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

SAP TechED Shanghai: 鲍瑞 - Raul Porras Information Infrastructure Solutions, EMC

December 2010







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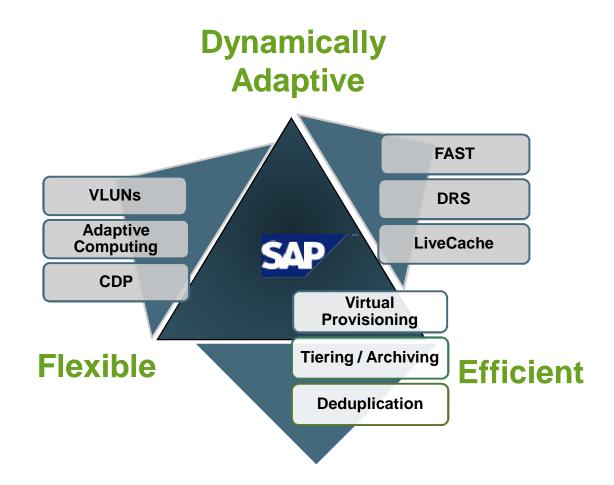
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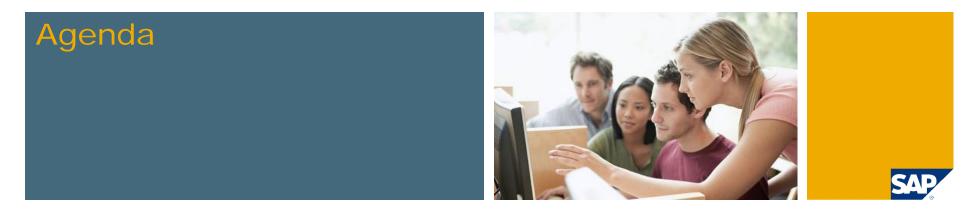


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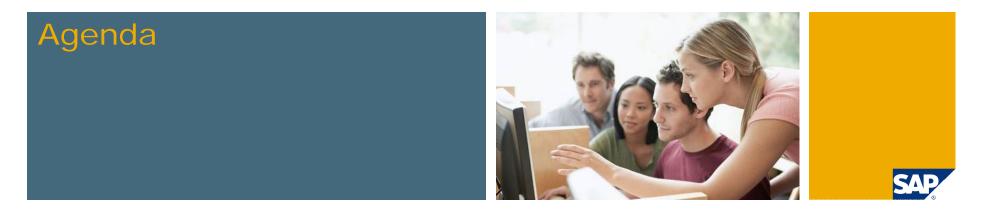
Today's Application Requirements







- 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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Storage Tiering Today – Manual



Faster

application

Lower

storage costs

and less energy

performance

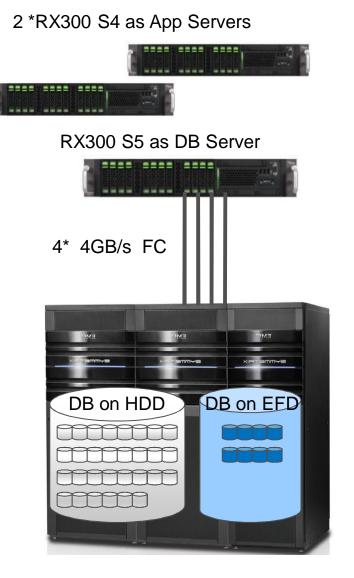
Get the right data to the right place EMG **Device Activity Report** Flash Flash drive targets? V-LUN **Fibre** Channel SATA V-LUN targets? **SATA** 270 4C6 D73 D8A 44C 2E IAG 356 5A3 BF2 36F 8E3 857 7CB 73F 6E3 627 3FF A5E EAD C32 D22 DEF F0D F39 14D0 144D

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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

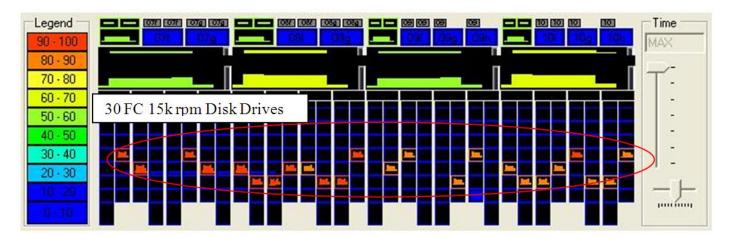


Drives

30 HDDs

Utilization

Nearly 100%

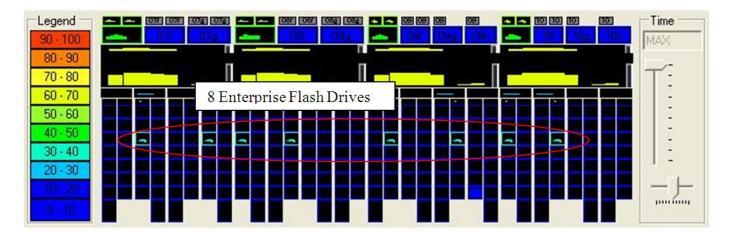


Drives

8 EFDs

Utilization

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





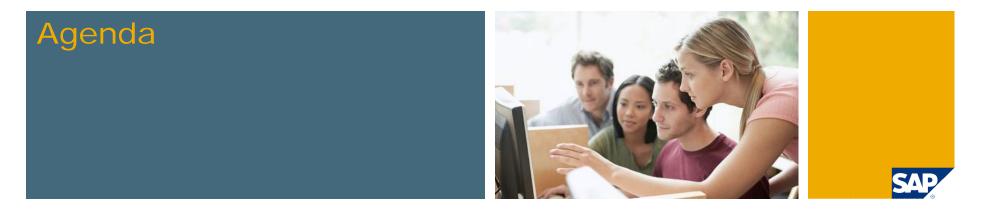
EFDs can sustain up to **30 times** the I/O of a typical FC drive

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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FAST Makes It Easy and Automatic



<u>Fully Automated Storage Tiering</u>

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

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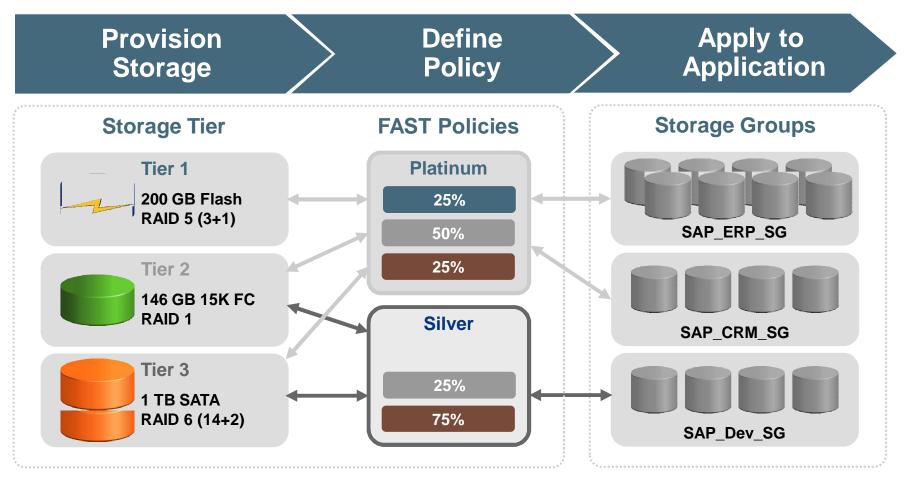


FAST wizard allows users to set up and apply storage tiering in minutes

FAST Building Blocks



FAST Made Simple



Why FAST for SAP



ERP: This month's SD transactions

ERP: Customer master data

BI InfoCubes

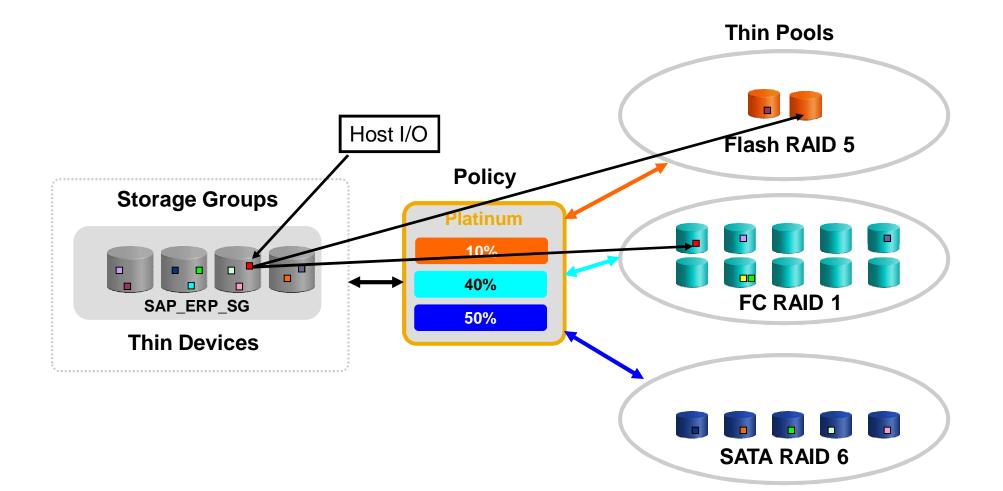
XI/PI System

SAP Executables

Non-production Copies

Virtual Provisioning with FAST VP At a Glance...



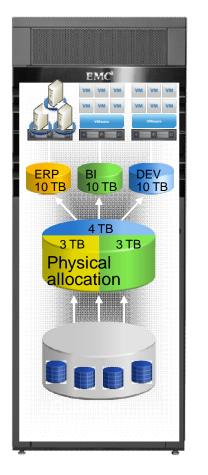


Agenda

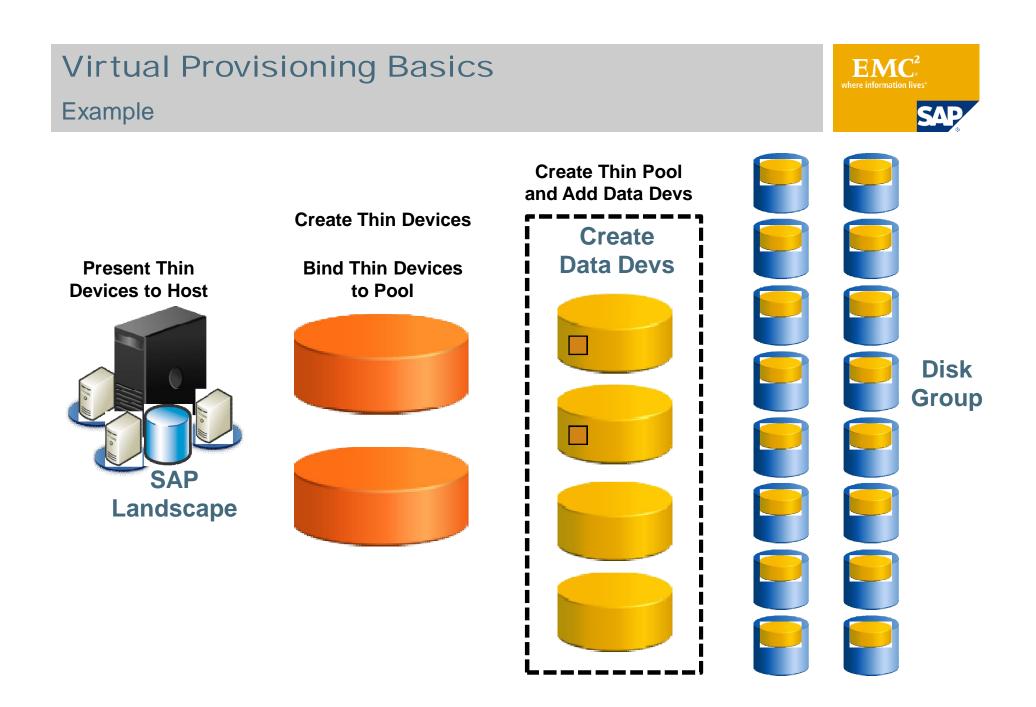
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Virtual Provisioning



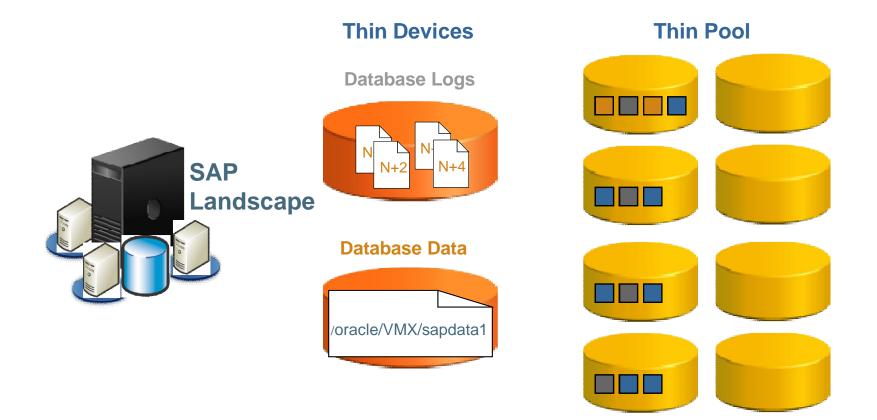


- Reduce total cost of ownership
- Increase capacity utilization
- Simplify storage management
 - Easier data layout with wide striping
 - Fewer steps to accommodate growth
- "Storage on Demand" concept
 - Allocate SAP requirements initially
 - Storage Administration adds storage as needed
 - No downtime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



Automated Pool Rebalancing





Why Virtual Provisioning for SAP?

EMC² where information lives*

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

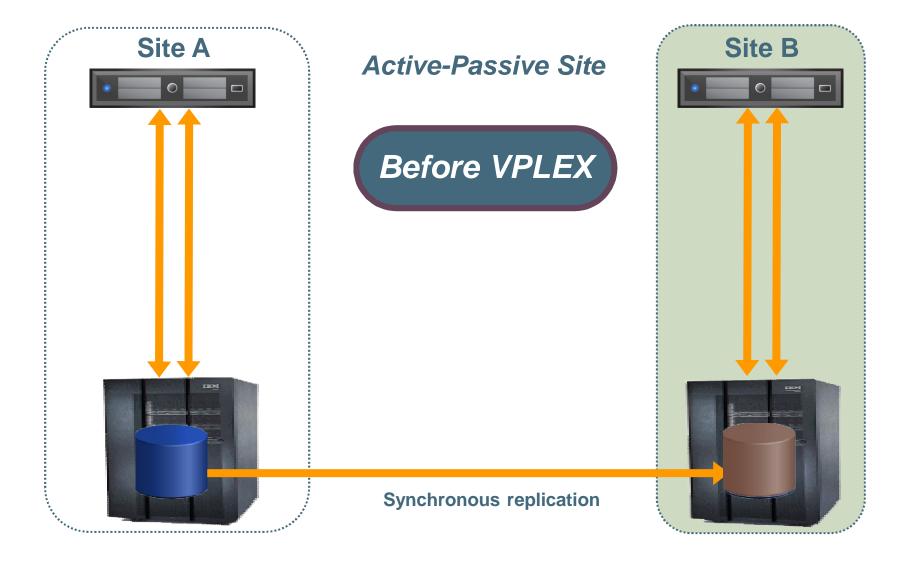
- Separate pools based on your SAP landscape
- Data and log in separate thin pool, but same data pool to gain performance benefit from wide striping

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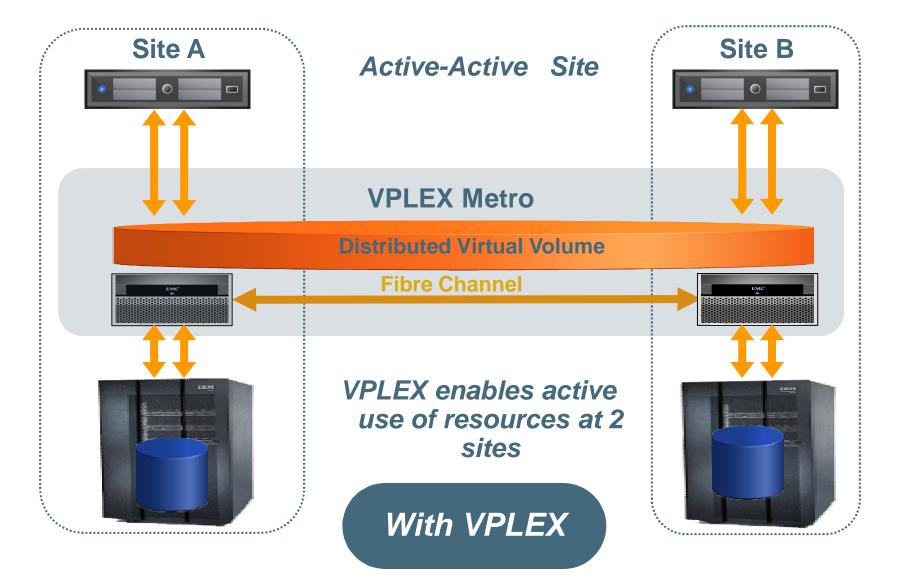
Federated Data Access





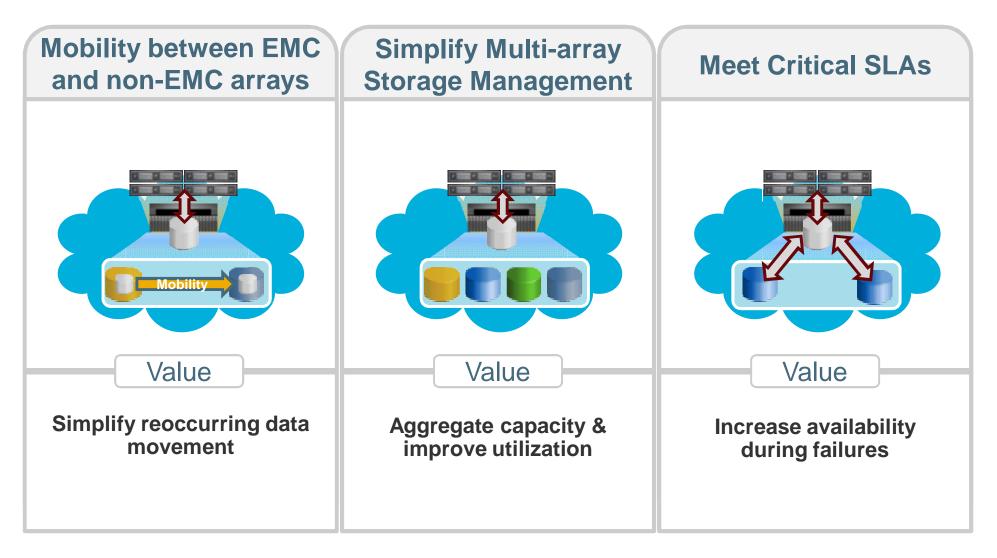
Federated Data Access





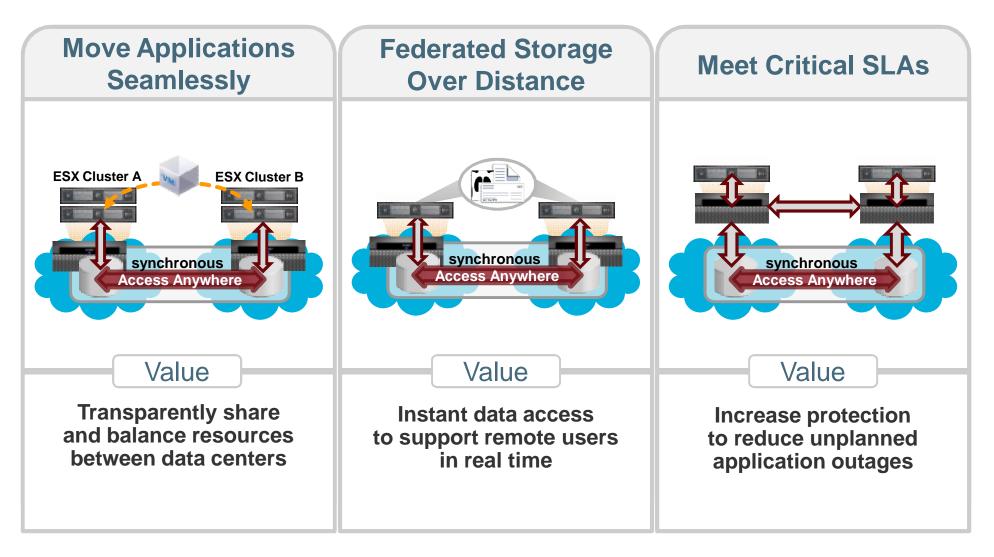
VPLEX Local – Use Cases





VPLEX Metro – Use Cases





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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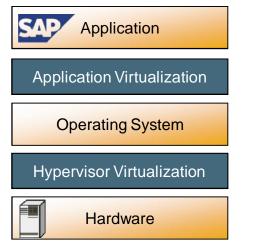
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Adaptive Computing Controller



- 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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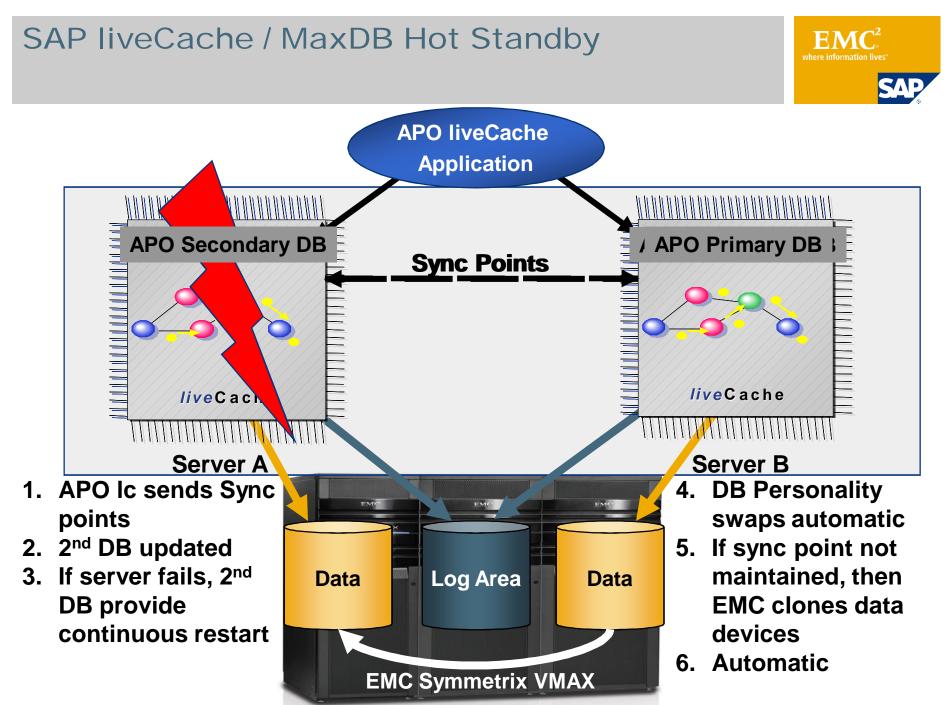
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What Is SAP liveCache?



- 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

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

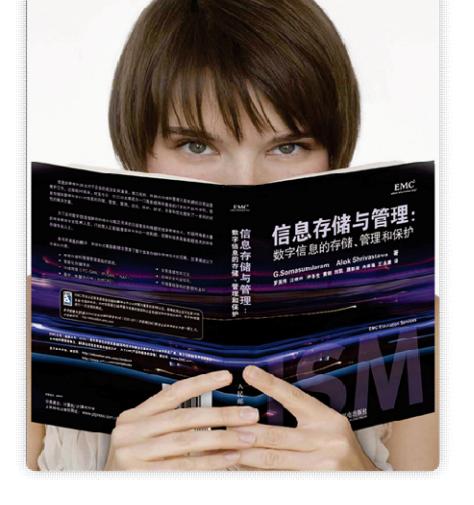
Summary and Questions **EMC**² Tiering Automation **Dynamically** Virtualization **Adaptive** Integration SAD **Flexible Efficient**

欢迎您莅临EMC展台参观



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Contact

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