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SAP Virtualization: On the Path to Cloud Computing

Ralf Lindenlaub, SAP
Joachim Rahmfeld, VMware
David Stump, NetApp

SAP Virtual Landscape Management
Solution View With Access Points

Business layer

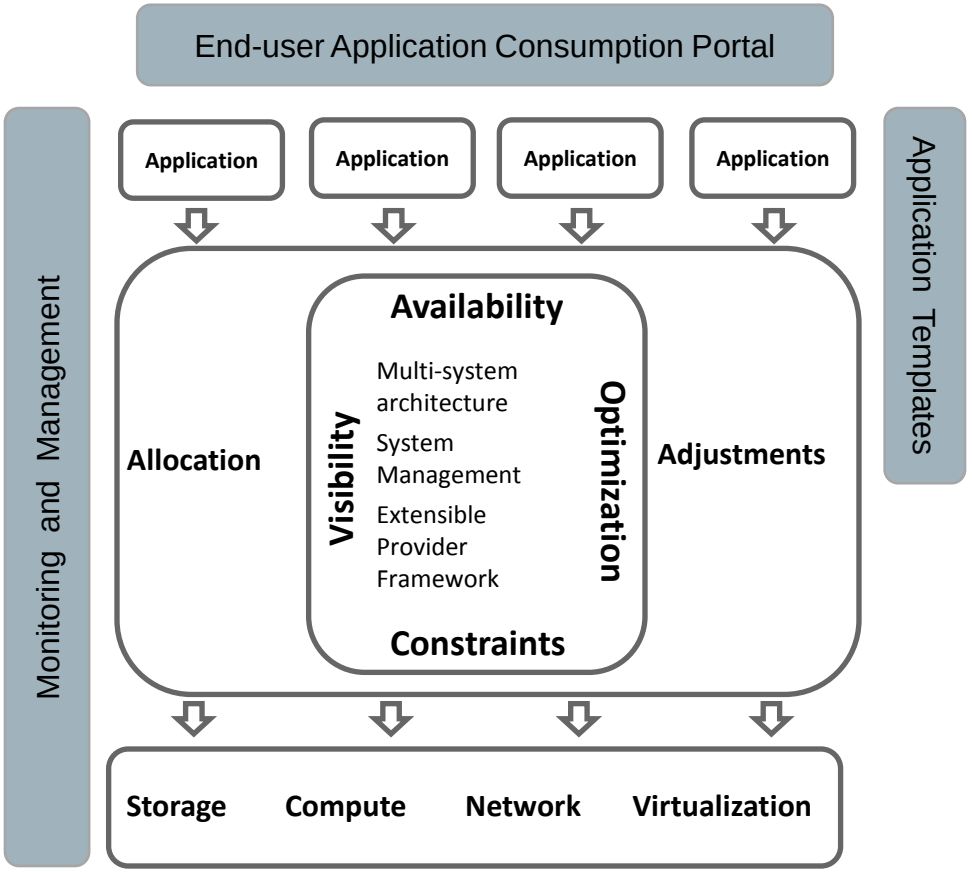
- Admin, business client & business sponsor cockpits
- Integrated monitoring and system management along entire stack
- Landscape-level provisioning with application template support & automated cloning
- Unprecedented application development, testing and production productivity

Infrastructure layer

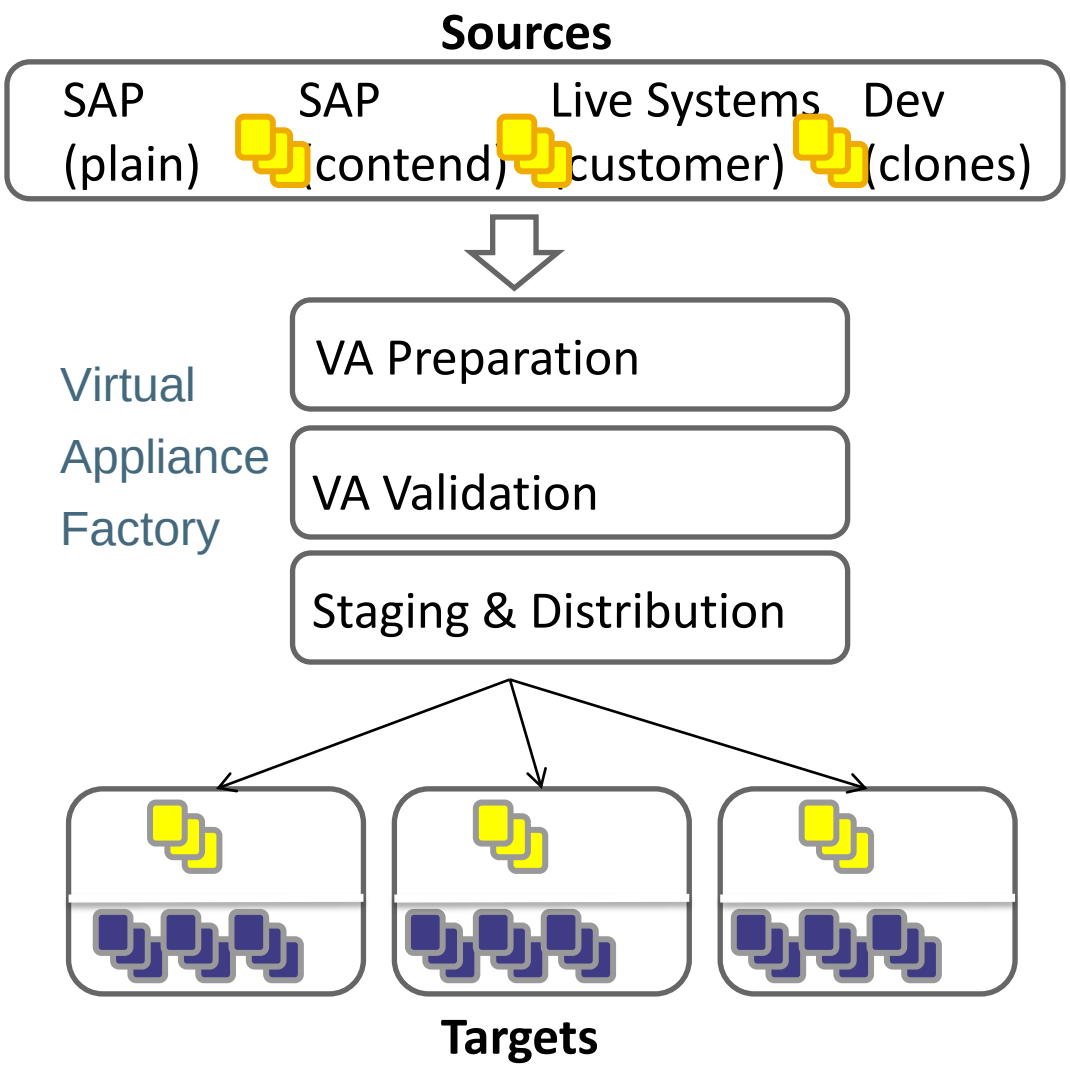
- Open platform for best-of-breed
- Lower TCO via optimized HW utilization and maintenance automation
- Flexibility of scaling up or down
- Security and reliability

SAP Virtual Landscape Management
Application-Driven Cloud Infrastructure

- End-user portal for Landscape-as-a-Service consumption
- Configurable resource allocation policies including applications
- Capture of information from enterprise applications as well as infrastructure providers
- Workload dependent dynamic adjustment
- Wizard-based VL cloning in minutes
- Uniform view for monitoring and management of all virtualized resources



SAP Virtual Appliance Factory
Streamlined Application Distribution Service



Golden Image

- Released, last-known good system, without location or workload-specific configuration
- Native or pre-seeded with business content, e.g. IDES

Virtual Appliance Production

- Completely configured, installed, patched and tested SAP applications
- Optimized virtual HW for each SAP system
- Stripping of OS or 3rd party components such as Java
- Single VM or complete VL

VA Distribution

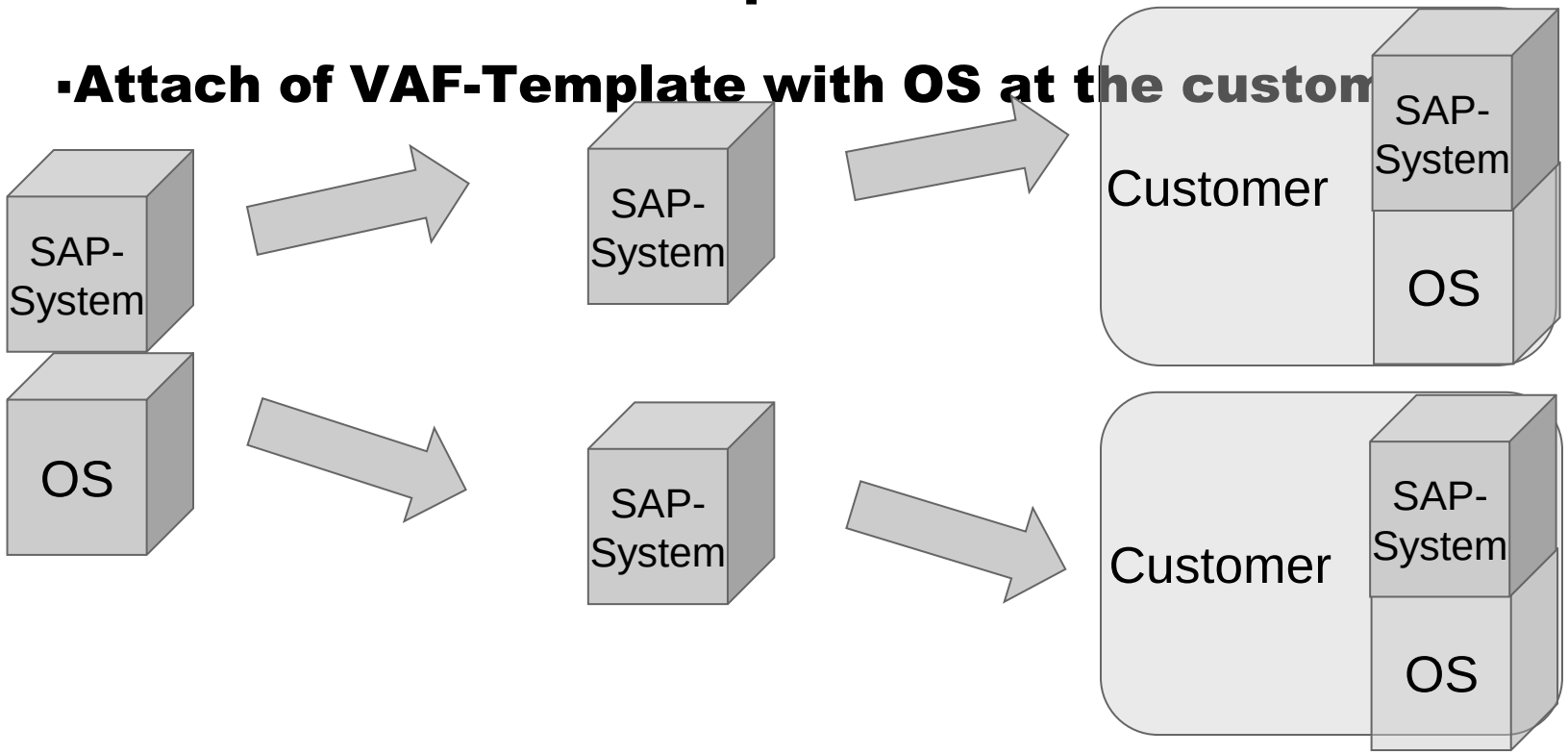
- Continuously refreshed local image for SI's/hosters or large SAP customers

VM or VL

- Provisioned as to end-user specifications ready to use

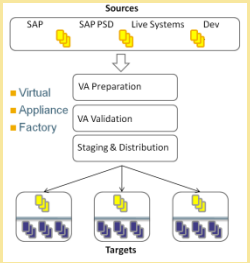
Concept „Virtual Appliance Factory“ (VAF)

- **Separating SAP Application and DB (Template) from the Operating System, („virtualized“)**
- **Multiplication of VAF-Template**
- **Distribution of VAF-Template to the customer**
- **Attach of VAF-Template with OS at the custom**



Demo Scenario – System Landscape Provisioning

System Landscape Provisioning Service (VAF)



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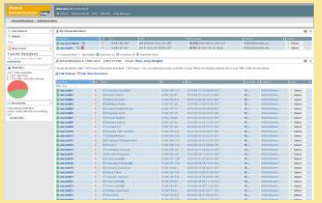
SAP landscape management software

- Active Landscape ECC PRD
- Active Landscape BI PRD
- Active Landscape ECC QAS
- Active Landscape ECC DI
- Test Landscape ECC PRD
- Test Landscape BI PRD
- Test Landscape ECC QAS
- Test Landscape ECC DI
- Test Landscape PI TST

External Cloud Management

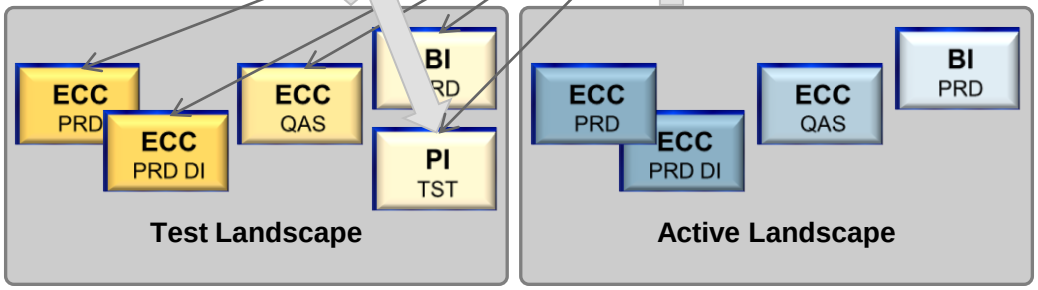
Internal Cloud Management



Clone the entire landscape into a test landscape

Copy PI TST system from Virtual Appliance Factory

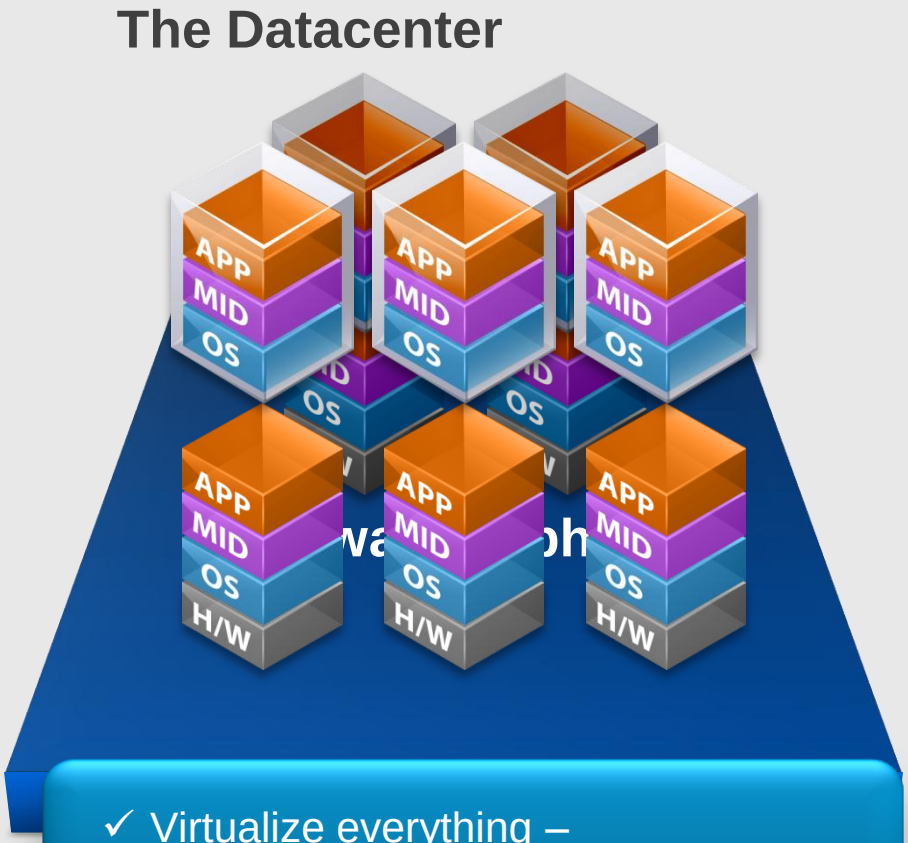
Detect for mgmt. control



Polling Question 1:

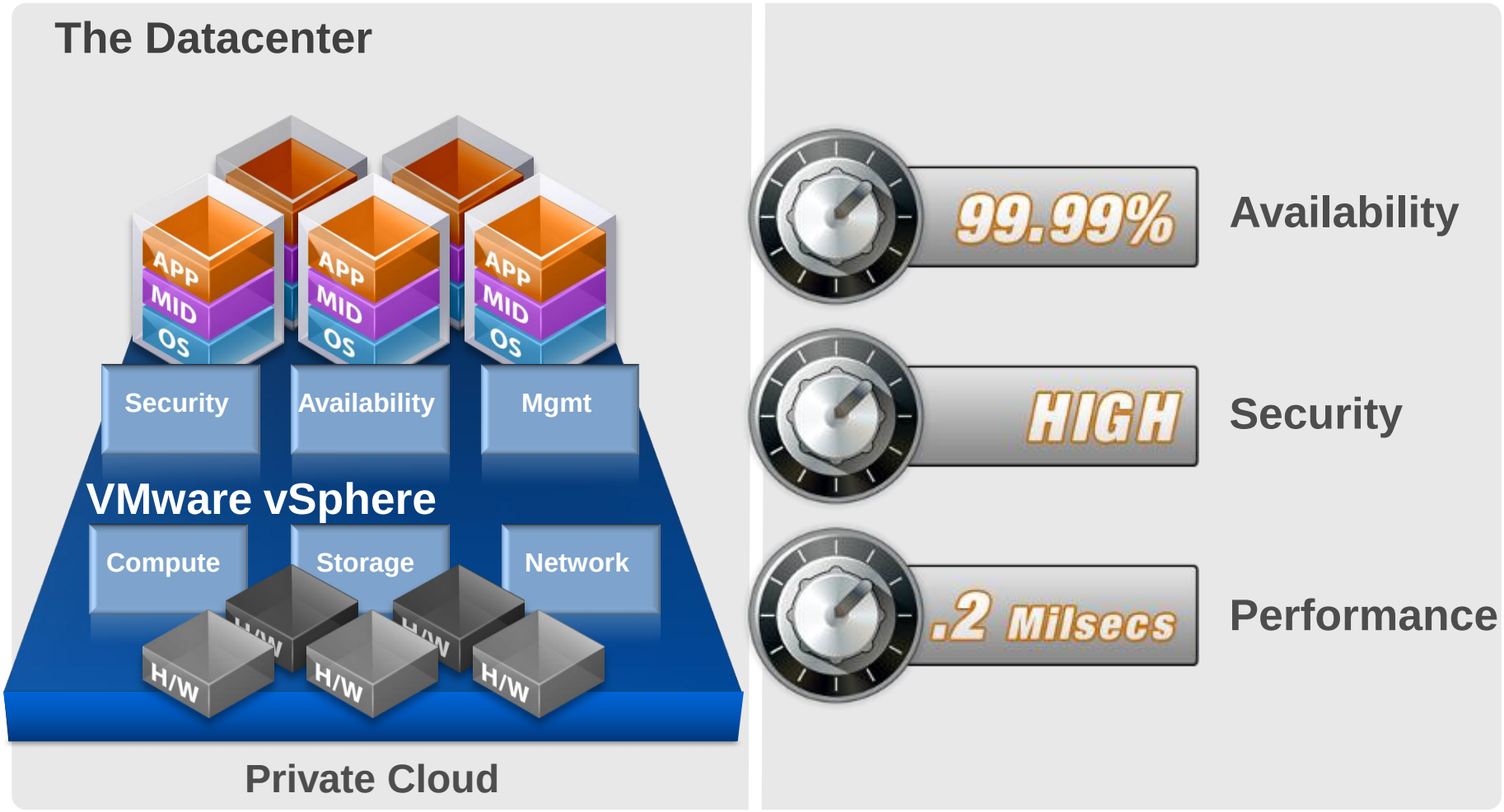
- Are you interested in receiving SAP components as appliances?
  - Very interested
  - Interested, where it makes sense
  - It does not matter to me

Virtualize – *Simplify the Datacenter*



- ✓ Virtualize everything – **Servers, Storage, Network**
- ✓ Free apps from infrastructure
- ✓ Dynamic optimization of resources

Automate – *Manage SLAs, Not Infrastructure*



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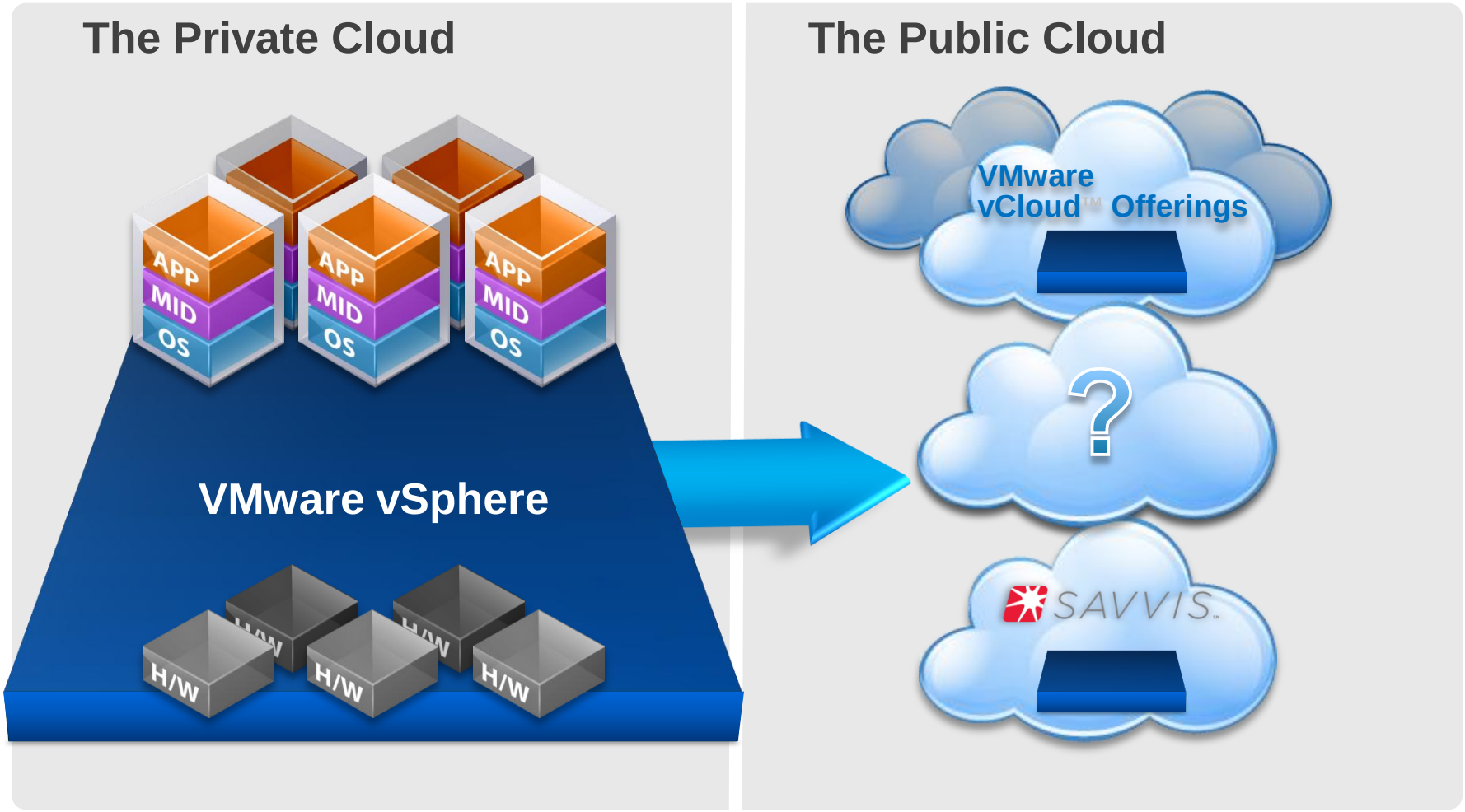
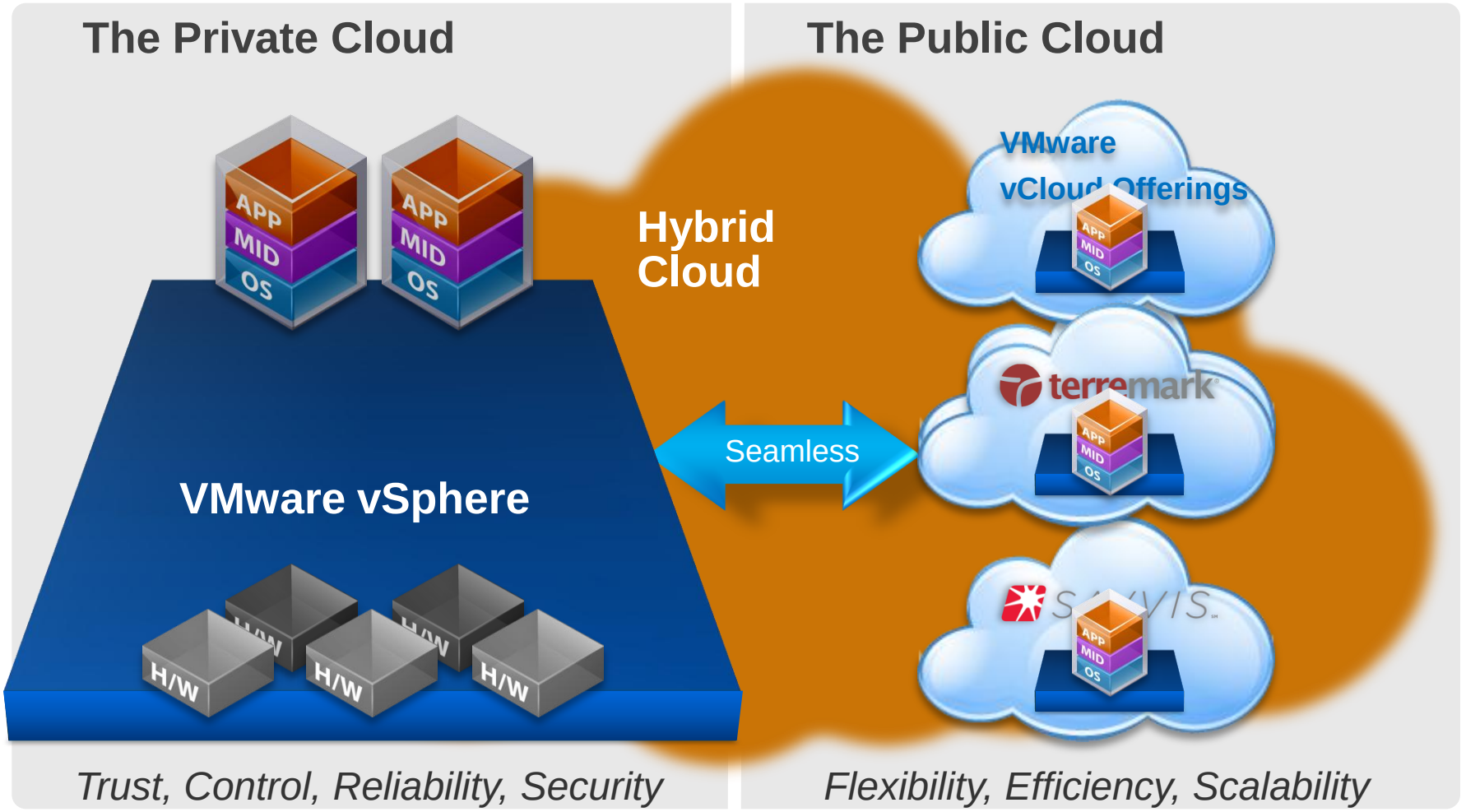
Extend – *The Private Cloud to the Public Cloud*



Extend – *The Private Cloud to the Public Cloud*



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Polling Question 2: Private/Public/Hybrid Clouds

- What is your cloud strategy for SAP?
  - Only interested in private cloud right now
  - Interested in public/hybrid cloud options
  - Started to deploy SAP components in public/hybrid clouds

2007: SAP Support Statement

VMware Announces Support from SAP of VMware ESX Server for Production Environments

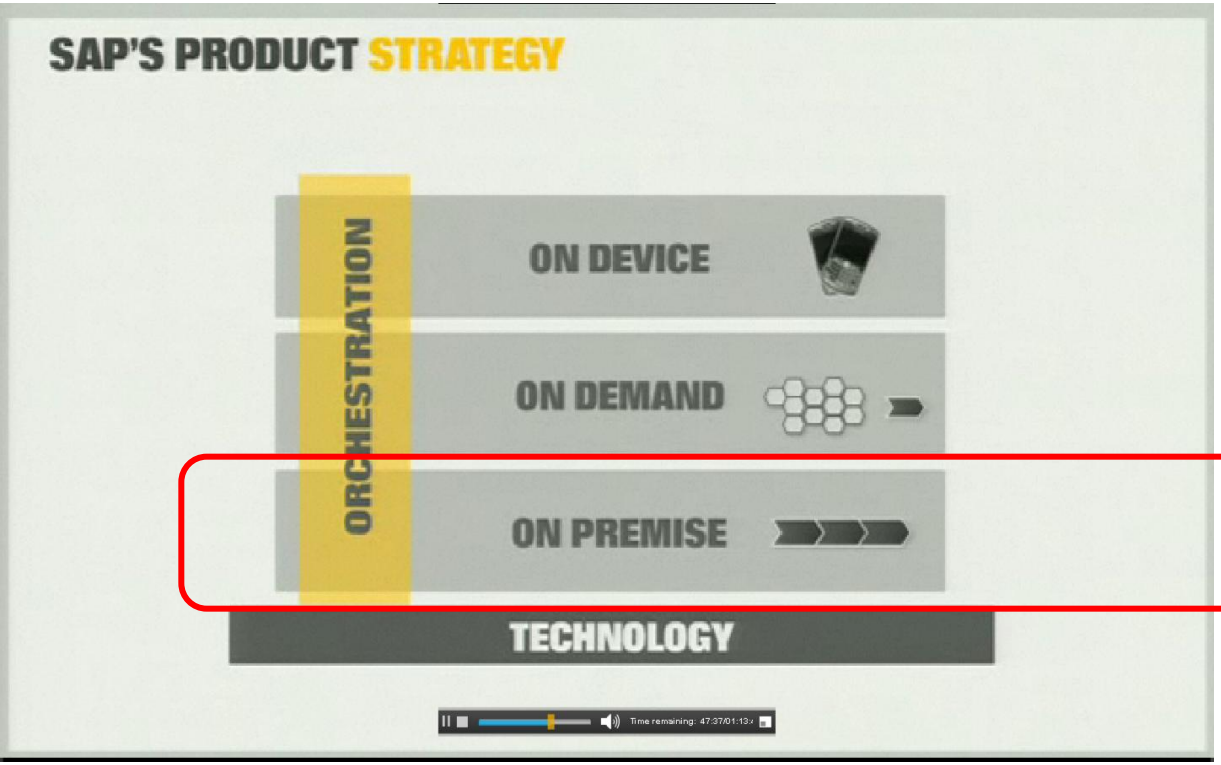
Responding to Customer Demand, VMware and SAP Establish Global Technology Partnership; VMware Infrastructure Supports SAP® Solutions with Both Windows and Linux on Industry-standard Hardware

PALO ALTO, Calif., December 12, 2007 — VMware, Inc., the virtualization software leader, today announced that SAP AG will provide immediate full support to its solutions in 64-bit Windows- and Linux-based production environments running on VMware ESX Server. Servers from Dell, Fujitsu-Siemens, HP, IBM and Sun have achieved hardware platform certification for SAP® solutions running on Windows and Linux with VMware ESX Server, a component of the VMware Infrastructure software suite. VMware Infrastructure supports SAP solutions with both Windows and Linux on industry-standard hardware. SAP and VMware will assist joint customers in cooperative support services and problem resolution, backed by a global technology partnership agreement and dedicated support staffing.

"There has been overwhelming customer demand for SAP and VMware solutions. Support of SAP solutions on VMware ESX Server means customers can extend the numerous benefits of infrastructure virtualization to the business-critical and functionally rich SAP solutions in their IT environments," said Brian Byun, vice president of global partners and solutions at VMware. "This support reflects the increasingly productive relationship between SAP and VMware, and it provides a sought-after solution for customers looking to combine the powerful process management capabilities of SAP solutions with the robust data center management and cost-saving features of VMware Infrastructure." [....]

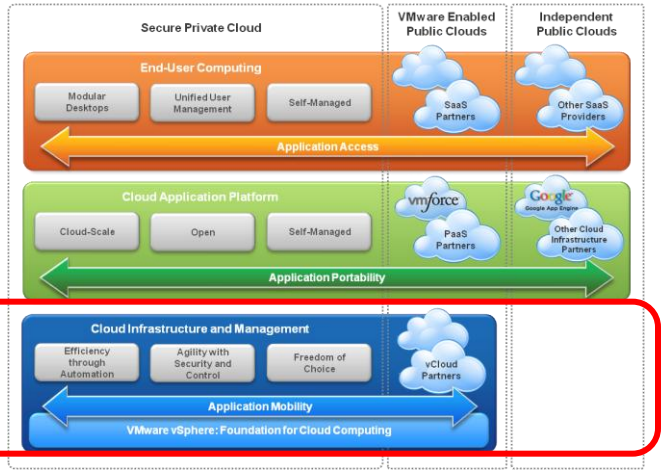
2008: Strategic Alignment & Virtualization Solutions

2010: New SAP Product Strategy – Well Aligned w/ VMware



Jim Hagemann Snabe, SAP Co-CEO
Keynote @SAP Sapphire

VMware Solutions for IT as a Service



Paul Maritz, VMware CEO
Keynote @VMworld

SAP Virtualization Proof Points: Customers

Thousands of customers virtualized SAP systems, like:

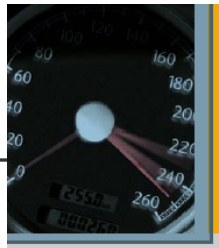
- ABB Grain
- Arinso
- AstraZeneca
- Bender
- Bobst Group
- Callaway Golf
- City of San Diego
- Checkpoint Systems
- Chevron
- Colgate
- C.R. Hammerstein
- Signalbau Huber
- Dow Chemical
- Energie AG
- EFI
- Favrille Pharma
- Forest City Enterprises
- FutureFuel Chemical Company
- Harley Davidson
- Hitachi Information Systems
- IDS Sheer
- Lego
- Merz Pharma
- Moen
- Miami Dade School District
- MTU Aero Engines
- NuVasive
- Peerless Clothing
- SAP Managed Services
- Siteco
- Southwestern Great American Inc.
- Steeltec
- Tasty Baking Company
- T-Systems

Why Virtualize SAP – Customer Benefits

- SAP Upgrades & Implementations
  - **EFI**: “100% more test cycles“ & „Upgrade cycle reduced by 33%“
  - **FutureFuel:** “We had only 3 months to implement, but we made it thanks to VMware!“
  - **Spital Biel:** “SAP Release Upgrade in < 36 hr“
  - **City of Essen:** “… SAP Business Warehouse on VMware delivers < 300 ms response time!“
- Availability & Disaster Recovery:
  - **NuVasive**: “… as high as 99.99% uptime…”
  - **ABB Grain:** “**…** recovery of core business systems can be completed in two hours..”
  - **Wifag:** “… SAP Systems are running robust with great performance …”
- Capital &Operational Costs and Improved Service Levels
  - **SAP Manged Services**: Lifecycle management of 6.000+ VMs on 400+ VMware ESX hosts
  - **T-Systems**: “30-40% cost savings“
  - **Merz Pharma**: “Improved server utilization“, “Significant savings of operational costs”
  - **AstraZeneca:** “€1.4 M in cost savings over three years“
- Provisioning & Compliance
  - **Checkpoint Systems**: “Provisioning in 30 min instead of 8h“, [now focussing on View]

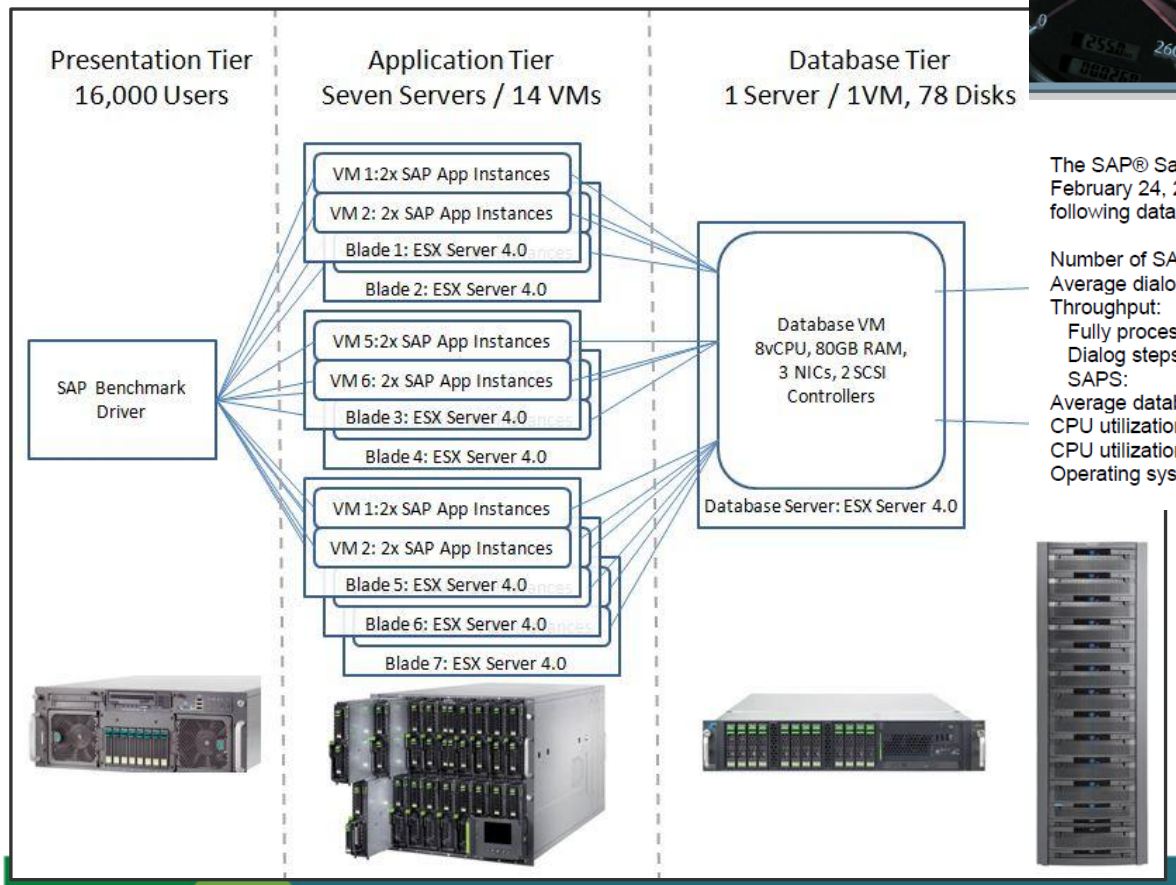
Certified 3-tier SAP Benchmark on vSphere (DB + CI + APP - virtual)

Fujitsu Benchmark, Certification 2010016: 16,000 Users and 87,800 SAPS



CERTIFICATION

SAP® Standard Application Benchmarks

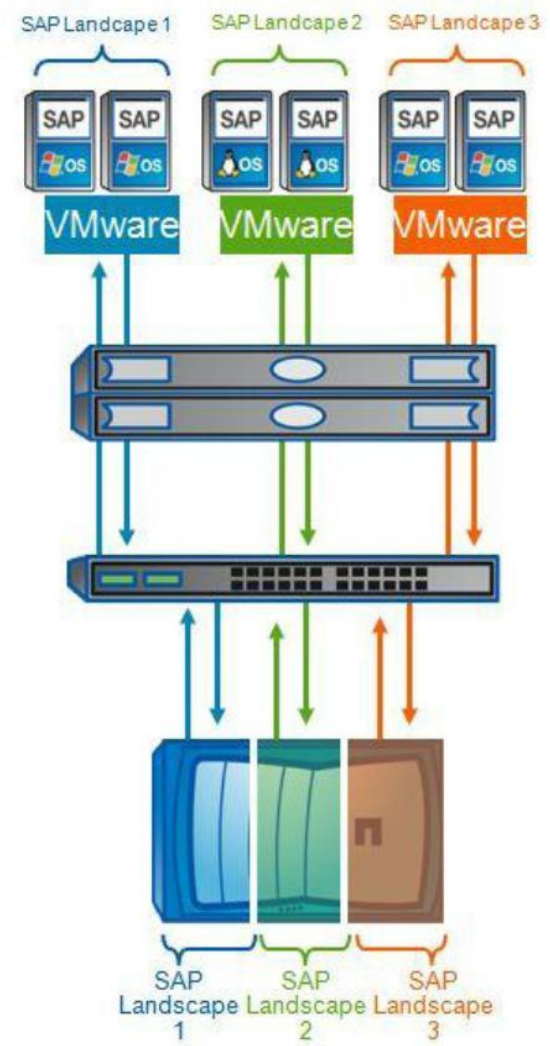


The SAP® Sales and Distribution (SD) Standard Application Benchmark performed on February 24, 2010 by Fujitsu in Walldorf, Germany, was certified on April 14, 2010, with the following data:

Number of SAP SD benchmark users:	16,000
Average dialog response time:	0.93 seconds
Throughput:	
Fully processed order line items per hour:	1,756,000
Dialog steps per hour:	5,268,000
SAPS:	87,800
Average database request time (dialog/update):	0.120 sec / 0.290 sec
CPU utilization of DB server:	53%
CPU utilization of Dia/Update/Mess/Enq servers:	69%
Operating system all servers:	SuSE Linux Enterprise Server 10 on VMware ESX Server 4.0

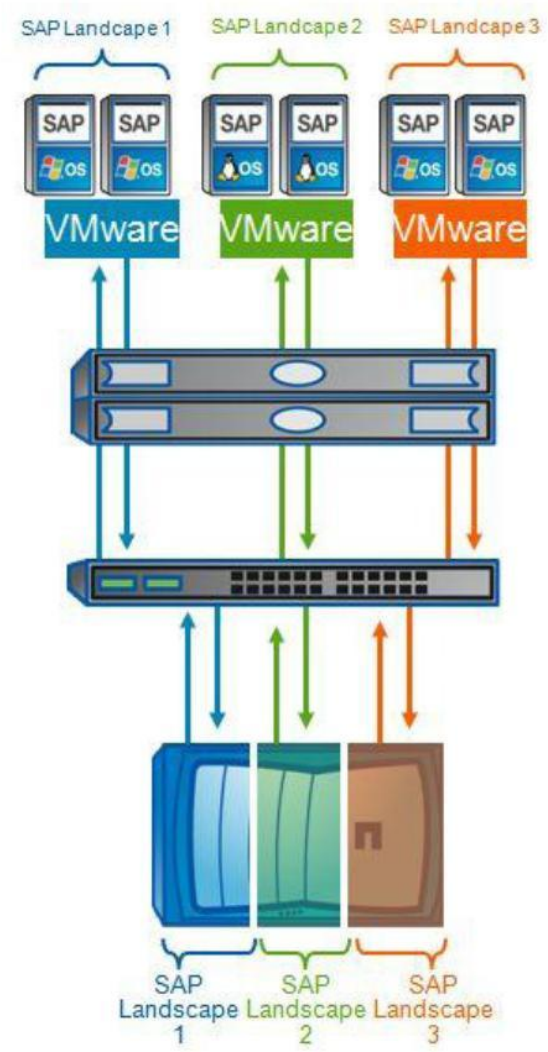
vmware

Secure Multi-Tenancy Solution for SAP w/ NetApp, Cisco & VMware



- SMT Solution for SAP:
  - End-to-end, tested and proven solution for SAP cloud architectures
  - Virtualization at all layers – server, network, and storage
  - Tested with SAP Adaptive Computing
  - Supported through aligned support organizations
- Benefits:
  - supporting secure multi-tenancy in the cloud
  - Backup & recovery in minutes
  - Fast, space-efficient system copies
  - Acceleration of test & training cycles
  - ….

Secure Multi-Tenancy Solution for SAP w/ NetApp, Cisco & VMware



- VMware components:
  - VMware vSphere
    - Providing virtualization platform
  - VMware vNetwork Distributed Switch
    - Maintaining network runtime state, enabling inline monitoring and centralized firewall services
  - VMware vShield Zones
    - Centrally managed, stateful, distributed firewall bundled with vSphere

VMware vShield – Foundation for Cloud Security

VMware vShield Manager
Centralized Security Across the Virtual Datacenter

VMware vShield Edge
Secure the Edge of the Virtual Datacenter

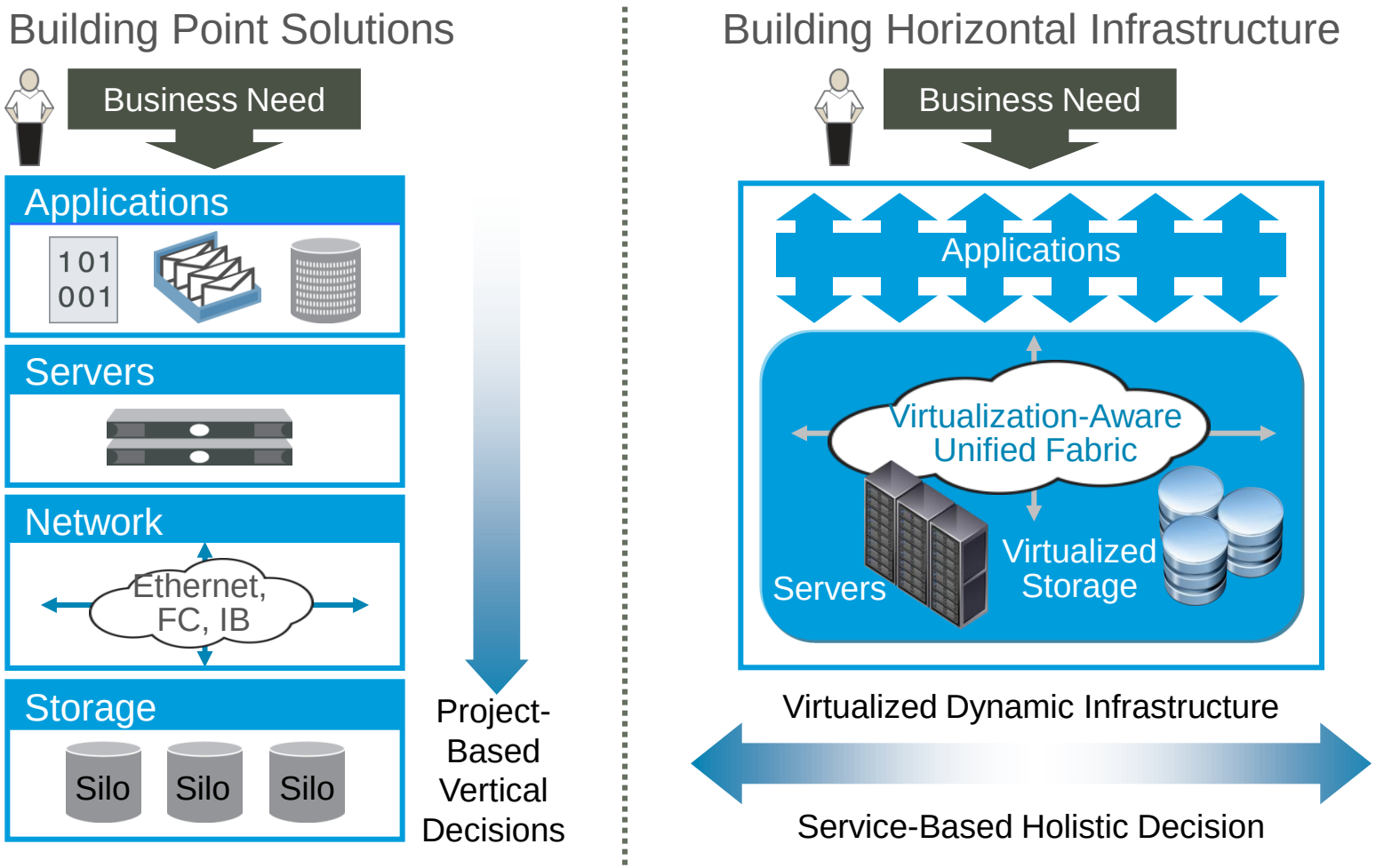
VMware vShield App & VMware vShield Zones
Application Protection from Network-Based Threats

VMware vShield Endpoint
Offload Antivirus and Anti-Malware Processing for Endpoints

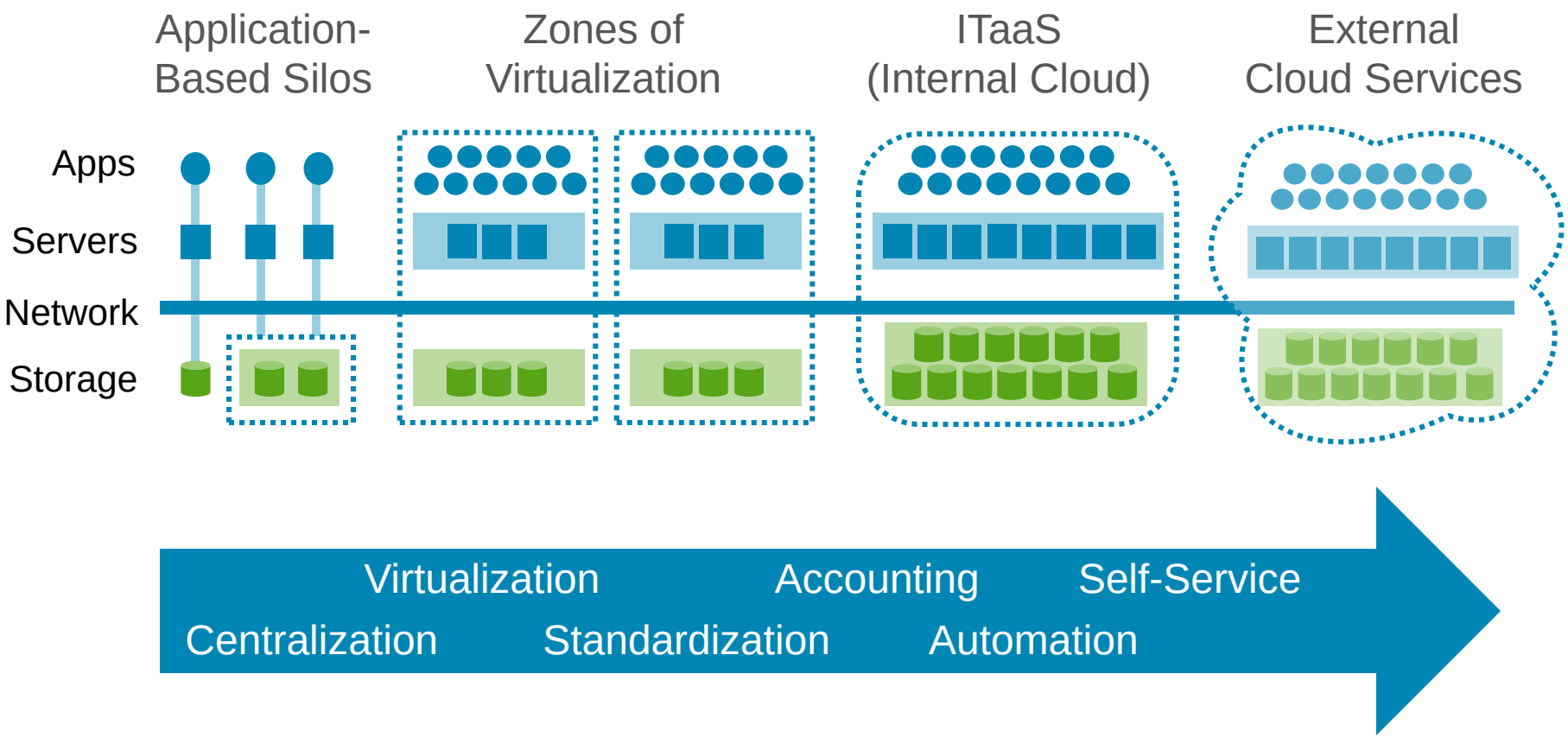
Polling Question 3: Virtualization & Private Cloud

- **What is your virtualization strategy?**
  - Interested in virtualization & private cloud
  - Started to virtualize SAP
  - Fully virtualized on-premise SAP
  - Offering SAP application teams ‘SAP IT As A Service’ (an SAP Private Cloud)

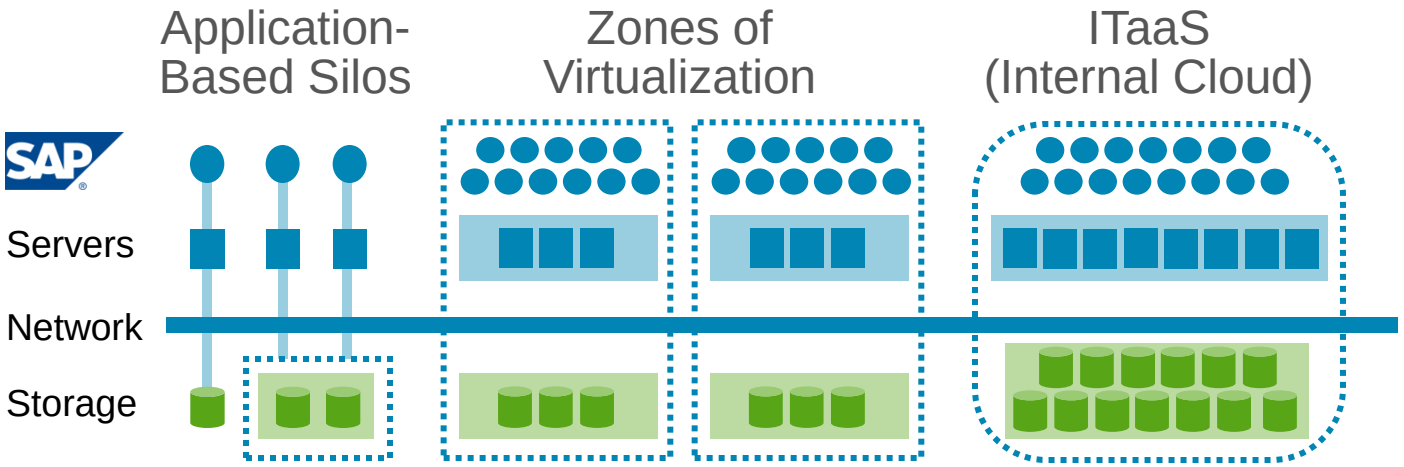
Next-Gen Data Centers Are Service Oriented



Data Center Evolution

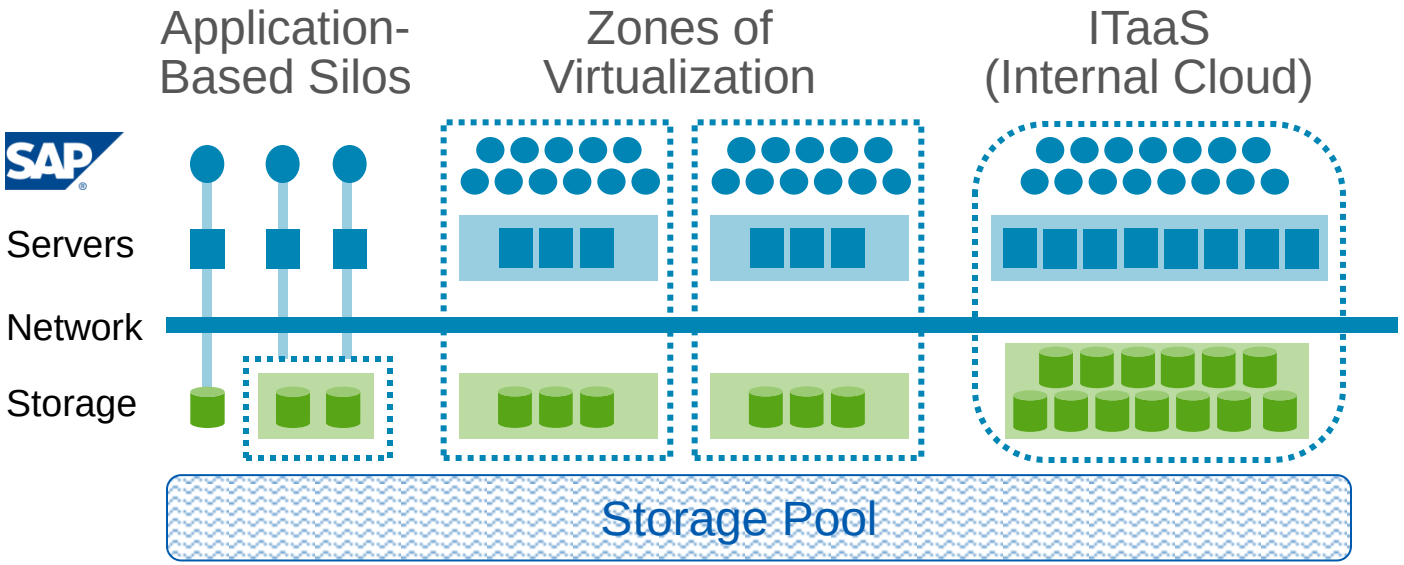


What This Means for Your Infrastructure



- Can’t rip and replace for all SAP® environments
- Interoperability is critical
- Storage infrastructure must support evolution
- Balance agility and change with time and budget

Storage Infrastructure Requirements



- Unified, virtualized storage
- End-to-end data protection
- Policy-based storage provisioning
- Data mobility
- Service automation and management
- Application integration
- Storage efficiency
- Multi-tenancy

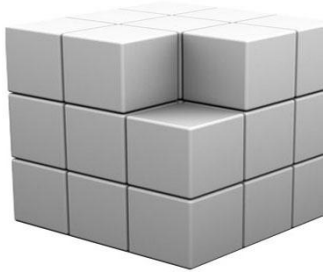
NetApp Value for SAP® Infrastructure

Extreme flexibility

- Unified storage platform enables application evolution on demand
- Instant provisioning to match servers

First end-to-end secure multi-tenancy

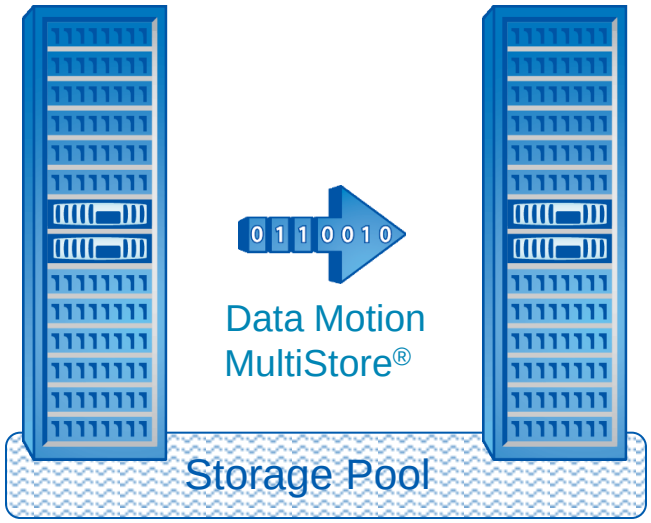
- Elastic scalability across all layers with zero disruption to SAP services
- Isolation and security for multi-tenant SAP environments



Outstanding efficiency

- 70-75% reduced storage footprint and related power, cooling costs
- Virtualized storage pool helps achieve 100% or greater utilization

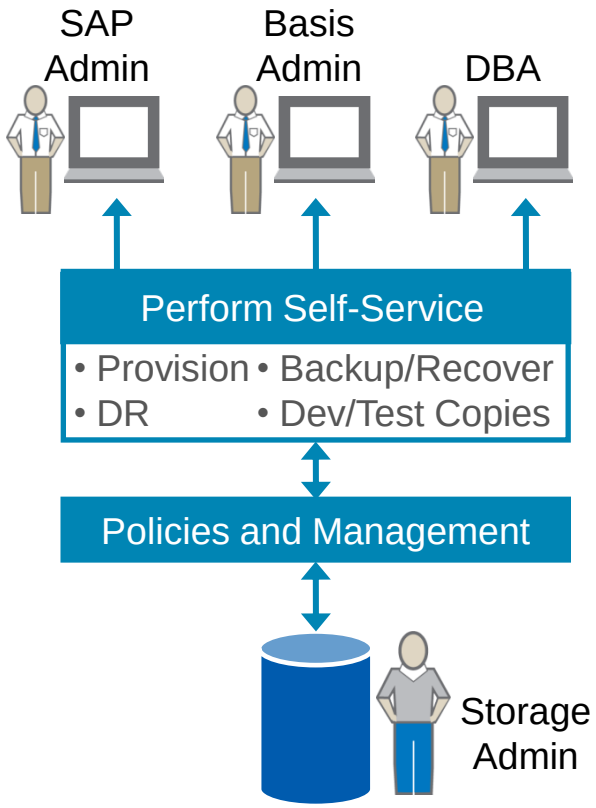
Service Automation and Management



Policy-based
storage provisioning
and live data migration

- Storage Provisioning and Data Mobility
- Rapidly provision complete servers or systems on-demand
- Grow or shrink seamlessly virtualized storage pool to meet requirements
- Transparent, non-disruptive SAP® landscape migration

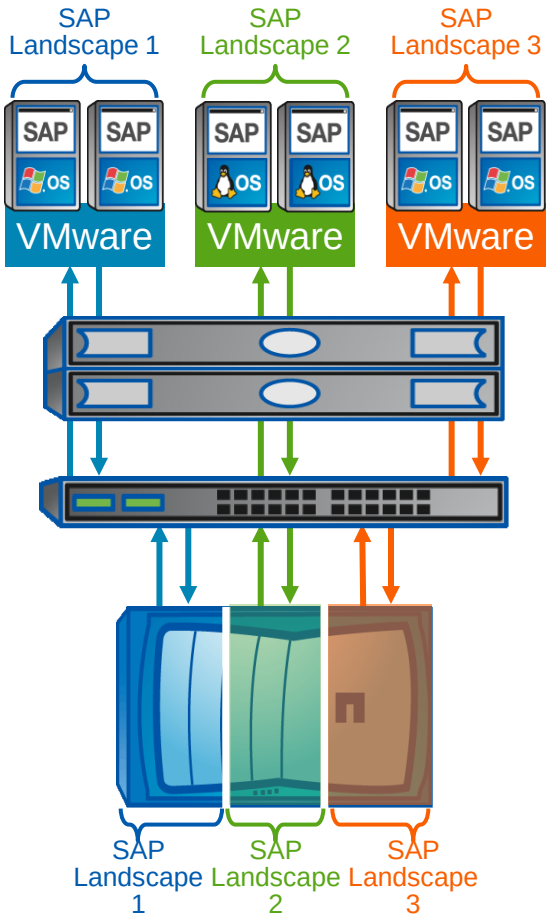
Service Automation and Management



- Policy-based SAP® data management
- Close integration with virtualization solutions
- Fast, integrated, on-demand data protection and rapid provisioning

SAP® Certified Integration

Secure Multi-Tenancy for SAP



- Isolation and security for multi-tenant SAP® environments
- Highly available data mobility with little or no SAP service disruption
- SAP-consistent serverless backup and recovery
- Rapid, space-efficient SAP system copies
- Virtualized SAP software decoupled from operating system and hosts

Application Requirements

- High SAP® business process availability
  - Integrated data protection
  - Optimized test cycles
  - Accelerated SAP upgrades
  - Rapid and isolated SAP repair system creation
- Rapid, space-efficient SAP system copy creation
- Simplified SAP archiving
- SAP TDMS integration

NetApp Value for SAP® Applications

Accelerate SAP rollouts

- High-speed system provisioning
- Rapid system copy creation

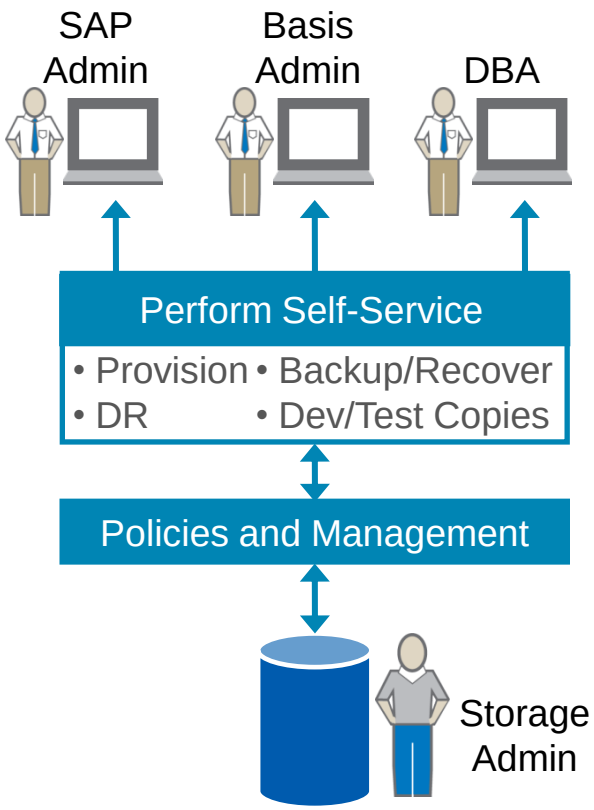
Minimize risk

- Fast recovery with little or no disruption to users in the event of failure
- More testing by more people in less time and with more relevant data

Lower TCO

- 50% lower cost of managing the most SAP data
- Best foot print and best TCO in the industry with 70-75% IT savings

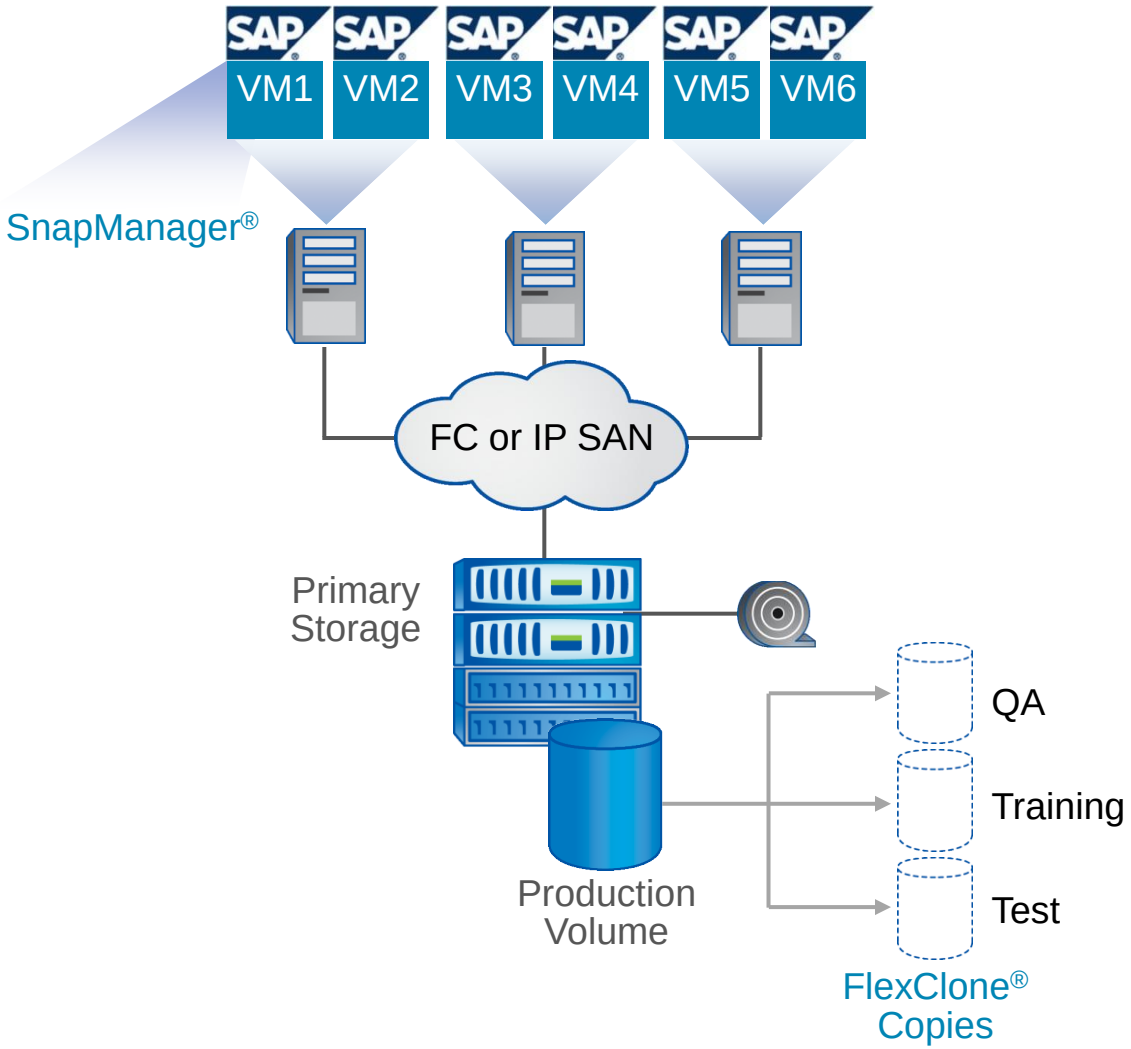
Rapid SAP-Integrated Data Protection



- Fast and efficient backup, restore, and recovery using BR*Tools
- Fast, space-efficient SAP® system copies
- Storefront available on SAP EcoHub at http://ecohub.sdn.sap.com/irj/ecohub/solutions/snapmanager

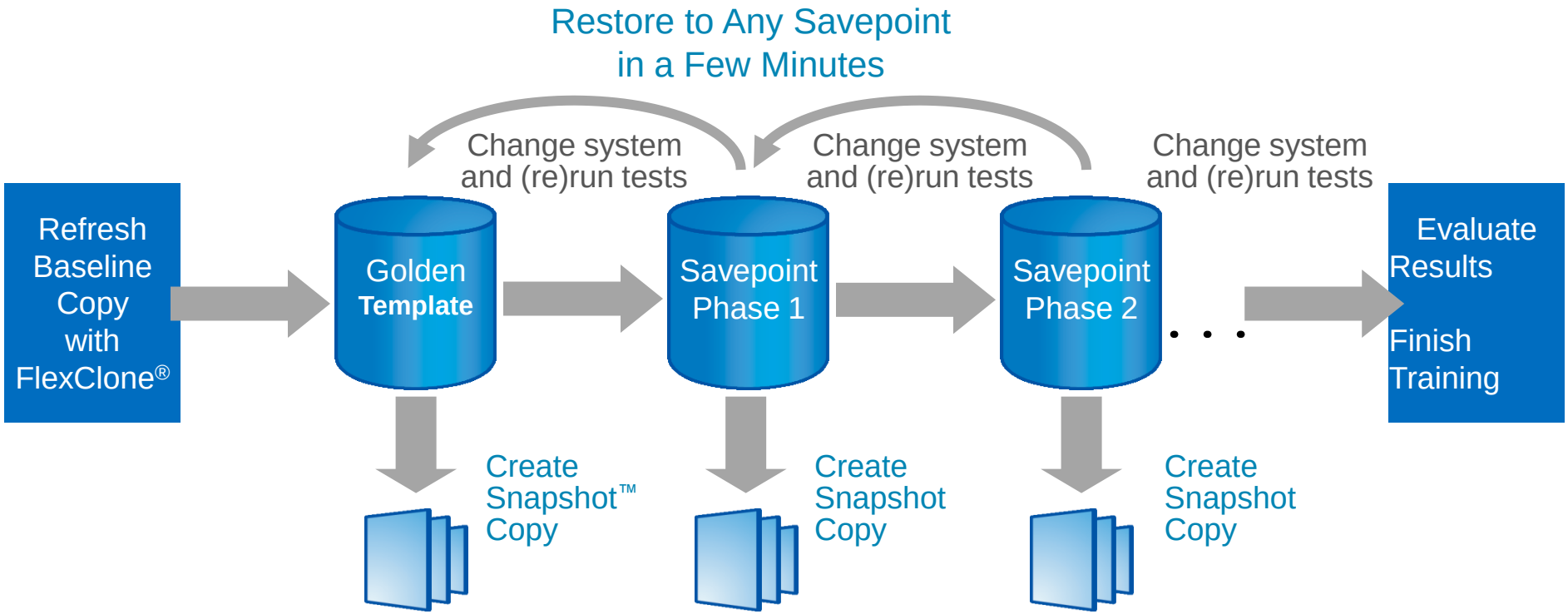
SAP® Certified Integration

Rapid System Copy Creation with SnapManager®



- Fast, space-efficient SAP® system copies
- Fully automated clone operations
- No performance implications
- Large space savings
- Accelerate projects such as SAP upgrades, Unicode conversions

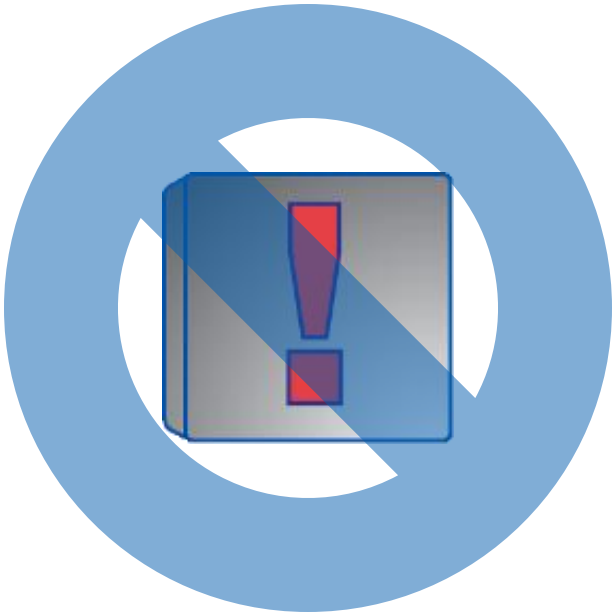
Optimize and Accelerate SAP® Test Cycles



Accelerate SAP® Upgrades with NetApp

- Rapid backups increase confidence and allow more time for testing and troubleshooting
- Your SAP systems could go live earlier
- Minimized risk of losing go-live window
- SAP teams can get their weekends and holidays back

Rapid Repair Systems with NetApp



- Eliminate logical error related challenges
- Minimize downtime
- Avoid data loss
- Achieve SAP® landscape consistency

Q&A