

# SAP Running on an EMC Virtualized Infrastructure and SAP Deployment of Fully Automated Storage Tiering



**SAP TechED Shanghai:**  
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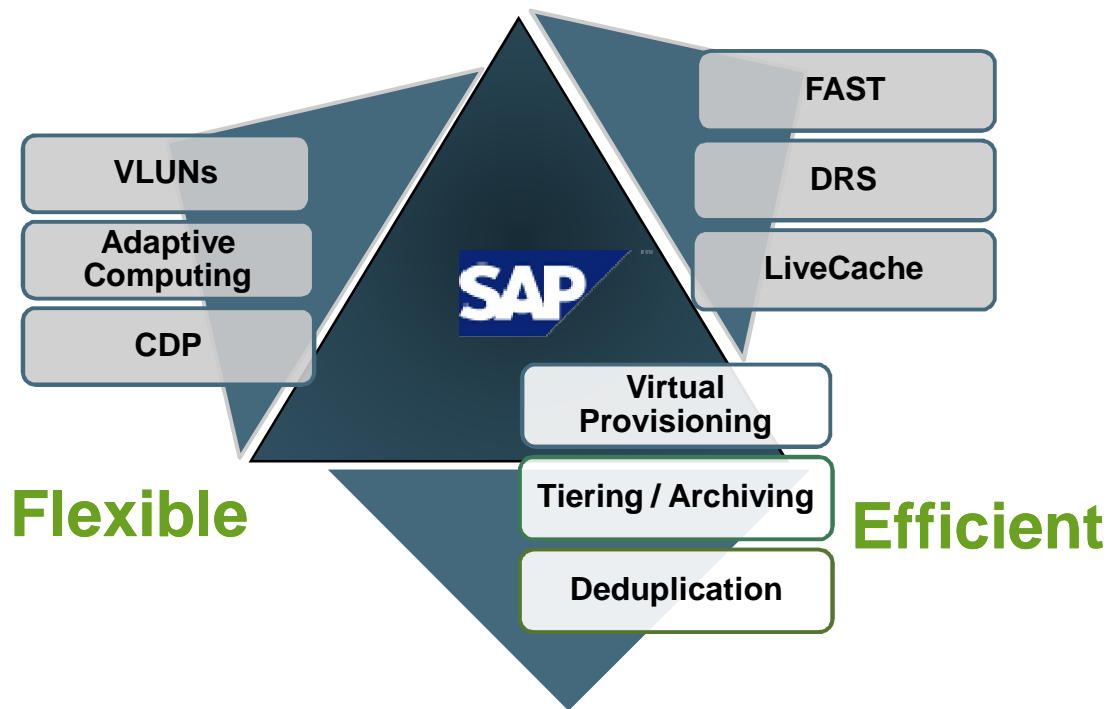


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# Today's Application Requirements



## Dynamically Adaptive



# Agenda



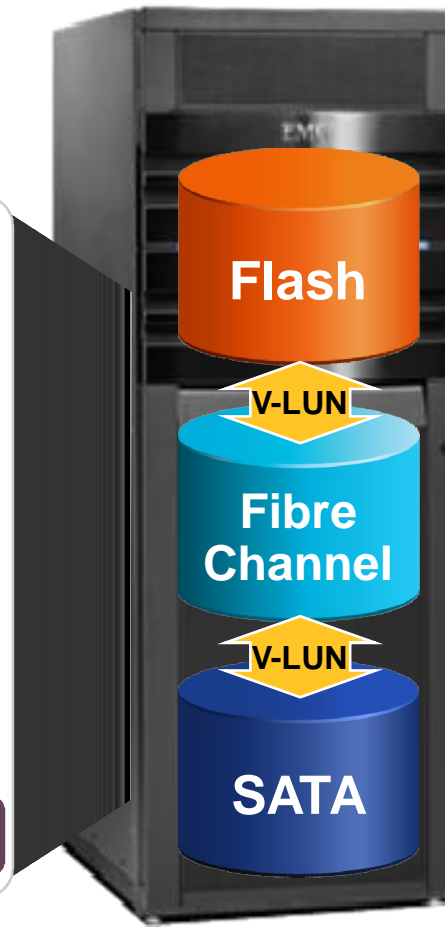
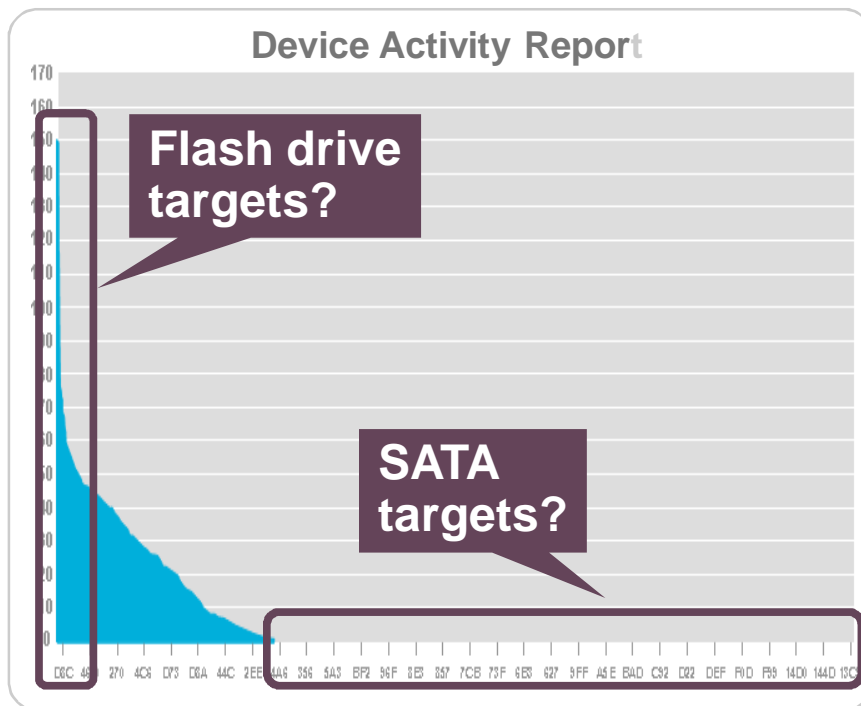
1. Storage Tiering Strategy
  - SAP BW Use Case
2. Fully Automated Storage Tiering (FAST)
  - Benefits
  - FAST futures
3. SAP Virtualized Infrastructure
  - Virtual Provisioning
  - SAP and VPLEX
4. SAP API Integrations
  - SAP Adaptive Computing 7.2 – Application Virtualization
  - SAP liveCache – High Availability

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## Get the right data to the right place



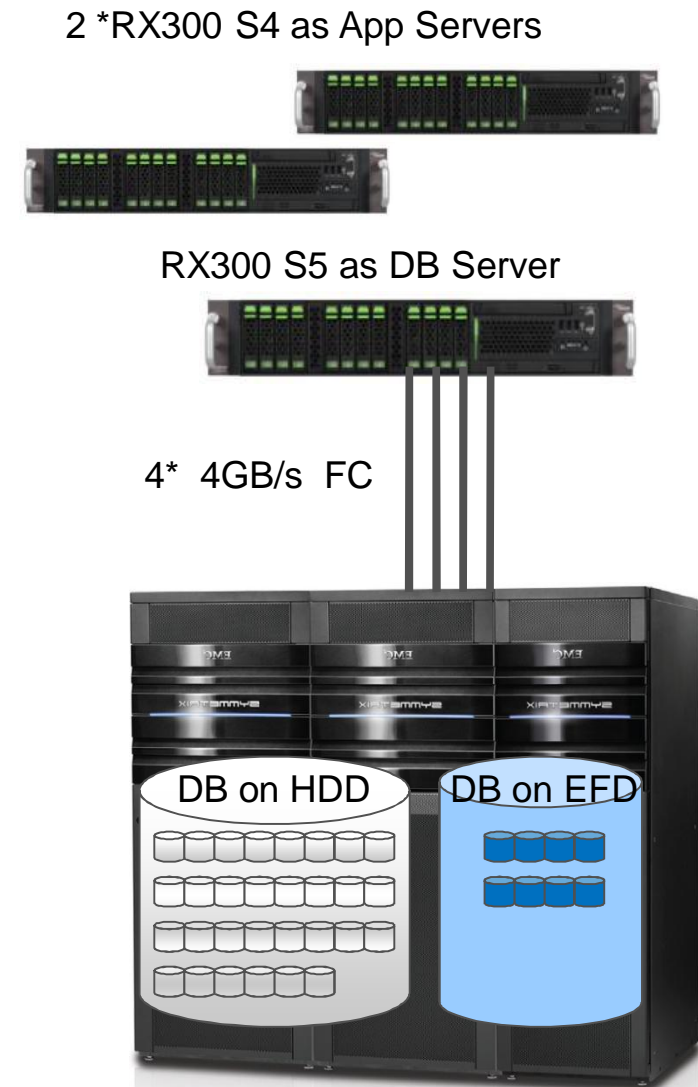
**Faster**  
application  
performance

**Lower**  
storage costs  
and less energy

# Fujitsu / EMC BW Performance Study SAP Center of Excellence – Walldorf



- SAP BW Data Mart Benchmark was used as a basis
  - Only chance to get enough I/O
  - DB size enlarged to approx 2 TB database
  - Two identical systems
- Setup of EMC Symmetrix VMAX
  - Striped on 30\*15k rpm HDD
  - Striped on 8\*EFD (RAID 7+1)
- Benchmark processing through Fujitsu
- EMC experts to analyze VMAX results





# Fujitsu Benchmark Results Symmetrix VMAX Back-End Heat Map

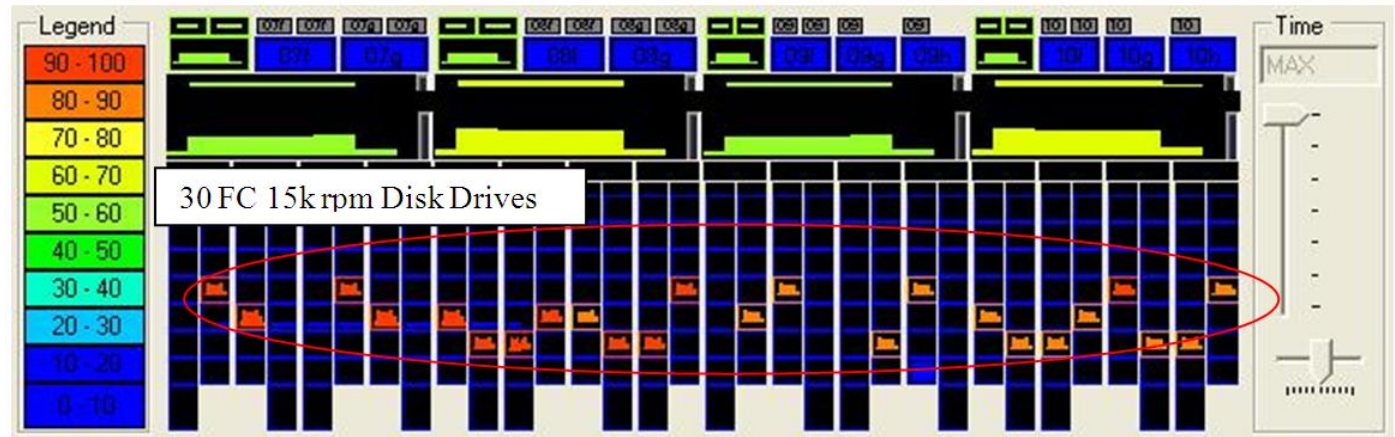


## Drives

- 30 HDDs

## Utilization

- Nearly 100%

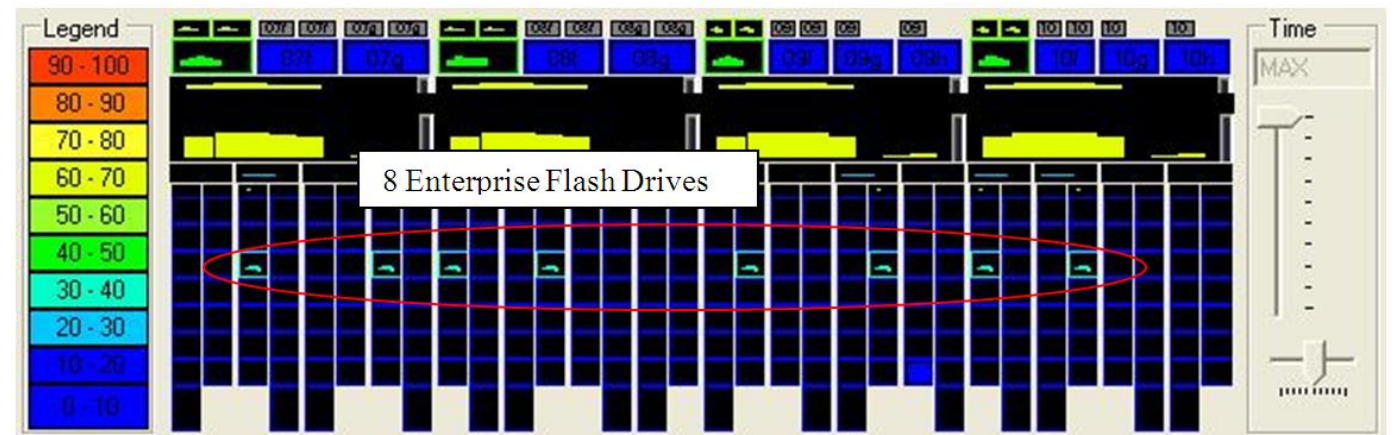


## Drives

- 8 EFDs

## Utilization

- 30%
- Can increase workload and maintain low response time





# Why Manual Tiering for SAP?



EFDs can sustain up to **30 times** the I/O of a typical FC drive

By consolidating high loads on EFD:

- Reduce drive count
- Redeploy drives to other applications
- **Free up** nearly **9 terabytes** of raw disk capacity

## Is it practical to place everything on EFD?

- Manual layout required to drive the benefit of taking advantage of:
  - EFD for high performance
  - HDD for performance and capacity
  - SATA for high capacity

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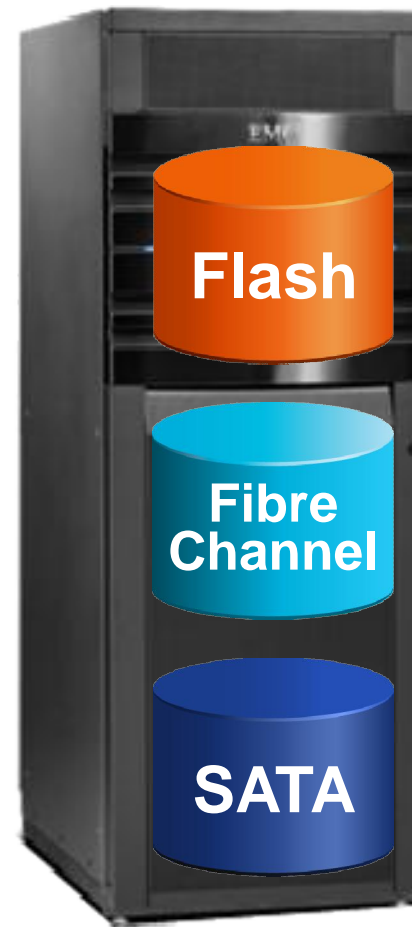
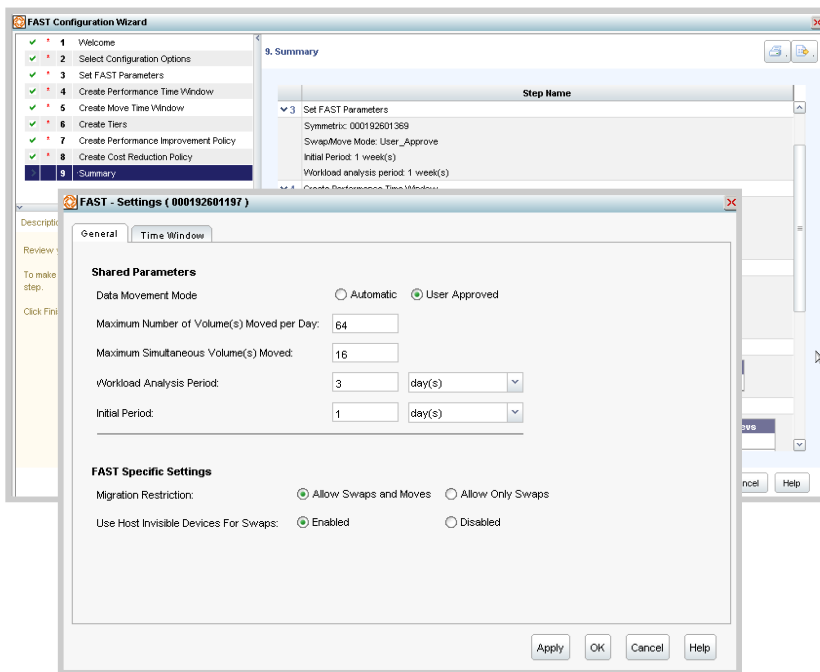
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# FAST Makes It Easy and Automatic



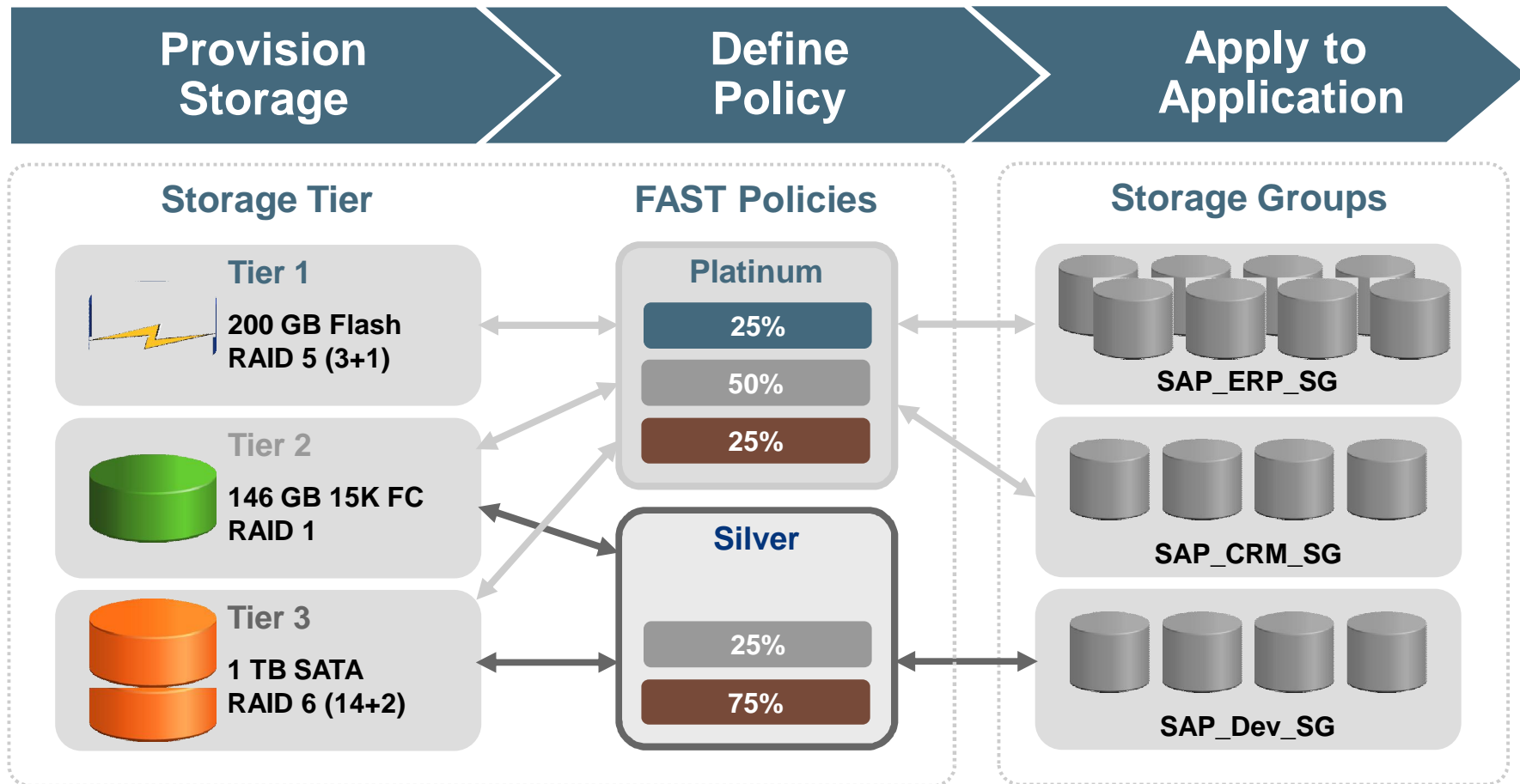
## Fully Automated Storage Tiering

Get the right data  
to the right place  
...at the right time



FAST wizard  
allows users  
to set up and  
apply storage  
tiering in  
minutes

## FAST Made Simple



ERP: This month's SD transactions

ERP: Customer master data

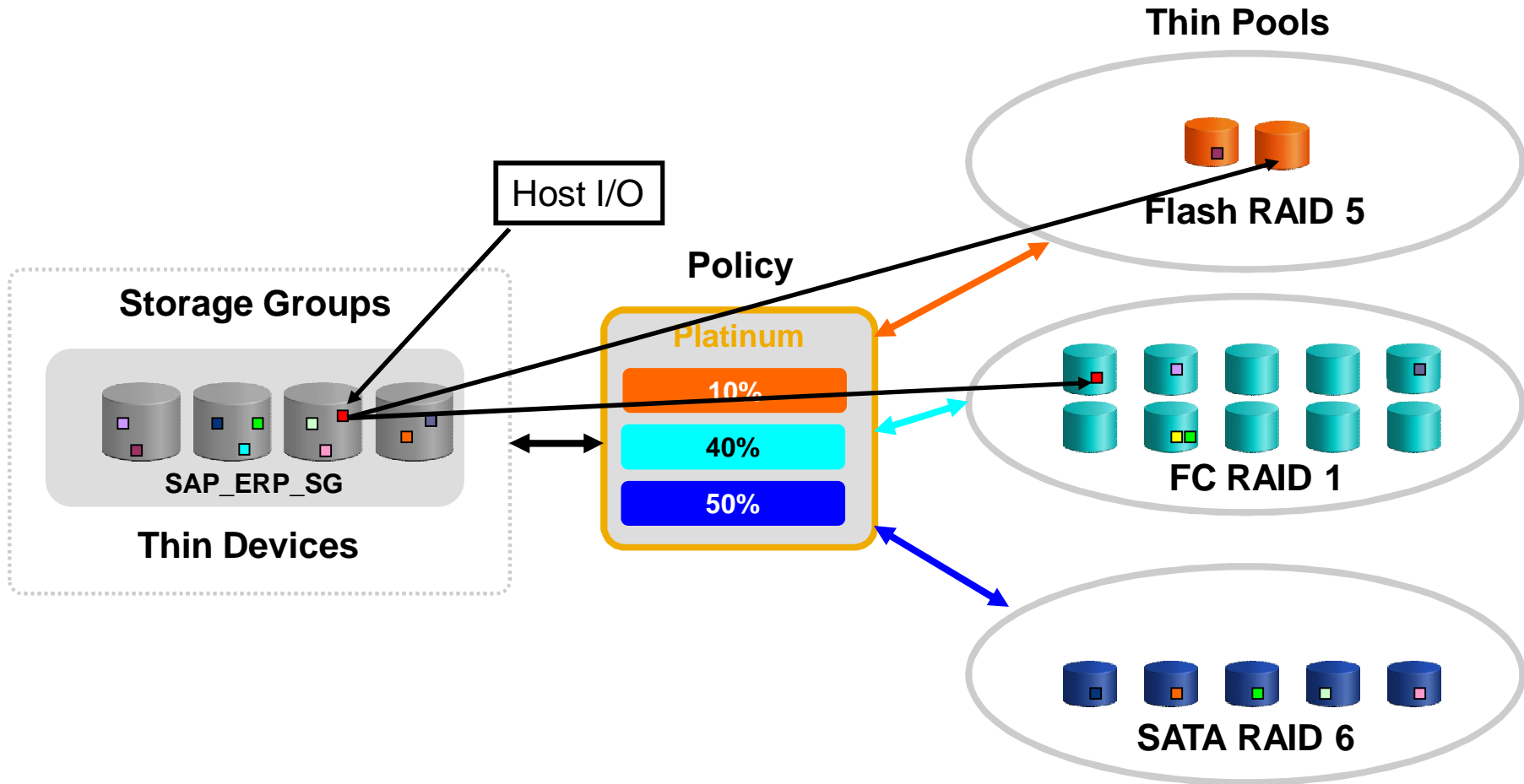
BI InfoCubes

XI/PI System

SAP Executables

Non-production Copies

# Virtual Provisioning with FAST VP At a Glance...

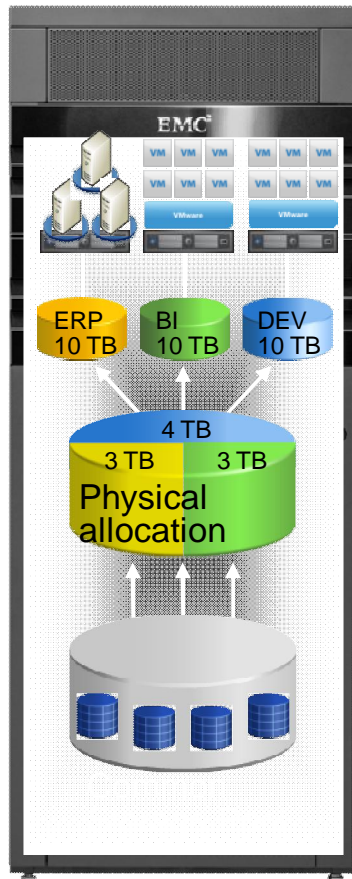


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- Reduce total cost of ownership
- Increase capacity utilization
- Simplify storage management
  - Easier data layout with wide striping
  - Fewer steps to accommodate growth
- “Storage on Demand” concept
  - Allocate SAP requirements initially
  - Storage Administration adds storage as needed
  - No downtime for SAP
- Enables quick response for storage growth
  - Application and/or virtual machine stay online without disruption
- Advanced alerts to monitor storage utilization

# Virtual Provisioning Basics

## Example

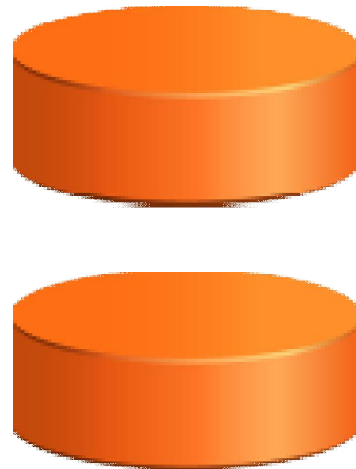


Present Thin Devices to Host



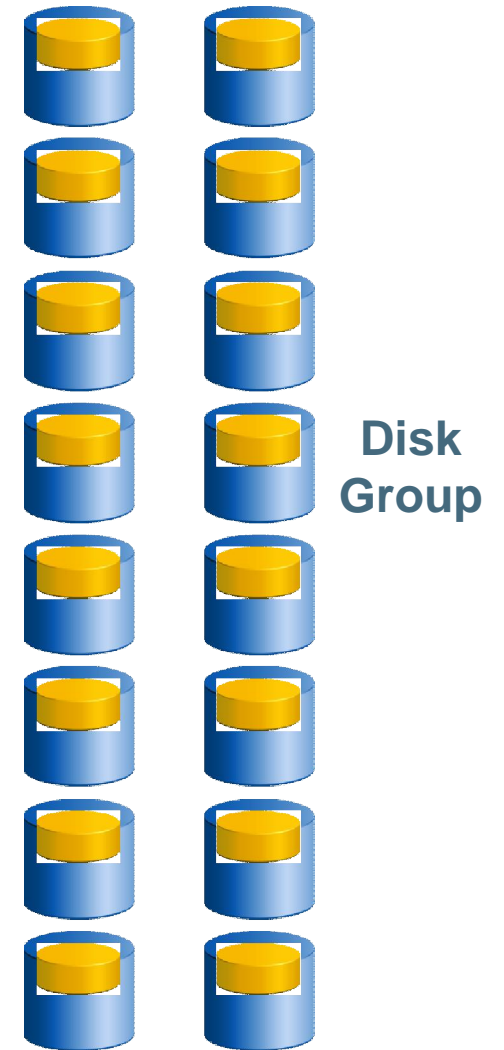
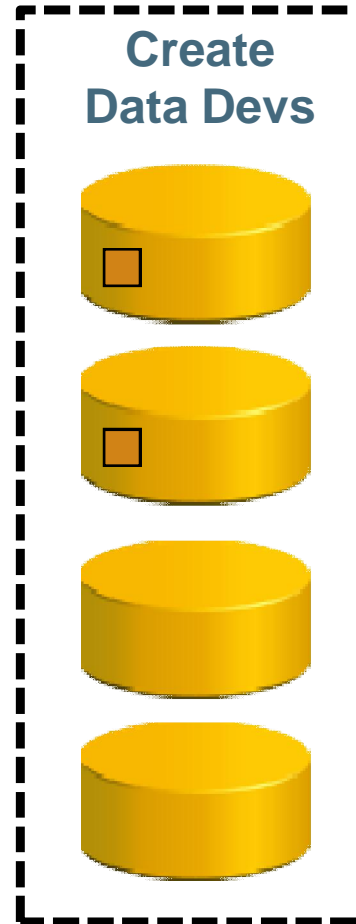
Create Thin Devices

Bind Thin Devices to Pool

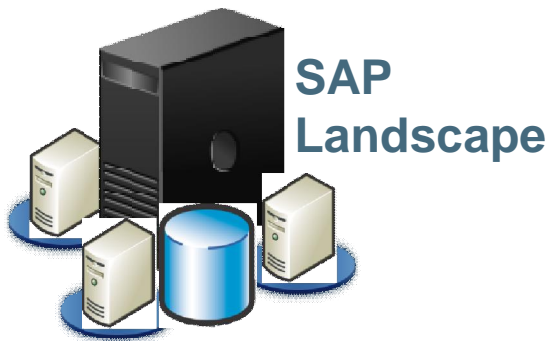


Create Thin Pool and Add Data Devs

Create Data Devs

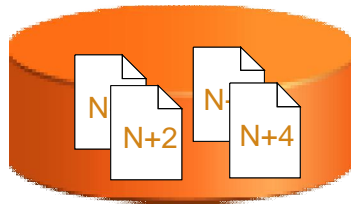


# Automated Pool Rebalancing



## Thin Devices

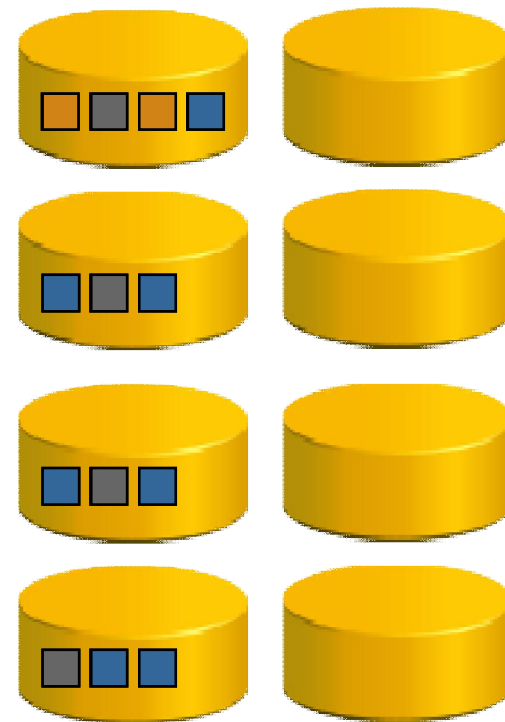
Database Logs



Database Data



## Thin Pool



# Why Virtual Provisioning for SAP?



Provision **full future capacity** immediately for new SAP systems

- Storage can be added to pool as required
- Monitoring and alerts for growth in pools

Add **capacity and performance**

- Data is striped across Symmetrix VMAX pool
- Pool rebalancing
- Space reclamation

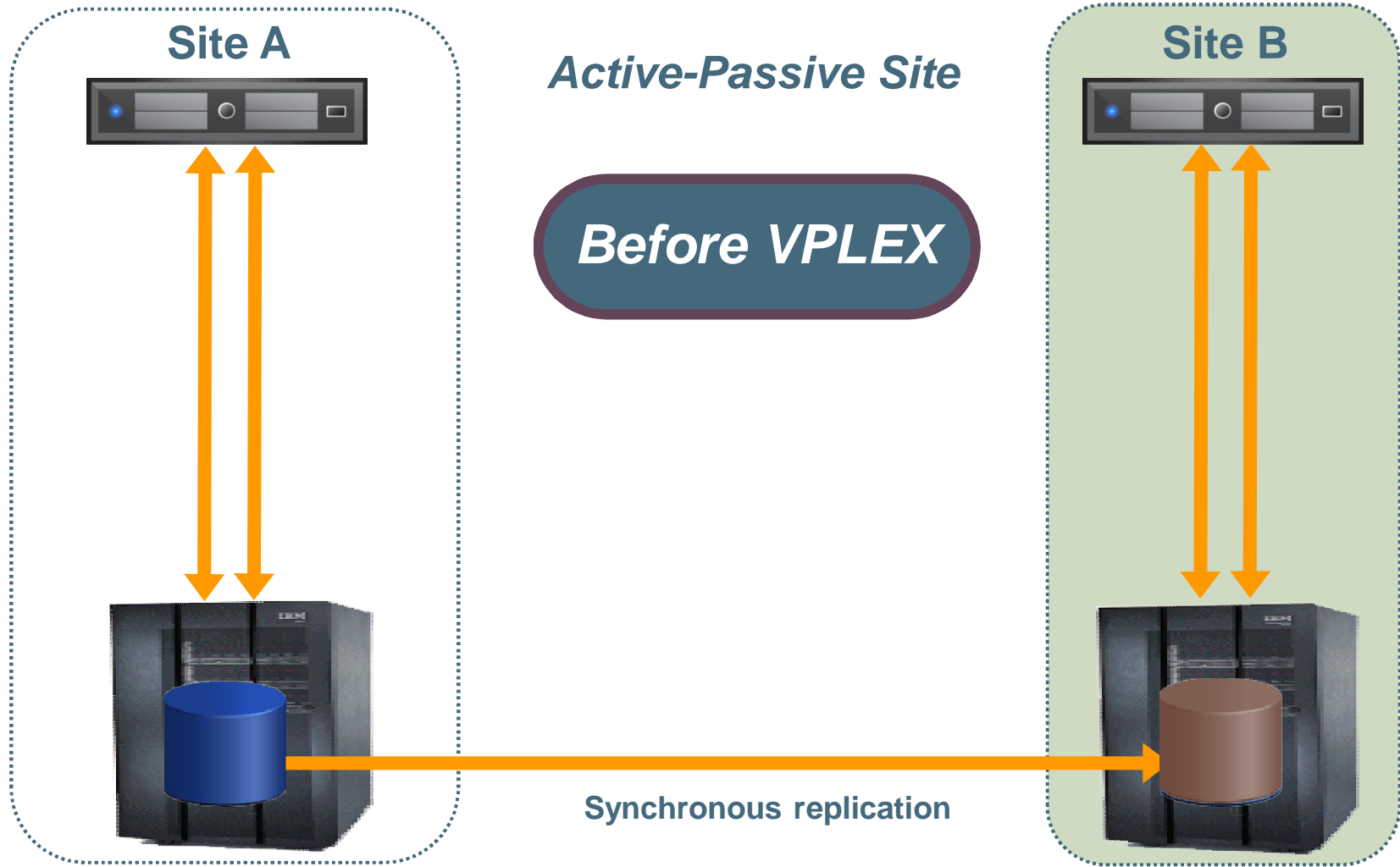
**Manage** SAP systems in separate pools or in a single pool

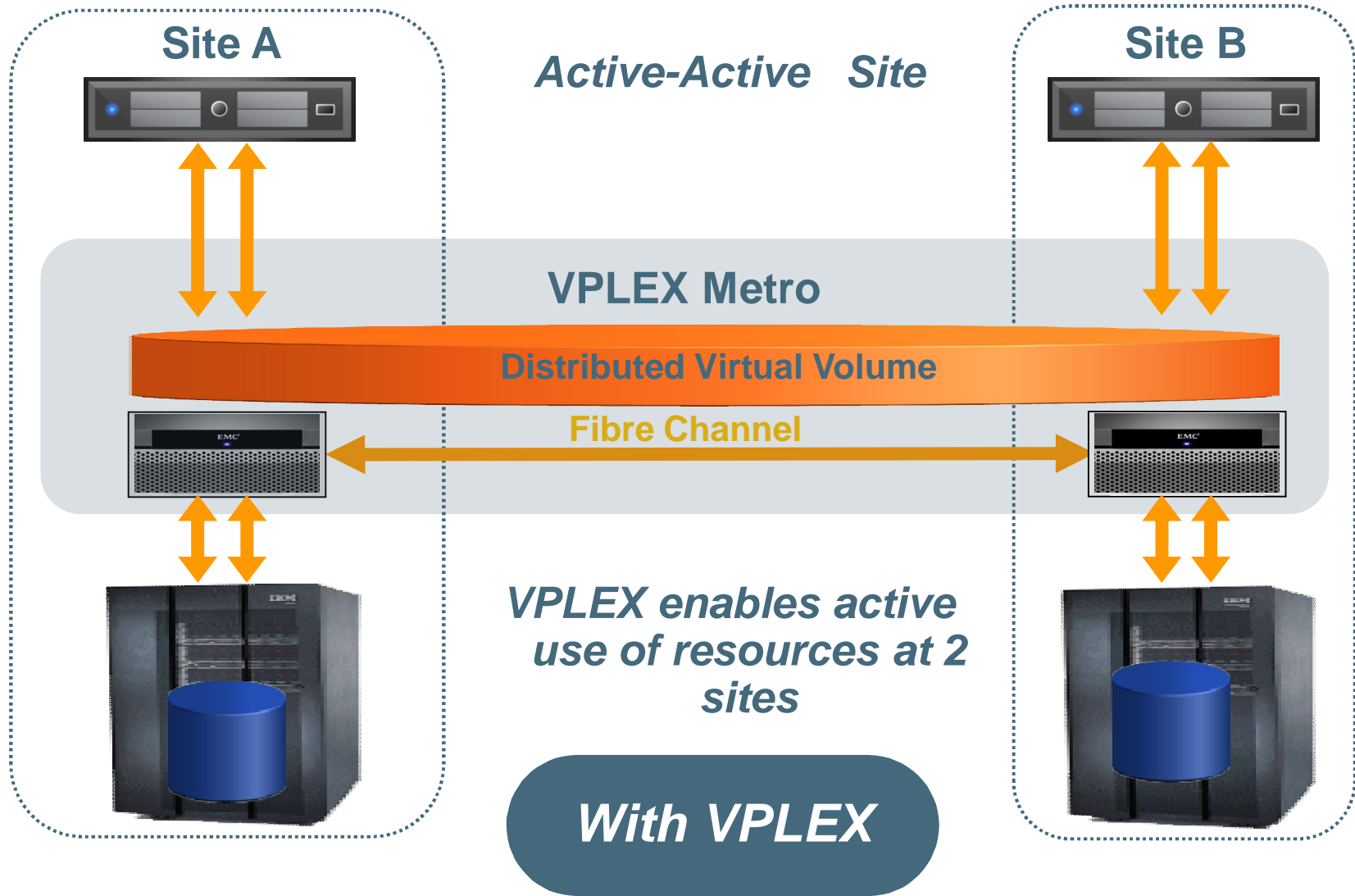
- Separate pools based on your SAP landscape
- Data and log in separate thin pool, but same data pool to gain performance benefit from wide striping

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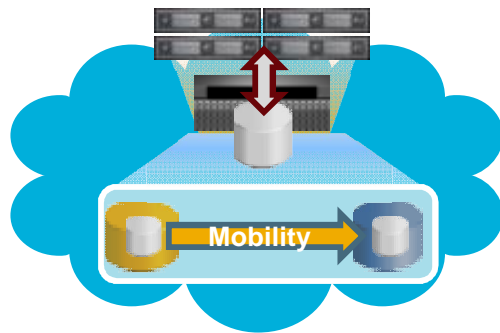
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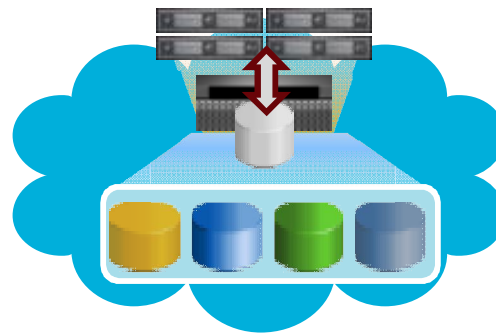
## Mobility between EMC and non-EMC arrays



Value

**Simplify reoccurring data movement**

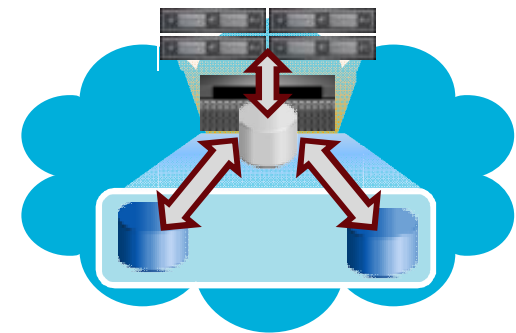
## Simplify Multi-array Storage Management



Value

**Aggregate capacity & improve utilization**

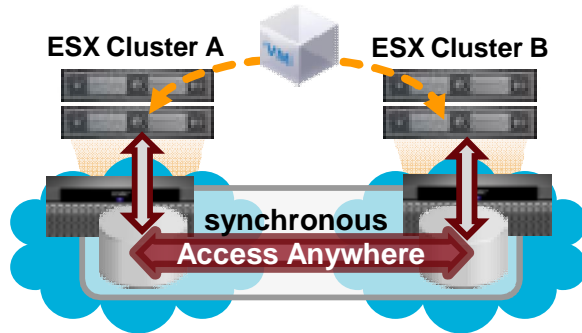
## Meet Critical SLAs



Value

**Increase availability during failures**

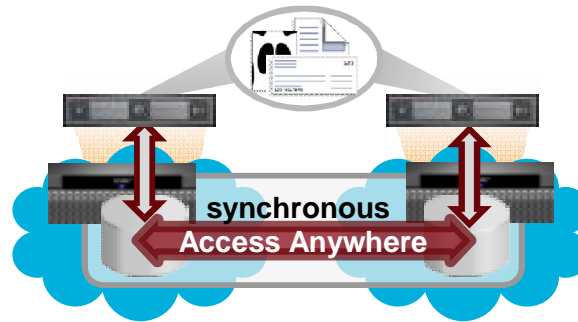
## Move Applications Seamlessly



Value

Transparently share and balance resources between data centers

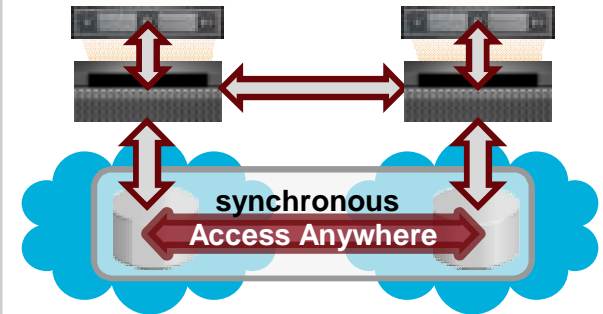
## Federated Storage Over Distance



Value

Instant data access to support remote users in real time

## Meet Critical SLAs



Value

Increase protection to reduce unplanned application outages

## Why VPLEX for SAP?



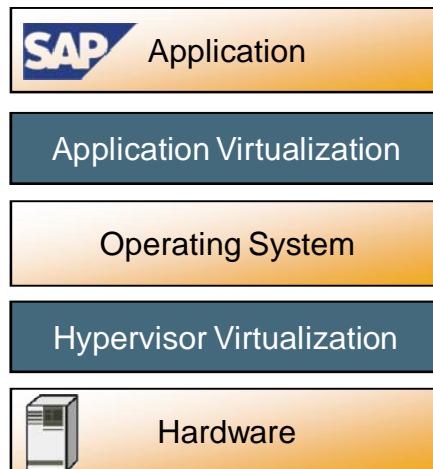
- **Active – Active** storage virtualization
  - Increase availability
  - Simplify data movement with no application changes
- Provide **local access** to remote users
- **Share and balance** resources between Data Centers
- **Simplify** multi-array storage management

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- Hardware abstraction for SAP systems
- Central point of control
  - With/without application or hypervisor virtualization
  - Basis can also manage hypervisor layer (7.2)
- Application-aware mass operations



- Single Start & Stop
- Mass Start & Stop
- Relocate (single or mass)
- VM relocate

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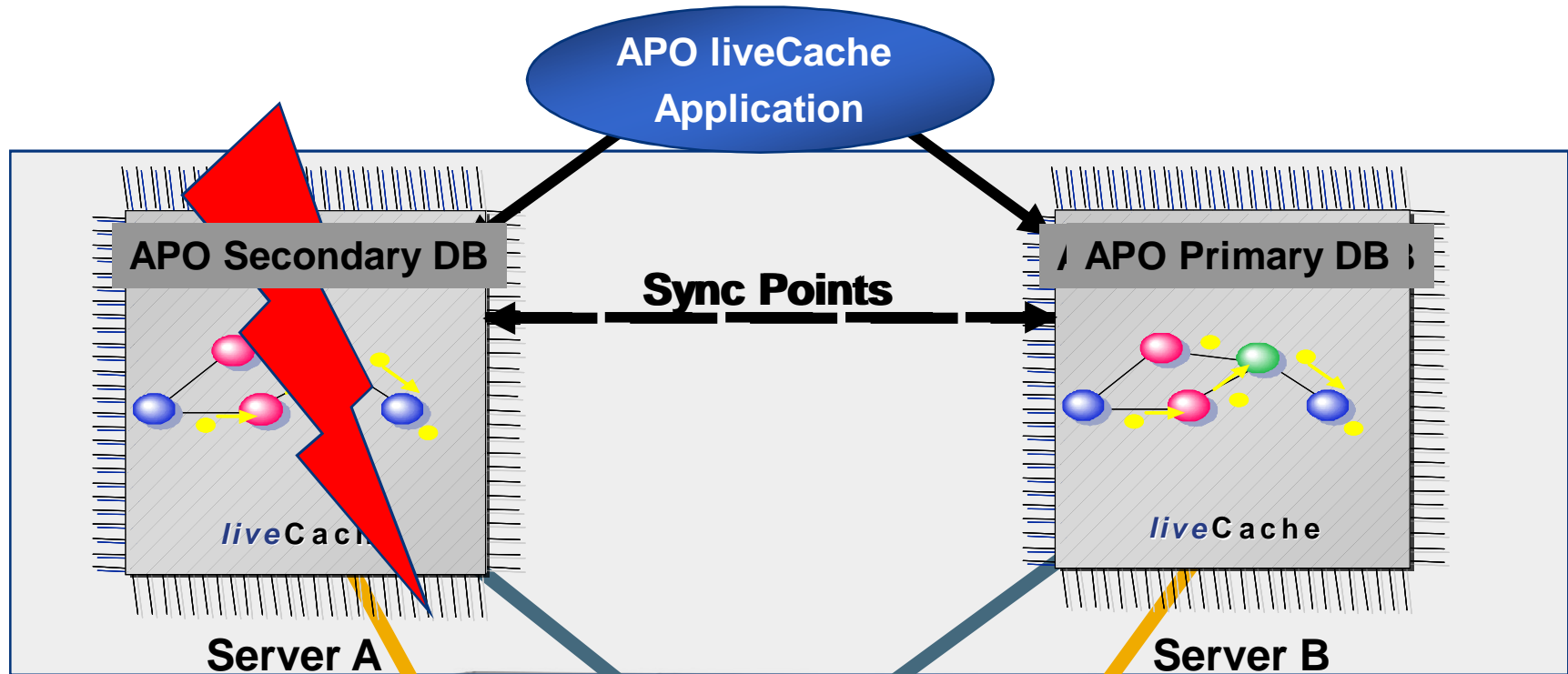
# What Is SAP liveCache?



- Used within the Supply Chain Management Application
- Combined relational and object-oriented database technologies
  - SAP Advanced Planner and Optimizer (APO) liveCache
- Hybrid database system can process enormous volumes of information, such as planning data for supply chain management
- Integration works on MaxDB hot standby configuration without liveCache

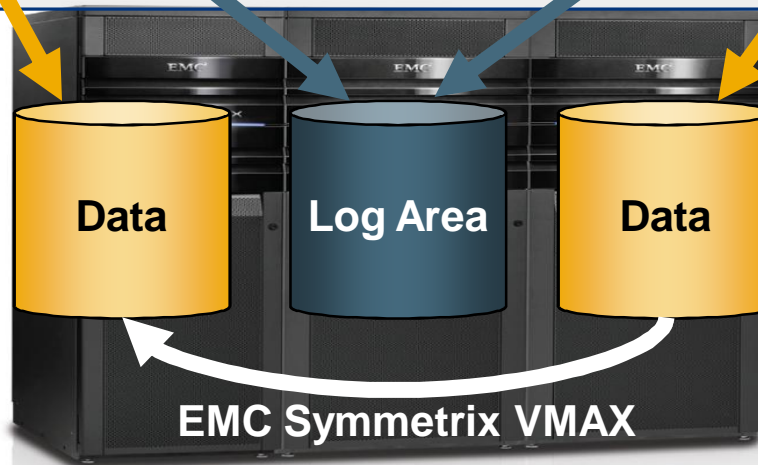


# SAP liveCache / MaxDB Hot Standby



1. APO Ic sends Sync points
2. 2<sup>nd</sup> DB updated
3. If server fails, 2<sup>nd</sup> DB provide continuous restart

4. DB Personality swaps automatic
5. If sync point not maintained, then EMC clones data devices
6. Automatic



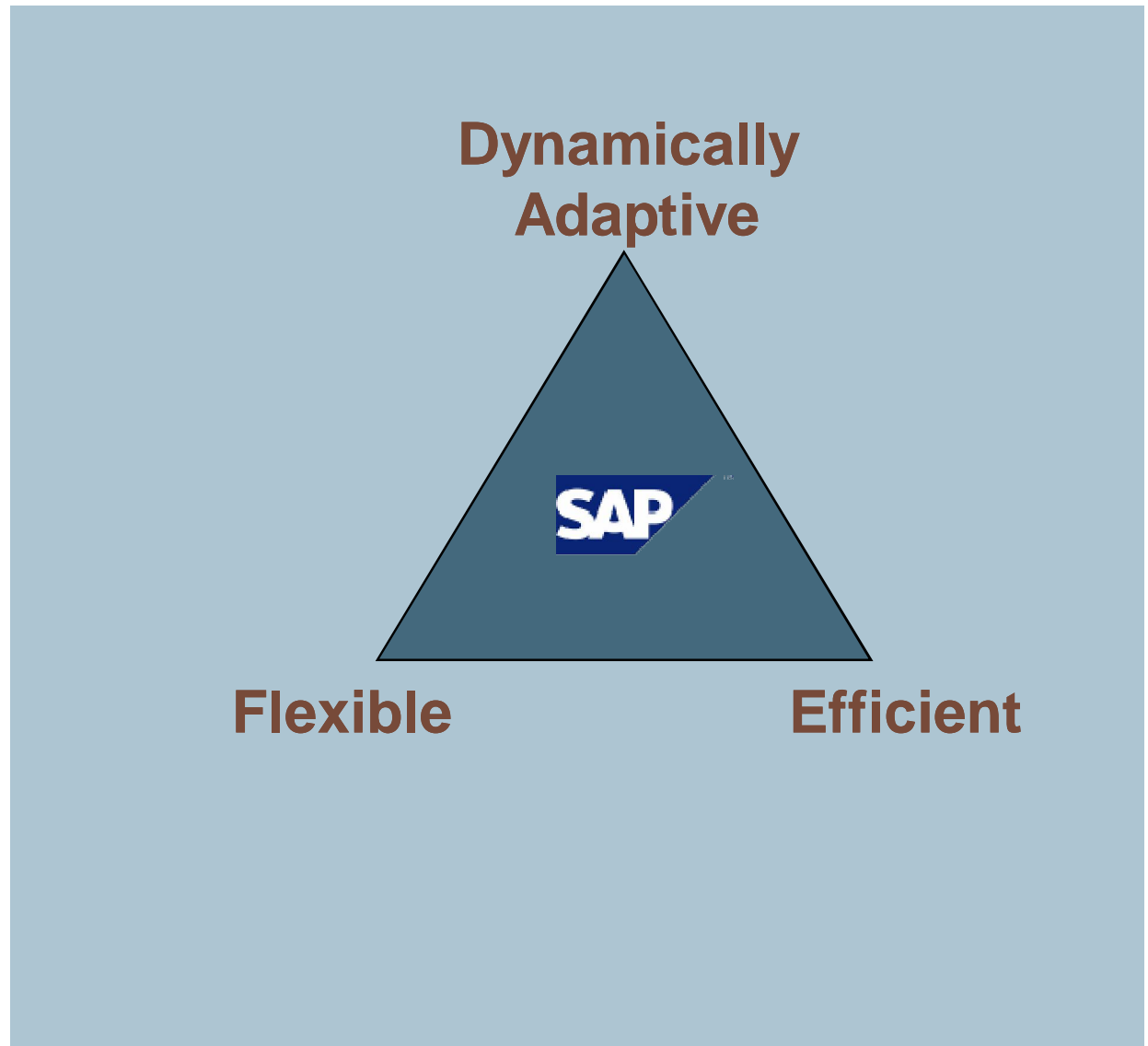
# SAP liveCache / MaxDB Hot Standby

## Keys to Success



- Supported for
  - AIX
  - HP
  - Linux
  - Symmetrix DMX and VMAX
  
- Accepting enhancement requests for other configurations
  - Other operating systems
  - Other EMC storage (Unified) support

- Tiering
- Automation
- Virtualization
- Integration



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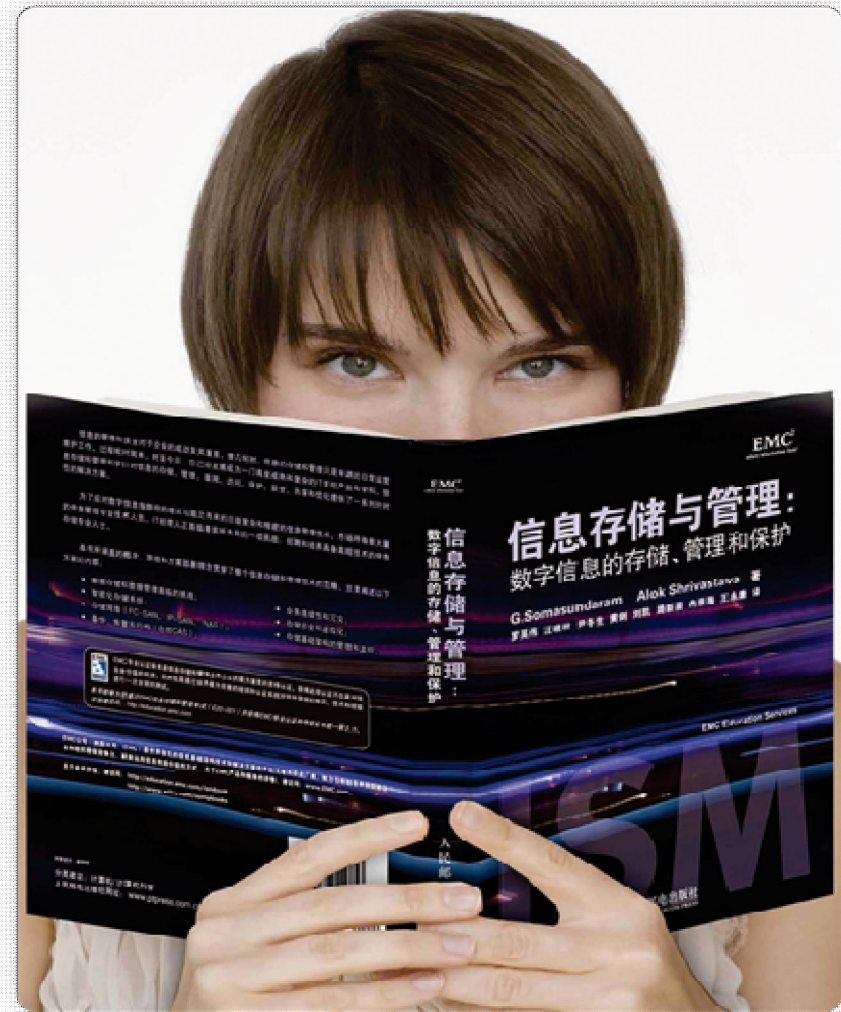


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EMC's Information Storage and Management

## 信息存储与管理： 数字信息的存储、管理和保护

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## Contact

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