Continuous Data Protection for Oracle Databases and Applications

Michael Guthrie
Advisory Systems Engineer
EMC Corporation

More Oracle Deployed on EMC Storage Than Any Other Vendor in 2012—IDC

Source: IDC, Storage User Demand Study, 2012 - Fall Edition: Many Uses of Internal Storage: Survey, doc #241840, June 2013.

IDC
Analyse the Future

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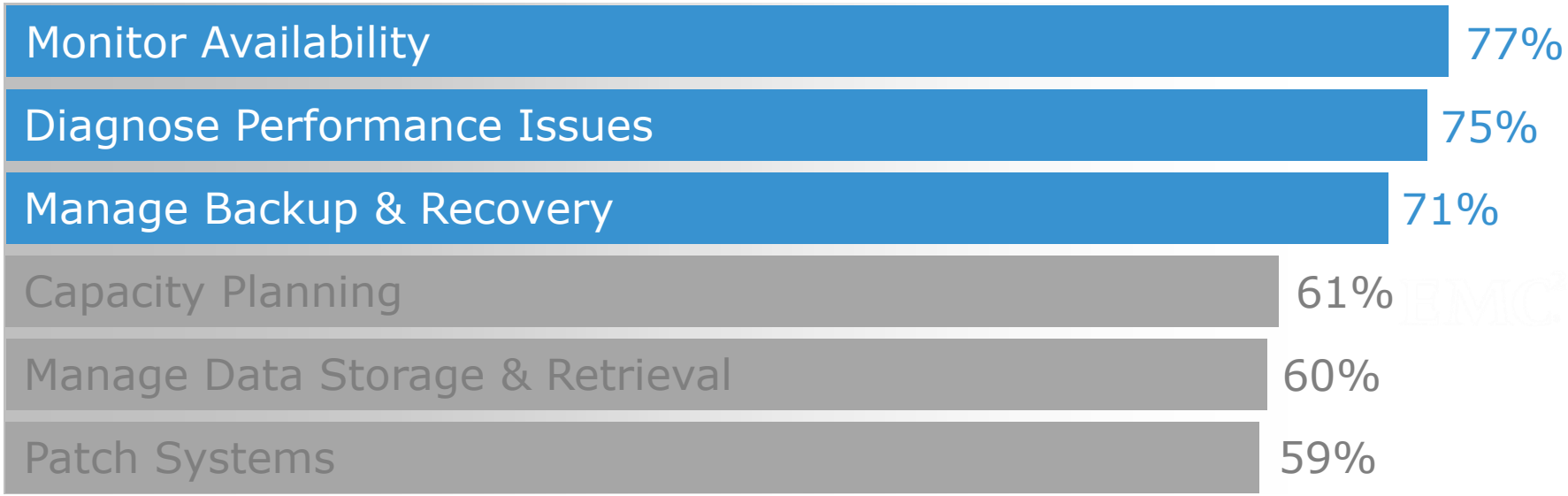
DBA Activities Increasing

Managing Capacity, Performance, Data Protection & Availability



The Cost of Downtime

In an “Always On” world, loss of critical applications can be fatal

DOWNTIME COST	SOURCE
$750 per minute	• Business Disruption
$45,000 per hour	• Lost Revenue
$1.8 million per day	• End User Productivity
	• IT Staff Time Allocation
	• Fines and Penalties
	• Company Reputation

* Enterprise Management Associates - 2012

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Continuous Availability Builds Trust

Trust means meeting the challenges of **service assurance**, for both physical and virtual infrastructure.

Today, all IT organizations have a common goal:

Continuous Availability

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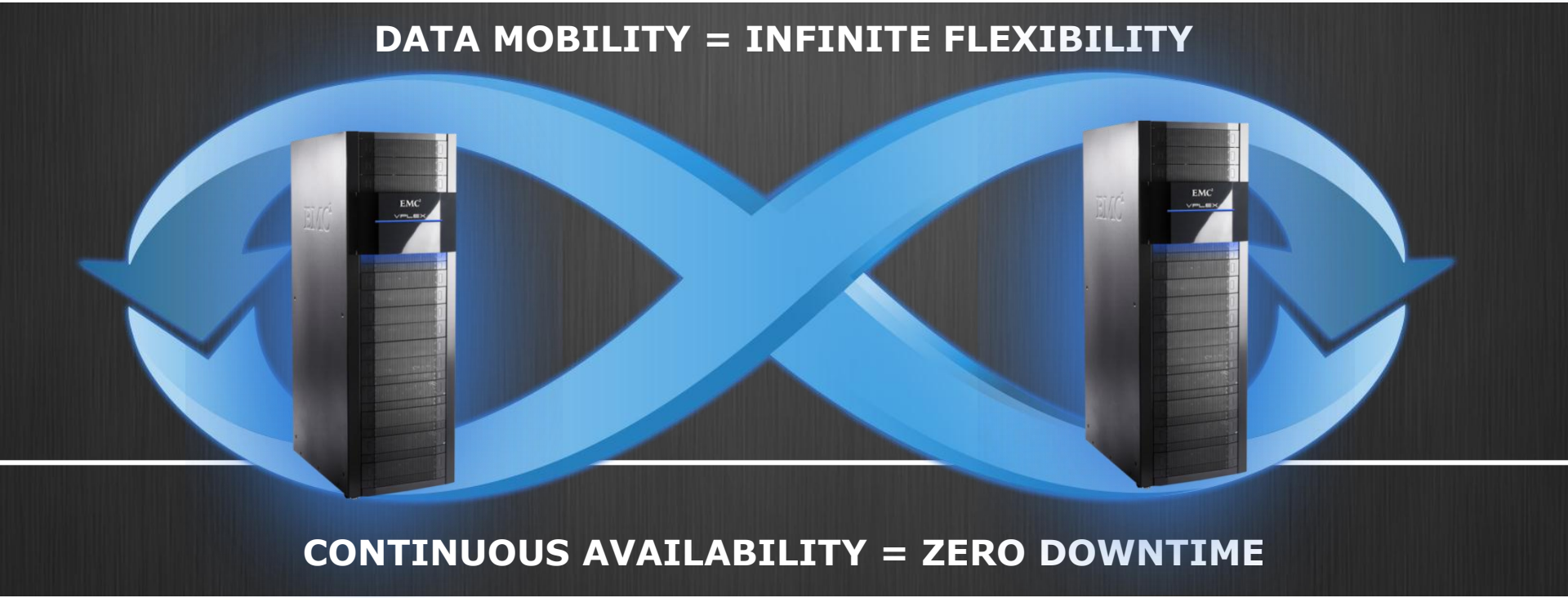
DBAs' Availability Challenges

Consequences

- Expense and revenue impact
- Lost productivity
- Stress on IT staff
- Unhappy customers
- Unhappy users
- Downtime

EMC VPLEX Provides for Zero Downtime



VPLEX Distributed Storage Access

With **EMC VPLEX** you can **simultaneously** read/write the same data on to two arrays in the same data center or across data centers.

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Continuous Availability During Site Failure

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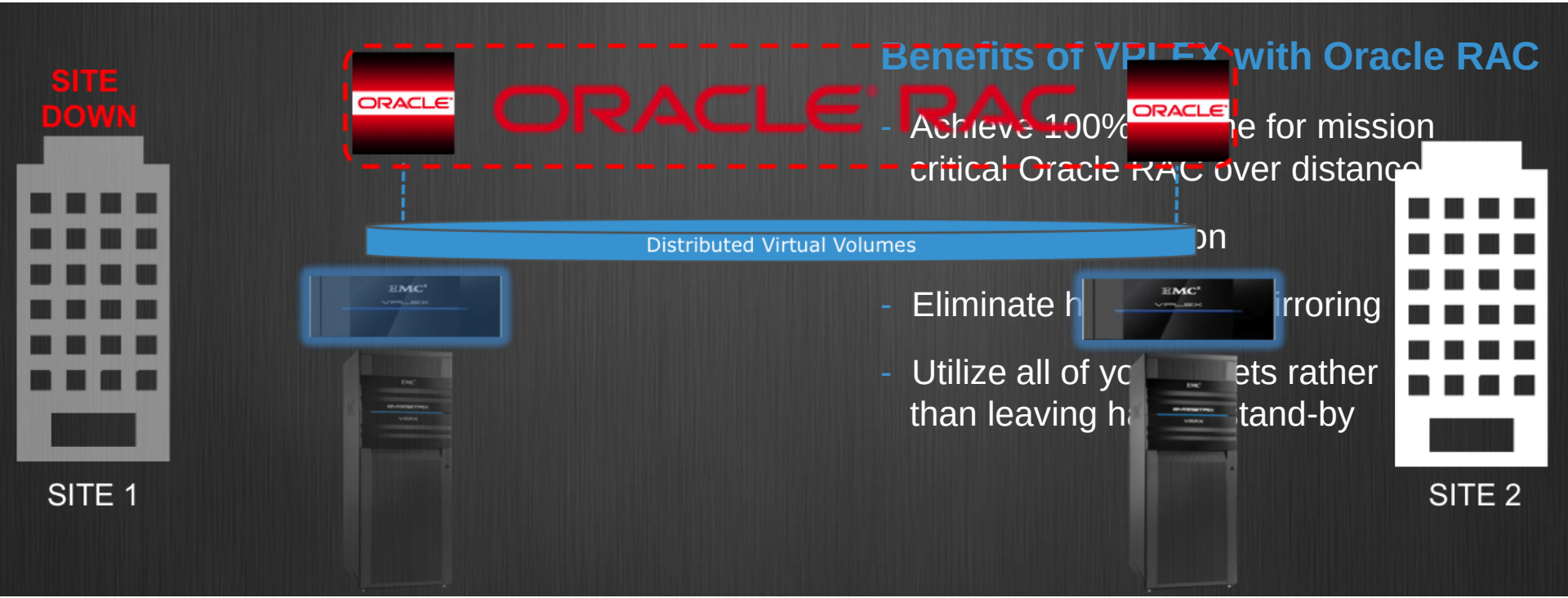
Continuous Availability Extends Oracle RAC



Benefits of VPLEX with Oracle RAC

- Achieve 100% [illegible]e for mission critical Oracle RAC over distance
- [illegible]on
- Eliminate h[illegible]irroring
- Utilize all of yo[illegible]ets rather than leaving h[illegible]tand-by

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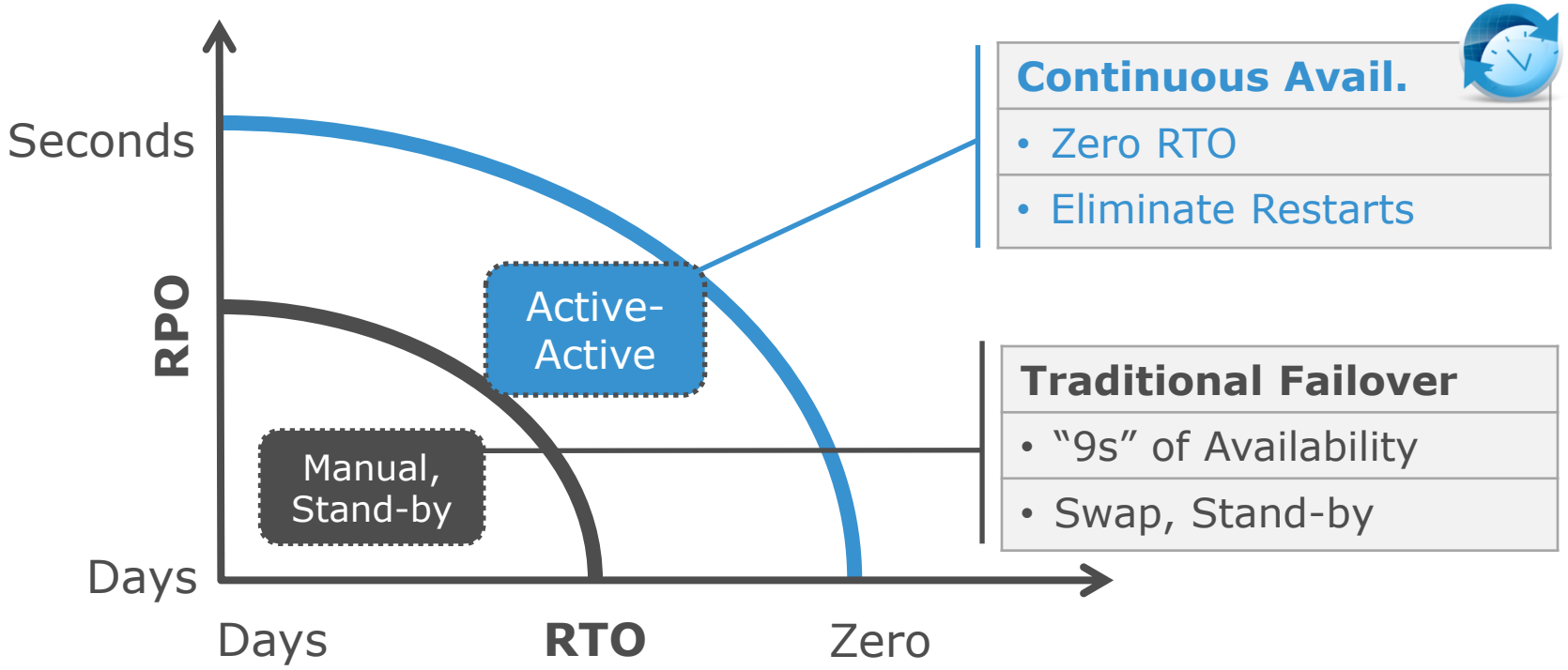
Evolution to Continuous Availability



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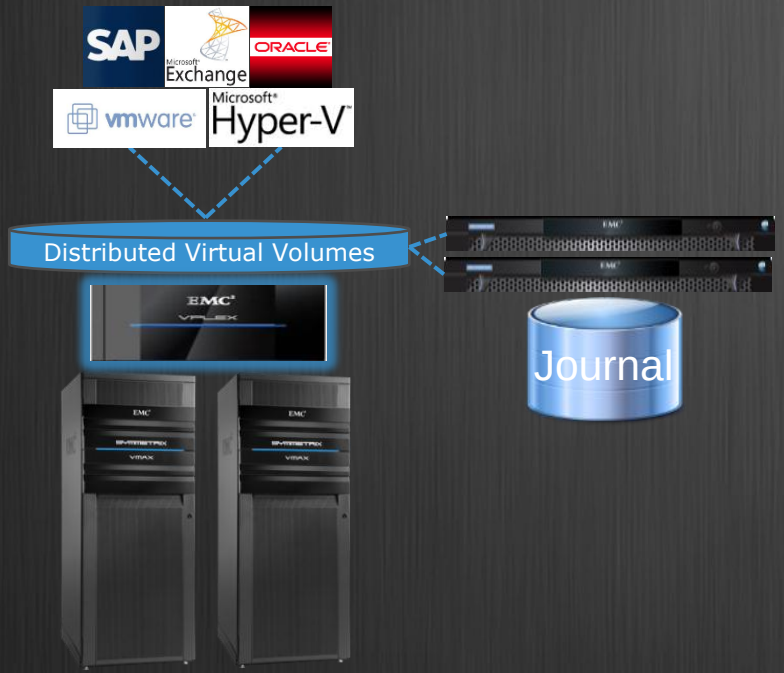
RecoverPoint for Operational Recovery



RecoverPoint is:

A SAN-based data replication solution which provides operational recovery and 3rd site replication for VPLEX environments

RecoverPoint Provides:

Continuous local and remote protection with WAN bandwidth reduction

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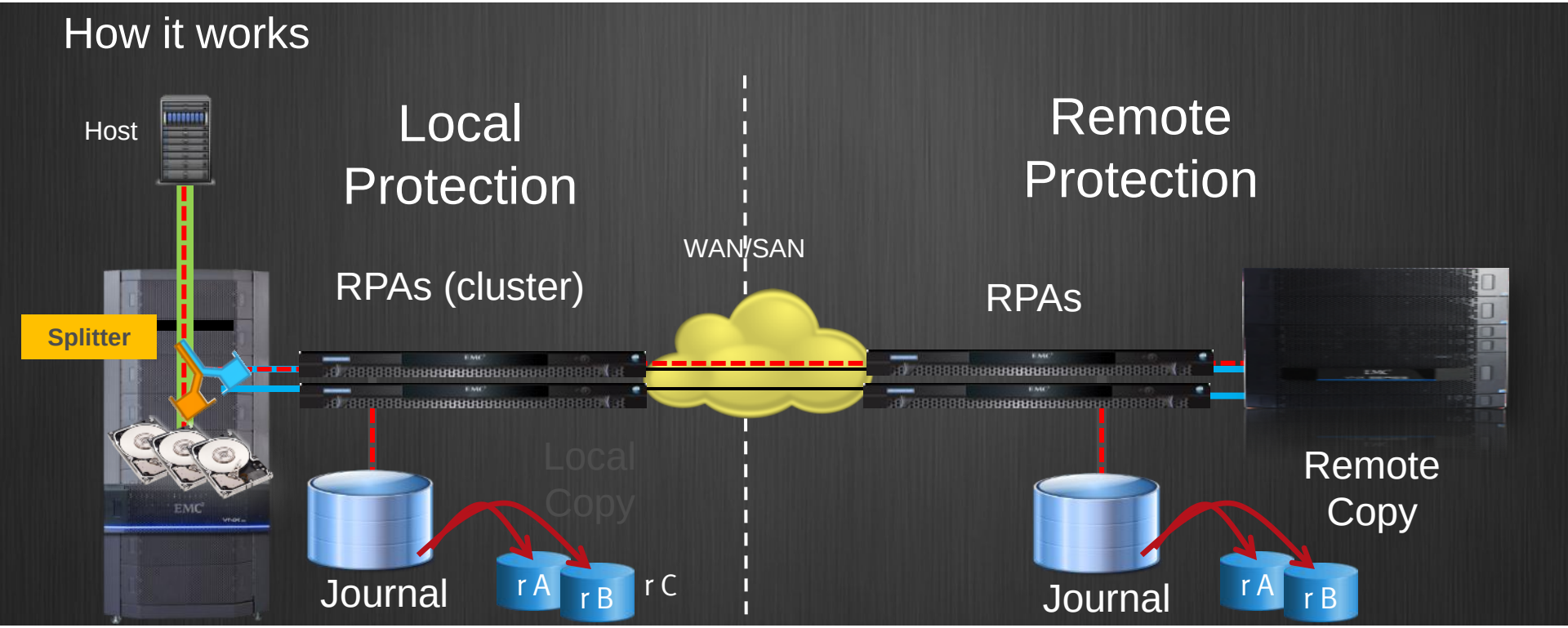
How RecoverPoint Works



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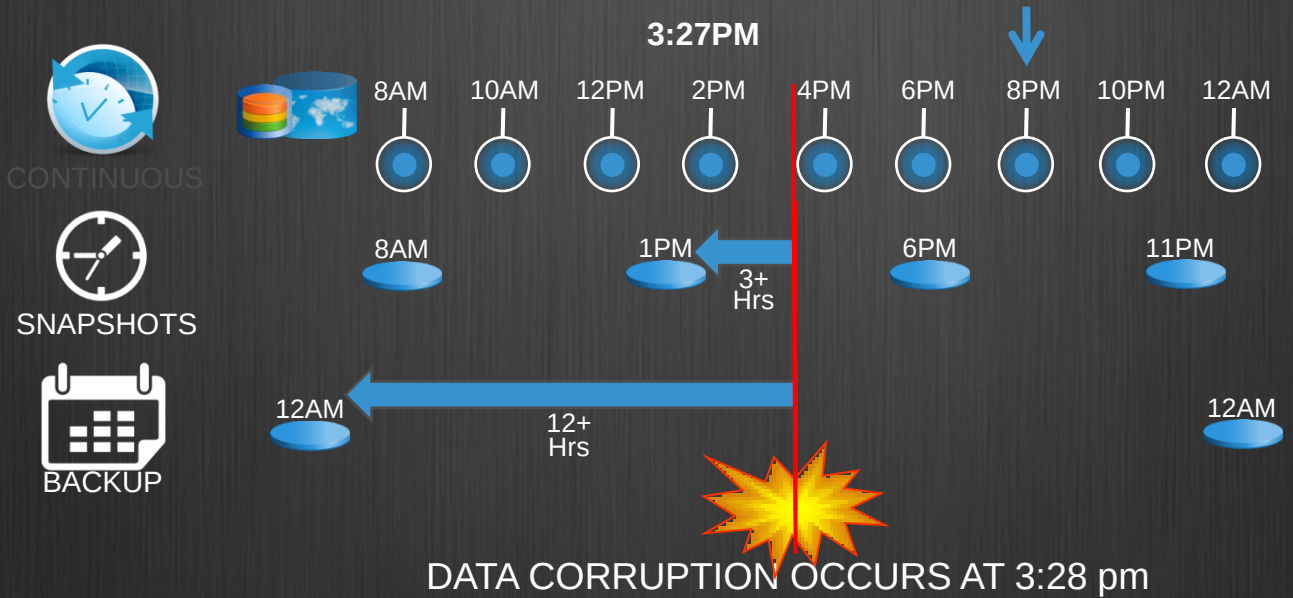
RecoverPoint Benefits

Provides DVR-like, ANY Point-In-Time access to data



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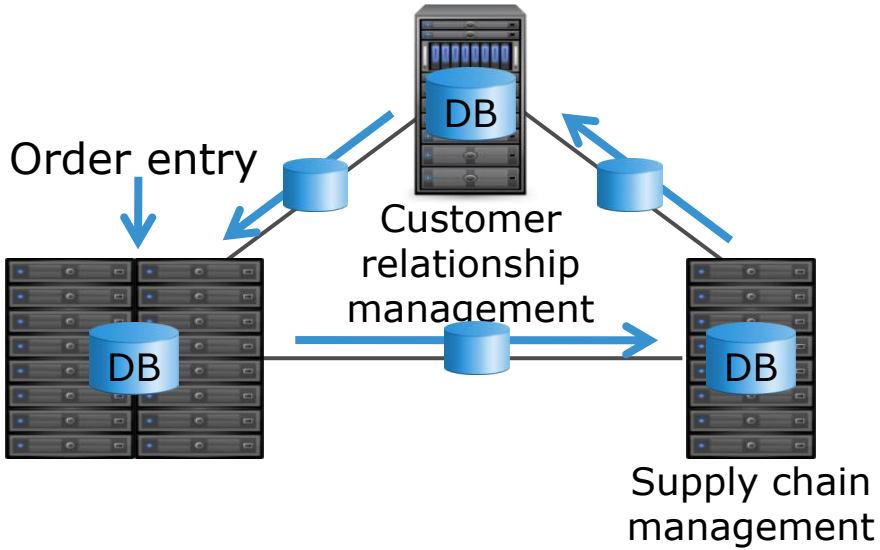
Importance Of Data Consistency



- Applications and data are interrelated (federated)
- All data movement must be stopped and started at the same point in time
- To restart applications, you must have *all* the data—not parts of it
- Recovery requires dependent-write consistency across *all* volumes and systems

Systems share information…
RecoverPoint captures a consistent view

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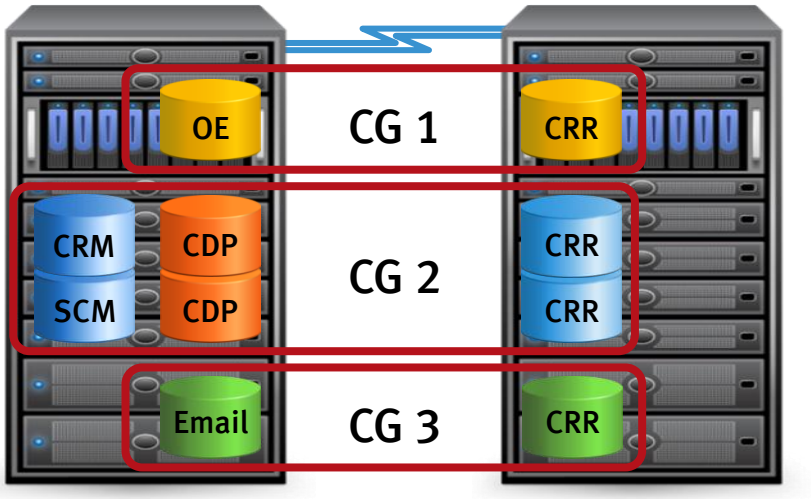
Consistency Groups for Applications



- Consistency Groups (CGs) protect every volume in an application
- RecoverPoint ensures write order consistency between production and its replicas
- Application recovery can be independent of service level agreements (SLAs)
- Independently replicate multiple applications
- Organize replicas by application

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What About Extended RAC?

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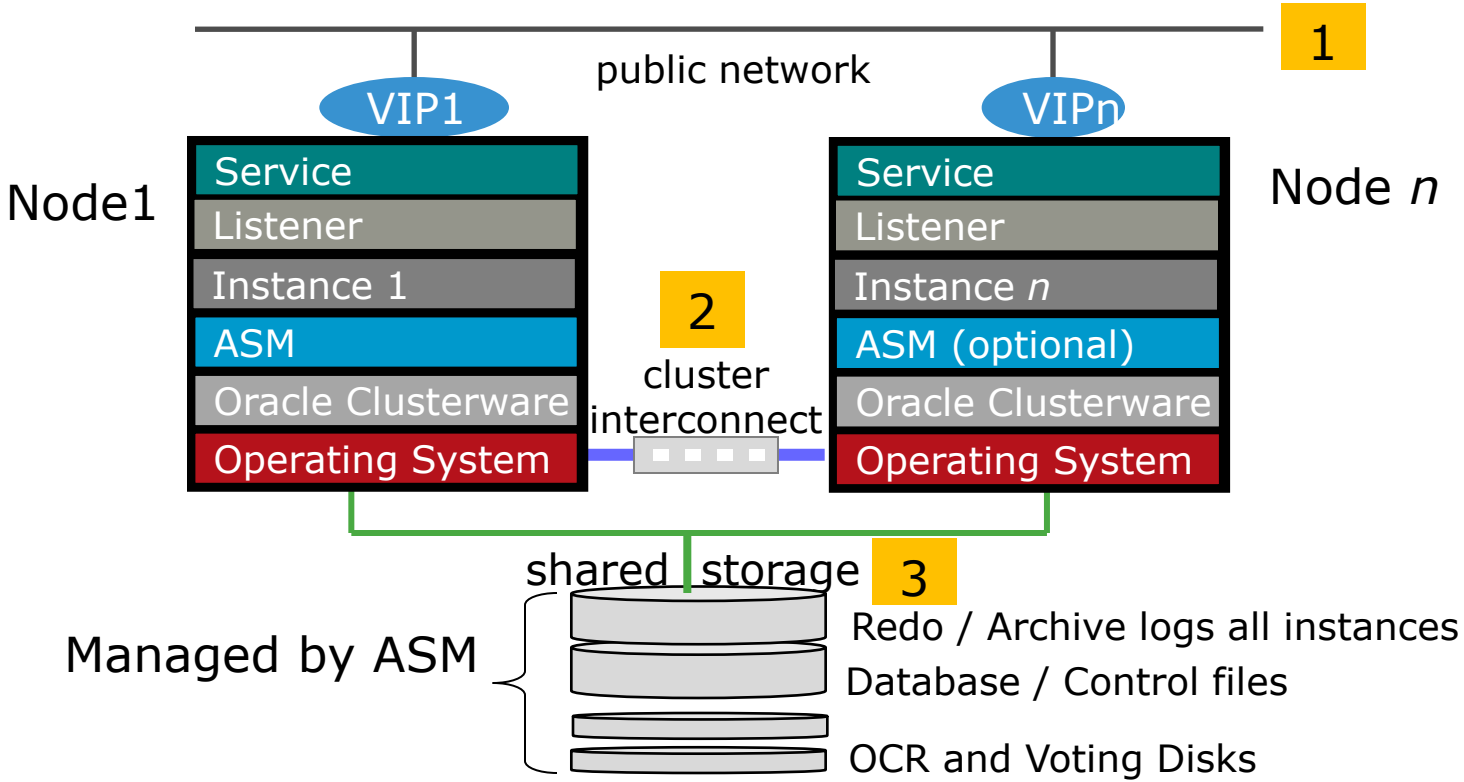
General Oracle RAC Architecture



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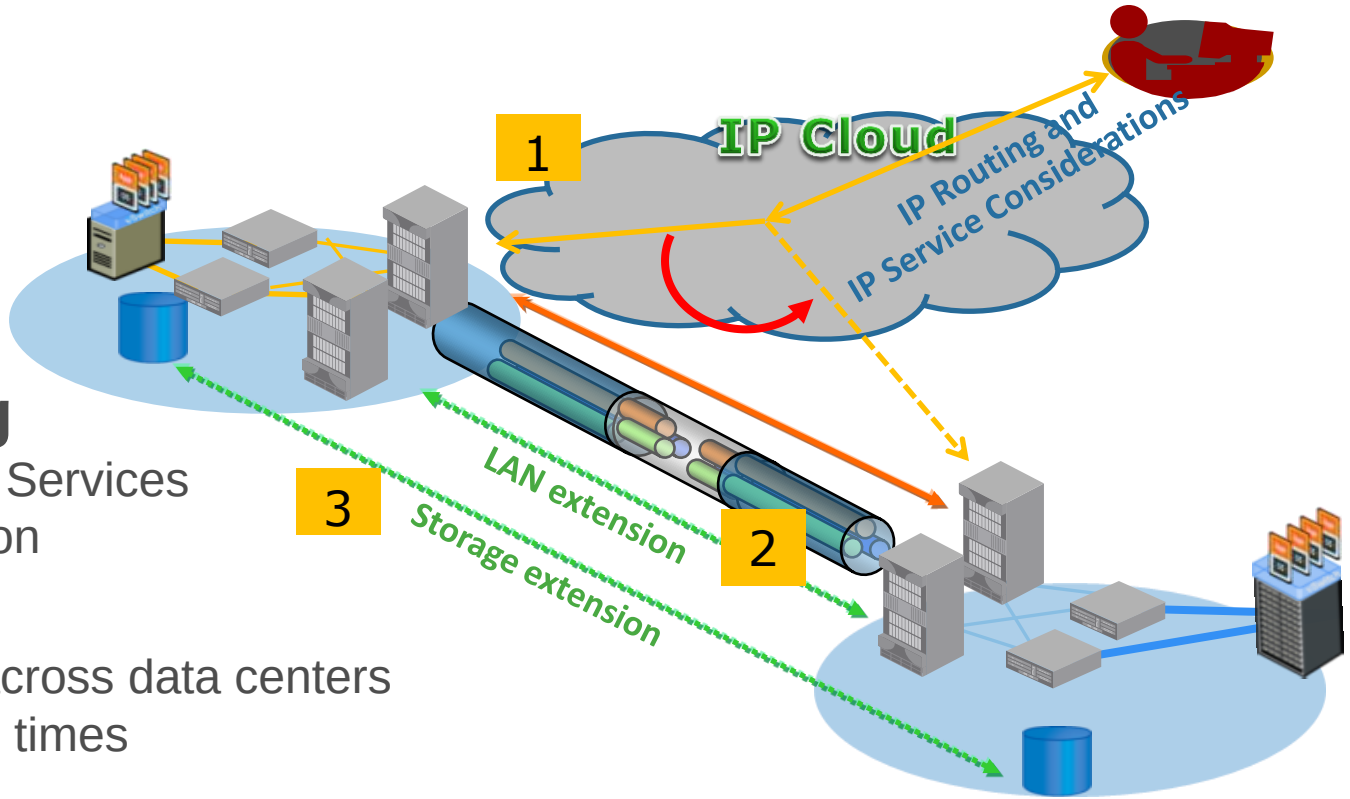
Infrastructure for Extended Oracle RAC



Networking

- IP Routing & Services
- LAN Extension

Storage

- Availability across data centers for R/W at all times

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Why Not Extend Oracle RAC?

- Host-based multi-site replication
  - Complexity - implementation and ongoing storage management efforts by DBA
  - Different approach than other availability solutions in the data center
- Tech Refresh / Mobility
  - Upgrading, scaling out, or moving data in the environment can be a big concern
- Other concerns can include
  - Application consistency across independent databases and upstream applications
  - SAN Performance / Scalability / Fault Isolation
  - CPU resource cost associated with node based mirroring and/or data movement between storage frames

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Benefits Review

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Why VPLEX for Extended Oracle RAC

- Easy to configure and manage
- Continuous Availability
  - Simple DR testing
  - Ideal for tech refresh and data/application mobility
- Optimized SAN Performance and Scale
  - All reads local (cache/disk), no host overhead
  - Maintain Separate Fabrics and associated limits
- Multi-database and application consistency upon failure
- Leverage for other applications
  - Interoperates with EMC and 3rd Party servers/arrays

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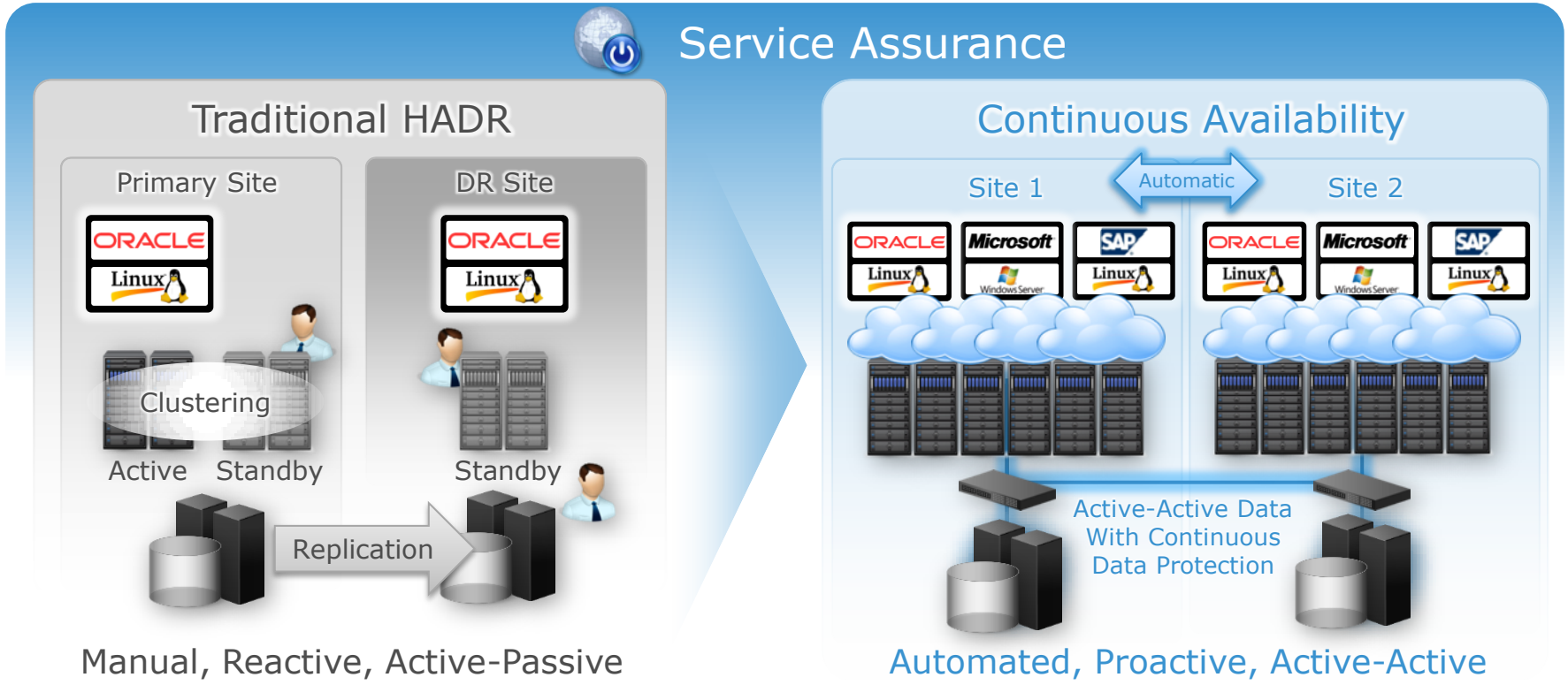
Transforming Oracle HADR For Your Cloud



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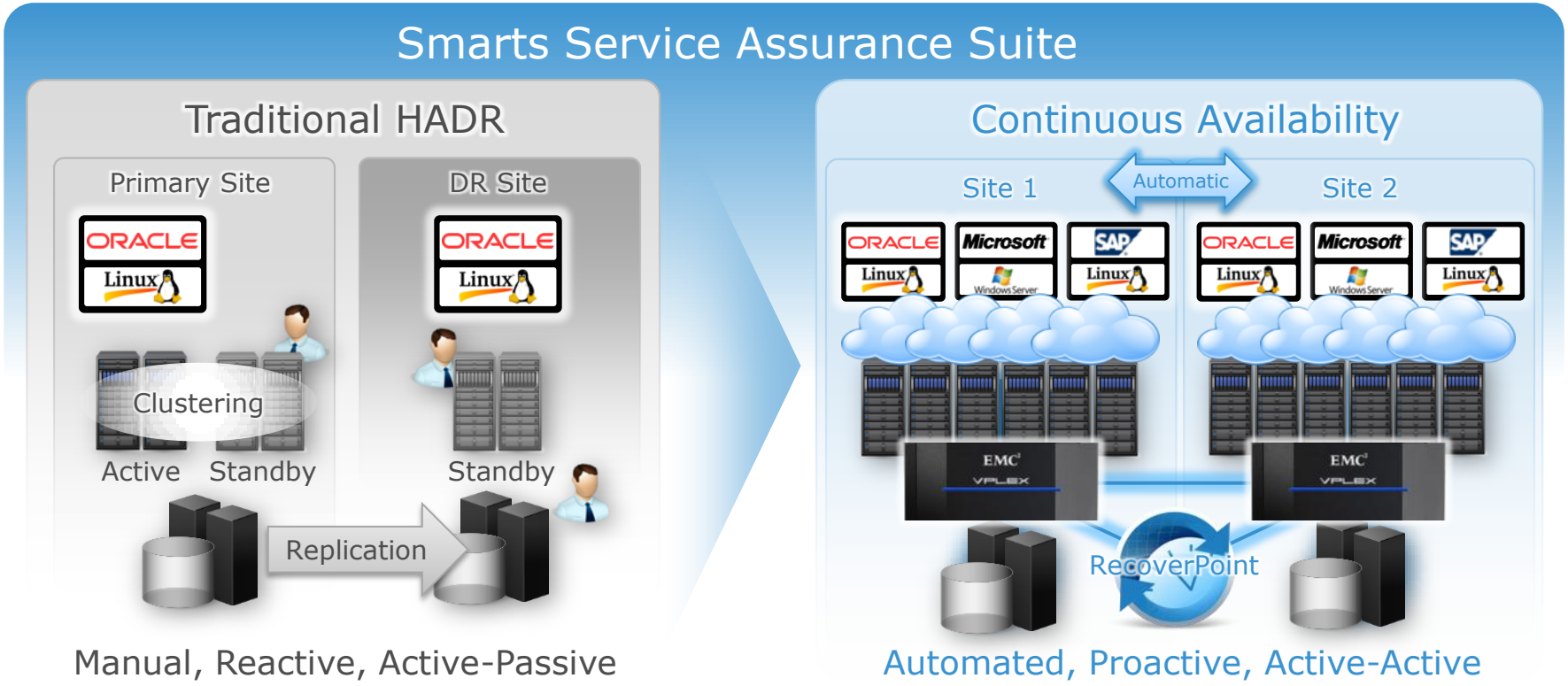
Transforming Oracle HADR For Your Cloud



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Open Solutions

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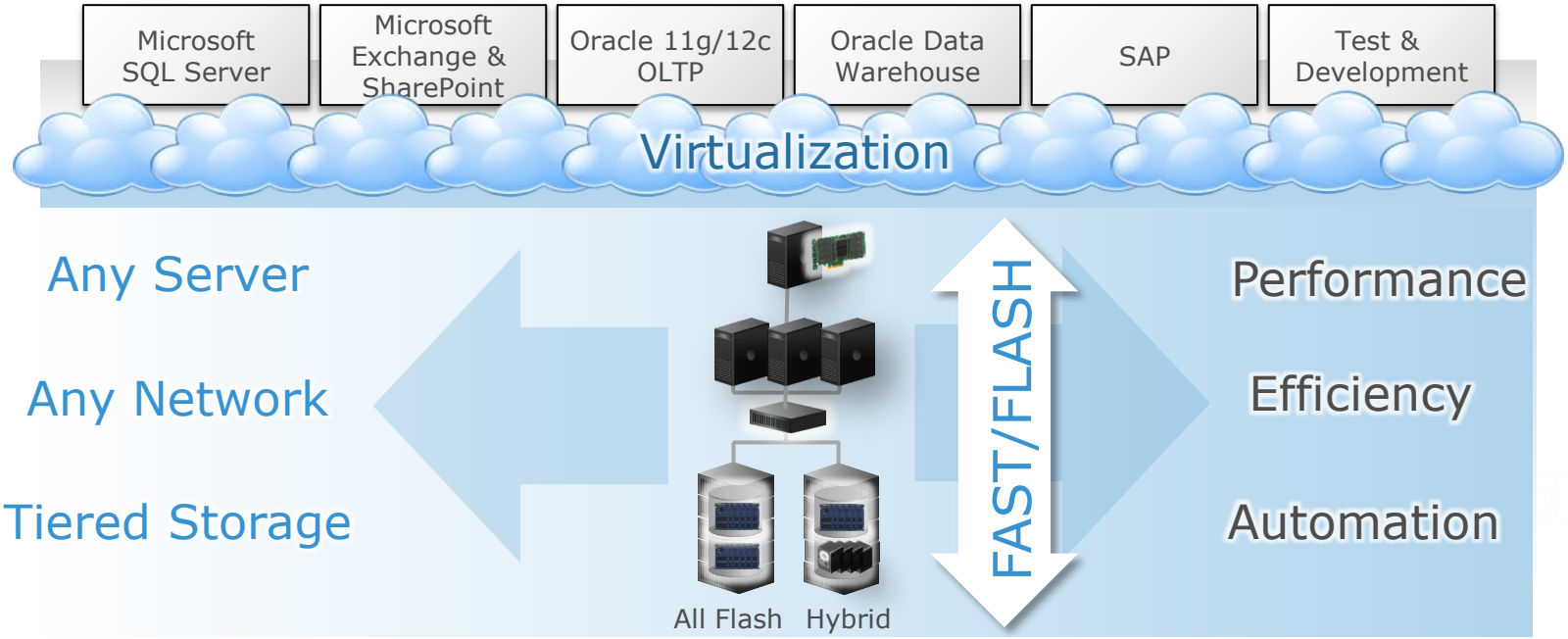
EMC Open Architecture For Oracle



Leverage: *Five 9's; Snaps, Clones, Backup/Recovery, Data Protection, Disaster Recovery, Seamless H/W Upgrades …*

Three Paths To Cloud Infrastructure

EMC Products

Best Of Breed
Infrastructure Components

Partner VSPEX

Proven
Infrastructure

VCE VBLOCK

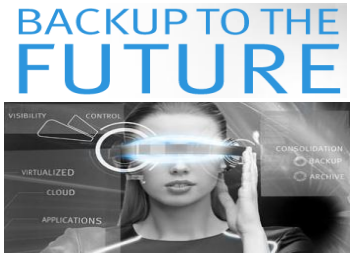
Converged
Infrastructure

Simpler, Faster, Lower TCO

Open Hardware Architecture
High Performance Database
Performance Driven. Purpose Built. Fully Integrated.
Flash Everywhere. Physical and Virtual.

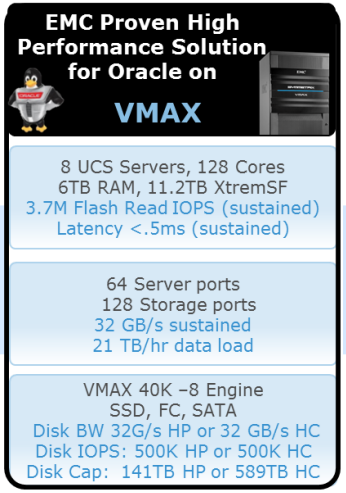
Automated Replication Management
Self-Service Replicas. Application Consistent.
Snaps & Clones. Local & Remote.

REPLICATION MANAGER



DATA DOMAIN

Consolidated Backup
High Speed Boost. Inline De-duplication.
Replication. Encryption. Retention.



EMC Proven High Performance Solution for Oracle (Reference Architecture)

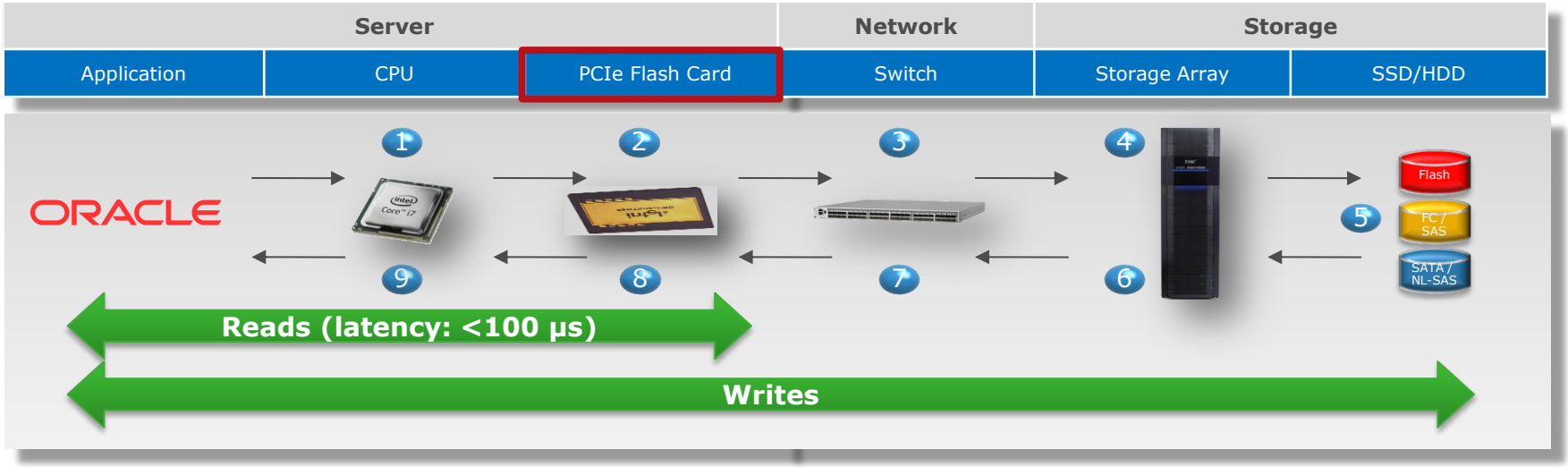
Continuous Operations
Mobility. Availability. Stretch Clusters.
Migrations. Scale-out.

VPLEX

RECOVERPOINT

Any Point in Time Application Recovery
Continuous. Bi-Directional. Local & Remote.
Bandwidth Compression & De-duplication.

XtremSW Cache Advanced Architecture



- Reads are serviced by XtremSW Cache for **PERFORMANCE**
- Writes are passed through to the storage array for **PROTECTION**

Oracle RAC Support*

Active-active Shared Storage via Distributed Cache Coherency

- Oracle Database 11g on Windows, RHEL or OEL running Oracle Clusterware 11g with ethernet interconnect
- Up to 8 nodes per cluster
- Uses SCSI-3 Persistent Reservations to block joining node from accessing storage until XtremSW Cache approves it

* Available October 2013

Helping Organizations Make the Journey

EMC Continuous Availability Assessment Service

- Current-State Snapshot
- Application Readiness Assessment
- CA Business Case
- Implementation Roadmap & Timeline

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Continue the Conversation!

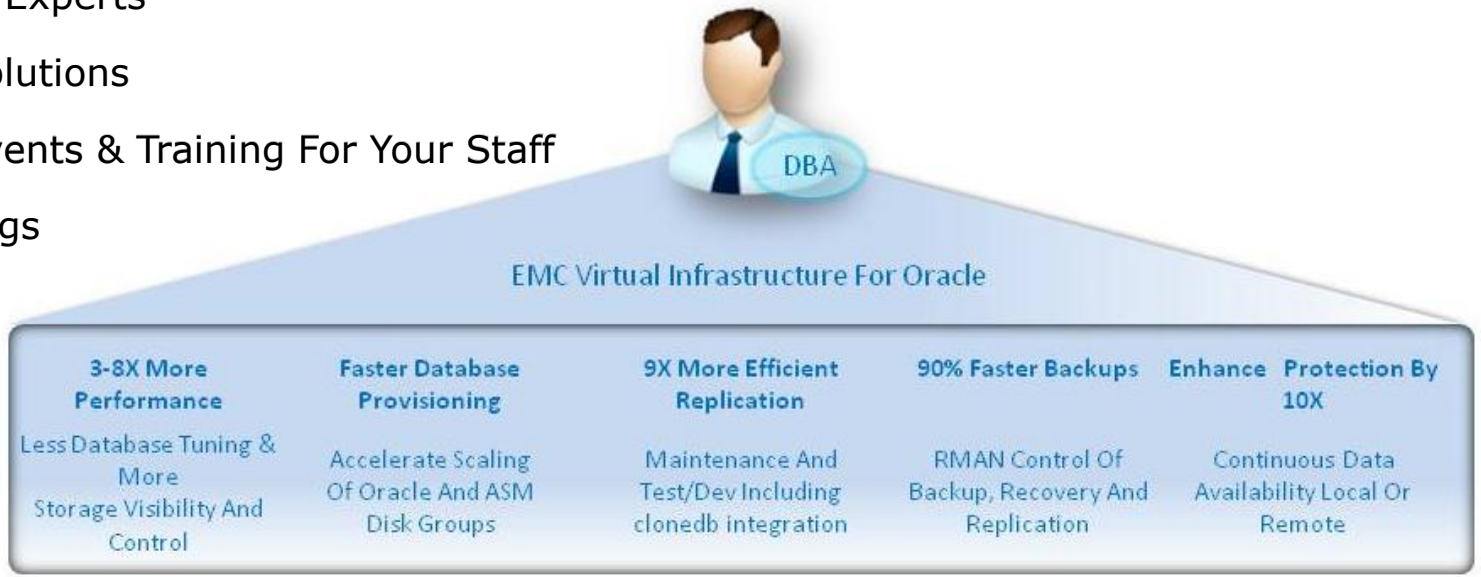
EMC ASK THE EXPERT

- Ask questions after the webinar!
- Participate on the EMC Community Network: bit.ly/CAexperts

EMC Community For Oracle DBAs

www.emc.com/everthingoracle

- 100+ Solution Experts
- 30+ Proven Solutions
- Calendar Of Events & Training For Your Staff
- Interactive Blogs
- Live Demos



https://community.emc.com/community/connect/everything_oracle

www.emc.com/DBperformance

Resources / Next Steps

Using VPLEX Metro and RecoverPoint with VMware SRM in an Oracle Extended RAC E-Business Suite Environment

Oracle Real Application Clusters (RAC) on Extended Distance Clusters with EMC VPLEX Metro
Best Practices Planning

EMC Mission-Critical Business Continuity and Disaster Recovery for Oracle Extended RAC