Veritas Cluster Server 6.0
New Features and Capabilities

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SAMG Technical Product Management
What does VCS do for me?

- **High Availability**
  - Ensure an application, in either a physical or virtual environment maintains its availability
  - Supports an application’s Service Level Agreement (SLA)

- **Application Management**
  - Manage applications without in-depth application knowledge
  - Ensure an application stays online even without a failover target

- **Single Pane-of-Glass Configuration and Control**
  - Allow an enterprise view and managability across UNIX/Linux/Windows hosts
  - Enables notification, health checks and reporting over the enterprise

- **Multi-Tier Application Support**
  - Enable visibility from top to bottom of an application across OS boundaries
  - Provide cross application dependencies on different cluster
Before we start, have you heard about...
How does VCS Monitor Applications?

• Legacy (Poll Based) Monitoring
  – Checks to see if the application is online during an interval of time
  – Attributes for VCS monitoring which are controlled per resource type:
    – MonitorInterval when the application is online (default 60 sec)
    – OfflineMonitorInterval when the application is offline (default 300 sec)
    – MonitorTimeout is the amount of time given to a monitor process before giving up (default 60 sec)
  – Resources are monitored on all systems they are configured to run on
    – If an Oracle database is configured to run on node-1, node-2 and node-3 then each of those three systems will validate the state of the resource based on the current resource state—online/offline
  – Each instance of a resource is monitored
    – If there are 20 mount resources in a service group, then 20 monitors will be run per system in the cluster based on the current resource state—online/offline
From polling to asynchronous monitoring
Faster failure detection

Traditional Monitoring Framework

- Poll based Monitoring
- Resources Being Monitored

Intelligent Monitoring Framework

- Intelligent Monitoring
- Resources Being Monitored

Most Clustering Solutions

- Immediate fault detection
- Zero polling overhead
- Single step enablement

Veritas Cluster Server (5.1 SP1 & 6.0)

- Asynchronous
IMF Enabled Agents for UNIX/Linux:

**VCS 5.1 SP1**

- Process based agents
  - Physical environments, containers
    - IMF is enabled for Process agents running within a container
  - Oracle agent, Netlsnr agent
  - CVMvxconfigd
  - DB2 agent with VCS 5.1SP1RP1

- Mount based agents
  - Mount, CFSMount

- Application agent
  - Using PidFiles or MonitorProcess for Application Agent monitoring

**VCS 6.0**

- Virtualization based agents
  - Solaris Zones
  - AIX WPAR

- Application agents
  - Sybase

- IMF updates
  - Agent Framework update for Custom Agent support
  - Support for IMF-PCV
    Prevention of Concurrency Violation
    Application Agent with MonitorProcesses

IMF support is continually expanding as updates to agents are introduced in quarterly agent packs.
IMF coverage for Windows

• VCS 6.0
  – GenericService
  – ServiceMonitor
  – IP
  – NIC
  – MountV
  – Mount
  – VMDg
  – Oracle
  – NetLsnr
  – Process
  – RegRep
  – SQLServer2005
  – SQLAgService2005
  – SQLOlapService2005
  – MSDTC
  – SQLServer2008
  – IIS
  – ExchService2007
  – Exchange2010DB
Maximize Availability
Prevent Concurrency

Node with Application **Online**

- VCS brings resource online
- Agent registers with IMF

Application is online

- Prior to IMF-PCV, concurrency detection took up to 5 minutes
- No additional monitoring required as part of IMF framework

Node with Application **Offline**

- User attempts to bring app online outside of cluster
- IMF recognizes attempt
- PCV prevents

Application is Offline

- Works on Application Agent with VCS 6.0
- The only clustering technology with this feature
- Preventing startup scripts is the future direction
Coordination Point Server and Non-SCSI3 Fencing
### Fencing Methodology Comparison

<table>
<thead>
<tr>
<th>Fencing Technology</th>
<th>Advantages</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SCSI3 based fencing</strong></td>
<td>• Data Protection is Fool-Proof in using of SCSI3-PR keys</td>
<td>• Requires SCSI3-PR capable disks</td>
</tr>
<tr>
<td></td>
<td>• Both SCSI3 Disks and CPS can be used for split-brain protection</td>
<td>• Not all virtual environments support SCSI3-PR</td>
</tr>
<tr>
<td><strong>Non-SCSI3 Fencing (NSF)</strong></td>
<td>• Supported in all virtual and physical environments</td>
<td>• Judicious use of timing to provide data protection</td>
</tr>
<tr>
<td></td>
<td>• CPS (Coordination Point Server) is used for cluster membership arbitration</td>
<td>• Provides network based membership arbitration</td>
</tr>
<tr>
<td></td>
<td>• Each CPS can server multiple clusters reducing the number of disks needed</td>
<td>• SCSI3-PR not used</td>
</tr>
</tbody>
</table>
I/O Fencing: Membership Arbitration

- On membership change, each subcluster will elect a race node to race for the coordination points.
- The first racer node to reach the coordination point will remove the registration of other racer node.
- The racer node which has its registration on greater than ½ of the configured coordination points is winner.
- The losing racer node alerts all subcluster nodes to panic, resolving the network partition.

Split-Brain Protection
Coordination Point Server: Multi-IP

Multiple IPs

• Connecting clients with each CPS over multiple IPs
• Removes Single Point of Failure in the configuration connecting to CPS over the network
• The losing racer node alerts all subcluster nodes to panic, resolving the network partition
Preferred Fencing
From neutral to preferred fencing
Avoid unnecessary application failover

Traditional Fencing

Preferred Fencing

**Needless failover to handle network split**

- Eliminate guess work and maximize uptime

**Arbitration in favor of preferred node**

- Set preference for application or node

Ensure 24x7 Availability: HA/DR 6.0 Update

SYMANTEC VISION 2012
New for 6.0
Enhanced Service Group Dependencies
Extend VCS to meet your specific application needs

- Parent supports multiple child service groups
- Various combinations of dependencies (soft, firm) supported
Improvements to Trigger Events
Extend VCS to meet specific application needs

- Execute custom scripts for HA events
- New trigger for Resource Restarted event
- New support for multiple scripts to be executed in specified order
Application Management
Application Management:
Centralized automation and monitoring of all applications

Control the start/stop/monitoring of applications...

...hundreds from a single screen...

Application placement takes into account factors such as application priority, application load, server capacity, and compatibility with other applications on the target server

...restart in place, or...

...move to another node
Managing Multi-tier Applications
- Orchestrated start/stop of multi-tier apps
- Coordinated failover of multi-tier apps

Database
App Server
Web Server
### Application Management
- Single node, either physical or virtual
- App start, stop & restart
- No local failover

### Application Availability
- Local failover for apps
- Customize based on local requirements
- Cluster file system support

### Business Continuity
- Volume level and File level replication
- Provides app disaster recovery
- Ensure DR availability with Firedrill
What a Cloud Application Looks Like
IT Challenge
How to effectively manage multi-tier services?

Manage dependencies

Service start/stop

Service availability

Disaster Recovery
Transition to Virtual Business Service Seamlessly

Billing Virtual Business Service

- Web Server SG
- Application Server SG
- Database SG

Start/Stop Order
Inter-cluster fault policy
# Virtual Business Service

## Unparalleled Support Matrix

<table>
<thead>
<tr>
<th>Operating Systems</th>
<th>Virtualization</th>
<th>High Availability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solaris</td>
<td>VMware</td>
<td>VCS 5.1, 6.0</td>
</tr>
<tr>
<td>HP-UX</td>
<td>OracleVM, Zones</td>
<td>VCS 5.1 SP1 (Unix)</td>
</tr>
<tr>
<td>AIX</td>
<td>WPAR, LPAR</td>
<td>VCS 5.1 SP2 (Win)</td>
</tr>
<tr>
<td>Linux</td>
<td>KVM</td>
<td>ApplicationHA 5.1 SP2</td>
</tr>
<tr>
<td>Windows</td>
<td>Hyper-V</td>
<td>ApplicationHA 6.0</td>
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<tr>
<th>Databases</th>
<th>Applications</th>
<th>Replication</th>
</tr>
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<tr>
<td>Oracle</td>
<td>Informatica</td>
<td>Veritas Replicator</td>
</tr>
<tr>
<td>Sybase</td>
<td>WebSphere</td>
<td>Oracle Dataguard</td>
</tr>
<tr>
<td>SAP</td>
<td>Microsoft Exchange</td>
<td>EMC SRDF</td>
</tr>
<tr>
<td>DB2</td>
<td>WebLogic</td>
<td>NetApp SnapMirror</td>
</tr>
<tr>
<td>MySQL</td>
<td>PeopleSoft</td>
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SM B12: Veritas Cluster Server 6.0 New Features and Capabilities  SYMANTEC VISION 2012
Application Availability with Virtualization
Veritas Cluster Server & Symantec ApplicationHA
Application Availability in Virtualized Environments

New ApplicationHA Support
- Solaris LDOM
- Red Hat KVM
- AIX DLPAR
VCS 6.0 Summary

Centralized Management, Visibility, Reporting & Notification through VOM

Application Management
- ApplicationHA
- Configuration Wizards
- IMF and ProPCV

Application Availability
- I/O Fencing with Multi-IP CPS
- Virtual Business Services
- Anti-Affinity
- Adaptive HA
- Priority Failover

Business Continuity
- VBS with DR
- DR Firedrill
- Healthcheck
Veritas Cluster Server Training Offerings

*Veritas Cluster Server* training offerings are designed to help you quickly learn how to ensure availability of your mission critical applications during planned and unplanned downtime and provide fast application failover in the event of an outage.

Learn to deploy the product in a lab environment, manage applications in highly available environments, and learn troubleshooting and recovery techniques.

*Extend your investment by purchasing Symantec Education*

**Symantec Training is EASY because:**

- Training from Symantec gives you the product knowledge you need to be effective in your job.
- Learn from Symantec’s expert instructors how to get it right – the first time.

For more information on storage and high availability training offerings, Visit: [http://go.symantec.com/education_sfha](http://go.symantec.com/education_sfha)
Interested to know more about Veritas Cluster Server? Go to these sessions:

<table>
<thead>
<tr>
<th>ID</th>
<th>Title</th>
<th>Day</th>
<th>Time</th>
<th>Room</th>
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<tbody>
<tr>
<td>SM B02</td>
<td>High Availability Strategy and Futures</td>
<td>Wednesday, May 9</td>
<td>10:45-11:45am</td>
<td>116</td>
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<tr>
<td></td>
<td></td>
<td>Thursday, May 10</td>
<td>1-2 pm</td>
<td>116</td>
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<tr>
<td>SM L06</td>
<td>VCS 6.0 Lab</td>
<td>Wednesday, May 9</td>
<td>4:45–5:45pm</td>
<td>112</td>
</tr>
</tbody>
</table>
Thank you!