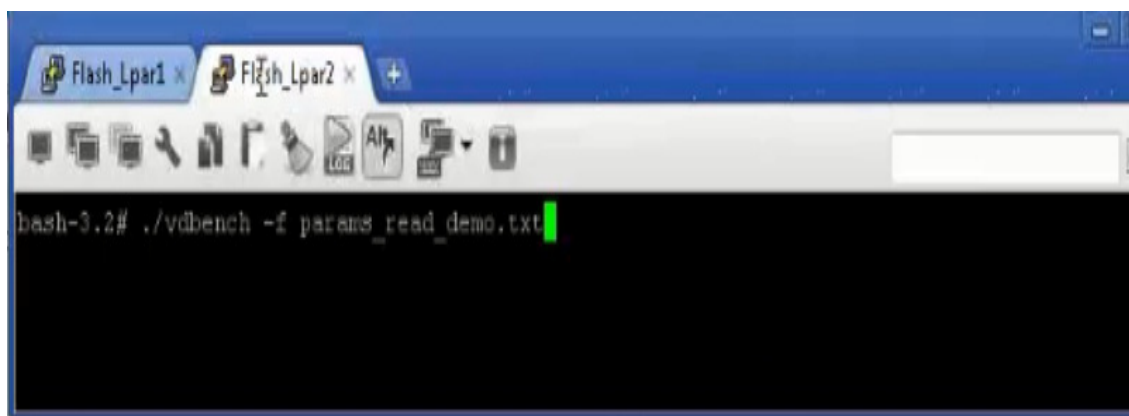
Simulate Application I/O workload on FlashSystem with 100% Read Profile (4K Block Size); the I/O workload would be increased in 100K IOPS increments.

Observe the Latency/Response of FlashSystem to the increase of Read I/O workloads.

### Initiate Test Case -1 [100% Random Read]

1. Run the Vdbench IO load on Power/AIX system LPAR1/LPAR2
2. 100% Random Read of 4K records are simulated at defined IO rate and run time
3. Vdbench Params file params.txt has all the config
4. Run the following commands on LPAR1, LPAR2 :

```
#!/vdbench -f params_read_demo.txt
```





# Monitor FlashSystem Performance

Go to FlashSystem Management UI and Observe for:

- The increase in IOPS and MBps
- Impact to Latency of the FlashSystem Storage Volumes provisioned to applications



# Monitor FlashSystem Performance



# Result of Test Case One

- Observe and note the average Read IOPS and Read Latency
- Observe the quantum of incremental increase in Latency vs. incremental increase in IOPS



**1.1 Million Read IOPS with 200 microsecond latency (0.2 ms)**

## Test Case Two

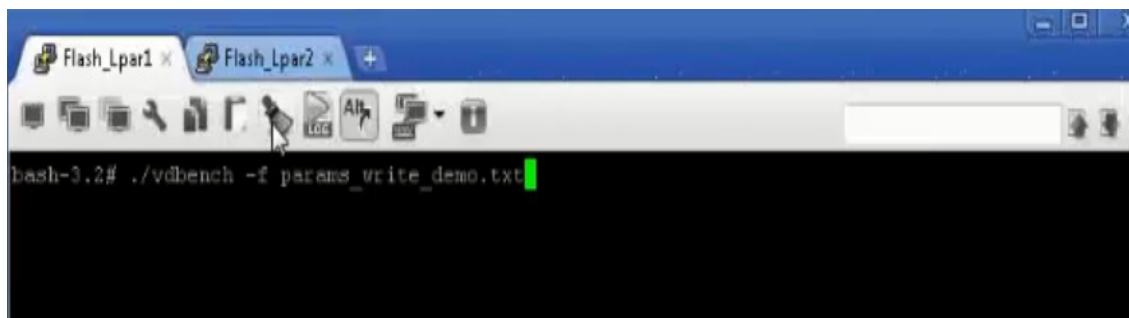
Simulate Application I/O workload on FlashSystem with 100% of Write Profile (4K Block Size); the I/O workload would be increased in 100K IOPS increments.

Observe the Latency/Response of FlashSystem to the increase of Write I/O workloads.

### Initiate Test Case -2 [100% Random Write]

1. Run the Vdbench IO load on Power/AIX system LPAR1/LPAR2
2. 100% Random Write of 4K records are simulated at defined IO rate and run time
3. Vdbench Params file params.txt has all the config
4. Run the following commands on LPAR1, LPAR2 :

**#./vdbench -f params\_write\_demo.txt**



# Monitor FlashSystem Performance

Go to FlashSystem Management UI and Observe for:

- The increase in IOPS and MBps
- Impact to Latency of the FlashSystem Storage Volumes provisioned to applications.



# Monitor FlashSystem Performance



# Result of Test Case Two

- Observe and note the average Write IOPS and Write Latency
- Observe the quantum of incremental increase in Latency vs. incremental increase in IOPS



**0.4 Million Write IOPS with 400 microsecond latency (0.4 ms)**

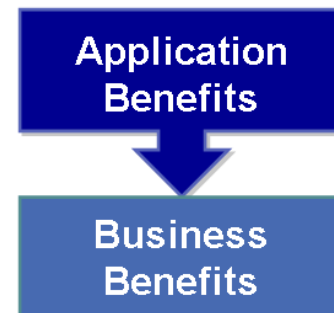
# Backup Content



# Business Benefits of FlashSystem



- **Scale applications** further
  - Do more things with more people/customers/etc
  - Increase "parallel" performance
- **Speed up applications**
  - Do existing things faster
  - Increase "serial" performance
- **Create new applications**
  - Do more things with data
  - More analytics -> more insight
- **Make applications** more efficient
  - Do more with less spindles, CPU cores, license fees, etc

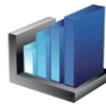


# Application Sweet Spots: Do More, Do it faster!



## OLTP Databases

- Financial, gaming, real-time billing, trading, real-time monitoring, query acceleration (DB2/Oracle), etc.



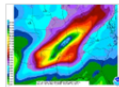
## Analytical applications (OLAP)

- Business intelligence, batch processing, ERP systems, reporting, massive data feeds, etc.



## Virtual Infrastructures

- VDI, Consolidated virtual infrastructures, user profiles, etc.



## HPC/Computational Applications

- Simulation, modeling, rendering, FS metadata, scratch space, video on demand, thread efficiency, etc.



## Cloud-scale Infrastructures

- On-demand computing, content distribution, web, caching, metadata, GPFS, active file management, etc.

