Frequently Asked Questions
Oracle Solaris Cluster 4.2

Introduction
Oracle Solaris Cluster is a comprehensive High Availability and Disaster Recovery solution for Oracle SPARC and x86 environments based on Oracle Solaris. It combines extreme service availability for applications and virtualized workloads, operational flexibility, agile deployments and simplified administration for traditional or cloud-based deployments.

Oracle Solaris Cluster
Built for Business Critical Clouds
Oracle Solaris Cluster extends Oracle Solaris to provide the infrastructure required for running mission critical workloads in virtualized cloud environment. It protects applications, zones, kernel zones and Oracle VM Server for SPARC deployments with advanced monitoring, policy-based recovery, and reliable management of multi-tier dependencies. With the Oracle Solaris Zone cluster feature, it offers a virtual cluster infrastructure providing fault isolation, separate resource management, private networking, and administrative isolation for multi-tenant environments.

Extreme Availability for Enterprise Applications
Tightly coupled with Oracle Solaris, Oracle Solaris Cluster detects system failures instantly and consistently, providing faster failure notification and faster application failover, significantly reducing overall service recovery time and drastically reducing application outages.
Oracle Solaris Cluster provides out-of-the-box support for a large number of applications and databases from Oracle and mainstream ISVs, avoiding any development and scripting tasks and facilitating immediate deployment in traditional systems or virtual environments. The Oracle Solaris Cluster agent toolkit enables adding support for custom applications with minimal effort and maximum flexibility.
Oracle Solaris Cluster also includes multi-site, multi-cluster disaster recovery for protecting business services from the consequences of disasters through automated application failover, and coordination with application-, storage-, and host-based replication solutions. It can now also orchestrate multiple applications and their respective replication solution offering significant gains in terms of reliability, speed of recovery and reduced risk.

Best Availability for Oracle Deployments on Oracle Solaris
Oracle Solaris Cluster offers built-in support for Oracle databases and applications with solution-specific failure detection and automatic recovery for minimized outage. Thoroughly tested with Oracle Sun servers, storage systems, and networking components and Oracle Optimized Solutions, Oracle Solaris Cluster is engineered from the ground up to support the stringent requirements of multi-tier mission critical environments such as those deployed on the Oracle SuperCluster engineered system for which it provides the application high availability and disaster recovery framework.

Frequently Asked Question
General Information
Q: What is Oracle Solaris Cluster?
A: Oracle Solaris Cluster is a framework that extends Oracle Solaris with high availability and disaster recovery features. It includes Oracle Solaris Cluster for the core clustering
features, Oracle Solaris Cluster Geographic Edition for the multi-cluster, multi-site disaster recovery features, Oracle Solaris Cluster agents for the built-in support of commercial and open-source applications and development tools for building custom agents. The integrated software provides High Availability and Disaster Recovery for local, campus, metropolitan, and worldwide clusters in physical and virtual environments.

A typical Oracle Solaris Cluster configuration includes:

- Hardware:
  - Servers with local storage (storage devices hosted by one node).
  - Shared storage (storage devices hosted by more than one node).
  - Cluster Interconnects for private communication among the cluster nodes.
  - Public Network Interfaces for connectivity to the outside world.
  - Administrative Workstation for managing the cluster.

- Software
  - Oracle Solaris running on each cluster node.
  - Oracle Solaris Cluster software running on each cluster node.
  - Data Services - applications and their corresponding Oracle Solaris Cluster agents that monitor the health of the applications and manage their lifecycle (start, stop and failover) running on one or more cluster nodes.

Q: How does Oracle Solaris Cluster work?
A: By tightly coupling servers, storage, and networking solutions, Oracle Solaris Cluster provides the maximum level of service availability and performance for a cluster system.

The servers (nodes) in a cluster communicate through private interconnects. These interconnect carry important cluster information (data as well as a cluster "heartbeat"). This heartbeat lets the servers in the cluster monitor the health of the other servers within the cluster, ensuring that each server is "alive". If one of the servers goes offline and its heartbeat disappears, the rest of the devices in the cluster isolate the server and "fail-over" any application or data from the failing node to another node. This fail-over process is quick and transparent to users of the application. By exploiting the redundancy in the cluster, Oracle Solaris Cluster ensures the highest levels of availability.

Q: What is Oracle Solaris Cluster Geographic Edition?
A: Oracle Solaris Cluster Geographic Edition is a feature of Oracle Solaris Cluster that enables a multi-site disaster recovery solution and manages the availability of application services and data across geographically dispersed Oracle Solaris Clusters. In the event that a primary cluster goes down, system administrators are informed immediately and can take the decision to automatically start up business applications with replicated data on the secondary Oracle Solaris Cluster. The new orchestrated disaster recovery support enables Oracle Solaris Cluster to manage the automated and synchronized recovery of multiple applications and their respective replication solution, whether this is following a data center wide outage of for maintenance purposes, offering a solution for a complete multi-tiered application.

Q: What is an Oracle Solaris Cluster agent?
A: An Oracle Solaris Cluster agent is a k-sh script, a C-program, or a binary that manages the availability of an application. The agent starts, stops, and monitors the health of the application, and takes corrective action to regain application availability upon failure. Applications do not need to be modified to benefit from the enhanced availability offered by the Oracle Solaris Cluster agent. Applications can run either directly on Oracle Solaris on a physical system, in Oracle VM Server for SPARC, in dynamic domains, or within Oracle Solaris Zones.

Oracle as well as ISVs have created tailored agents for popular applications and databases such as Oracle RAC and Single Instance databases, Oracle Weblogic, Siebel, PeopleSoft, E-business suite, SAP, Sybase, MySQL, Apache, and many others. If your application does not have an available tailored agent, you can create your own using the Oracle Solaris Cluster agent builder (included with the Oracle Solaris Cluster software). This agent builder has an easy to use "wizard" graphical user interface, which leads the user through the steps of creating an agent. After the user completes the agent building process, a ready-to-use agent is available for immediate use (the whole process takes only a few minutes from start to finish). The agent toolkit also also includes a Generic Data Service (GDS) designed and developed by Oracle Solaris Cluster engineering to reduce
the complexity associated with data service development for more advanced applications. GDS v2 further increases flexibility, ease of use and security of this already trusted and robust development tool.


Q: Why is Oracle Solaris Cluster the best HA solution on Oracle Solaris?

A: Oracle Solaris Cluster is designed for, and integrated more deeply and broadly with Oracle Solaris and Oracle Sun servers than any other solution in the industry. Tightly coupled with the Oracle Solaris operating system at the kernel level, Oracle Solaris Cluster detects failure without delay. It provides much faster failure notification, application failover, and reconfiguration time; and significantly reduces services recovery time. For customers looking for the highest level of security for their mission-critical applications, Oracle Solaris Cluster offers a qualified HA solution that supports Oracle Solaris Trusted Extensions.

Oracle Solaris Cluster is designed to take advantage of the built-in reliability features found in Oracle Solaris, such as its Predictive Self Healing framework. It supports applications controlled by the Service Management Facility and deployed in Oracle Solaris Zones, as well as the ability to use Oracle Solaris ZFS as a failover and boot file system. It uses Oracle Solaris lifecycle management tools such as IPS, Automated Installer and Unified Archives, enabling agile and flexible deployments of clustered solutions.

Oracle Solaris Cluster continuously includes new Oracle server, storage, and connectivity solutions to its configuration matrix. Each new configuration is tested and certified through Oracle Solaris Cluster automated test environment (SCATE), an advanced distributed test development and execution framework for a highly reliable solution that can be deployed with confidence.

New Releases

Q: What are the latest Oracle Solaris Cluster releases?

A: It depends on the Oracle Solaris version:

- Use Oracle Solaris Cluster 3.3 3/13 with Oracle Solaris 10
- Use Oracle Solaris Cluster 4.2 with Oracle Solaris 11.1 or 11.2

Oracle Solaris Cluster 4.2 (Oracle Solaris 11)

A: What are the new features included in the Oracle Solaris Cluster 4.2 release?

A: Oracle Solaris Cluster 4.2 is the latest update of Oracle Solaris Cluster 4, supported on Oracle Solaris 11.2 and 11.1.

New features include:

**Virtualization**

- Kernel Zone HA
- Load distribution and dependencies management for Oracle VM for SPARC guests deployments
- Exclusive IP support in Oracle Solaris 10 zone cluster on Oracle Solaris 11

**Lifecycle and operations management**

- New browser-based graphical management user interface
- Unified Archives for cluster deployment and cloning
- Increased safety with secure Automated Installer deployments
- Enhanced SNMP service

**Disaster recovery**

- Disaster recovery orchestration with automated and synchronized recovery of multiple applications and their respective replication solution

**Application Integration**

- Hardened, simplified and extended Generic Data Service agent toolkit
- Support for latest database version and ecosystem components: Oracle 12.1 new RAC database options (database containers, service agent, policy managed database), ACFS
New Oracle applications: J.D. Edwards EnterpriseOne, Oracle Exalogic Traffic Director, GoldenGate
• New application on Oracle Solaris 11: Oracle Business Intelligence
• New application versions: Oracle Siebel, TimesTen, Weblogic Server, MySQL; Sybase, SAP LiveCache/MaxDB, Samba, PostgreSQL

Oracle Solaris Cluster 3.3 3/13 (Oracle Solaris 10)
Q: What are the new features included in the Oracle Solaris Cluster 3.3 3/13 release?
A: Oracle Solaris Cluster 3.3 3/13 is the latest update of Oracle Solaris Cluster 3.3.
New features include:
Availability
• Faster failure detection and failfast for storage
• Improved protection for HA-ZFS data integrity
• Improved per-node dependencies management
• Dynamic Reconfiguration (DR) for M8000/M9000 memory boards
Disaster Recovery
• ZFS Storage Appliance replication support with Geographic Edition
Security
• Agent framework security enhancements
Ease of Use
• Configuration wizards for Zone cluster, PeopleSoft and WebLogic Server
Application integration
New applications: Oracle Web Tier for Oracle Fusion 11.1.1.4 and 11.1.1.5, Peoplesoft Job Scheduler 8.52, Oracle External Proxy 10.3.6, 11gR2, 11gR1 and 11gR2
New supported application versions: Weblogic Server 10.3.6, E-Business Suite 12.1, Peoplesoft Application Server 8.52, Siebel 8.2.2, Oracle iPlanet Webserver 7.0, MySQL Cluster 7.2, SAP 7.3

For more details please check the following document:

Note: The Oracle Solaris Cluster qualification list is regularly updated. Please contact your sales representative for information or the Oracle Solaris Cluster community pages on My Oracle Support:
https://support.oracle.com/rs?type=doc&id=1560789.2

Features
Q: What are the applications pre-integrated with Oracle Solaris Cluster (e.g. for which Oracle Solaris Cluster Agents are available)?
A: Please refer to the Oracle Solaris Cluster Features document at following location:

Systems Requirements
Q: Is non-Sun Storage supported with Oracle Solaris Cluster?
A: Oracle’s Solaris Cluster Storage Partner Program provides customers with expanded choices of supported third-party storage arrays with Oracle Solaris Cluster. The following partners are Oracle Solaris Cluster certified: 3PAR, Compellent, EMC, Engenio, Fijitsu, Hitachi Data Systems, HP, IBM, NEC, NetApp, and Pillar Data Systems. For detailed information about supported configurations please check the Interoperability Matrices from following location:

Q: Are there any differences between Oracle Solaris Cluster software running with Oracle Solaris on SPARC based systems and x86-based systems?
A: No, there are no differences in functionality. All Oracle Solaris Cluster software features are available for Oracle Solaris Cluster software on both processor technologies. However, there are differences in supported applications, their Oracle Solaris Cluster agents, and supported hardware (storage, interconnect, ...).

Q: Can I install Oracle Solaris Cluster on any x86 system?
A: You can install Oracle Solaris Cluster on Oracle x86 systems that are certified with Oracle Solaris Cluster. The list of supported Oracle servers is available in the System
Licensing

Q: What is the Oracle Solaris Cluster product licensing model?

A: The Oracle Solaris Cluster pricing and licensing model, aligned with the Oracle software licensing model, consists of a single non-version specific part (Oracle Solaris Cluster, Enterprise Edition). This license includes the right-to-use all functionalities included in:

- Oracle Solaris Cluster: the core High Availability functionalities
- Oracle Solaris Cluster Agents: the applications-specific modules
- Oracle Solaris Cluster Geographic Edition: the disaster recovery features offered on top of Oracle Solaris Cluster

Q: How do you calculate the number of licenses required?

A: The number of required Oracle Solaris Cluster licenses on a system shall be determined by multiplying the total number of cores of the processors by a core processor licensing factor specified in the Oracle Processor Core Factor Table (http://www.oracle.com/us/corporate/contracts/processor-core-factor-table-070634.pdf)

All cores on all multicore chips are to be aggregated before multiplying by the appropriate core processor licensing factor and all fractions of a number are to be rounded up to the next whole number.

Oracle VM for SPARC is recognized as a hard partitioning when used as defined in following document: http://www.oracle.com/technetwork/server-storage/vm/ovm-sparc-hard-partitioning-1403135.pdf

Q: Can customers evaluate Oracle Solaris Cluster?

A: Yes, customers interested in evaluating Oracle Solaris Cluster can download the software from the Oracle Technical Network for evaluation and development from the following location: http://www.oracle.com/technetwork/server-storage/solaris-cluster/downloads/index.html

Services and Support

Q: I've purchased Oracle Solaris Cluster, Enterprise Edition and would need training and assistance to install and operate Oracle Solaris Cluster?

A: - Services: For assistance to install and operate Oracle Solaris Cluster, Advanced Customer Service (ACS) Expert Services are available to deliver a comprehensive software installation performed by server and storage experts using Oracle best practices. Installation by Oracle services is not a requirement but it is recommended as it provides expert design, documentation, and testing, helping to meet the high-availability requirements for your deployments.

For more information, please refer to the Advanced Customer Services for Oracle Solaris Cluster datasheet or to the Advanced Customer Support Services web pages.


- Training: Learning paths identify the required courses for a desired training goal or certification level. Select the course to obtain the training that would enable you to administer and manage a highly available computing environment effectively. The following courses are available for Oracle Solaris Cluster:

  - Oracle Solaris Cluster Administration, 5-Day
  - Oracle Solaris Cluster Advanced Administration, 5-day

For more information visit the Oracle Solaris Cluster Learning Path. (http://education.oracle.com/pls/web_prod-plq-dad/db_pages.getipage?page_id=212&amp;path=SCLS)

More Resources

Q: Where can I find documentation about Oracle Solaris Cluster?

A: Oracle Solaris Cluster Documentation is available at following location: http://www.oracle.com/technetwork/server-storage/solaris-cluster/documentation/index.html

Q: Where can I find more technical information about Oracle Solaris Cluster such as white papers, How-To Guides?

A: How can I get more news about Oracle Solaris Cluster

LinkedIn: http://www.linkedin.com/groups/Oracle-Solaris-Insider-3951282

http://blogs.oracle.com/SC
http://blogs.oracle.com/otngarage

YouTube: http://www.youtube.com/oraclesolaris

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