



HA/DR 상시 점검 솔루션

- Disaster Recovery Advisor

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꼭 필요한 시점에 현재 준비 되어 있는 HA, DR 전환 계획이 정확히 실행될 것으로 확신하십니까?

전통적인 방식의 HA, DR 계획만으로는 충분하지 않습니다.

지속적인 운영 환경의 구성 변경이 HA, DR 전환 계획에는 위험 요소라고 생각되지 않으신가요?

Business Continuity 에 문제가 되기 전에 반드시 Fix 되어야 합니다.

HA, DR을 위해 구축한 인프라가 다양한 OS와 여러 벤더의 솔루션들로 되어 있지 않으신가요?

DR을 위한 모든 IT 자원들은 반드시 보호되어야 합니다.



HA/DR 리스크 관리의 어려움



잘못된 구성 검출의 어려움

- 운영 환경은 지속적으로 변경
- 다양한 H/W, S/W 및 대량 서버의 변경 관리 부담



업무 중단 및 비용 부담이 큰 전환 테스트

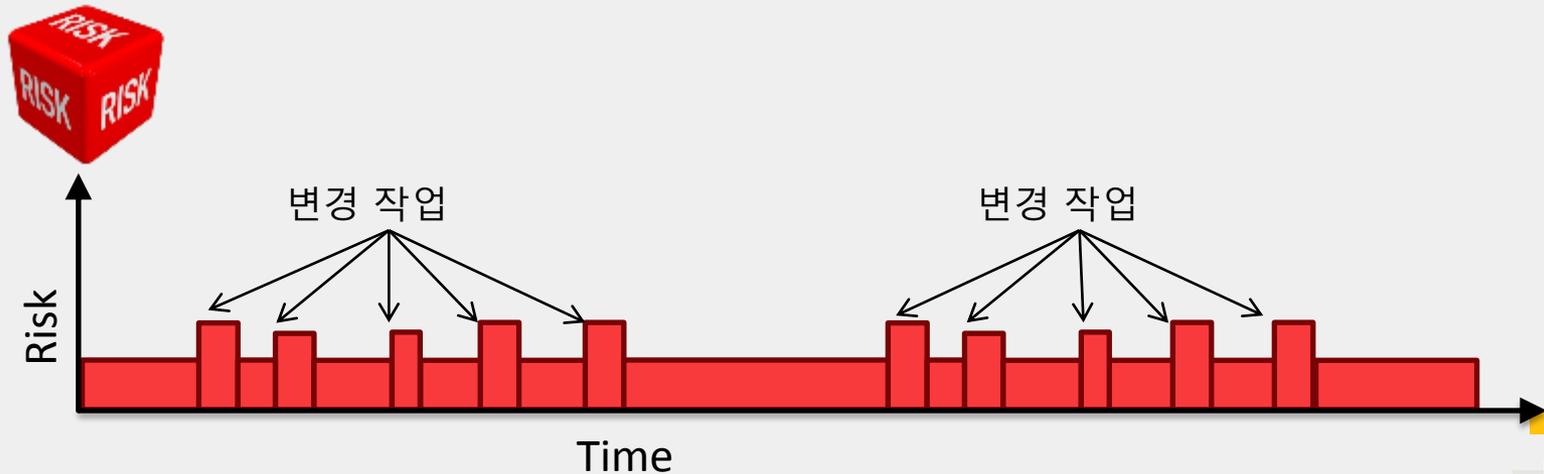
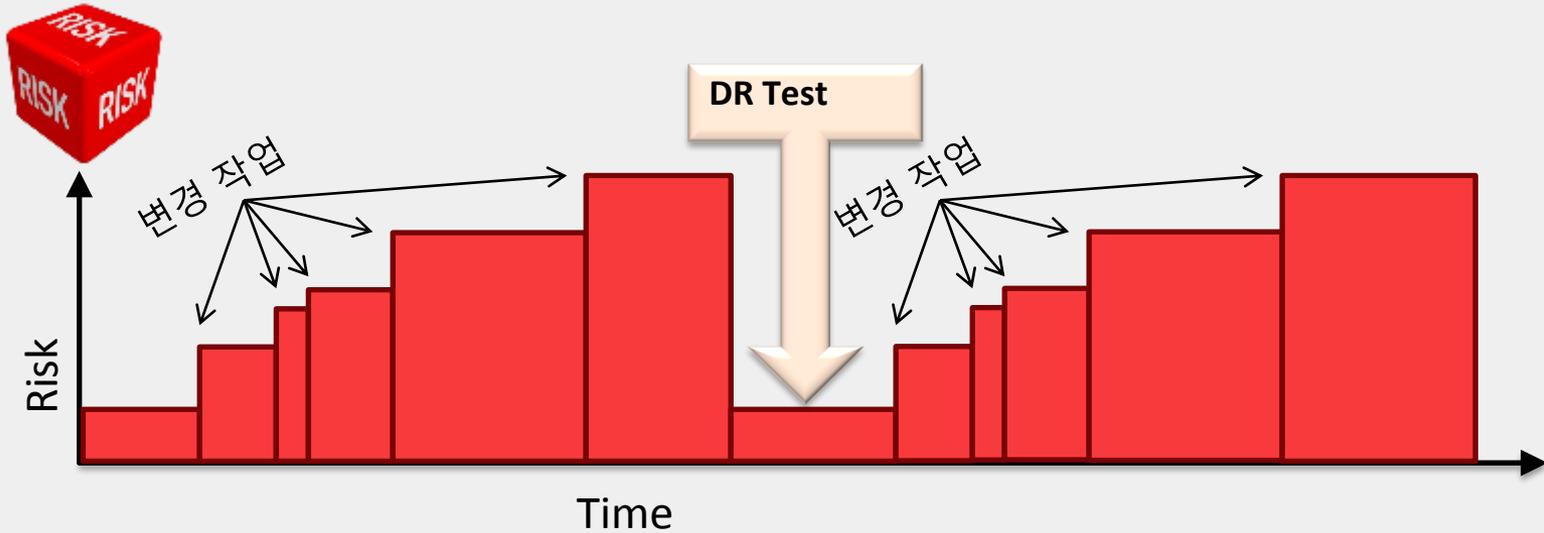
- 대형 고객사의 24%는 DR 테스트로 인해 매출에 부정적 영향
- 대형 고객사의 59%는 DR 테스트가 직원들에게 과중한 업무 부담



테스트 결과는 예상 수준에 못 미침

- 대형 고객사의 20%는 일년에 1회 이하로 테스트 수행
- 거의 세 번 중에 한번의 빈도로 DR 테스트는 실패

자동화된 주기적 구성 점검으로 리스크 관리



Disaster Recovery Advisor 특징

부하가 적은 데이터 수집



- Agentless 구조 데이터 수집
- 정책 기반의 스케줄링

자동화된 취약점 분석



- 전체 인프라스트럭처간의 연관성을 통한 분석
- 약 5,000가지의 취약점 검사

조치 리포트



- 분석된 취약점에 대한 해결 방안 리포트
- 업무별 SLA 준수여부 확인

운영 시스템 변경 없는 구성

- Agentless 방식으로 표준 프로토콜 이용



Web Interface



Windows 2008 R2 Server x64



Oracle 11g



Optional Collectors

Storages



- **EMC:** SYMCLI / NaviCLI
- **HDS/HP XP:** HiCommand / CommandView API
- **IBM:** DSCLI / XCLI
- **NetApp:** ZAPI / SSH / Telnet

Servers



- SSH / WinRM / WMI
- OS / Vendor read-only commands and queries
- Valid user credentials / keys

Databases



- JDBC using read-only user credentials

Virtual Machines



- **VMware** API using read-only user credentials
- **AIX VIO:** HMC CLI
- **UNIX:** OS commands

DRA 지원 Matrix

Operating System

- Solaris 8+
- HPUX 11.0+
- AIX 4+
- Linux RedHat AS 3+
- Linux SuSE 8+
- Windows 2000+

Application Server

- IBM WebSphere
- Oracle WebLogic
- Apache Tomcat

Database

- Oracle 8.1.7+
- MS SQL Server 2000 SP3+
- Sybase 12.5+
- DB2 UDB 8.1+

Management Consoles

- OEM 11+
- vCenter 3.5+
- Command View
- DFM 5+
- ECC 5+
- HiCommand 4+
- HMC 7+

Storage

- EMC Symmetrix – All
- EMC CLARiiON (6.19+)
- EMC Isilon, DataDomain
- NetApp Filers – All
- HDS AMS series (500 & 1000),
USP (TagmaStore, USP V, USP VM)
- IBM DS 6xxx, 8xxx
- IBM XIV, SVC

Multi-Pathing

- Veritas DMP
- EMC PowerPath
- HP PVLinks, HPDM
- AIX, Linux, Windows 2k8 MPIO
- IBM AIX MPIO, SDD
- Hitachi HDLM
- NetApp DSM

Volume Management

- Core supported OS VMs
- Veritas Volume Manager
- LVM 2

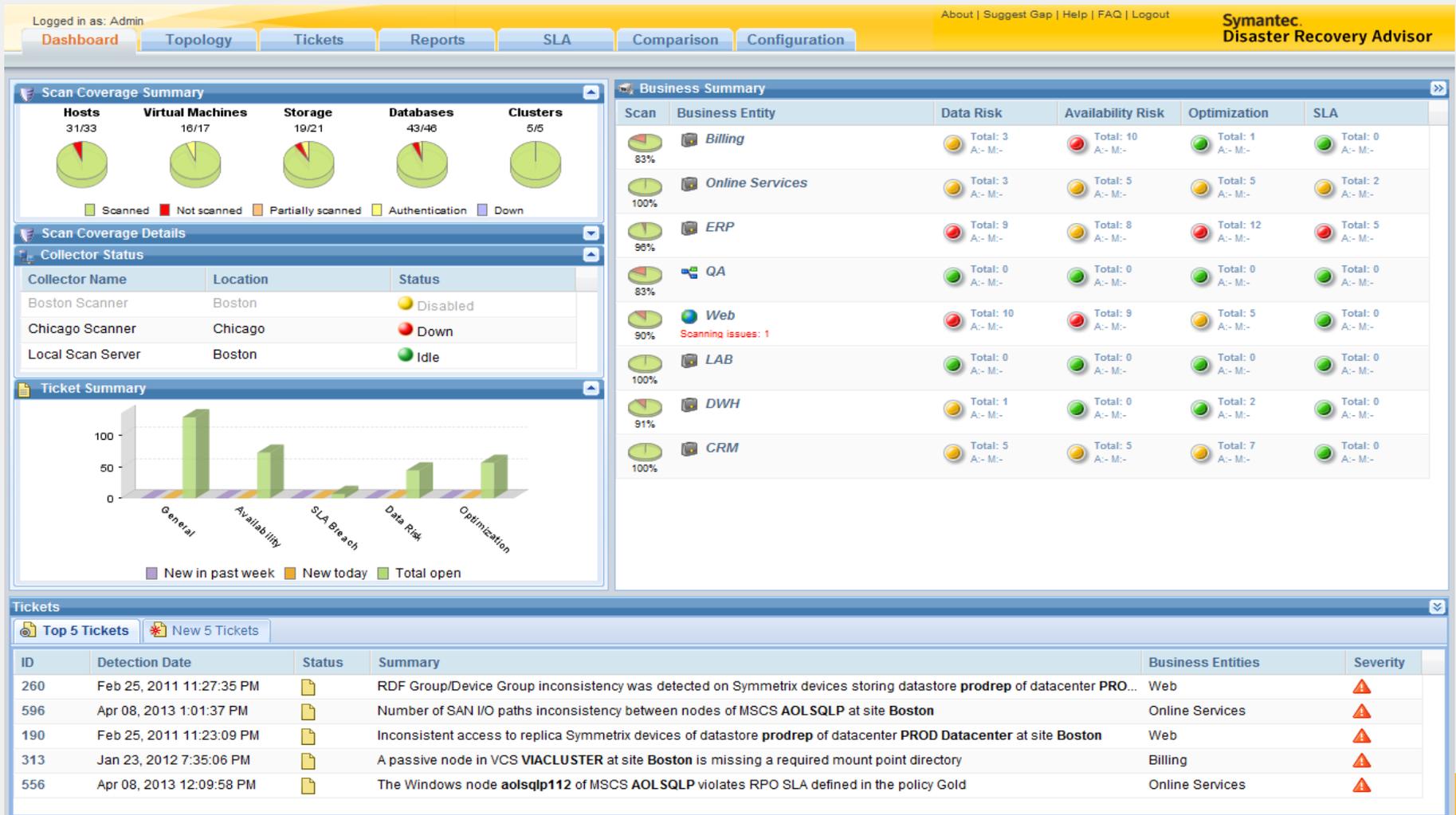
Replication

- Symantec Replicator Option
- EMC TimeFinder, SRDF
- EMC MirrorView, SnapView
- EMC RecoverPoint
- NetApp SnapMirror, SnapShots,
SnapVault
- HDS TrueCopy, ShadowImage,
UniversalReplicator, TrueShadow
- IBM FlashCopy, FlashCopy/SE, Metro
Mirror, Global Mirror, Global copy
- Oracle DataGuard

Clustering

- Symantec Cluster Server 5.0+
- HP MC/SG, PolyServe
- IBM PowerHA
- VMware ESX cluster
- MSCS
- Linux cluster
- Oracle RAC

HA, DR 인프라 리스크 관리



HA, DR 인프라 리스크 관리

HA/DR 구성에 대한 통합 모니터링을 제공하여, 전체 인프라 내의 클러스터링과 재해 복구 전환에 필요한 인프라의 통합 리스크 관리 기능을 수행합니다.

HA/DR 리스크 관리 개선안

1) HA/DR 통합 모니터링

2) 주요 시스템의 패치 레벨 관리

3) 복제 상태 관리

4) HA/DR 최적 구성 점검

5) RTO, RPO 개선

HA/DR 통합 모니터링

HA/DR 준비 사항 통합 모니터링 



DRA Master Server



HA, DR 인프라 리스크 관리

HA/DR 구성된 시스템 간의 주요 운영 애플리케이션의 패치 및 애플리케이션을 동일하게 관리함으로써, 파일 오버와 DR 전환 시 운영 재개에 소요되는 시간 지연과 장애를 방지한다.

HA/DR 리스크 관리 개선안

1) HA/DR 통합 모니터링

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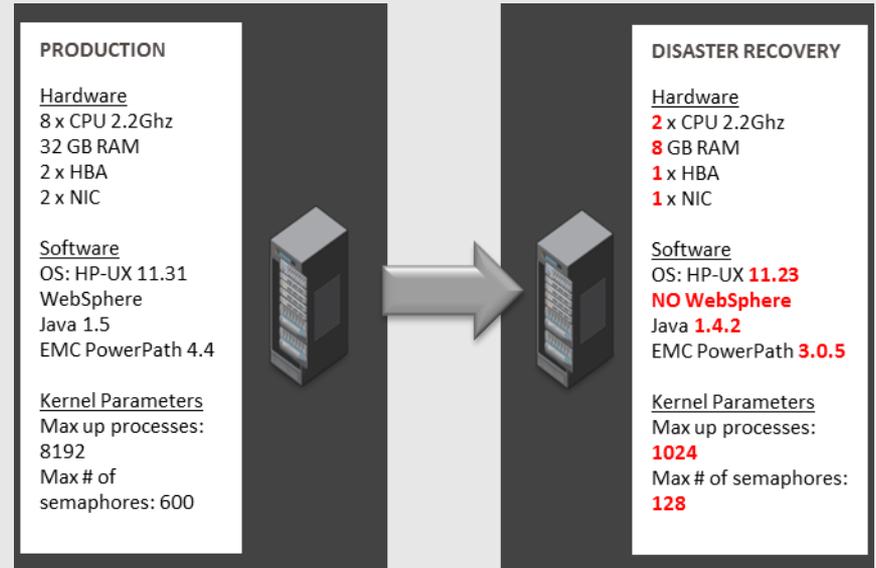
3) 복제 상태 관리

4) HA/DR 최적 구성 점검

5) RTO, RPO 개선

주요 시스템 패치 관리

주요 운영 시스템의 패치 레벨 관리 



HA, DR 인프라 리스크 관리

HA/DR 구성된 시스템 간의 스토리지와 주요 복제 운영 상태를 관리함으로써 재해 복구 재개에 필요한 데이터 전환 준비 상태를 관리하는 작업을 수행한다.

HA/DR 리스크 관리 개선안

1) HA/DR 통합 모니터링

2) 주요 시스템의 패치 레벨 관리

3) 복제 상태 관리

4) HA/DR 최적 구성 점검

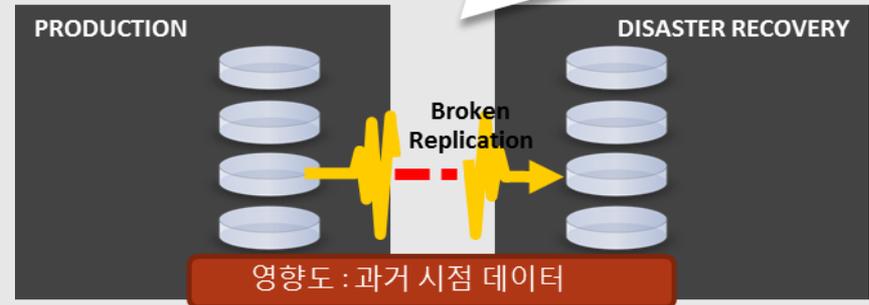
5) RTO, RPO 개선

복제 시스템 상태 관리

복제 구성의 정상 여부 확인



복제 구성의 정상 여부 확인



HA, DR 인프라 리스크 관리

HA/DR 구성된 시스템 간의 잘못된 구성을 검출하고, 각 컴포넌트의 구성 권고에 부합되는 지 여부를 확인하고, 이에 대한 관리를 수행한다.

HA/DR 리스크 관리 개선안

1) HA/DR 통합 모니터링

2) 주요 시스템의 패치 레벨 관리

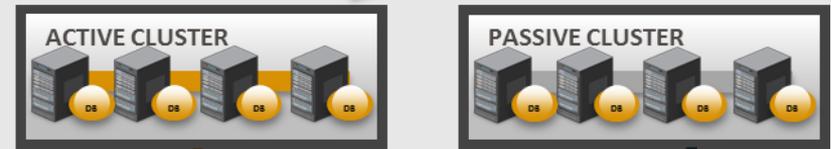
3) 복제 상태 관리

4) HA/DR 최적 구성 점검

5) RTO, RPO 개선

HA/DR 구성 점검

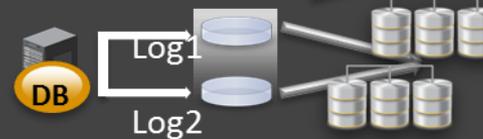
페일 오버를 위한 정상 구성 점검 



영향도 : 스탠바이 클러스터 기동 실패 (스토리지 연결 미구성)

오라클 데이터 베이스 구성 권고안 점검 

PRODUCTION



영향도 : 오라클 성능 저하 및 동일 스토리지 장애 영향

HA, DR 인프라 리스크 관리

SLA 관리를 통해, 실시간 복제본 유지 (RPO 0) 관리가 필요한 업무를 관리하고, 각 리스크를 최소화함으로써 재해 센터로의 전환 상의 작업 리스크를 줄임으로서, 신속한 업무 재개(RTO 관리)가 필요한 서비스를 관리한다.

HA/DR 리스크 관리 개선안

1) HA/DR 통합 모니터링

2) 주요 시스템의 패치 레벨 관리

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RTO, RPO 개선

정의된 SLA 준수 SLA 여부 확인

Component	Additional Info	SLA	Protection	SLA Information					
				Number of copies		RPO		Retention	
				Local	Remote	Local	Remote	Local	Remote
*iTime01	Last scan: 09/04/2014 4:33:27 완료	완료	완료	0	0	No replicas	No replicas	No replicas	No replicas
*iTime02a	Last scan: 09/04/2014 4:33:27 완료	완료	완료	0	0	No replicas	No replicas	No replicas	No replicas
*iTime02	Last scan: 09/04/2014 4:33:29 완료	완료	완료	0	0	No replicas	No replicas	No replicas	No replicas
*iTime01	Last scan: 09/04/2014 4:33:28 완료	완료	완료	0	0	No replicas	No replicas	No replicas	No replicas
*iTime01a	Last scan: 09/04/2014 4:33:28 완료	완료	완료	0	3	No replicas	Up to date	No replicas	00:25:53
*iTime01b	Last scan: 09/04/2014 4:31:38 완료	완료	완료	0	0	No replicas	No replicas	No replicas	No replicas

전환 시 이슈가 되는 RISK 제거로 RTO 개선



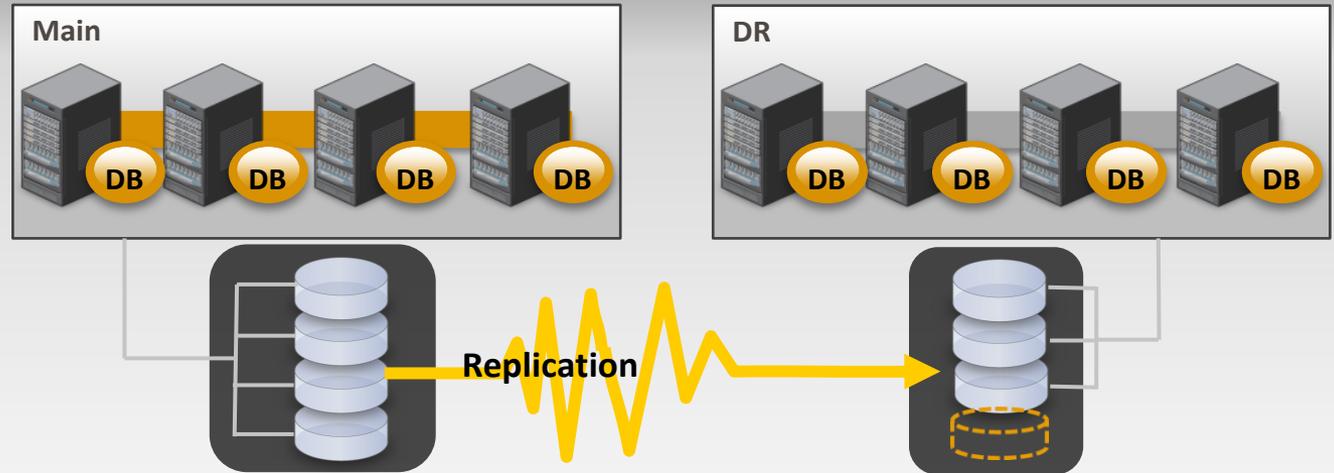


HA, DR 운영 취약점 주요 사례

취약점 1: 스토리지 복제 누락

취약점 및 상황

- 취약점 : 스토리지 복제 시 일부 디스크 누락
- 장애 가능성 : DR 전환 시 데이터 유실로 인한 전환 실패



조치 및 개선효과

- 복제 대상에서 누락된 디스크를 확인하여 복제에 포함하도록 지시 해줌으로 취약점 조치
- DR 전환시 데이터 유실에 대한 대비책 마련

취약점 1-1: 스토리지 복제 누락

Logged in as: Admin | About | Suggest Gap | Help | FAQ | Logout | Symantec Disaster Recovery Advisor

Dashboard | Topology | Tickets | Reports | SLA | Comparison | Configuration

High Level | Search

Boston

- udbhost (AIX host)
 - udbvg (Volume Group)
- Symm 0011
 - Symmetrix device x 11
 - 24D7 (Red device)

Chicago

- Symm 0151
 - Symmetrix device x 11

SRDF/S (Synchronized)

Ticket Item

Ticket 154 ★★★★★ (clear) | Mark as Resolved | Suppress Ticket | Suppress Gap

Description	Impact	Resolution	History	Notes	Symptoms	
hdiskpower42 on udbhost	0011 /13AC	SRDF/S	0151 /13AC	Chicago	Up to date	
hdiskpower43 on udbhost	0011 /13AD	SRDF/S	0151 /13AD	Chicago	Up to date	
hdiskpower59 on udbhost	0011 /24D7	N/A	N/A	N/A	N/A	

Volume groups affected by this gap

- VG udbvg on AIX host udbhost

취약점 1-2: 스토리지 복제 누락

Business Summary

Scan	Business Entity	Data Risk	Availability Risk	Optimization	SLA
70%	EAI	Total: 23 A:- M:+18	Total: 5 A:- M:+3	Total: 9 A:- M:+9	Total: 13 A:- M:+13
57%	CORE Scanning issues: 6	Total: 30 A+2	Total: 24 A+3 M:+21	Total: 65 A:+13 M:+54	Total: 9 A:+2 M:-11

Tickets

ID	Detection Date	Status	Summary	Business Entities	Severity
361	Oct 30, 2014 8:24:07 PM	Open	VCS DR_ at site DRSite has misconfigured CFS mount resource dependency	CORE	High
103	Oct 22, 2014 1:25:30 PM	Open	HORCM replication groups of instance horcm100 are not configured on all cluster nodes of RAC_ at site Pr...	EAI, CORE	High
209	Oct 24, 2014 2:15:07 PM	Open	HORCM replication groups of instance horcm101 are not configured on all cluster nodes of VCS_ at site Prod...	CORE	High
99	Oct 22, 2014 1:25:30 PM	Open	HORCM replication groups of instance horcm11 are not configured on all cluster nodes of VCS_ LU at site DR...	EAI, CORE	High
206	Oct 24, 2014 2:15:07 PM	Open	HORCM replication groups of instance horcm201 are not configured on all cluster nodes of VCS D_ U at site D...	CORE	High

취약점 1-2: 스토리지 복제 누락

The screenshot shows the Symantec Disaster Recovery Advisor (DRA) web interface. The user is logged in as 'admin with profiles: Predefined System Admin'. The interface includes a navigation menu with options like Dashboard, Topology, Tickets, Reports, SLA, Comparison, and Configuration. The 'Tickets' section is active, displaying a search for 46 distinct tickets. The search filters are set to 'Closed tickets' and 'Status: Closed'. The results table shows a ticket with ID 362, labeled 'HORCM replication group cluster configuration mismatch (1)'. The ticket details section shows the following information:

ID	Labels	Detection Date	Status	Summary	Rating	Severity
362	AIX HDS RAC VCS	Oct 30, 2014 8:24:34 PM	Closed	HORCM instance horcm100 replication group on RAC [redacted]	★★★★★	ERROR

Additional search results include 'HORCM replication groups existence mismatch between cluster nodes (10)' and 'Host violating retention SLA (10)'. The interface also features a 'Filter Tree' on the left side, showing a hierarchy of Business Entities (46), Sites (46), Databases (2), and Physical Hosts (46).

HORCM instance horcm100 replication group on RAC [redacted] at sites [DRSite](#) and [ProductionSite](#) is inconsistently configured according to the HDS pairing configuration

The screenshot shows the details for Ticket ID 362. The ticket is categorized as 'Completeness, Consistency' and is marked as 'ERROR' and 'CLOSED'. The detection date is 'Oct 30, 2014 8:24:34 PM', and it was last verified on 'Nov 05, 2014 3:29:08 AM'. The ticket is closed on 'Nov 06, 2014 2:46:42 AM'. The description states: 'A gap has been detected where one replication group of HORCM instance horcm100 on RAC [redacted] sites [DRSite](#) and [ProductionSite](#) has issues in the pairing configuration of the replication groups. This might cause data corruption in performing synchronization or suspension operations on the corresponding HDS logical units (see impact).'

취약점 1-2: 스토리지 복제 누락

Logged in as: admin with profiles: Predefined System Admin

Dashboard Topology Tickets Reports SLA Comparison Configuration

Symantec Disaster Recovery Advisor

Tools

Session Filter Tree

- (root)
 - Business Entities (46)
 - CORE (44)
 - EAI (7)
 - Sites (46)
 - DRSite (25)
 - ProductionSite (34)
 - Databases (2)
 - Oracle pcor...
 - Oracle pcor...
 - Oracle pcor...
 - Physical Hosts (46)
 - AIX ... (7)
 - AIX ... (2)
 - AIX ... (3)
 - AIX ... (1)
 - AIX ... (2)
 - AIX ... (3)
 - AIX ... (4)
 - AIX ... (3)
 - AIX ... (1)
 - AIX ... (2)
 - AIX ... (3)
 - AIX ... (1)
 - AIX ... (2)
 - AIX ... (3)

Tickets Search - Found 46 distinct tickets

Use Filter: Closed tickets Closed between [] and []

Business Entities: All Status: Closed Areas: All Severity: All Category: General Labels: All Reset Filter

Group Tickets By: Gap Type Export Tickets

ID	Labels	Detection Date	Status	Summary	Rating	Severity
HORCM replication group cluster configuration mismatch (1)						
362	AIX HDS RAC VCS	Oct 30, 2014 8:24:34 PM		HORCM instance horcm100 replication group on RA	☆☆☆☆☆	Warning
HORCM replication groups existence mismatch between cluster nodes (10)						
Host violating retention SLA (10)						

Page 1 of 1 Search: [] Reg Exp []

Displaying 1 - 46 of 46 Show 50 items

Details

Ticket 362 ☆☆☆☆☆ (clear) Suppress Gap Open Topology

Description Impact Resolution History Notes

The following section provides information about the wrong configuration on the HORCM replication group.

HORCM replication group horcm100/ur_pcorbdb_DB on AIX node pcorbdb01 of RAC pcorbdb-cluster at site ProductionSite						
Source PVOL	Source device name (in HORCM file)	Target SVOL	Target HORCM group	Target device name (in HORCM file)	Configuration issue	
(480)		N/A	N/A	N/A	Configured correctly	
91011/703C	...	N/A	N/A	N/A	Configured correctly	
91011/703D	...	N/A	N/A	N/A	Configured correctly	
91011/703E	...	N/A	N/A	N/A	Configured correctly	
91011/703F	...	N/A	N/A	N/A	Configured correctly	
91011/7040	...	N/A	N/A	N/A	Configured correctly	
91011/7041	...	N/A	N/A	N/A	Configured correctly	
91011/7042	...	N/A	N/A	N/A	Configured correctly	

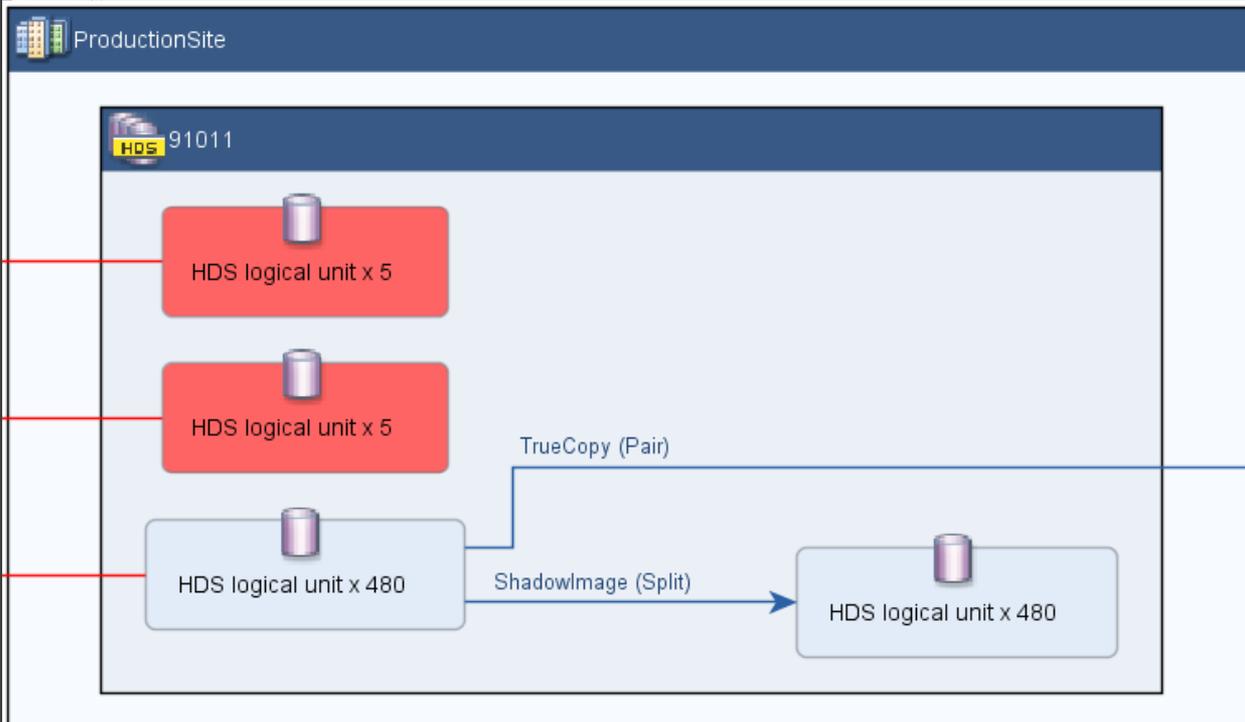
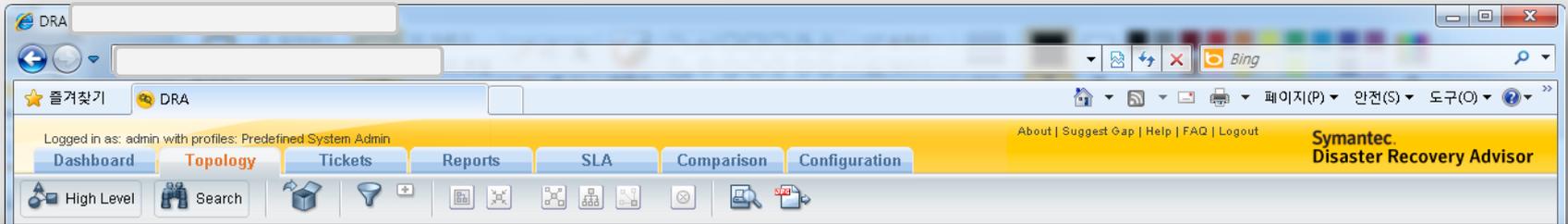
취약점 1-2: 스토리지 복제 누락

The screenshot shows the Symantec Disaster Recovery Advisor (DRA) interface. The top navigation bar includes 'Dashboard', 'Topology', 'Tickets', 'Reports', 'SLA', 'Comparison', and 'Configuration'. The 'Tickets' tab is active, displaying a search for 46 distinct tickets. The search filters are set to 'Closed tickets' and 'Status: Closed'. The results list several ticket categories, with 'HORCM replication groups existence mismatch between cluster nodes (10)' and 'Host violating retention SLA (10)' being prominent.

The details for Ticket 362 are shown below. The ticket title is 'HORCM replication group horcm100/r_pcordb_DB on AIX node pcordb01 of RAC pcordb-cluster at site ProductionSite'. The ticket is rated with 5 stars. The details section includes a table of replication issues:

Source PVOL	Source device name (in HORCM file)	Target SVOL	Target HORCM group	Target device name (in HORCM file)	Configuration issue
(480)		N/A	N/A	N/A	Configured correctly
(10)		N/A	N/A	N/A	Device does not have replica in the same layout path
91011/0F2A...	_votedg-02	N/A	N/A	N/A	Device does not have replica in the same layout path
91011/0F2B...	_ocrdg-01	N/A	N/A	N/A	Device does not have replica in the same layout path
91011/0F2C...	_votedg-04	N/A	N/A	N/A	Device does not have replica in the same layout path
91011/0F2D...	_ocrdg-03	N/A	N/A	N/A	Device does not have replica in the same layout path

취약점 1-2: 스토리지 복제 누락



취약점 2: H/W, S/W 구성 관련

취약점 및 상황



- 취약점 : Main 센터와 DR 센터간의 구성 불일치
- 장애 가능성 : DB 기동 불가, 성능 저하, 기존 Main 센터에서의 장애 재발 등

조치 및 개선효과

- Main 센터와 DR 센터간 환경구성 차이점 및 변경정보 제공
- 성공적인 DR 전환

취약점 2: H/W, S/W 구성 관련

Software/Products:

Property Name	red1	red2	red3
ant-antr	Not installed	Not installed	Not installed
libpcap0	0.9.8-50.10.1	0.9.8-50.10.1	0.9.8-50.10.1
zlib-devel	Not installed	Not installed	Not installed
brasero-nautilus	Not installed	Not installed	Not installed
python-object2	Not installed	Not installed	2.20.0.5.el6.x86_64

Operating System:

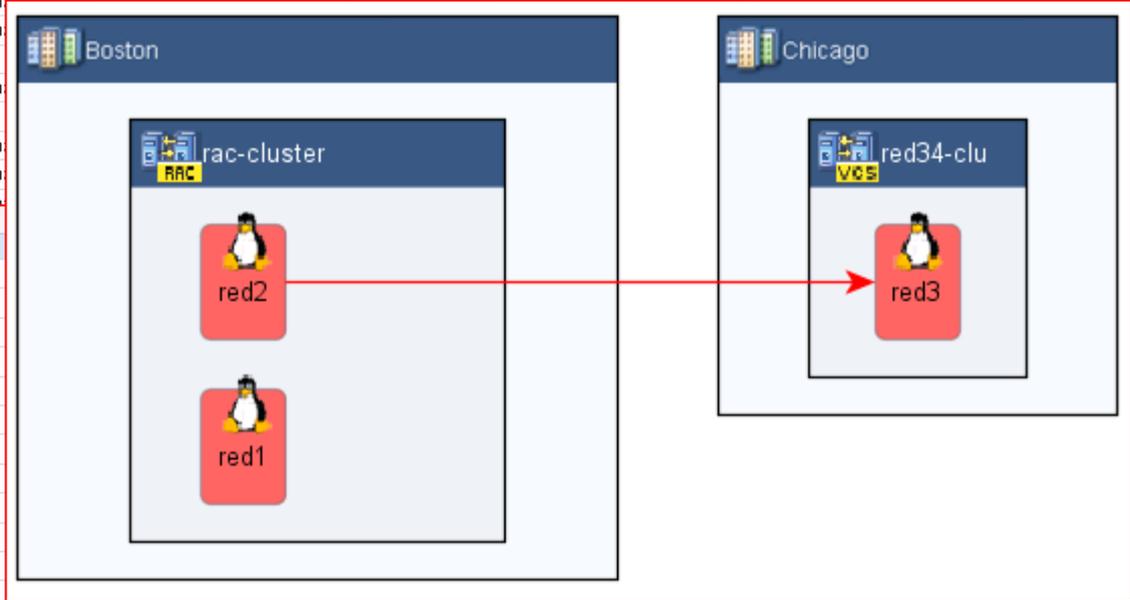
Property Name	red1	red2	red3
Version	3.0.76-0.11-default	3.0.76-0.11-default	2.6.32-279.el6.x86_64

OS/Kernel Parameters / Limits:

Property Name	red1	red2	red3
net.ipv6.conf.virbr0-nic.accept_ra_rt_info_max_plen (sysctl)	[no parameter]	[no parameter]	0
net.netfilter.nf_conntrack_checksum (sysctl)	[no parameter]	[no parameter]	1
ipsec (chkconfig)	[no parameter]	[no parameter]	off
net.ipv4.conf.em3.forwarding (sysctl)	0	0	0
fs.nfs.nsm_local_state (sysctl)	[no parameter]	[no parameter]	0
group/persistent (nscd.conf)	yes	yes	yes
certmonger (chkconfig)	[no parameter]	[no parameter]	off
NetworkManager (chkconfig)	[no parameter]	[no parameter]	off
fs.mqueue.msgsize_default (sysctl)	[no parameter]	[no parameter]	1000000

Users and Groups:

Property Name	red1	red2	red3
Group ntadmin	Exists	Exists	Does not exist
User rpc	Does not exist	Does not exist	Does not exist
User lp	login-shell=/bin/bash	login-shell=/bin/bash	login-shell=/bin/bash
Group nobody	id=65533	id=65533	id=65533
User avahi-autoipd	Does not exist	Does not exist	Does not exist
User selee	id=1000primary-group=users	id=1000primary-group=users	id=1000primary-group=users
User man	Exists	Exists	Does not exist
User usbmuxd	Does not exist	Does not exist	Does not exist
Group utempter	Does not exist	Does not exist	Does not exist
User uucp	home-dir=/etc/uucplogin-shell=/bin/bash	home-dir=/etc/uucplogin-shell=/bin/bash	home-dir=/etc/uucplogin-shell=/bin/bash
User operator	Does not exist	Does not exist	Does not exist
Group saslauth	Does not exist	Does not exist	Does not exist
User polkituser	Exists	Exists	Does not exist



취약점 2-1: SAN I/O Path 오류

Business Summary

Scan	Business Entity	Data Risk	Availability Risk	Optimization	SLA
70%	EAI	Total: 23 A:- M:+18	Total: 5 A:- M:+3	Total: 9 A:- M:+9	Total: 13 A:- M:+13
57%	CORE Scanning issues: 6	Total: 30 A:+2 M:-1	Total: 24 A:- M:+1	Total: 65 A:+13 M:+54	Total: 9 A:+2 M:-11

Scan Coverage Summary

Hosts	Virtual Machines	Storage	Data
18/18	0/0	16/16	3/3

Ticket Summary

ID	Detection Date	Status	Summary	Business Entities	Severity
361	Oct 30, 2014 8:24:07 PM	Open	VCS DR_... at site DRSite has misconfigured CFS mount resource dependency	CORE	High
103	Oct 22, 2014 1:25:30 PM	Open	HORCM replication groups of instance horcm100 are not configured on all cluster nodes of RAC_... at site Pr...	EAI, CORE	High
209	Oct 24, 2014 2:15:07 PM	Open	HORCM replication groups of instance horcm101 are not configured on all cluster nodes of VCS_... at site Prod...	CORE	High
99	Oct 22, 2014 1:25:30 PM	Open	HORCM replication groups of instance horcm11 are not configured on all cluster nodes of VCS_... LU at site DR...	EAI, CORE	High
206	Oct 24, 2014 2:15:07 PM	Open	HORCM replication groups of instance horcm201 are not configured on all cluster nodes of VCS D_... U at site D...	CORE	High

취약점 2-1: SAN I/O Path 오류

The screenshot displays the Symantec Disaster Recovery Advisor (DRA) web interface. The top navigation bar includes 'Dashboard', 'Topology', 'Tickets', 'Reports', 'SLA', 'Comparison', and 'Configuration'. The user is logged in as 'admin with profiles: Predefined System Admin'. The main content area shows a search for tickets, resulting in one ticket titled 'Devices with dead SAN I/O paths (1)'. The ticket details are expanded, showing the description: 'AIX host [redacted] 1 at site DRSite has storage volumes with missing SAN I/O paths (AIX_MPIO)'. The ticket is categorized as 'Availability' with a 'WARNING' severity and a 'CLOSED' status. It was detected on Oct 22, 2014, and closed on Nov 06, 2014. The description further explains that some SAN I/O paths to storage volumes are unavailable, potentially affecting performance and redundancy.

Tickets Search - Found 1 distinct tickets

Use Filter: Find ticket by ID Ticket ID: [input] [Reset Filter](#) [Search](#)

Group Tickets By: Gap Type Export Tickets

ID	Labels	Detection Date	Status	Summary	Rating	Severity
80	AIX	Oct 22, 2014 1:24:40 PM	[icon]	AIX host [redacted] site DRSite has storage volumes with missing SAN ...	★★★★★	[dropdown]

Page 1 of 1 Search: [input] Reg Exp [checkbox] Displaying 1 - 1 of 1 Show 50 items

Details

Ticket 80 ★★★★★ (clear) [Suppress Gap](#) [Open Topology](#) [icon]

Description Impact Resolution History Notes

AIX host [redacted] 1 at site DRSite has storage volumes with missing SAN I/O paths (AIX_MPIO)

Ticket ID: 80 **Area:** Storage , Servers **Gap Signature:** [00245DeadPath] Devices with dead SAN I/O paths

Category: Availability **Detected On:** Oct 22, 2014 1:24:40 PM
Severity: WARNING **Last Verified On:** Nov 05, 2014 3:27:20 AM
Status: CLOSED **Closed On:** Nov 06, 2014 2:46:42 AM

AIX X

Description

AIX host [redacted] site DRSite is mapped to SAN storage volumes. Some of the SAN I/O paths to these storage volumes are unavailable. This might result in reduced performance and redundancy.

The following table shows the unavailable paths:

취약점 2-1: SAN I/O Path 오류

The screenshot shows the Symantec Disaster Recovery Advisor (DRA) interface. The user is logged in as 'admin' with the profile 'Predefined System Admin'. The interface includes a navigation menu with 'Dashboard', 'Topology', 'Tickets', 'Reports', 'SLA', 'Comparison', and 'Configuration'. The 'Tickets' section is active, displaying a search for 'Found 1 distinct tickets'. The search filter is set to 'Find ticket by ID' with a 'Reset Filter' button. The results table shows one ticket with ID 80, labeled 'AIX', detected on Oct 22, 2014 at 1:24:40 PM. The summary indicates 'AIX host [redacted] site DRSite has storage volumes with missing SAN ...'. The ticket details show a severity of 'WARNING', status of 'CLOSED', and a description: 'AIX host deaidb01 at site DRSite is mapped to SAN storage volumes. Some of the SAN I/O paths to these storage volumes are unavailable. This might result in reduced performance and redundancy.' A table of unavailable paths is highlighted with a red box:

The following table shows the unavailable paths:			
VG	PV	Dead path	Unavailable paths/Total # of paths
allinst_rootvg	hdisk1	hdisk1-vscsi0-820000000000	1/2
rootvg	hdisk0	hdisk0-vscsi0-810000000000	1/2

An 'Open Topology' button is visible in the details section, with a mouse cursor pointing to it.

취약점 2-2: 볼륨 Layout 구성 차이

Business Summary

Scan	Business Entity	Data Risk	Availability Risk	Optimization	SLA
70%	EAI	Total: 23 A:- M:+18 ↑	Total: 5 A:- M:+3 ↓	Total: 9 A:- M:+9 ↓	Total: 13 A:- M:+13 ↓
57%	CORE Scanning issues: 6	Total: 30 A:+2 ↓ M:-1 ↓	Total: 24 A:- M:-1 ↓	Total: 65 A:+13 ↓ M:+54 ↓	Total: 9 A:+2 ↓ M:-11 ↓

License Issues
Your maintenance/support contract for DRA has expired, or contains less than 30 days remaining. Go to License page for more details.

Running/Failed Scan Tasks
Full Cycle Full [Oct 22, 2014 11:10:31 AM] Finished with errors
Full Cycle Full1 [Nov 11, 2014 12:18:51 AM] Finished with errors

Scan Coverage Summary

Hosts	Virtual Machines	Storage	Data
18/18	0/0	16/16	3/3

Ticket Summary

ID	Detection Date	Status	Summary	Business Entities	Severity
361	Oct 30, 2014 8:24:07 PM	Open	VCS DR_... at site DRSite has misconfigured CFS mount resource dependency	CORE	High
103	Oct 22, 2014 1:25:30 PM	Open	HORCM replication groups of instance horcm100 are not configured on all cluster nodes of RAC_... at site Pr...	EAI, CORE	High
209	Oct 24, 2014 2:15:07 PM	Open	HORCM replication groups of instance horcm101 are not configured on all cluster nodes of VCS_... at site Prod...	CORE	High
99	Oct 22, 2014 1:25:30 PM	Open	HORCM replication groups of instance horcm11 are not configured on all cluster nodes of VCS_... LU at site DR...	EAI, CORE	High
206	Oct 24, 2014 2:15:07 PM	Open	HORCM replication groups of instance horcm201 are not configured on all cluster nodes of VCS D_... U at site D...	CORE	High

취약점 2-2: 볼륨 Layout 구성 차이

```
[pc-001:root] / ##>
[pc-001:root] / ##>
[pc-001:root] / ##> vxprint -htg pc-001-g02 | grep "CONCAT"
pl rdat10-0305-01 rdat10_PCOR0305 ENABLED ACTIVE 20971520 CONCAT - RW
pl rdat10-0345-01 rdat10_PCOR0345 ENABLED ACTIVE 20971520 CONCAT - RW
pl rdat10-0385-01 rdat10_PCOR0385 ENABLED ACTIVE 20971520 CONCAT - RW
[pc-001:root] / ##>

pl raux30-0003-01 raux30_PCOR03 ENABLED ACTIVE 62914560 STRIPE 8/128 RW
pl raux30-0006-01 raux30_PCOR06 ENABLED ACTIVE 62914560 STRIPE 8/128 RW
pl rct101-0003-01 rct101_PCOR03 ENABLED ACTIVE 6291456 STRIPE 8/128 RW
pl rdat10-0003-01 rdat10_PCOR0003 ENABLED ACTIVE 20971520 STRIPE 8/128 RW
pl rdat10-0006-01 rdat10_PCOR0006 ENABLED ACTIVE 20971520 STRIPE 8/128 RW
pl rdat10-0009-01 rdat10_PCOR0009 ENABLED ACTIVE 20971520 STRIPE 8/128 RW
pl rdat10-0012-01 rdat10_PCOR0012 ENABLED ACTIVE 20971520 STRIPE 8/128 RW
pl rdat10-0015-01 rdat10_PCOR0015 ENABLED ACTIVE 20971520 STRIPE 8/128 RW
pl rdat10-0018-01 rdat10_PCOR0018 ENABLED ACTIVE 20971520 STRIPE 8/128 RW
pl rdat10-0021-01 rdat10_PCOR0021 ENABLED ACTIVE 20971520 STRIPE 8/128 RW
pl rdat10-0024-01 rdat10_PCOR0024 ENABLED ACTIVE 20971520 STRIPE 8/128 RW
pl rdat10-0027-01 rdat10_PCOR0027 ENABLED ACTIVE 20971520 STRIPE 8/128 RW
```

취약점 2-2: 볼륨 Layout 구성 차이

The screenshot shows the Symantec Disaster Recovery Advisor (DRA) interface. The top navigation bar includes 'Dashboard', 'Topology', 'Tickets', 'Reports', 'SLA', 'Comparison', and 'Configuration'. The 'Tickets' section is active, displaying a search result for 18 tickets. The table below shows the search results:

ID	Labels	Detection Date	Status	Summary	Rating	Severity
22	AIX HDS RAC VCS	Nov 11, 2014 2:51:28 AM	Open	LVs stored on Veritas DG <code>sddg01</code> on AIX node <code>dcordb03</code> of VCS D...	★★★★★	Warning
18	AIX HDS RAC VCS	Nov 11, 2014 2:51:28 AM	Open	LVs stored on Veritas DG <code>sddg02</code> on AIX node <code>dcordb03</code> of VCS D...	★★★★★	Warning
17	AIX HDS RAC VCS	Nov 11, 2014 2:51:28 AM	Open	LVs stored on Veritas DG <code>sddg01</code> on AIX node <code>dcordb01</code> of VCS D...	★★★★★	Warning
20	AIX HDS RAC VCS	Nov 11, 2014 2:51:28 AM	Open	LVs stored on Veritas DG <code>sddg02</code> on AIX node <code>dcordb01</code> of VCS D...	★★★★★	Warning
19	AIX HDS RAC VCS	Nov 11, 2014 2:51:28 AM	Open	LVs stored on Veritas DG <code>sddg01</code> on AIX node <code>dcordb02</code> of VCS D...	★★★★★	Warning

The details for Ticket 20 are shown below, with a red box highlighting the description:

Description: LVs stored on Veritas DG `pcor_sddg02` on AIX node `dcordb01` of VCS DR CO `dcordb01` CLU at site `DRSite` have different mirror layouts

Ticket ID: 20 **Area:** Servers **Gap Signature:** [00311VGLVMMRLY1] VG contains logical volumes of different mirror layout

Category: Performance, Best Practice **Detected On:** Nov 11, 2014 2:51:28 AM
Severity: WARNING **Last Verified On:** Nov 11, 2014 2:56:48 AM
Status: REOPEN

Tags: AIX X HDS X RAC X VCS X

Description: The Veritas DG `pcor_sddg02` is storing LVs that are configured with mirroring. Typically, LVs stored on a VG are configured with the same mirror layout, to gain uniform performance. However, the LVs stored on the Veritas DG `pcor_sddg02` are configured with different mirror layouts. This will lead to unexpected performance degradation, upon non suitable usage of file systems on this VG (see impact).

취약점 2-2: 볼륨 Layout 구성 차이

Logged in as: admin with profiles: Predefined System Admin

Symantec Disaster Recovery Advisor

Tools

Session

Filter Tree

- (root)
- Business Entities (18)
 - CORE (18)
 - Sites (18)
 - DRSite (18)
 - Physical Hosts (18)
 - 01 (18)
 - 02 (18)
 - 03 (18)

Tickets Search - Found 18 distinct tickets

Use Filter: Recently opened | Opened in the last 2 days

Business Entities: All | Status: Open | Reopen | Areas: All | Severity: All | Category: General | Labels: All | Reset Filter

Group Tickets By: Gap Type | Export Tickets

ID	Labels	Detection Date	Status	Summary	Rating	Severity
22	AIX HDS RAC VCS	Nov 11, 2014 2:51:28 AM	[Icon]	LVs stored on Veritas DG pcor_sddg01 on AIX node dcorb03 of VCS D...	★★★★★	▼
18	AIX HDS RAC VCS	Nov 11, 2014 2:51:28 AM	[Icon]	LVs stored on Veritas DG pcor_sddg02 on AIX node dcorb03 of VCS D...	★★★★★	▼
17	AIX HDS RAC VCS	Nov 11, 2014 2:51:28 AM	[Icon]	LVs stored on Veritas DG pcor_sddg01 on AIX node dcorb01 of VCS D...	★★★★★	▼
20	AIX HDS RAC VCS	Nov 11, 2014 2:51:28 AM	[Icon]	LVs stored on Veritas DG pcor_sddg02 on AIX node dcorb01 of VCS D...	★★★★★	▼
19	AIX HDS RAC VCS	Nov 11, 2014 2:51:28 AM	[Icon]	LVs stored on Veritas DG pcor_sddg01 on AIX node dcorb02 of VCS D...	★★★★★	▼

Page 1 of 1 | Search: | Reg Exp

Displaying 1 - 18 of 18 | Show 50 items

Details

Ticket 20 ★★★★★ (clear) | Mark as Resolved | Suppress Ticket | Sug | **Open Topology**

Description | Impact | Resolution | History | Notes | Symptoms

AIX X | HDS X | RAC X | VCS X

Description

The Veritas DG pcor_sddg02 is configured with LVs that are configured with different mirror layouts. Typically, LVs stored on Veritas DG pcor_sddg01 are configured with the same mirror layout, to gain uniform performance. However, the LVs stored on the Veritas DG pcor_sddg02 are configured with different mirror layouts. This will lead to unexpected performance degradation, upon non suitable usage of file systems on this VG (see impact).

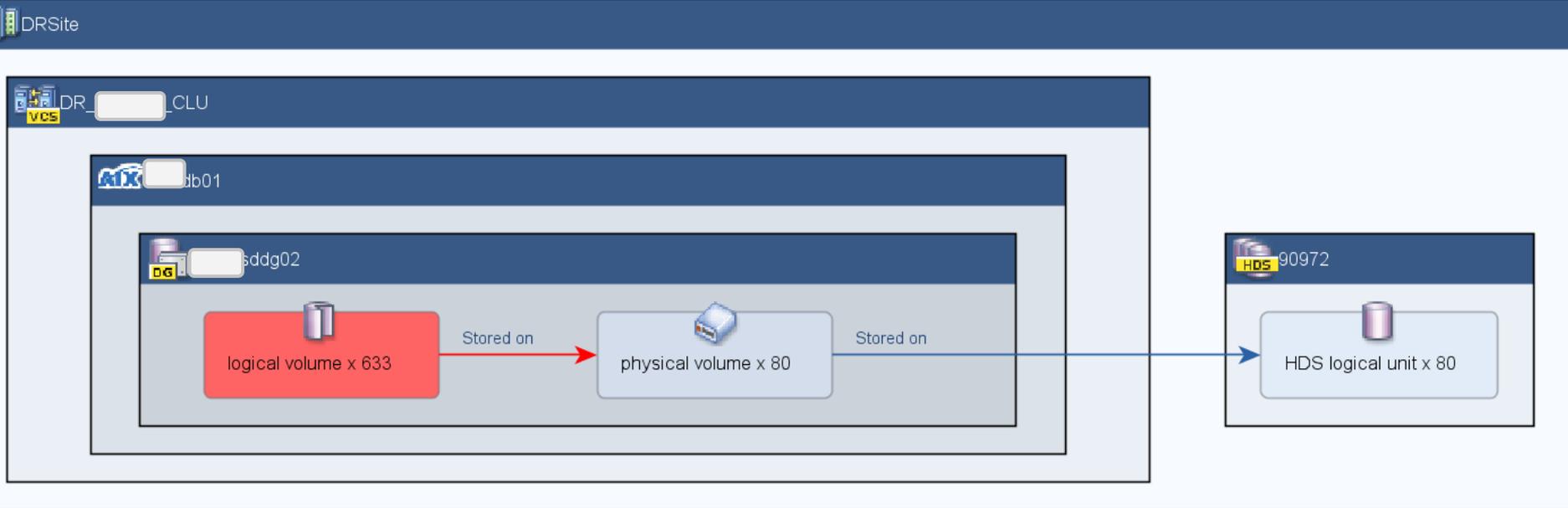
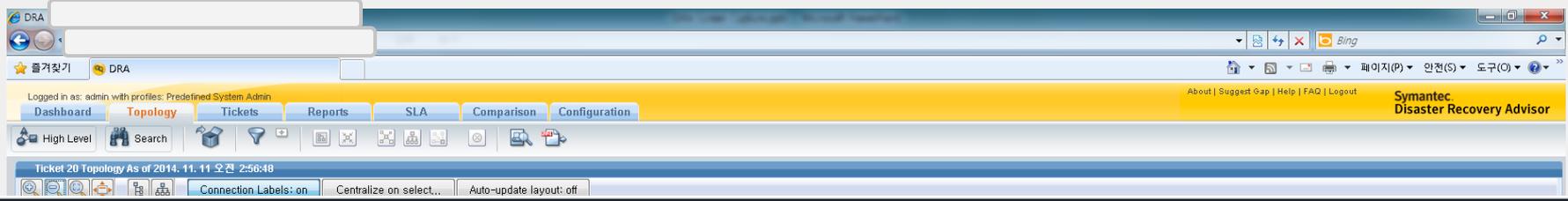
The following table presents the LVs stored on the Veritas DG pcor_sddg02 and their mirror layouts

Logical volume	Mirror layout
(3)	CONCAT
(630)	STRIPE

Note: The following items were not successfully scanned lately:

- HDS 90972 has never been scanned successfully

취약점 2-2: 볼륨 Layout 구성 차이



취약점 3: 파일 속성 및 내용 관련

취약점 및 상황



- 취약점 : Main 센터와 DR 센터간의 구성 불일치
- 장애 가능성 : Application 기동 불가, 성능 저하, 기존 Main 센터에서의 장애 재발 등

조치 및 개선효과

- Main 센터와 DR 센터간 환경구성 차이점 및 변경정보 제공
- 성공적인 DR 전환

취약점 3-1: 파일 속성 및 내용 관련

Logged in as: admin with profiles: Predefined System Admin About | Suggest Gap | Help | FAQ | Logout

Dashboard | Topology | **Tickets** | Reports | SLA | Comparison | Configuration **Symantec Disaster Recovery Advisor**

Tickets Search - Found 34 distinct tickets

Use Filter: Open tickets Detected between [] and [] Search

Business Entities: All Status: Open | Reopen Areas: All Severity: All Category: General Labels: All [Reset Filter](#)

Group Tickets By: Gap Type Export Tickets

ID	Labels	Detection Date	Status	Summary	Rating	Severity
Host configuration differences (6)						
401	Linux RAC VCS	Jun 26, 2014 10:44:50 AM		Host configuration differences have been detected on group filediff according to worksheet Worksheet 0 (owne...	★★★★★	▼
402	Linux RAC VCS	Jun 26, 2014 10:44:50 AM		Host configuration differences have been detected on group Difference according to worksheet Worksheet 0 (o...	★★★★★	▼
322	Linux RAC VCS	Jun 13, 2014 3:49:05 PM		Host configuration differences have been detected on group rac-cluster according to the default system worksh...	★★★★★	▼
321	Linux RAC VCS	Jun 13, 2014 3:49:05 PM		Host configuration differences have been detected on group SuseCI (41010) according to the default system wor...	★★★★★	▼

Page 1 of 1 Search: [] Reg Exp [] Displaying 1 - 34 of 34 Show 50 items

Unix Environment Compare:

Property Name ▼	red1	red2
/home/dsbear/bin/dsbear - cksum	329845150:233055240	53624523:178782208
/home/dsbear/bin/dsbear - group	dsinst	root
/home/dsbear/bin/dsbear - owner	dsbear	root
/home/dsbear/bin/dsbear - permission	751	644
/home/dsbear/bin/dsbear - size	233055240	178782208

DEVICE TYPE DISK GROUP STATUS

취약점 3-2: 파일간 정합성 이슈

운영

(ap01, ap02)

비교항목	차이
존재 유무	45(26/19)
size	1
checksum	1
permission	0

비교항목	차이
존재 유무	30(5/25)
size	4
checksum	2
permission	4



DR

(ap01_dr, ap02_dr)

비교항목	차이
존재 유무	28(14/14)
size	0
checksum	1
permission	0

비교항목	차이
존재 유무	24(3/21)
size	6
checksum	9
permission	1

취약점 3-2: 파일간 정합성 이슈



운영

비교대상 파일
: JeusMain.xml



DR

```
<name>ap01</name>
:
<command-option>
- Xms1024m -Xmx2048m -verbosegc -
  Xverbosegclog:/logfs/gc.log -
  Djeus.sessionmgr.SessionServer1= -
  Djeus.sessionmgr.SessionServer2= -
:
</command-option>
<vendor>oracle</vendor>
<export-name>jdbc/SFADS0</export-name>
<data-source-classname>
oracle.jdbc.pool.OracleConnectionPool
DataSource</data-source-class-name>
<database-name>NTOP</database-name>
```

```
<name>ap01_dr</name>
:
<command-option>
- Xms512m -Xmx1024m -verbosegc -
  Xverbosegclog:/logfs/gc.log -
  Djeus.sessionmgr.SessionServer1= -
  Djeus.sessionmgr.SessionServer2= -
:
</command-option>
<vendor>oracle</vendor>
<export-name>jdbc/SFADS2</export-name>
<data-source-classname>
oracle.jdbc.pool.OracleConnectionPool
DataSource</data-source-class-name>
<database-name>NTOP</database-name>
```

취약점 3-3: 클러스터 노드 간 파일 시스템 차이

The screenshot shows the Symantec Disaster Recovery Advisor (DRA) interface. The main content area displays search results for tickets, specifically focusing on host configuration differences and local file system comparisons between cluster nodes. Two pop-up windows provide detailed data from these results.

Tickets Search - Found 24 distinct tickets

Use Filter: Open tickets | Detected between [] and [] | Search

Business Entities: CORE | Status: Open | Reopen | Areas: All | Severity: All | Category: Availability | Labels: All | Reset Filter

Group Tickets By: Gap Type | Export Tickets

ID	Labels	Detection Date	Status	Summary	Rating	Severity
[Host Comparison Module:] Host configuration differences (3)						
Local file system comparison between cluster nodes (4)						
34	AIX RAC VCS	Oct 22, 2014 12:45:21 PM	Open	Local file system configuration inconsistency was detected between nod...	★★★★★	High
30	AIX VCS	Oct 22, 2014 12:45:21 PM	Open	Local file system configuration inconsistency was detected between nod...	★★★★★	High
33	AIX RAC VCS	Oct 22, 2014 12:45:21 PM	Open	Local file system configuration inconsistency was detected between nod...	★★★★★	High

Displaying 1 - 24 of 24 | Show 50 items

The following table lists the cluster nodes and the local file systems mounted on each node:

Local file system	pcorap01	pcorap02	pcorap03
/mig_work33	Does not exist	Exists	Does not exist
/sortwork1	Exists	Does not exist	Does not exist
/mig_load41	Does not exist	Does not exist	Exists
/mig_sort30	Does not exist	Exists	Does not exist
/sortwork3	Does not exist	Does not exist	Exists
/mig_work13	Exists	Does not exist	Does not exist
/sortwork2	Does not exist	Exists	Does not exist
/mig_work31	Does not exist	Exists	Does not exist
/mig_work42	Does not exist	Does not exist	Exists
/mig_work43	Does not exist	Does not exist	Exists
/mig_sort10	Exists	Does not exist	Does not exist
/mig_work12	Exists	Does not exist	Does not exist
/mig_sort40	Does not exist	Does not exist	Exists

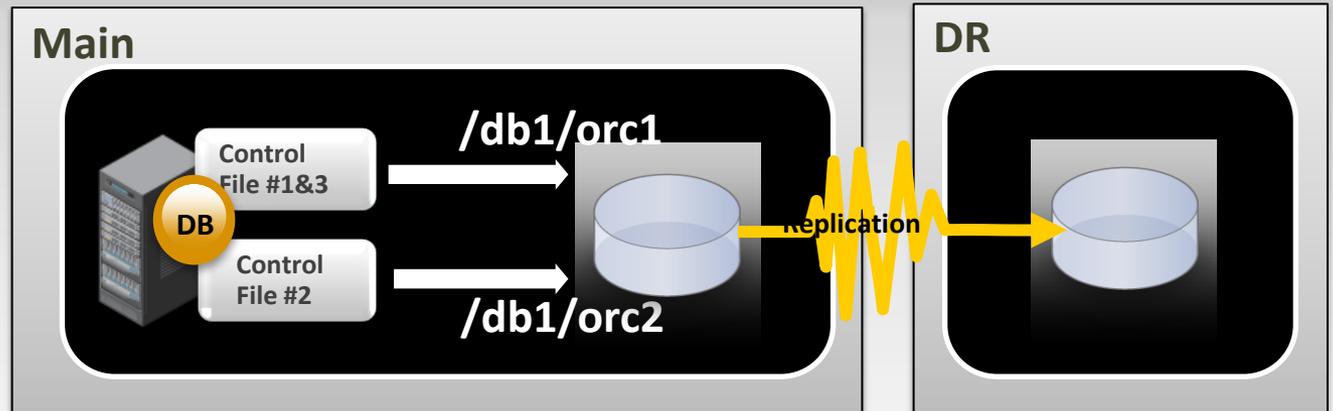
The following table lists the file systems with significant size difference:

Local file system	pcorap01	pcorap02	pcorap03
/mig_work45	1.95TB	1.95TB	4TB
/mig_load45	1000GB	1000GB	1.95TB

취약점 4: 최적화 및 SLA 관련

취약점 및 상황

- 취약점 : Oracle Control file에 대한 단일 저장 위치
- 장애 가능성 : 단일지점 장애



조치 및 개선효과

- Oracle Control File에 대한 저장위치를 단일 디스크에서 분산된 구조로 변경 권고
- Single Point Failure 대한 취약점 발생 가능성 개선

취약점 4-1: DB (Oracle) 파일 분산 권고

Logged in as: Admin About | Suggest Gap | Help | FAQ | Logout

Dashboard | Topology | **Tickets** | Reports | SLA | Comparison | Configuration Symantec Disaster Recovery Advisor

Tickets Search - Found 12 distinct tickets

Use Filter: Open tickets Detected between [] and [] Search

Business Entities: ERP Status: Open | Reopen Areas: All Severity: All Category: Optimization Labels: All External Ticket: All [Reset Filter](#)

Group Tickets By: Gap Type Export Tickets

ID	Labels	Detection Date	Status	Summary	Rating	Severity
Mixed storage types - correct LV layout (1)						
Mixture of database instances (1)						
SAN I/O inconsistency on primary storage volumes (1)						
Suboptimal Oracle control file multiplexing (1)						
129	Linux Oracle Symmetrix	Sep 29, 2010 1:17:29 AM		Suboptimal control file multiplexing for Oracle database db1 on Linux host tyler at site Boston	★★★★★	▼
Suboptimal Oracle redo log file multiplexing (1)						

Page 1 of 1 Search: [] Reg Exp [] Displaying 1 - 12 of 12 Show 50 items

Details

Ticket 129 ★★★★★ (clear) [Mark as Resolved](#) [Suppress Ticket](#) [Suppre](#) [Open Topology](#)

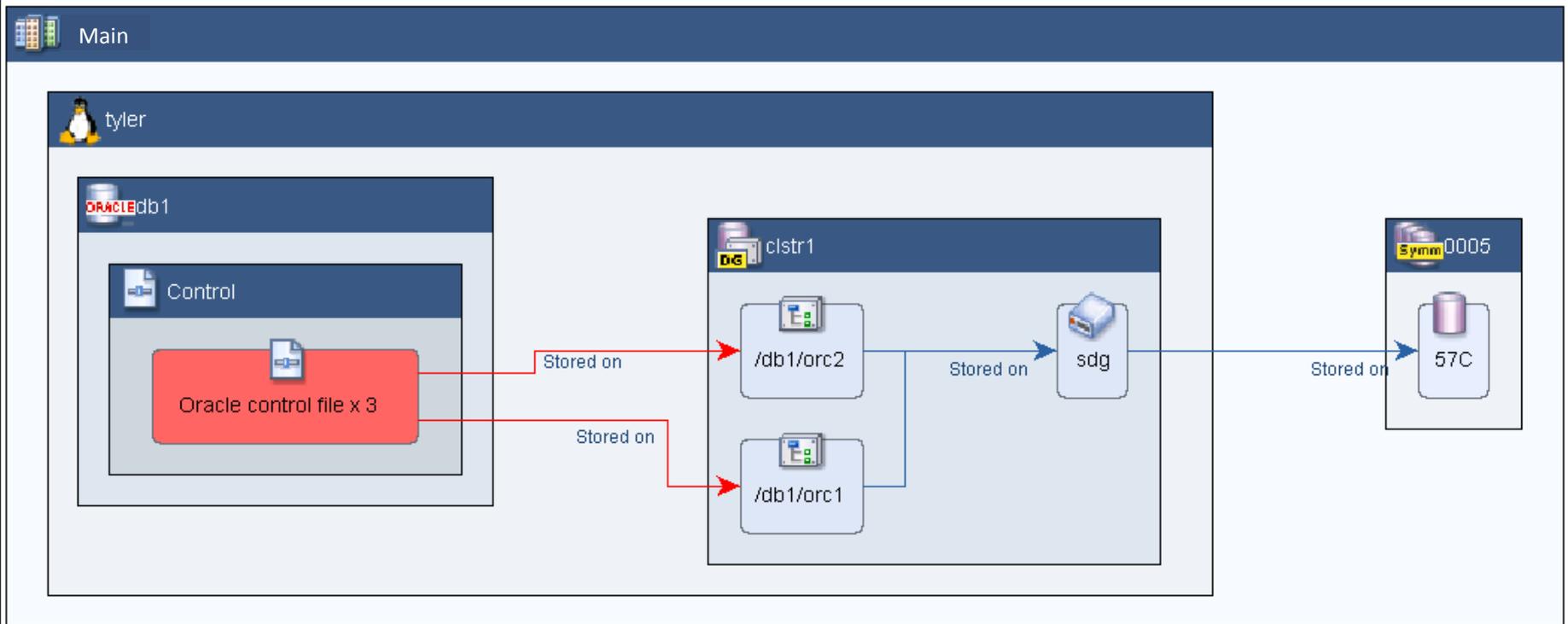
Description Impact Resolution History Notes Symptoms

The following table lists the control files stored on same storage volumes:

Control File	File System	Physical Volume	Storage volume
/db1/orc1/.../control01.ctl	/db1/orc1	sdg	0005 /57C
/db1/orc1/.../control03.ctl	/db1/orc1	sdg	0005 /57C
/db1/orc2/.../control02.ctl	/db1/orc2	sdg	0005 /57C

... of unexpected single point-of-failure (see impact).

취약점 4-1: DB (Oracle) 파일 분산 권고



Ticket Item

Ticket 129 ★★★★★ (clear) Mark as Resolved Suppress Ticket Suppress Gap

Description Impact Resolution History Notes

Suboptimal control file multiplexing for Oracle database `db1` on Linux host `tyler` at site |

Ticket ID: 129 **Area:** Databases **Gap Signature:** [00250CS0] Suboptimal Oracle control file multiplexing

Category: Availability, Best Practice **Detected On:** Sep 29, 2010 1:17:29 AM

Severity: WARNING **Last Verified On:** Apr 08, 2013 8:30:46 PM

Status: OPEN **External System Ticket ID:**

취약점 4-2: SLA 관련 - 1시간 RPO 위반

Logged in as: admin with profiles: Predefined System Admin About | Suggest Gap | Help | FAQ | Logout

Symantec Disaster Recovery Advisor

Dashboard | Topology | **Tickets** | Reports | SLA | Comparison | Configuration

Tools

Session +

Filter Tree -

- (root)
- Business Entities (13)
 - CORE (1)
 - EAI (13)
- Sites (13)
 - DRSite (5)
 - ProductionSite (9)
- Physical Hosts (13)
 - AIX di p01 (1)
 - AIX di p02 (1)
 - AIX di p03 (1)
 - AIX di b01 (1)
 - AIX di b02 (1)
 - AIX di b03 (1)
 - AIX di p01 (3)
 - AIX di p01 (3)
 - AIX pi p01 (1)
 - AIX pi p02 (1)
 - AIX pi p03 (1)
 - AIX pi p01 (5)
 - AIX pi p02 (5)
 - AIX pi p01 (5)
 - AIX pi02 (5)

Tickets Search - Found 13 distinct tickets

Use Filter: Open tickets Detected between [] and [] Search

Business Entities: **EAI** Status: **Open** | Reopen Areas: **All** Severity: **All** Category: **SLA Breach** Labels: **All** Reset Filter

Group Tickets By: Gap Type Export Tickets

ID	Labels	Detection Date	Status	Summary	Rating	Severity
Host violating RPO SLA (6)						
137	AIX HDS	Oct 22, 2014 9:33:53 PM		The AIX host d...01 violates RPO SLA defined in the policy Platinum	★★★★★	
142	AIX HDS RAC VCS	Oct 22, 2014 9:33:53 PM		The AIX node b01 of RAC -cluster violates RPO SLA defined...	★★★★★	
152	AIX HDS RAC VCS	Oct 22, 2014 9:33:53 PM		The AIX node b02 of RAC -cluster violates RPO SLA defined...	★★★★★	
150	AIX HDS VCS	Oct 22, 2014 9:33:53 PM		The AIX node p01 of VCS CLU violates RPO SLA defined in t...	★★★★★	

Page 1 of 1 Search: [] Reg Exp [x] Displaying 1 - 13 of 13 Show 50 items

Details

Ticket 152 ★★★★★ (clear) Mark as Resolved Suppress Ticket ? Suppress Gap Open Topology

The AIX node db02 of RAC db-cluster violates RPO SLA defined in the policy Platinum

Ticket ID: 152 Area: Storage, Servers Gap Signature: [00700HSLARPO] Host violating RPO SLA

Category: Data Risk, Replication SLA Detected On: Oct 22, 2014 9:33:53 PM
 Severity: ERROR Last Verified On: Nov 11, 2014 3:31:06 AM
 Status: OPEN

AIX X HDS X RAC X VCS X

Description

The AIX node db02 of RAC db-cluster at site ProductionSite was assigned the SLA policy "Platinum". When assigning a host, VG, file system or database service to a SLA policy, the assigned component must meet all the criteria configured in the SLA policy. However, an SLA breach was detected in the context of RPO.

The following table specifies the RPO SLA definition and the SLA de-facto:

취약점 4-2: SLA 관련 - 1시간 RPO 위반

Logged in as: admin with profiles: Predefined System Admin About | Suggest Gap | Help | FAQ | Logout

Symantec Disaster Recovery Advisor

Dashboard | Topology | **Tickets** | Reports | SLA | Comparison | Configuration

Tools

Session +

Filter Tree

- (root)
- Business Entities (13)
 - CORE (1)
 - EAI (13)
- Sites (13)
 - DRSite (5)
 - ProductionSite (9)
- Physical Hosts (13)
 - AIX 31 (1)
 - AIX 32 (1)
 - AIX 33 (1)
 - AIX 31 (1)
 - AIX 32 (1)
 - AIX 33 (1)
 - AIX 11 (3)
 - AIX
 - AIX
 - AIX
 - AIX
 - AIX
 - AIX
 - AIX

Tickets Search - Found 13 distinct tickets

Use Filter: Open tickets Detected between [] and [] Search

Business Entities: EAI Status: Open | Reopen Areas: All Severity: All Category: SLA Breach Labels: All [Reset Filter](#)

Group Tickets By: Gap Type Export Tickets

ID	Labels	Detection Date	Status	Summary	Rating	Severity
Host violating RPO SLA (6)						
137	AIX HDS	Oct 22, 2014 9:33:53 PM	Open	The AIX host violates RPO SLA defined in the policy Platinum	★★★★★	Warning
142	AIX HDS RAC VCS	Oct 22, 2014 9:33:53 PM	Open	The AIX node of RAC cluster violates RPO SLA defined...	★★★★★	Warning
152	AIX HDS RAC VCS	Oct 22, 2014 9:33:53 PM	Open	The AIX node of RAC cluster violates RPO SLA defined...	★★★★★	Warning
150	AIX HDS VCS	Oct 22, 2014 9:33:53 PM	Open	The AIX node of VCS E U violates RPO SLA defined in t...	★★★★★	Warning

Page 1 of 1 Search: [] Reg Exp [] Displaying 1 - 13 of 13 Show 50 items

Details

Ticket 152 ★★★★★ (clear) [Mark as Resolved](#) [Suppress Ticket](#) [Sup](#) **Open Topology**

Description Impact Resolution History Notes Symptoms

AIX X HDS X RAC X VCS X

The following table specifies the RPO SLA definition and the SLA de-facto:

Affected component	Violated SLA definition	De-facto
(5)	RPO of 1 hour at any remote site	Replicas that match the criteria were not found in the specified site
Veritas DG pe_01_1	RPO of 1 hour at any remote site	Replicas that match the criteria were not found in the specified site
Veritas DG pe_sl_00	RPO of 1 hour at any remote site	Replicas that match the criteria were not found in the specified site
Veritas DG pe_sl_01	RPO of 1 hour at any remote site	Replicas that match the criteria were not found in the specified site
Veritas DG pe_vc_lg	RPO of 1 hour at any remote site	Replicas that match the criteria were not found in the specified site
Veritas DG pe_b_dq00	RPO of 1 hour at any remote site	Replicas that match the criteria were not found in the specified site

다양한 리포트

Logged in as: Admin About | Suggest Gap | Help | FAQ | Logout

Dashboard **Topology** Tickets **Reports** SLA Comparison Configuration Symantec Disaster Recovery Advisor

Reports

- Business Continuity Status Report
- Business Continuity Status Report**
- Business Entity Scan Coverage
- Custom Report
- Data Collection Expansion Package Summary
- Data Collectors Summary
- Database Replica Synchronization
- Database Storage Utilization
- Host Configuration Differences
- Host HBA Comparison
- Hosts with a Single SAN I/O Path
- Infrastructure Change Log
- Installed Software
- License Usage
- MS SQL Server Backup Summary
- NetApp Filer Replication Summary
- New Databases Notification
- Old Replicas
- Replicated Temporary Databases
- Replication Availability Report
- Scan Status
- Scan Troubleshooting
- Standby Pairs
- Storage Allocation Optimization
- Storage Summary
- System Event Log
- Ticket Details
- Un-replicated Data on Replicated Hosts
- Un-scanned Servers / Arrays
- Unsynchronized Remote Replication
- VMware Summary

Generate

Top 5 Business Services by Category

Service	Availability	SLA Breach	Data Risk	Optimization
Billing	High	Low	Medium	Low
ERP	Medium	High	Medium	Low
CRM	Medium	Low	Medium	High
Web	Low	Low	Low	High
Online Services	Low	Low	Low	High

Data Safety

Metric	Percentage
Green Segment	52%
Red Segment	48%

다양한 리포트 – Business Continuity Status Report

Logged in as: Admin About | Suggest Gap | Help | FAQ | Logout **Symantec Disaster Recovery Advisor**

Dashboard | Topology | Tickets | **Reports** | SLA | Comparison | Configuration

Reports

Report: Business Continuity Status Report

Selected business entities: [all]

Time period: [current (now)]

Show Top 5 Business Entities Generate

BUSINESS CONTINUITY RISKS (06/25/2014)

Ticket Status

Top 5 Business Services by Severity

Service	Error	Warning	Info
Billing	4	2	1
ERP	3	2	1
CRM	1	3	1
Web	1	1	1
Online Services	0	1	0

BE: Error (Red), Warning (Yellow), Info (Grey)

Top 5 Business Services by Category

Service	Availability	SLA Breach	Data Risk	Optimization
Billing	7	2	1	0
ERP	2	2	2	2
CRM	4	1	1	1
Web	1	1	1	1
Online Services	1	1	1	0

BE: Availability (Blue), SLA Breach (Green), Data Risk (Cyan), Optimization (Magenta)

Servers at Risk

Total: 1 clusters (2 nodes), 27 standalone servers

Overall

High risks: 15 Minor risks: 6

Availability

High risks: 11 Minor risks: 4

Data Safety

High risks: 14 Minor risks: 0

다양한 리포트 – Host Configuration Differences

Report: Host Configuration Differences

Compare: Hardware Software Oper...

HOST CONFIGURATION DIFFERENCES

This report analyzes potential vulnerabilities based on inconsis...
The report lists the configuration differences between standb...

Report generation time: Jun 25, 2014 8:51:46 PM

Component	moon
CPU Speed	2992M
CPU Vendor	intel

Component	crmd
CPU Speed	1200
Number of CPUs	28
Server Model	Sun M

Component	ava
Kernel Bits	64
Memory	16GB
Number of CPUs	12

Component	esx2
Memory	4GB
Number of CPUs	2
Server Model	EXL

OS/Kernel Parameters / Limits

Parameter (Source)	system
...	...

Product	sun1	sun2
Admin/Install Java Ext	11.8,REV=2005.01.09	11.8,REV=2005.01.09.20.42
HP OpenView Perform	04.59.001	Not installed
HP Operations agent	8.53.006	Not installed
Perl 5.8.4 (core)	11.10.0,REV=2005.01	11.10.0,REV=2005.01.21.15.20

Product	c1p1	c1p2
- bos.adt.data - bos.ac	Not installed	5.3.0.0
- bos.adt.debug - bos.i	Not installed	5.3.12.2
- bos.adt.graphics - bo	Not installed	5.3.7.0
bos.adt.insttools	Not installed	5.3.12.1
bos.adt.sccs	Not installed	5.3.11.0
bos.adt.utils	Not installed	5.3.8.0
Java5.sdk	5.0.0.275	5.0.0.345

Product	crmd	prcrm
- Configuration and Ser	3.5	Not installed
- Java API for XML Pro	3.5,REV=2.6.2004.04	Not installed
- Solaris Resource Mar	1.2.0,REV=2000.03.20	Not installed
- Sun Management Cer	3.5,REV=2.8.2004.04	Not installed
- Sun Management Cer	3.5_v4,REV=2.8.2004	Not installed
Enterprise Security Ma	60	Not installed
GUYWiobp	Not installed	release 1.3

다양한 리포트 – Ticket Details

Logged in as: Admin

Dashboard Topology Tickets Reports

Reports

Report: Ticket Details

Use Filter: Open tickets Detected between

Business Entities: All Status: Open | Reopen Areas: All Severity:

Sort By A: Gap Type B: Severity C:

Show Summary Show Category/Severity Distribution
 Show Gap Type

Show Details Show Impact Show Resol
 Show Ticket Summary Show V

TicketDetailsReport_Open_tickets_2014-06-25_20_20_02[1].pdf - Adobe Reader

File Edit View Window Help

1 / 189 100%

TICKET 129

Gap ID	0025OCSO	Name	Suboptimal Oracle control file multiplexing
Severity	WARNING	Status	OPEN
Categories	Availability, Best Practice		
Detected on	09/29/2010 1:17:29 AM		
Verified on	04/08/2013 8:30:46 PM		

Summary

Suboptimal control file multiplexing for Oracle database **db1** on Linux host **tyler** at site **Boston**.

Description

Oracle database **db1** on Linux host **tyler** at site **Boston** stores multiplexed control files on the same storage volumes. This might result in downtime due to the existence of unexpected single point-of-failure (see impact).

The following table lists the control files stored on same storage volumes:

Control File	File System	Physical Volume	Storage volume
/db1/orc1/.../control01.ctl	/db1/orc1	sdg	0005 /57C

Resolution

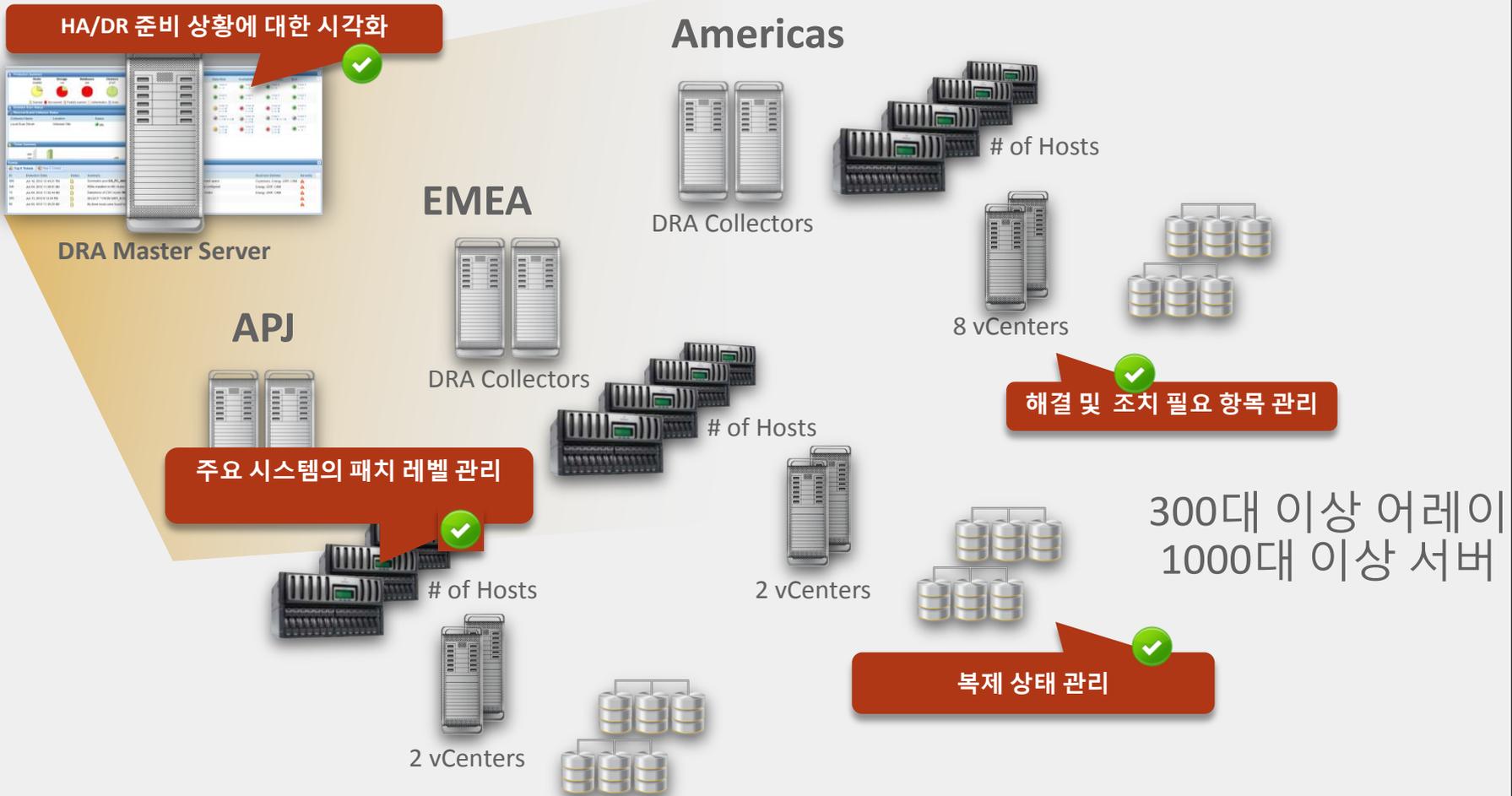
Relocate one of the control files to a file system which is stored on separated storage volumes. This process typically includes the following steps:

- Choose or configure a new location for each one of the improperly configured control file
- Connect as sysdba
- Display the current control files by: **SHOW PARAMETER CONTROL_FILES**
- Use the command **ALTER SYSTEM SET control_files='[FILE1]';'[FILE2]';...'[FILEN]'**
- Shutdown the database
- Move database control file to the new location
- Startup the database

Important notes:

- If necessary, modify any related backup/replication scripts
- Verify that the relocated control files reside on storage of the same tier and performance characteristics

글로벌 금융 HA, DR 리스크 상시 관리



HA, DR 전환 리스크 상시 관리



성공적인 HA, DR 리스크관리

- 비즈니스 서비스의 복잡도 및 다양한 계층 구성
- HA/DR 리스크를 상시적으로 제거하고 준비 상황을 관리



사전에 예방의 필요성

- 장애 발생 후 대처가 아닌 사전에 예방이 필요
- 프로젝트 단계 별, 오픈 시점 등의 준비 사항 점검
- HA, DR 구성에 대한 문제점을 사전에 발견 조치



상시 점검으로 지속적인 취약점 관리

- 주기적으로 운영환경에 대한 취약점 리포팅
- 서비스 가용성 극대화 관리 필요

HA, DR 전환 리스크 상시 관리





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