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Education

How to: Eliminate Configuration Drift Risk

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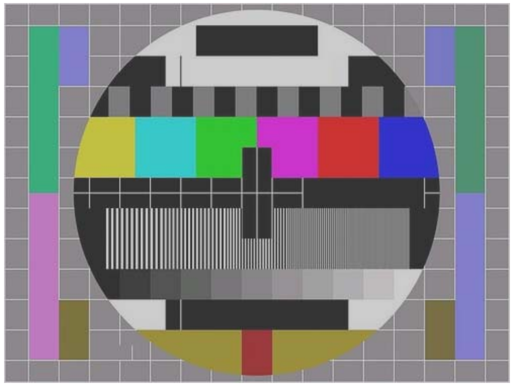
Abstract

- How to Eliminate Configuration Drift Risk
  - This session will appeal to:
    - Chief Information Officers
    - IT Management: System(Unix/Win/Cluster/VM) & Storage Managers
    - Business Continuity Managers
    - Those seeking a fundamental understanding of HA/DR Risks
  - Topics covered
    - Downtime & Data Loss – Major Business Risk
    - Configuration Drift – Leading Cause of Downtime & Data Loss
    - Understanding Configuration Drift
    - Eliminating Configuration Drift with HA/DR Configuration Analytics
    - HA/DR Configuration Analytics – How it works

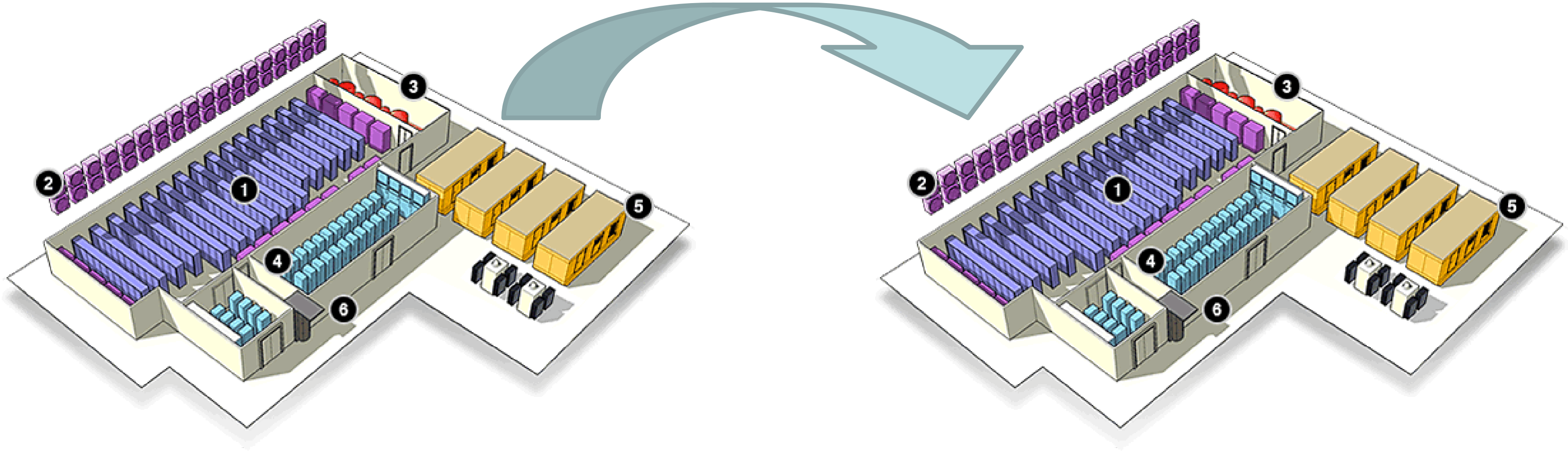
IT’s greatest nightmares

- Critical data loss

- Unplanned (& prolonged…) downtime



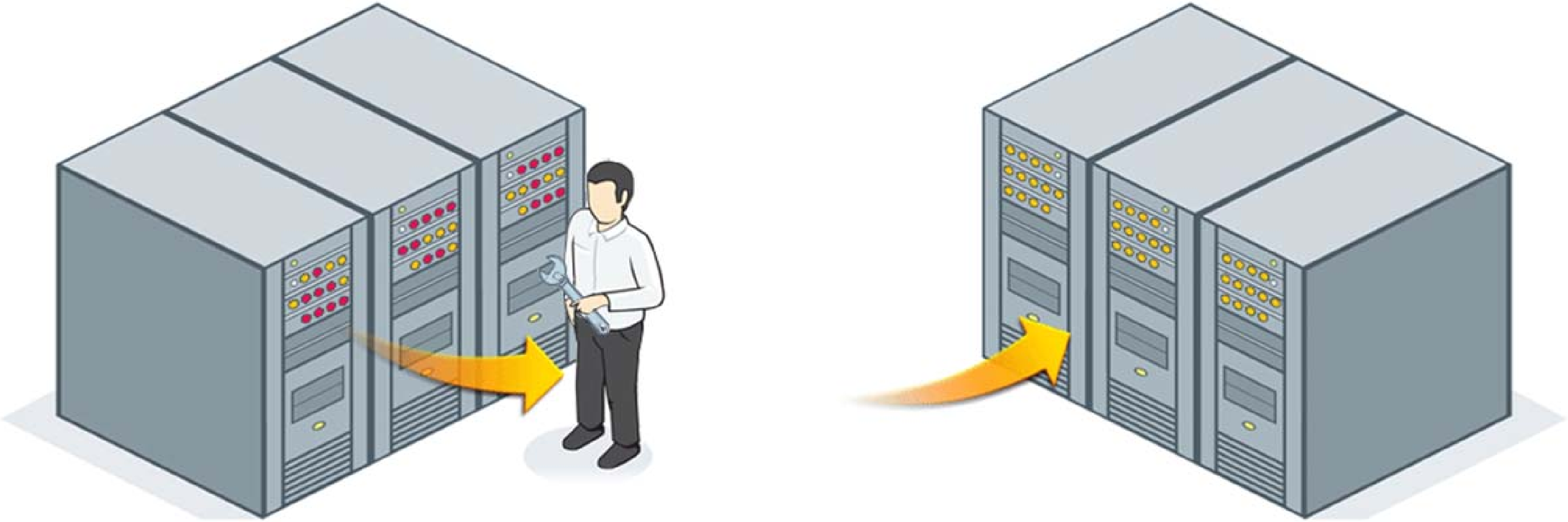
Having the right infrastructure



- Redundant datacenters
- Data replication
- Manual failover configuration / Local and Geo-Cluster

Is simply not enough

The problem: configuration drift



Standby systems get "out of sync"

- Production environment constantly changes
- Changes manually applied to HA and DR systems
- Some changes slip through…

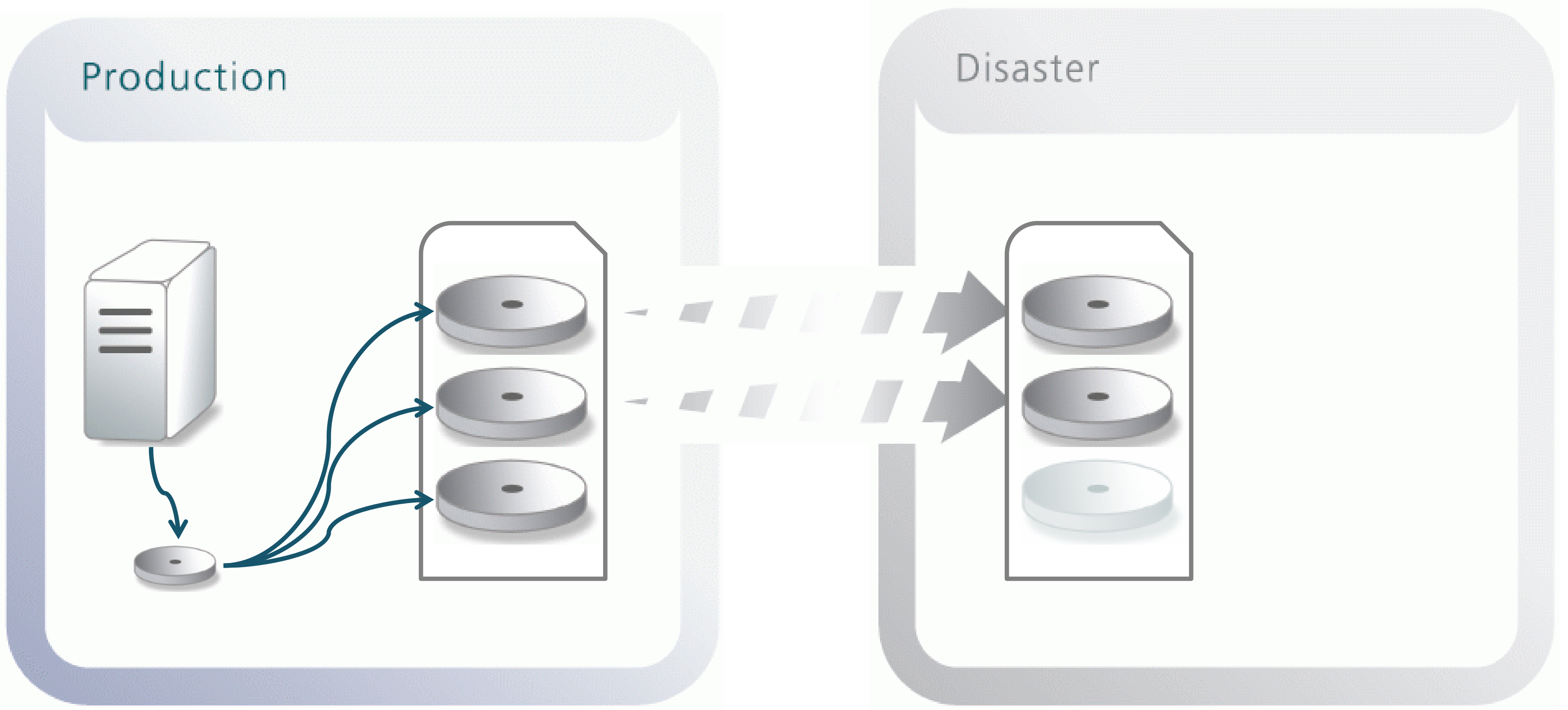
Existing mitigation approach fails

- Annual manual & expensive DR & HA tests
- Testing results: "75% failure rate as recovery configurations are "out of sync" with their production configurations" (*)

Solution: Configuration Analytics

- Automatic Detection & Alerting:
  - HA / Cloud / DR Vulnerabilities & Inefficiencies
  - Cross Vendor Best Practice Violations
- Benefit: Reduced Risks, Effort & Costs

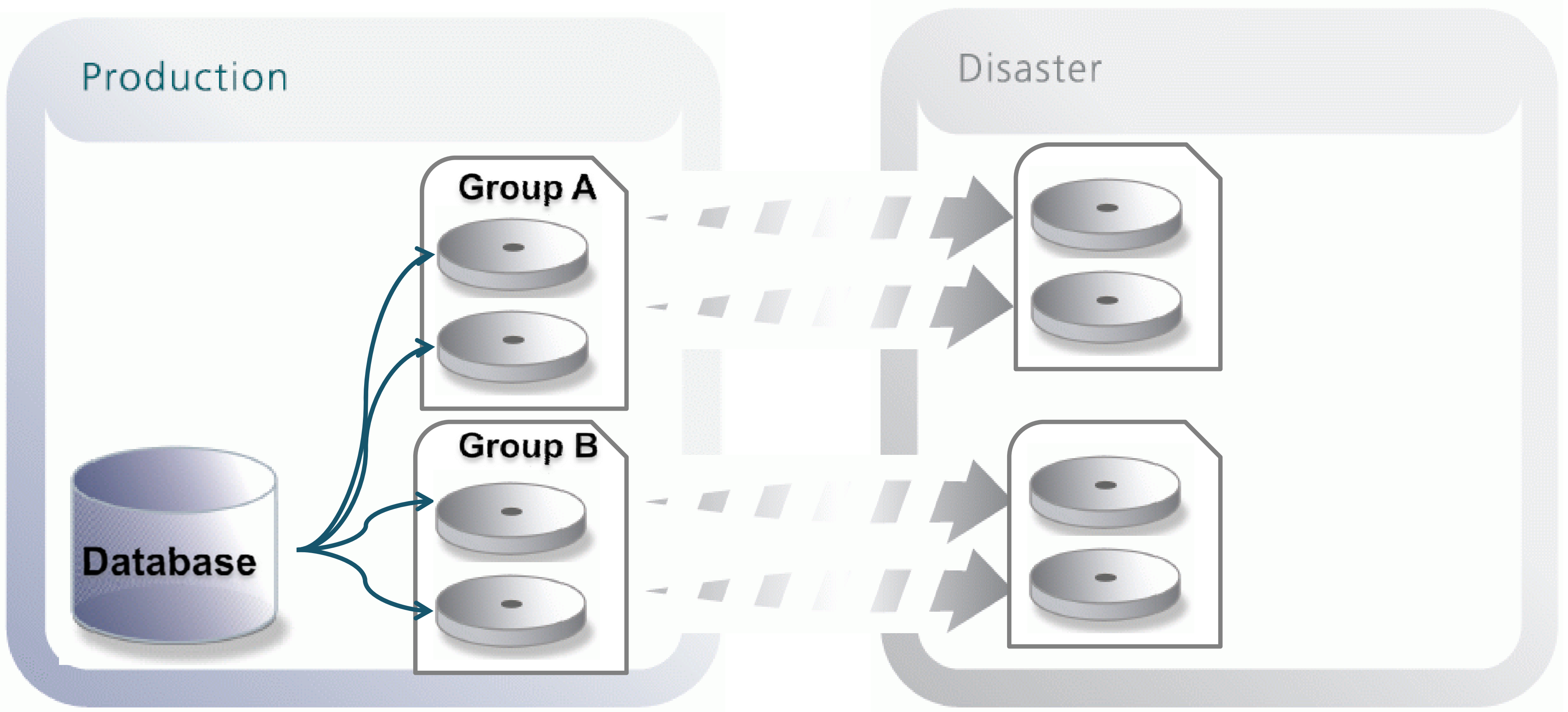
Sample Gap – Partial Replication



Result: Data Loss

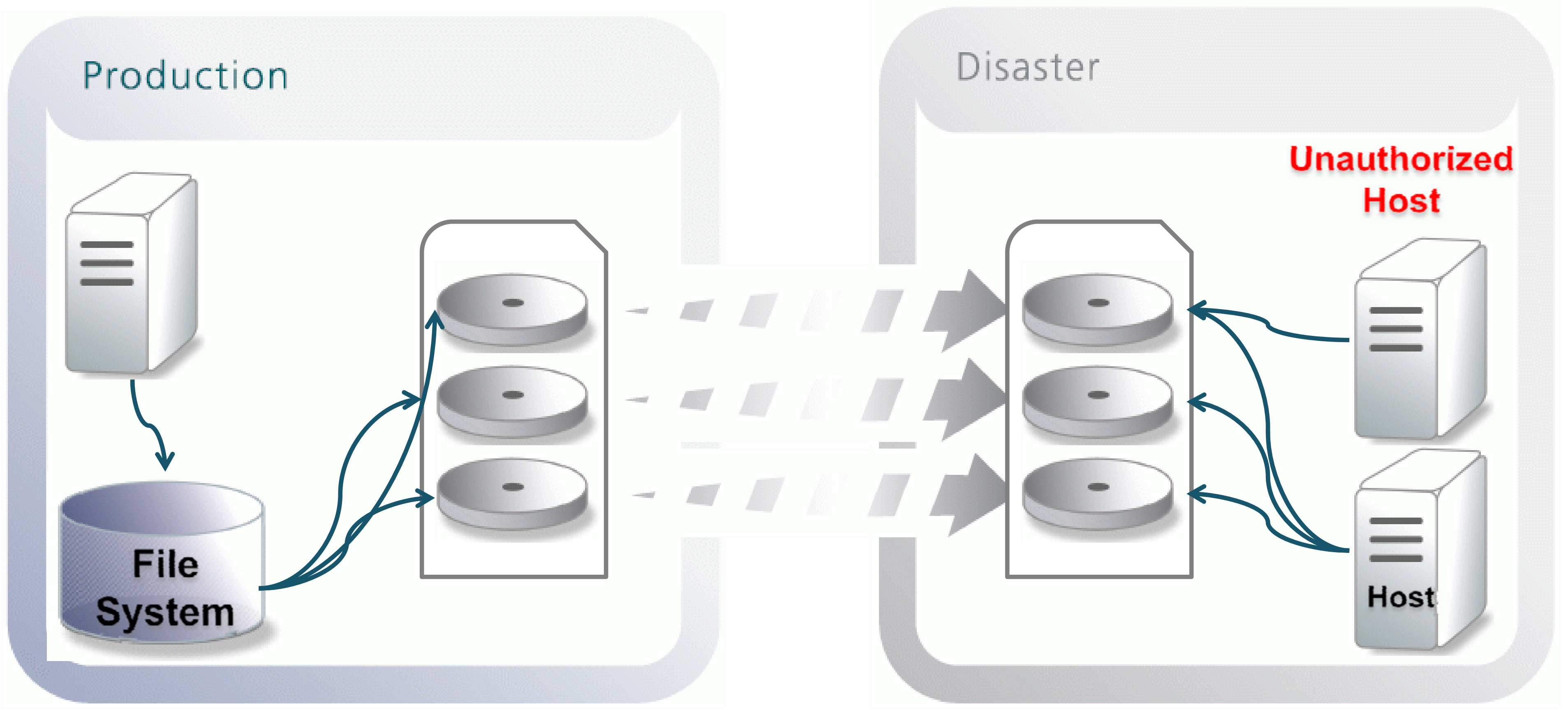
Sample Gap - Sync Replication

RDF Group Replication Inconsistency



Result: Data loss, increased time to recover

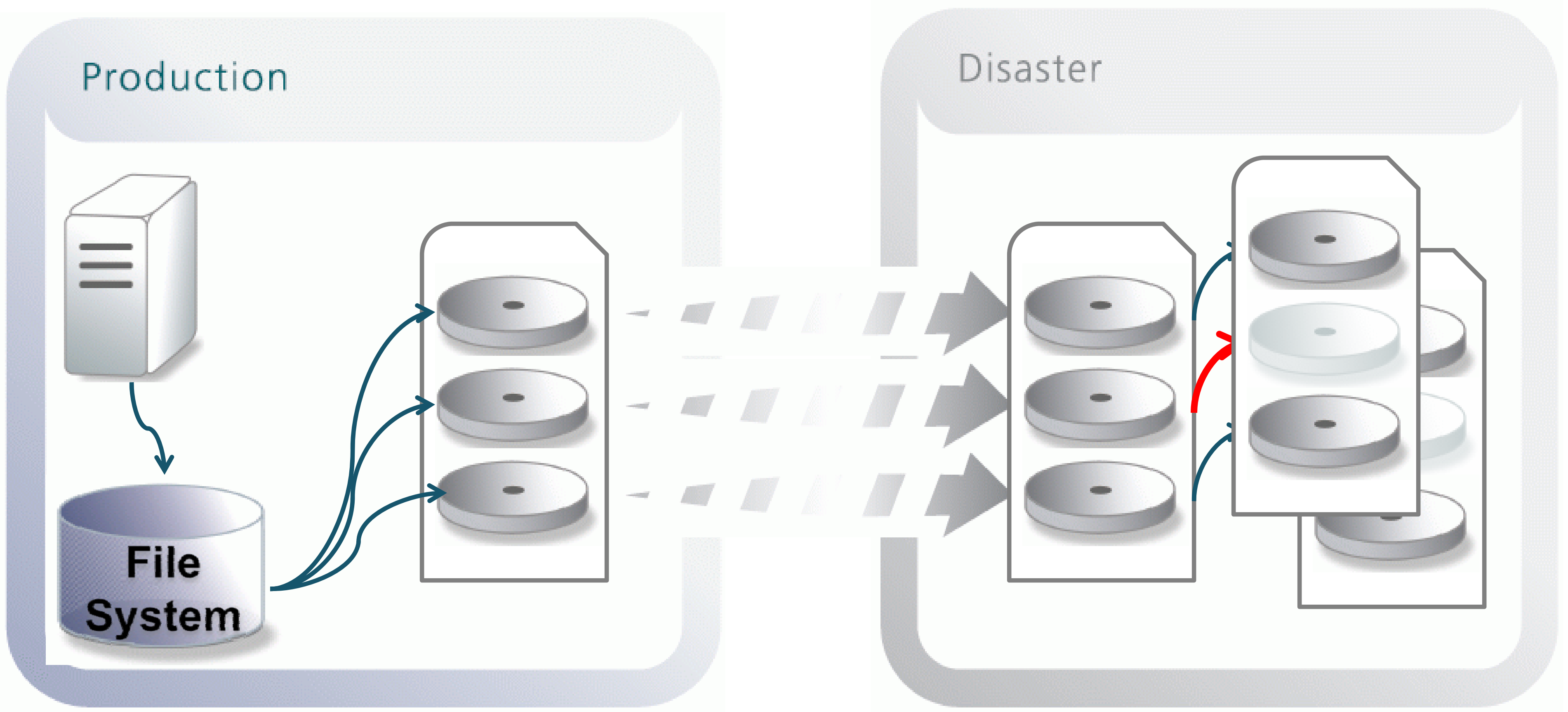
Sample Gap - Tampering Risk



Result: DR failure and data corruption

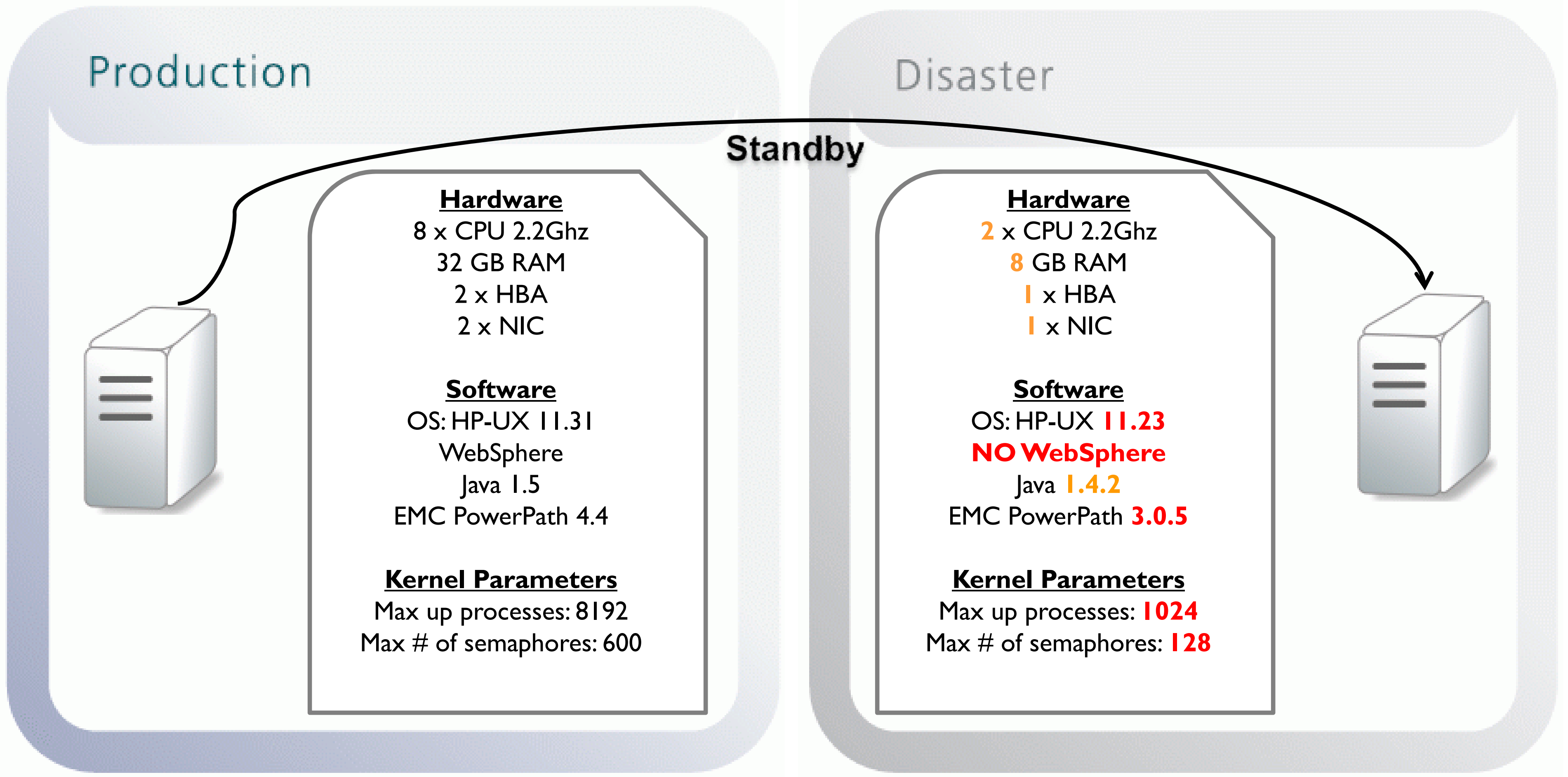
Sample Gap - Local Replication with BCVs

Replication Age Inconsistency



Result: Data corruption

Config Drift: Production → DR/HA



Hardware
8 x CPU 2.2Ghz
32 GB RAM
2 x HBA
2 x NIC

Software
OS: HP-UX 11.31
WebSphere
Java 1.5
EMC PowerPath 4.4

Kernel Parameters
Max up processes: 8192
Max # of semaphores: 600

Hardware
2 x CPU 2.2Ghz
8 GB RAM
1 x HBA
1 x NIC

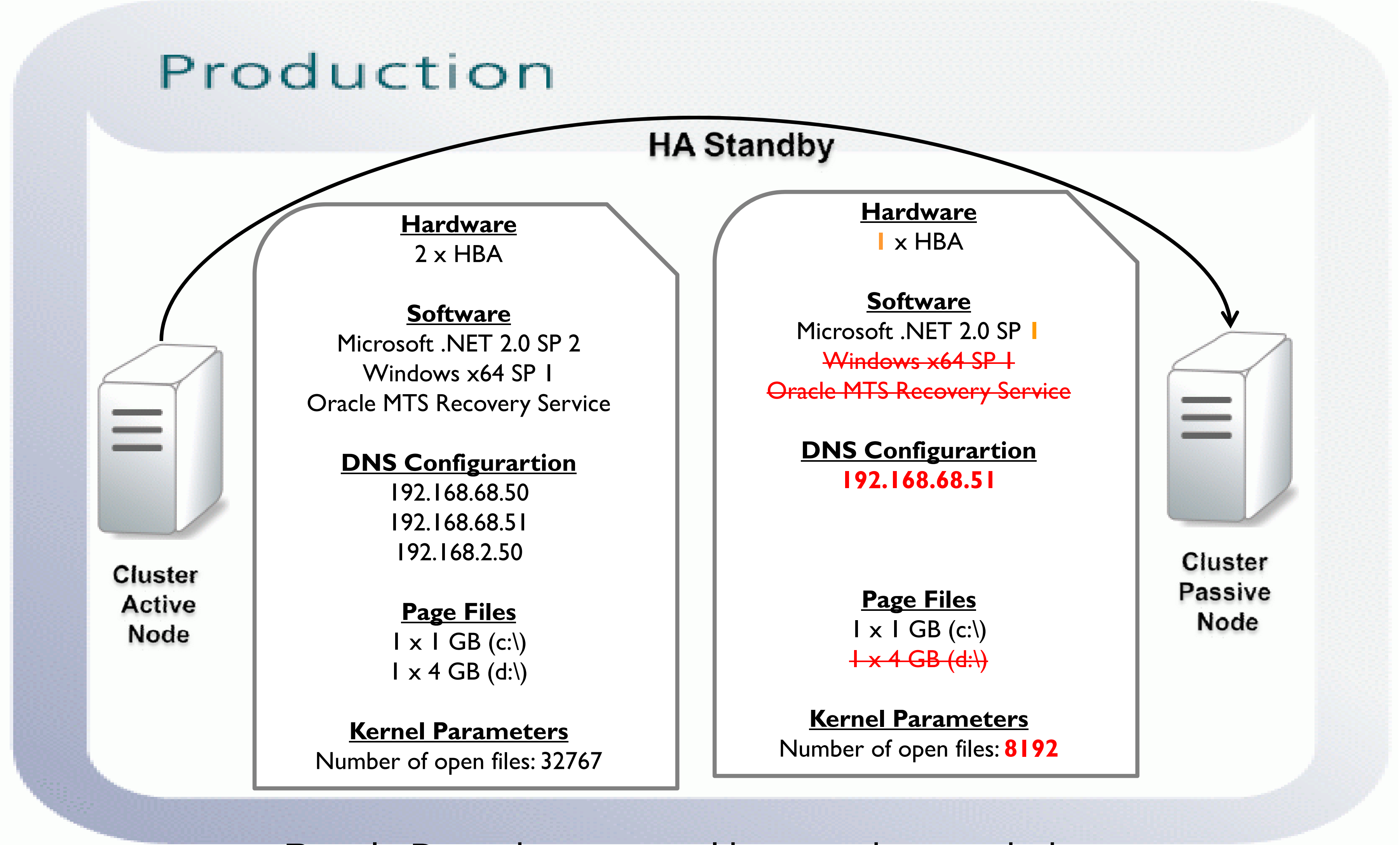
Software
OS: HP-UX **11.23**
NO WebSphere
Java **1.4.2**
EMC PowerPath **3.0.5**

Kernel Parameters
Max up processes: **1024**
Max # of semaphores: **128**

More differences in the areas of DNS, NTP, Page files, Internet services, patches, etc

Result: Increased time to recover

Config Drift 2: Production → DR/HA



Hardware
2 x HBA

Software
Microsoft .NET 2.0 SP 2
Windows x64 SP 1
Oracle MTS Recovery Service

DNS Configurartion
192.168.68.50
192.168.68.51
192.168.2.50

Page Files
1 x 1 GB (c:\)
1 x 4 GB (d:\)

Kernel Parameters
Number of open files: 32767

Hardware
1 x HBA

Software
Microsoft .NET 2.0 SP 1
~~Windows x64 SP 1~~
~~Oracle MTS Recovery Service~~

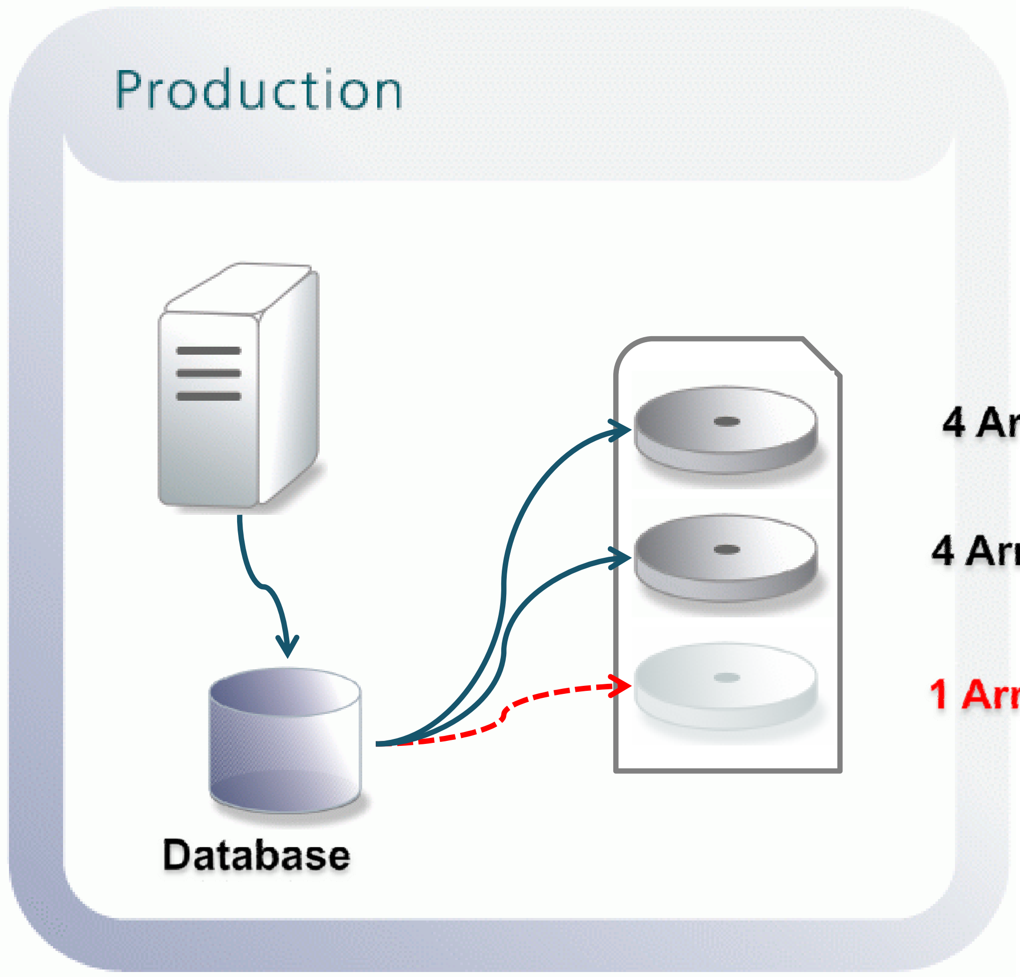
DNS Configurartion
192.168.68.51

Page Files
1 x 1 GB (c:\)
~~1 x 4 GB (d:\)~~

Kernel Parameters
Number of open files: **8192**

Result: Downtime, manual intervention needed to recover

Suspended Replication



4 Array Port Mappings & multiple I/O paths

4 Array Port Mappings & multiple I/O paths

1 Array Port Mappings & single I/O path

Result: Reduced MTBF, Downtime, Sub-optimal performance

Config Drift is Not for Humans

Numerous interconnected systems in the Datacenter

X

Practically unlimited configuration options for each

X

(Daily growth, changes, patches, upgrades +

Inability to instantly validate configuration)

= Failure = Downtime

& Data Loss

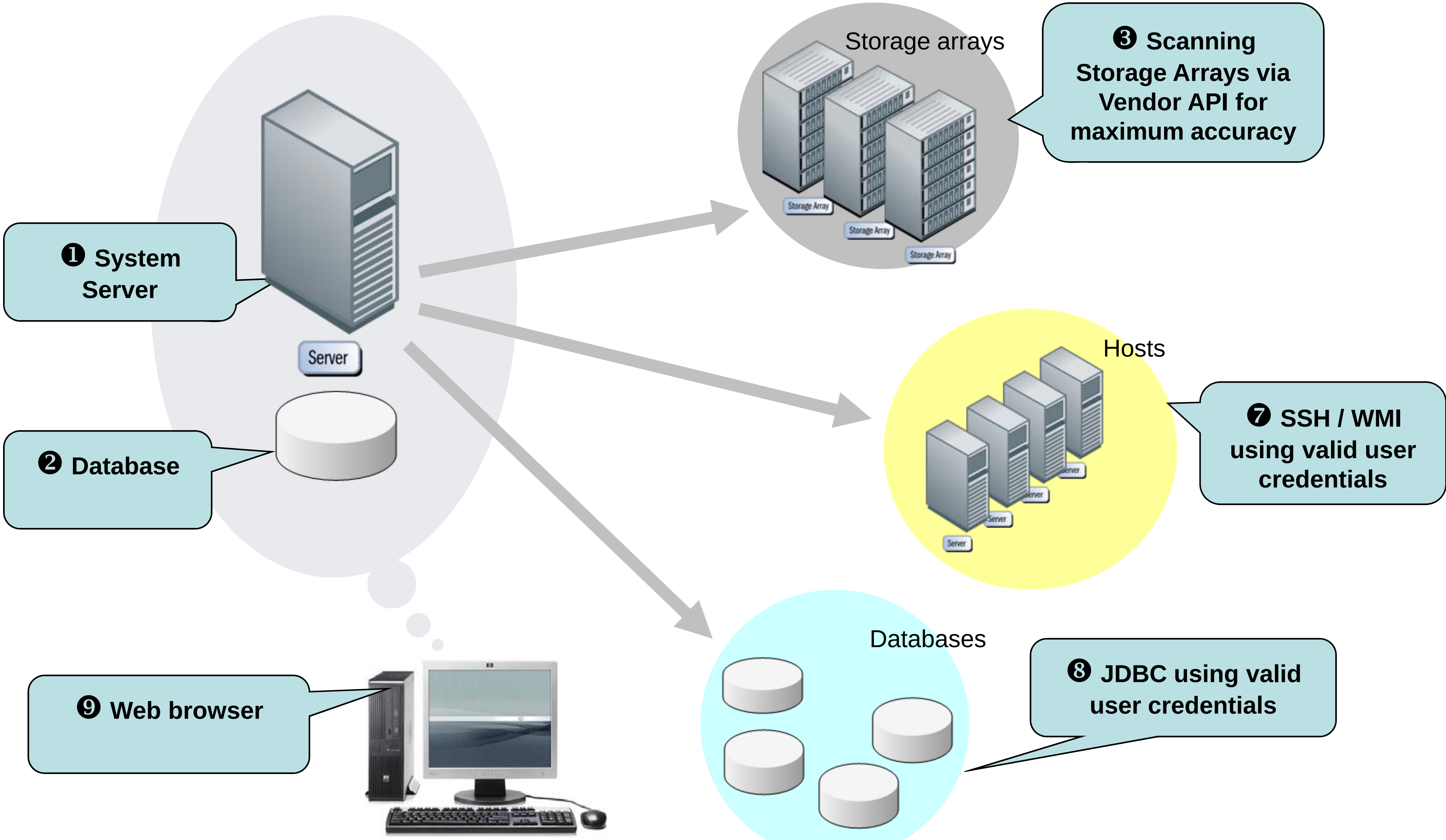
Solution: Configuration Analytics

- Automatic Detection & Alerting:
  - HA / Cloud / DR Vulnerabilities & Inefficiencies
  - Cross Vendor Best Practice Violations
- Benefit: Reduced Risks, Effort & Costs

What’s required

- Discovery
  - Import of IT elements from CMDB / Other Systems
  - Optional: Automatic discovery
- Scanning of entire IT for configuration data:
  - Database-Cluster-Virtualization-Server-Storage-Replication
  - Optional: Use existing CMDB data
  - Recommended: Agent-less, Read-only, Non-intrusive
- Configuration Analytics to discover Risks & Inefficiencies
  - Recommended: Updatable Risks & Inefficiencies databases
- Community driven risk database

How It Works



❶ System Server

❷ Database

❸ Scanning Storage Arrays via Vendor API for maximum accuracy

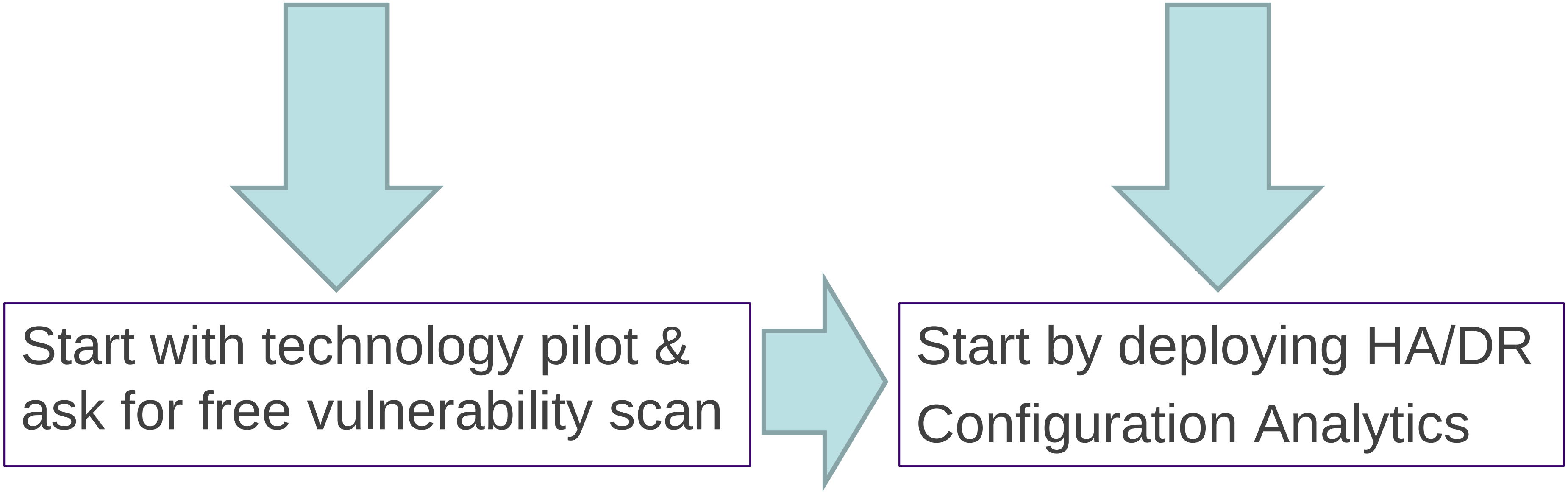
❼ SSH / WMI using valid user credentials

❽ JDBC using valid user credentials

❾ Web browser

How to get started?

- If you want to
  - Get a **one time** accurate assessment of your Downtime & Data Loss Risks
- If you want to
  - **Continuously** monitor for Downtime & Data Loss Risks



Start with technology pilot & ask for free vulnerability scan

Start by deploying HA/DR Configuration Analytics

Starting with Technology Pilot

- Demand the free HA/DR Vulnerability Detection Report from your leading IT Provider / Vendor.

- Report should cover Risks & Improvement opportunities for:
  - Databases, Clusters, Private Cloud / Virtual Machines, Operating Systems, Servers, Storage Arrays, Replication Mechanisms, Etc…

- Typically takes < 3 days from install to report

Starting with Full Deployment

- Key factor for choosing the right system:
  - Breadth & depth of Risk (Signatures) Database
  - Impact on production systems (Should be minimal)
  - Deployment effort (Should be <5 days for large datacenter)

- Expected benefits / results
  - Dramatic reduction in downtime & data loss events
  - HA/DR Testing Results Improvement & reduced effort
  - New Risks expected to be discovered daily for med-large datacenters

Q&A / Feedback

- Please send any questions or comments on this presentation to SNIA: trackstoragemgmt@snia.org

Many thanks to the following individuals for their contributions to this tutorial.

- SNIA Education Committee

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