
EMC WORLD 2013
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# Leveraging EMC VNX to Protect SAP In-Memory Databases (HANA)

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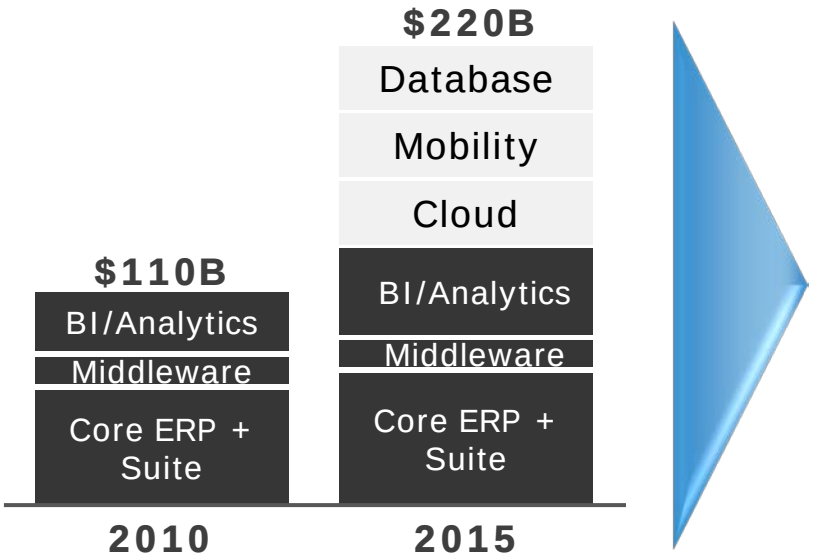
# Agenda

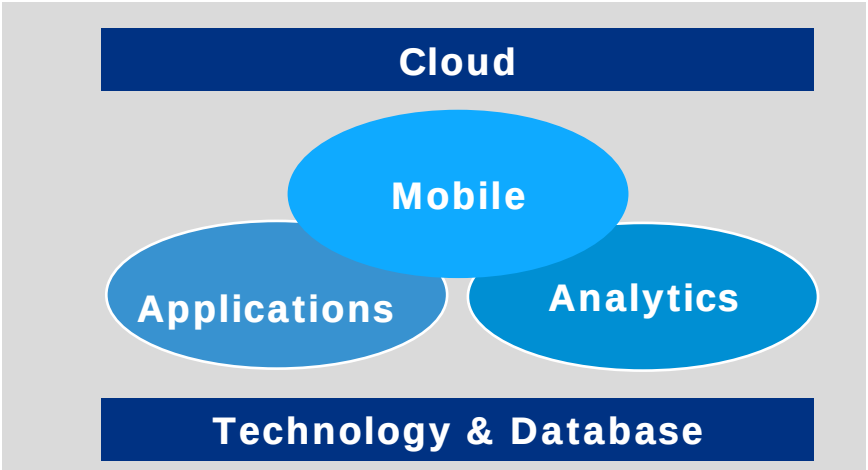
- SAP Focus 2010-2015
- HANA Overview – Vendors, Challenges, Use Cases
- HANA Technical Overview
- Case Studies

# SAP Focus For 2010 - 2015

## SAP's Addressable Market ($B)




## SAP's Five Markets




**SAP HANA**

- **SAP is the market leader in Applications, Mobile and Analytics**
- **EMC's goal is leadership in the Cloud and Database markets**

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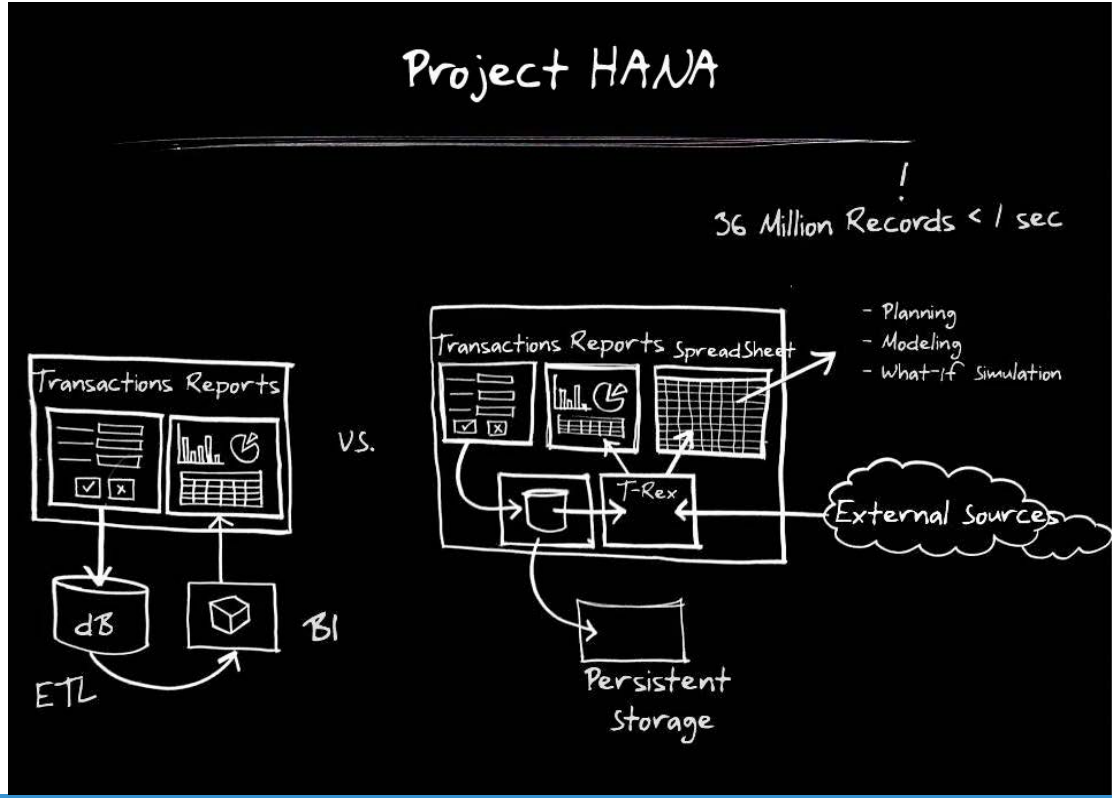
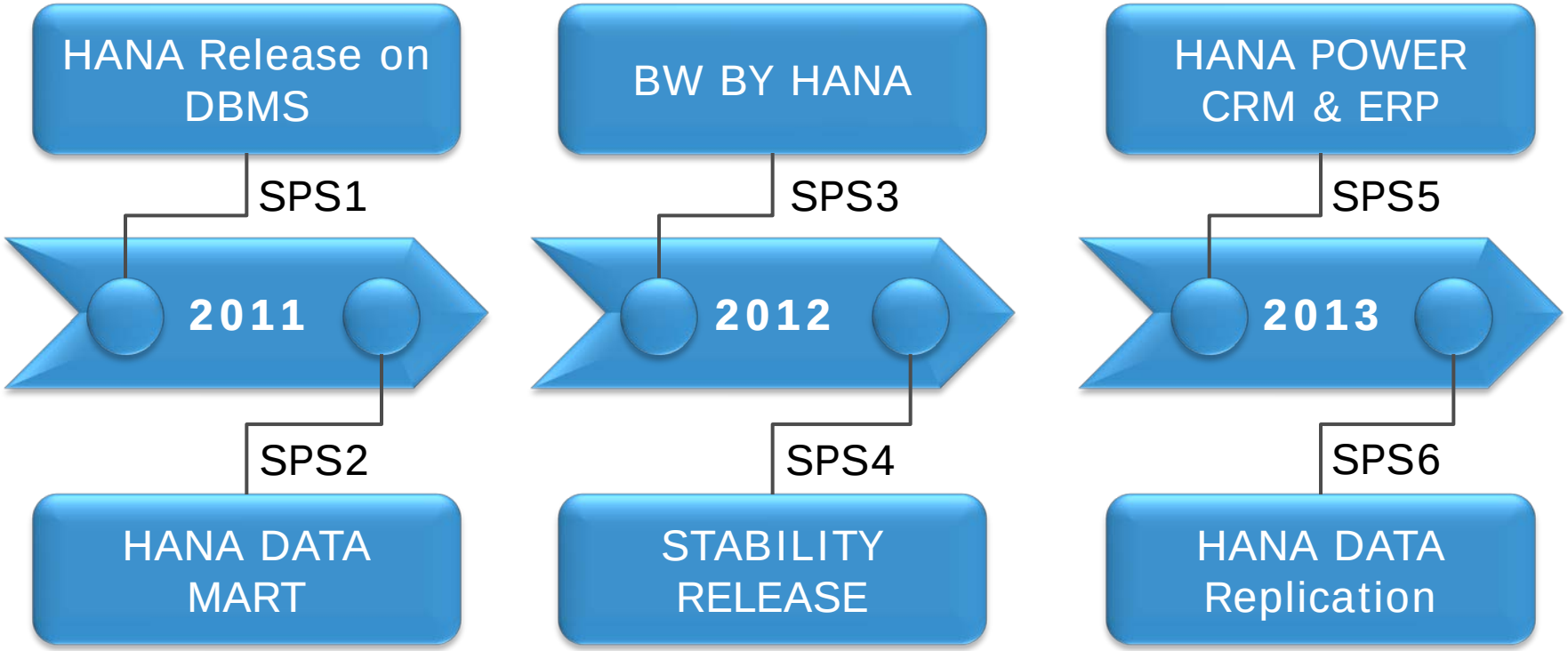
# EMC and SAP Joint Collaboration

- HPI FutureSoc Lab
  - EMC is a founding member
  - Member of the steering committee
  - HPI uses EMC
- Research project at the HPI
  - “the famous what if…”
  - In-Memory DB becomes reality



# SAP HANA Roadmap



# EMC Partnership Strengths




- SAP Global Technology Partner since 1996
- 60+ infrastructure solutions
- 35+ joint engineering
- >26,000 customers
- EMC #1 Storage Vendor for SAP
  - IDC Storage User Demand Study, Fall 2011- 2012

- Common Mission:
  - Accelerate Cloud
  - Enable Big Data
- Provide Choice:
  - Reference architectures (VSPEX and CVD)
  - Converged infrastructure (VCE Vblock)
- New joint Scale-Out SAP HANA appliance

# EMC VNX Product Family


## Efficient

- FAST Suite self-optimizing storage
- Ideal for virtualized applications
- Multi-protocol support: file, block

## Powerful

- Each HANA Node Requires 600MB/s
- VNX leverages 6BG/s SAS Backend
- Next Generation Intel Processors

## Available

- Five 9s (99.999%) availability for SAP applications
- Cache mirroring, cache destage, proactive sparing, replication

# EMC: #1 In Storage For Applications


| Oracle | SAP | Exchange | VDI | Home Directory | SharePoint | Analytics |
|---|---|---|---|---|---|---|
| EMC² #1 | EMC² #1 | EMC² #1 | EMC² #1 | EMC² #1 | EMC² #1 | EMC² #1 |

More Oracle, SAP, Exchange, VDI, Home Directory, SharePoint and/or Business Intelligence / Analytics is Deployed On EMC Storage *Than Any Other Vendor*– IDC

Source : IDC, June 2012, June 2011

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# Today's Challenges

- Massively growing volumes of data
- Immediate results
- Hardware Consolidation
- Software Consolidation
- High Flexibility
- Legacy Systems

# HANA BENEFITS REAL TIME ANALYTICS

Data Volume

Data Governance

**SAP HANA**

**Next Gen Platform for SAP Apps (OLAP+OLTP)**

Calculation Speed

Information Latency

1. UCS Server Profile
2. Less Network Hops
3. Manage Data Growth
4. Get answers in split seconds
5. Remove data latency caused by ETL
6. Cut weeks from development cycles by removing the need for pre-aggregation cubes

# SAP HANA Use Cases

## Finance:

- "Take advantage of your large volume of financial data"
  - SAP CO-PA Accelerator
  - SAP Finance and Controlling Accelerator
  - SAP Dynamic Cash Mgmt

## IT:

- "Empower IT with Operational Effectiveness for Big Data"
  - BW on HANA

## Customer:

- "Empower Sales and Marketing with Speed and Depth"
  - Customer Segmentation
  - Sales Pipeline Analysis
  - Trade Promotion Management
  - SAP Sales & Operations Planning On-Demand

## Supply Chain:

- "Drive Your Supply Chain in Real-Time"
  - SAP Sales & Operations Planning On-Demand

# SAP HANA Use Cases

## Utilities:

- "Energy Revolution with Big Data"
  - SAP Smart Meter Analytics
  - Smart GRID Analytics

## Banking:

- "Real-Time Banking with Big Data"
  - SAP HANA Transactional History RDS
  - SAP HANA Financial Reporting RDS
  - Liquidity Risk Management

## Retail:

- "Real-Time Retailing with Big Data"
  - Sales Analysis for Retail
  - Planning for Retail

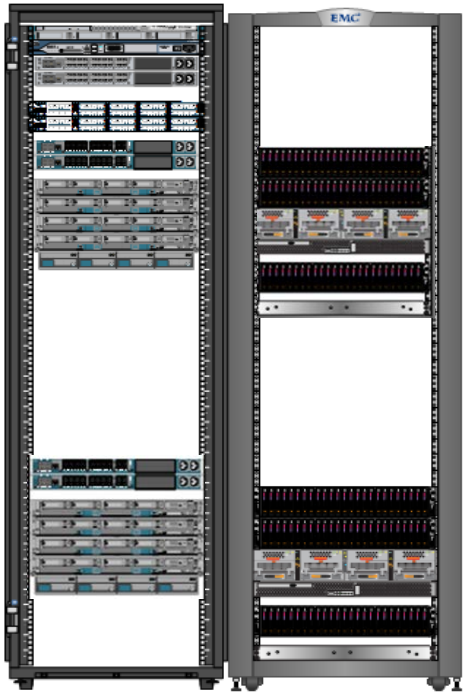
## Telecommunications:

- "The Big Opportunity of Big Data in Telco"
  - BW on HANA

## Consumer Products:

- "Precise Promotions with Big Data"
  - SAP Trade Promotion Management

# SAP Certified Cisco-EMC HANA Solutions



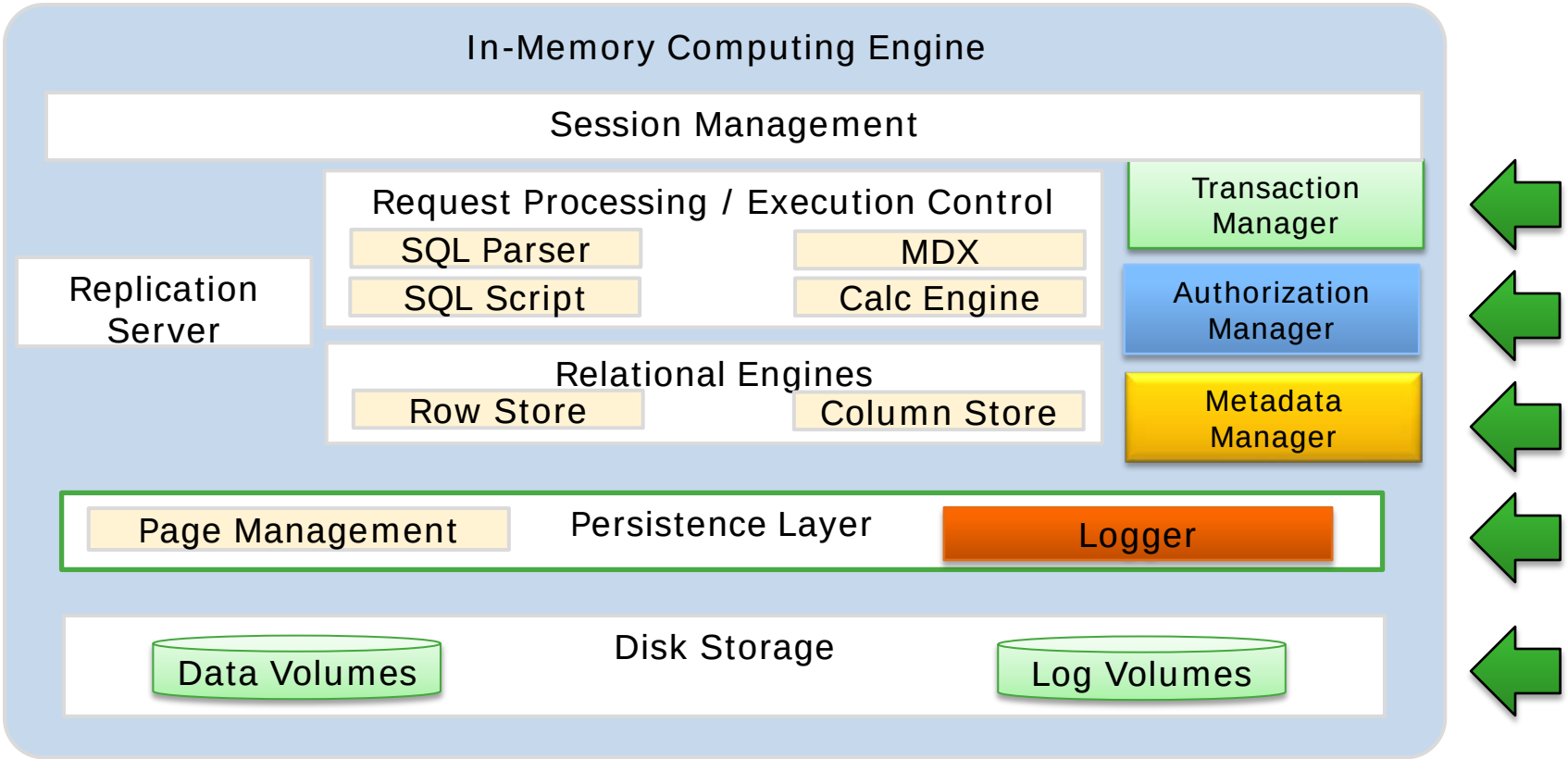
## Scale-Out Appliance

- SAP HANA Software With SLES OS Pre-Installed
- Cisco UCS Blade Servers
- 4 x Intel® Xeon® E7-4870 CPU
- 512 GB Memory
- EMC VNX5300
- Scales 3 → 16 Blades
- Across 1→ 4 VNX 5300s

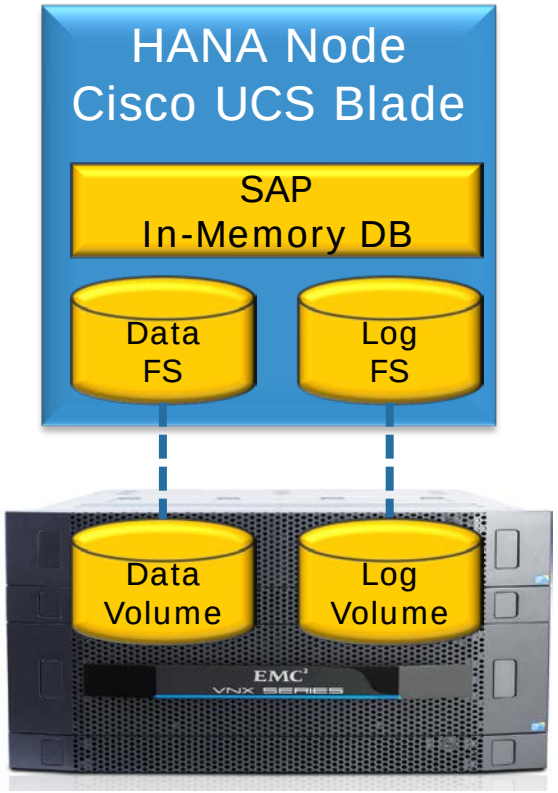
# EMC Cisco HANA Offerings

| Size | Model | Intel CPU | Memory | Form Factor | Log Persistence | Data Storage |
|---|---|---|---|---|---|---|
| XSmall | C260 | 2 x E7 | 128GB (16 x 8GB) | rack | 6 x 100GB SSD | 10 x 600GB |
| Small | C260 | 2 x E7 | 256GB (32 x 8GB) | rack | 6 x 100GB SSD | 10 x 600GB |
| Medium | C460 | 4 x E7 | 512GB (32 x 16GB) | rack | 2 x FusionIO | 12 x 600GB SAS |
| Large | B440 | 8 x E7 | 1TB | 2 blades *(+1 HA)* | **EMC VNX5300** | **EMC VNX5300** |
| XL | B440 | 16 x E7 | 2TB | 4 blades | **EMC VNX5300** | **EMC VNX5300** |
| XXL | B440 | 64 x E7 | 8TB | 16 blades | **EMC VNX5300** | **EMC VNX5300** |

# Architecture Overview: The Engine



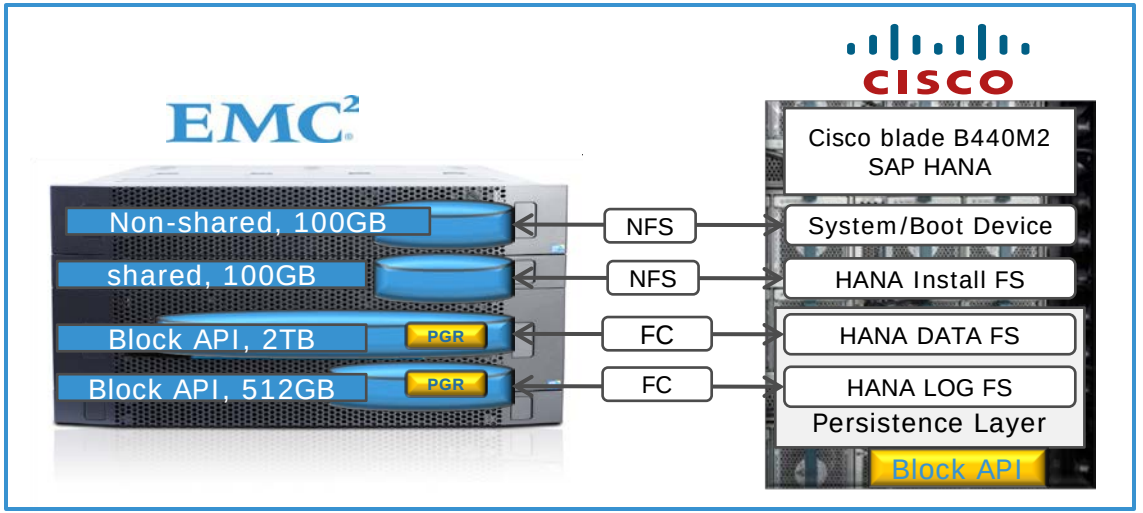
# SAP HANA Persistence Layer




- Savepoints (Data Filesystem)
  - In-memory data written to disk in regular intervals (5 mins default)
- Log Filesystem
  - Capturing all DB transactions since last savepoint
  - Restore DB from last savepoint onwards
  - High IOPS requirement but SAS drives sufficient
- HANA scale-out (multi-node)
  - Filesystems reside on external storage
  - Enables node failover
  - Foundation for DR and Backup

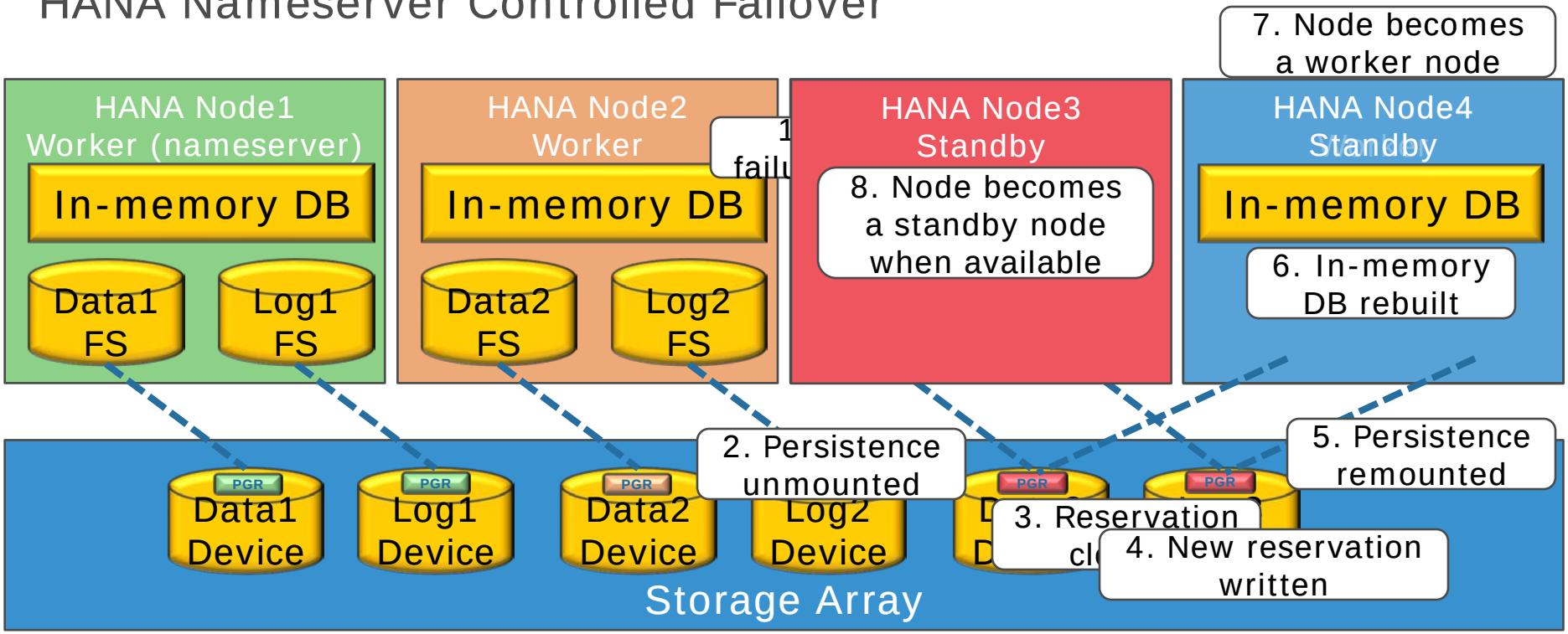
# HANA appliance using SAP Block API

- Controlled by the HANA nameserver
- Ensures exclusive access to persistence
- Uses SCSI-3 PGR (Persistent Group Reservations)
- Ensures that only the owning node has access to the persistence layer
- Ensures that only the owning node has persistence mounted

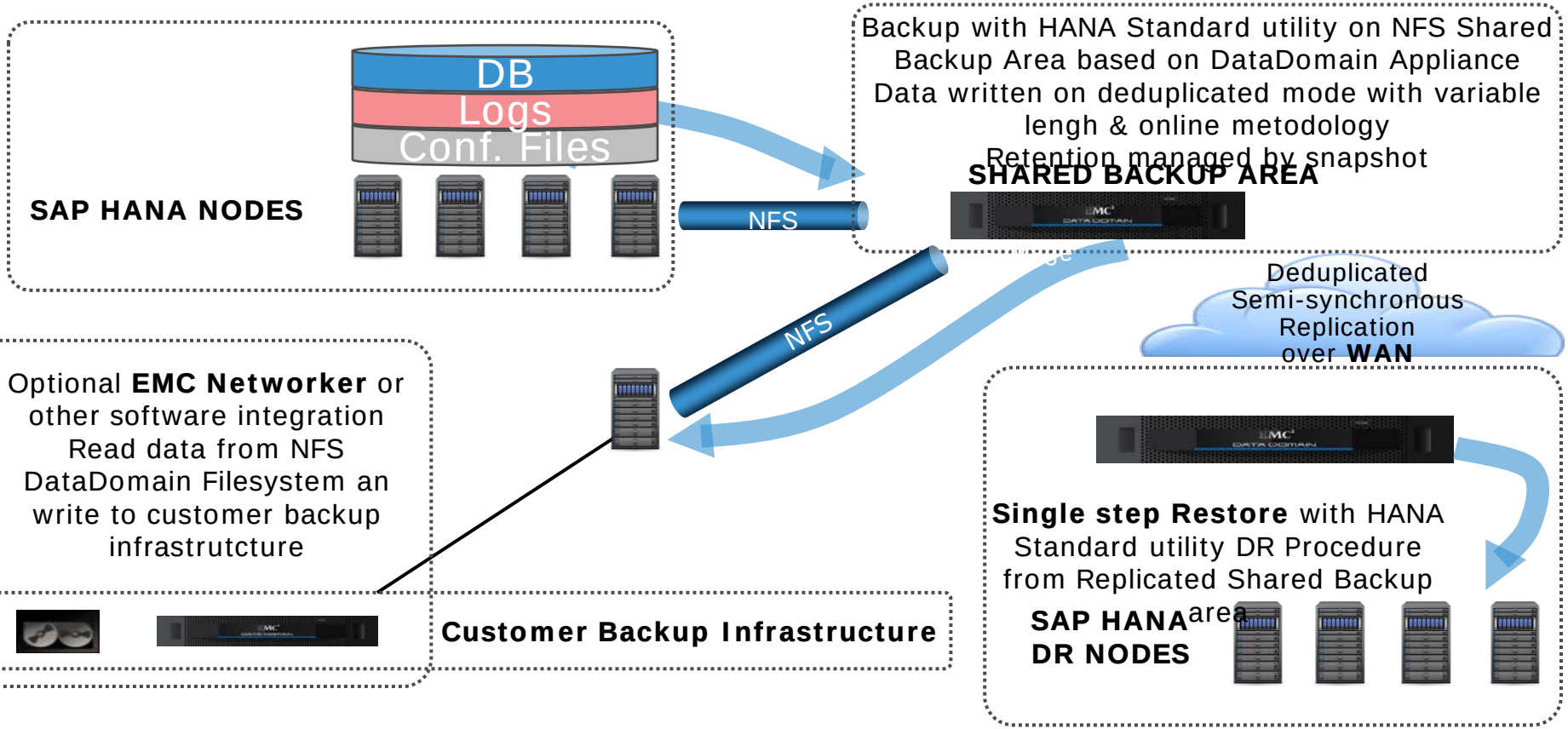


# HANA High Availability

## HANA Nameserver Controlled Failover



# SAP HANA Backup with Cold DR Solution

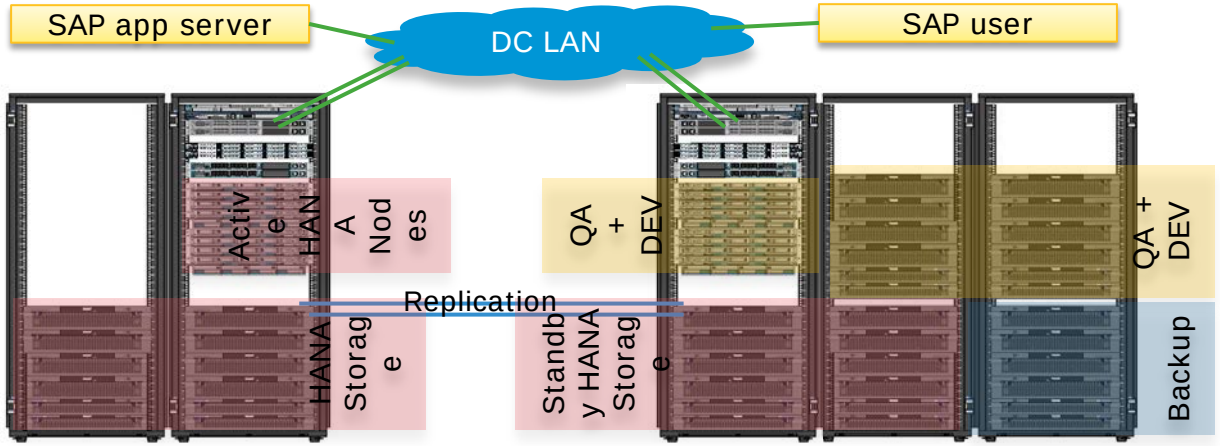


# Disaster Tolerance Scenario

## Active Standby Site

Q3

- Cisco stateless computing resolves the “fixed IP address issue” of HANA
- Computing resources at 2nd site used for QA+Dev
- Proven VNX replication technologies used to replicate data to 2nd side




**In case of a Disaster:**

1. Stop Non-Prod
2. Deploy service profile
3. Start Prod

# SAP HANA in Retail

## **Sysco** chooses Cisco/EMC HANA to Accelerate BW Reporting


### Challenge

- Data growth 120 GB a month
- System Audit and Data Control
- Slow ETL process
- Issues with order fulfillment and order processing

**Jim Hope**
Executive Vice President
Business Transformation
Good things come from Sysco

"EMC was with us every step of the way. They made the world of difference through out SAP HANA implementation & through out enhancing out business processing. Thanks to EMC for truly making a difference in our data."

### Results

- Ability to upload 3 TB of data in 2 hours to HANA.
- Complete BW reporting in 20 minutes from 10 hours.
- Reduce Compliance Issues by 92%.
- Ordering process went up by 120%.

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# SAP HANA in Manufacturing

## **Medtronic** chooses Cisco/EMC HANA to Accelerate BW Reporting


### Challenge

- Data growth 100 GB a month
- Slow reporting
- Slow ETL process
- Could not fulfill order fast from BW

David Hannon

Medtronic

"A program to define and implement a Business Intelligence strategy at Medtronic. The strategy needed to encompass both the technical and process aspects; while meeting the business needs. EMC & Cisco provided exactly that vision."

### Results

- Improved data load from 2 and ½ day to 1 hour & 20 minutes.
- Users with appropriate access to access the data.
- Improved insight through seamless analysis of data.
- Fulfill with FDA rules from one week to minutes.

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# Visit the vCredible Unified Storage Booth

Booth #134

- Demos covering Oracle, Microsoft, VMware and Hyper-V, FLASH 1st, Sizing Tools and more…
- Meet the Experts!
- "Whack a Villain" Challenge
- Win iPad mini's daily!


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