Safeguarding SAP HANA: Key Strategies for Ensuring High Availability & Disaster Recovery

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Introduction

Kelly Silva
Partner Alliances Director

- **20+ Years Experience**
  - High Tech Sales, Partner Dev, & Relationship Mgt.
- **7 Years with SIOS**
  - Sales, Cloud Sales, Partner Management

Jed Tobin
Sr. Account Executive

- **15+ Years Experience**
  - High Tech Sales, VMTurbo, Oracle
- **7 Years with SIOS**
  - Managing Enterprise Accounts

SIOS Technology

- 20+ Years focused on HA/DR
- SAP-Certified Products
  - SIOS Protection Suite for S/4HANA HA and NetWeaver HA
- Microsoft Partner Since 2007
- AWS Partner Since 2014
- Worldwide Locations
  - US, UK, Germany, Singapore, Japan

SAP Partner · Google Cloud Partner · Microsoft Azure Certified · aws PARTNER · amazon web services Partner Network ADVANCED TECHNOLOGY PARTNER

SAP® Certified Integration with SAP S/4HANA® · SAP® Certified Integration with SAP NetWeaver®

redhat · NTT · ORACLE · SUSE

SAP HANA

SAP HANA 2027

SAP Mandated migration to SAP HANA by 2027

78%

78% of US-based SAP customers are using or planning to use S/4HANA (89% in UK & Ireland)[1]

18 mos.

The average deployment time for SAP S/4HANA is around 18 months.[2]

[1] https://www.cio.com/article/416188/sap-user-groups-see-pick-up-in-migration-to-s-4hana.html#:~:text=In%20the%20US%2C%20the%20proportion,Users'%20Group%20(ASUG). Syntax & ASUG Survey: Trading up to the Cloud Leaves Competitors in the Dust

[2] SAPInsider: https://sapinsider.org/analyst-insights/is-sap-s4hana-adoption-accelerating/

Downtime for SAP and HANA is expensive

1HR
of downtime

$300K
lost business, productivity disruptions and remediation efforts

91%
of organizations

1HR
of downtime

$1- 4M
lost business, productivity disruptions and remediation efforts

44%
of organizations

SAP HANA SAP Microsoft SQL Server ORACLE DATABASE

Data courtesy of ITIC 2021Global Server Hardware, Server OS Reliability Survey

Downtime Takes a Toll on IT Teams

- **Costly Disruption**
  - Drop current tasks to respond
  - Identify root cause of problem and solution
  - Stressed-induced errors
- **Expertise needed**
  - Staff shortage
  - Changing role
- **Highly Manual**
  - Monitoring to ensure applications are “healthy”
  - Clustering/DR scripting and management
- **Cloud challenges**
  - Added complexity
  - Less control
  - No way to do realistic DR testing

HA/DR Needs are Often Unclear

- Cloud-native resiliency and scalability are ideal for **stateless** but not for **stateful** applications
- **Stateful** design of SAP is best Protected by **data replication** and **failover clustering**
- **Clustering** is best for cloud, on-prem and hybrid

HA/DR Protection is a Necessity

Cloud Outages
Uncommon but Costly

"Amazon Web Services explains outage and will make it easier to track future ones"- CNBC

"Global Azure outage knocked out virtual machines, other VM-dependent services"- ZDnet

"Google Cloud Outage Takes Major Websites & Apps Down"-CRN

Disasters
Sitewide and Regional

"COVID-19 upended technology priorities. Where do businesses go from here?"
- CIODive Magazine

"Storm Damage Closes LA Technology Building"
- Lincoln Cty News

"Huge customer effort keeps flooded NYC data center running"- Lincoln ComputerWorld

Human Error
Sitewide and Regional

"How A 'Human Error' Took Down Servers of Europe's Major Cloud Computing Group" - NDTV

"Human Error To Blame in AWS Outage" - Website Mag

"Study Shows Human Error To Blame In Majority Of Network Downtime Incidents" - Appneta

Criteria for HA/DR for SAP HANA

Automatic Recovery

Constant workload monitoring and the ability to **restore operation** when services are compromised.

Designed for HA and DR

Redundant workloads across cloud fault domains for HA **and across cloud regions** or on **prem geo** for DR

Regular Recovery Testing

All workload recovery processes (automated and manual) **thoroughly tested** as realistically possible as part of normal production processes.

SIOS

But Delivering HA/DR is Challenging

Many HA Solutions are . . .

Complex & manual

Notoriously unreliable & unstable

Costly & time consuming to keep up with changes

Vendor Lock-in

Red Hat

SUSE

Windows Server 2008 R2

Windows Server 2012

ORACLE Linux

Windows Server 2016

Windows Server 2019

Windows Server 2022

vmware vSphere

Microsoft Hyper-V

amazon web services

Microsoft Azure

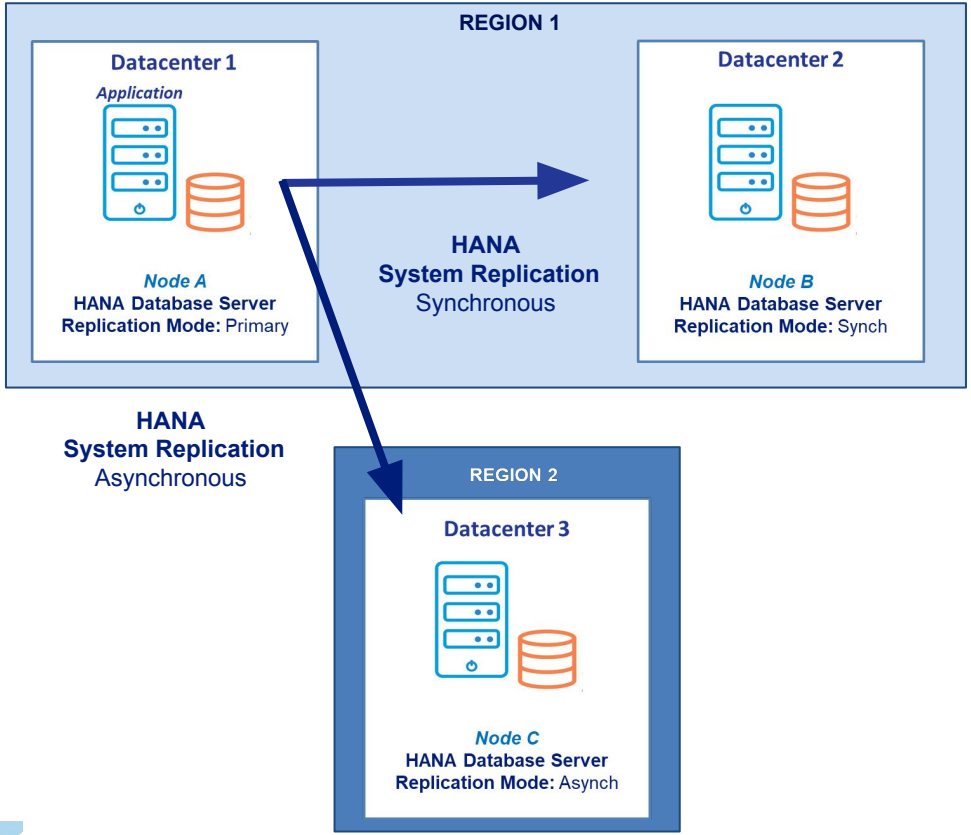
Google Cloud

What’s the Solution?

Three Key Requirements

1. Redundant, Geographically Separated Nodes
2. Reliable, Automated Failover
3. Eliminate Human Errors and Manual Hassles with Automation

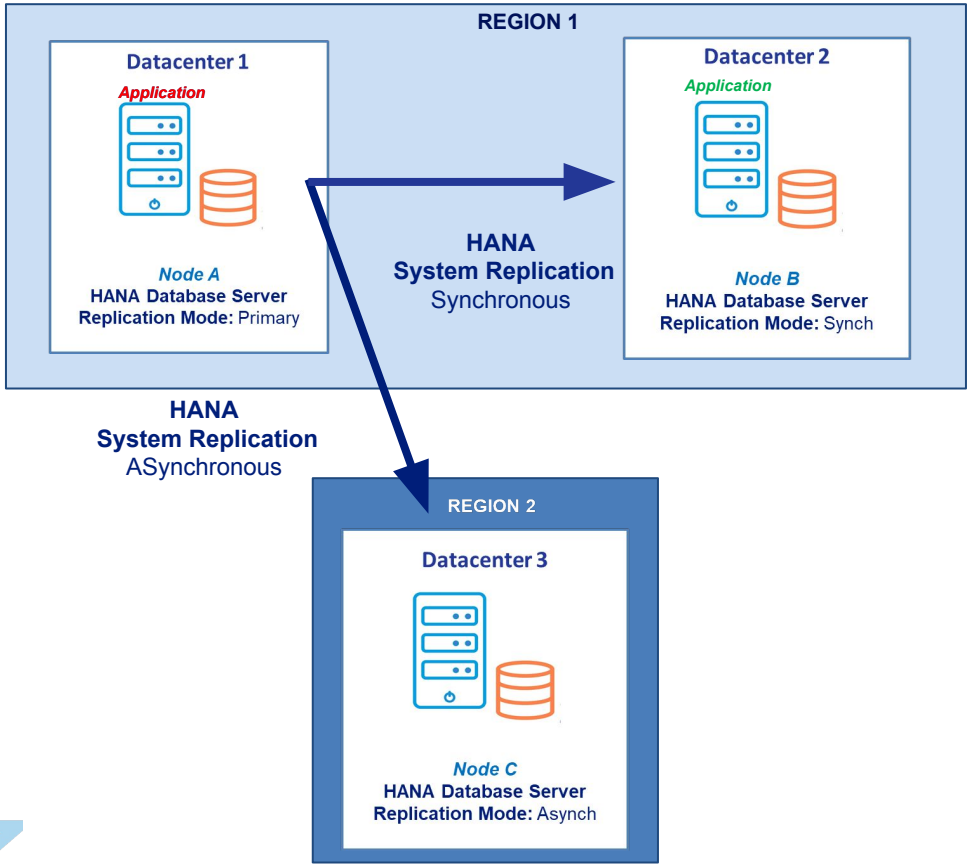
Redundant Nodes with Geographic Separation



Recommendations:

- **Maintain a standby copy of the database instance** in a separate AZ
- **Synchronously replicate data** to secondary database host for zero RPO
- **Keep standby database running with important tables pre-loaded into memory**, if possible, to create a “hot standby” for low RTO

Ensure Reliable, Automated Failover

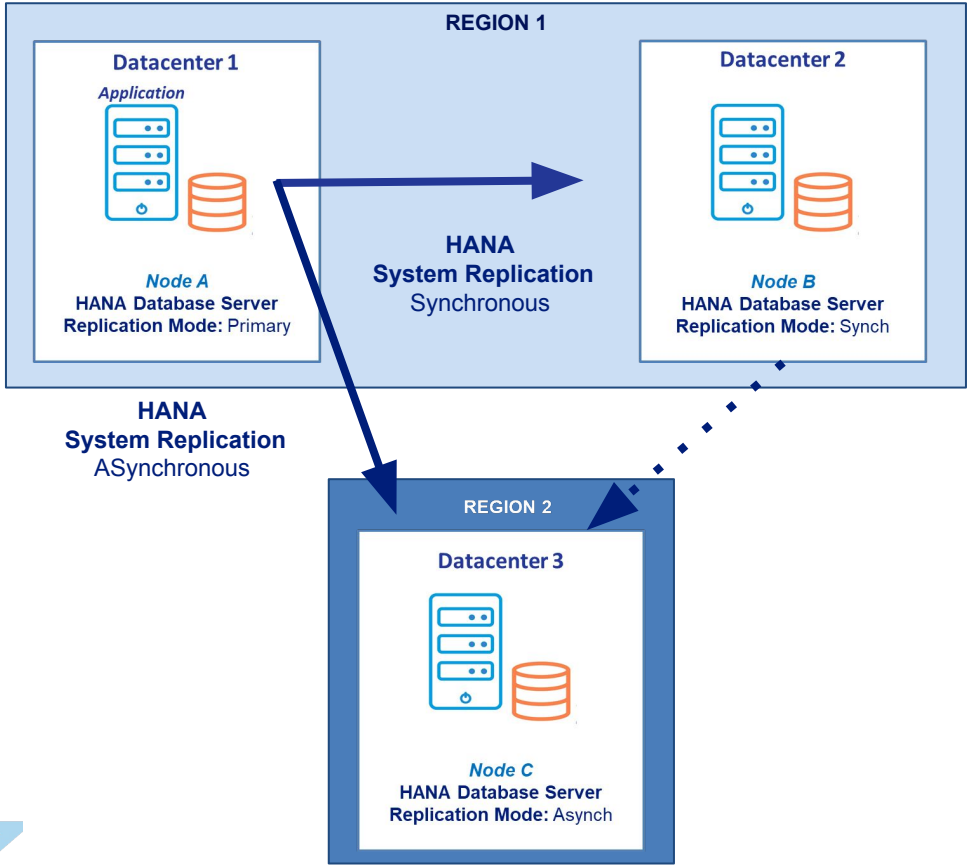


Recommendations:

- **Reliable Applications and Databases Failover**
  Interdependencies, App-specific requirements

- **Application Intelligence** - Automatically failover according to vendor best practices - maximum reliability

Eliminate Human Errors and Manual Hassle



Recommendations:

- **Keep Run Books Updated**
- **Cross Train Staff**
- **Automate Manual Steps**
  - Simplify setup and configuration
- **Avoid Failover**
  - Restart before full failover
  - Hands-free failover
- **Simplify Replication Management**
  - Replicate to DR site(s)
  - Automatically Maintain DR protection
  - Restore normal settings when needed

SIOS High Availability Solutions

SAP® Certified
Integration with SAP S/4HANA®

SAP® Certified
Integration with SAP NetWeaver®

LifeKeeper

Application-Aware Automated Failover Orchestration

- SIOS LifeKeeper for Linux
- SIOS LifeKeeper for Windows

Automated recovery from failures at any layer of the IT Stack. (hardware, OS, network, storage, file shares, database, applications) and Application-Aware Automated Failover.
Supports HANA System Replication

DataKeeper

High Performance Block-level Data Replication

- SIOS DataKeeper Cluster Edition for Windows
- Optional Replication for LifeKeeper for Linux or Windows

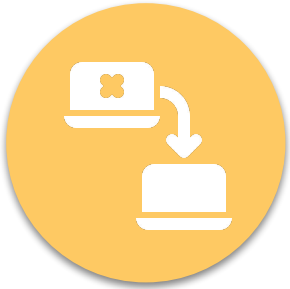
Integrated DataKeeper functionality for WSFC

Application Recovery Kits

Application Recovery Kits (ARKs) for SIOS LifeKeeper provide out-of-the-box application-specific intelligence.

Wizard-Driven Automated Configuration and Management

No time-consuming, error-prone manual scripting. Automatic validation of user input for error-free configuration and management.



Application-Aware Failover Orchestration

Monitors and protects all layers of the stack and maintains application-specific best practices for failover and recovery.

Protects Custom and Commercial Applications

Any application can be protected with a custom resource type as long as LifeKeeper knows how to start, stop, monitor, and recover it.

SAP HANA Recovery Kit

Out-of-the-Box HA and DR for SAP HANA Environments

- Intelligent, application-aware failover orchestration
- Protection for SAP HANA scale-up clusters utilizing HANA System Replication (HSR)

Maintains SAP Best Practices Throughout Recovery and Failover

- Monitors and recovers all required instance processes as well as supporting services (e.g., SAP Host Agent, SAP OS Collector, SAP Start Service)
- Monitors HANA System Replication status to prevent accidental data loss caused by attempting HSR takeover while replication is out-of-sync
- Maintains “hot standby” running standby database for quick switchover and failover
- Supports SAP HANA Takeover with Handshake feature for decreased downtime during planned maintenance windows

Thank you!

For more information,
contact SIOS!

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