ORACLE
Solaris

Oracle Solaris Cluster

Features and Benefits

Oracle Solaris Cluster is a comprehensive high availability (HA) and disaster recovery (DR) solution for Oracle SPARC and x86 environments that is 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.

HIGH AVAILABILITY

Kernel integration	Kernel integration enables instant server failure detection and load resilient heartbeats for faster and more reliable application recovery and minimized downtime.
Disk fencing	Fencing helps ensure data integrity in the event of server outages by preventing failing nodes to access storage and corrupt data. With Oracle Solaris Cluster, the appropriate fencing protocol can be discovered automatically or chosen per storage device to adapt to the available hardware. Choices include SCSI-2, SCSI-3, per-device discovery, or no SCSI fencing.
Quorum	The quorum feature helps ensure data integrity across split-brain or amnesia situations. Supported quorum devices include disk-based quorum, software quorum, and quorum server. This flexibility allows customers to tailor their quorum solution to their storage and system topology, satisfying a wide range of HA and cost requirements.
Component monitoring	Active monitoring brings increased service availability through early detection of issues, such as outages and operator errors, and provides easier error diagnostics during the application bring-up phase. All components of Oracle Solaris Cluster, including the server, network, disks, storage resources, and quorum, are monitored. The health and effective availability of file systems, such as ZFS storage pools, and global devices used by the clustered applications are monitored, and corrective action is initiated when possible. All disk paths can be monitored and configured to automatically reboot a node in the event of multiple path failures.

ORACLE

Resource dependencies, load, and priority management	Resource dependency management helps provide higher reliability for starting and stopping applications through the management of application dependencies on resources such as storage, network, and other applications. Load and priority management enables asset optimization and increases the reliability of cluster operations by considering target system capacity and priority when moving or failing over workloads.
Integration with Oracle Solaris Service Management Facility services	Administrators can easily move applications enabled by the Oracle Solaris Service Management Facility from a single-node Oracle Solaris environment to a multi-node Oracle Solaris Cluster environment, increasing availability with little or no development effort.
Configuration checker	The configuration checker enables detecting vulnerable cluster configurations regularly and rapidly throughout the lifetime of the cluster, limiting failures due to misconfiguration.

VIRTUALIZATION

Oracle Solaris Zones clusters	Zone clusters are virtual clusters based on Oracle Solaris Zones. They are perfect environments in which to consolidate multiple applications or multitiered workloads onto a single physical cluster configuration. They provide • Full service protection through fine-grained monitoring of applications, policy-based restart, and failover within a virtual cluster • Reliable operation of multitiered workloads through the management of dependencies inside and across zones clusters • Ease of use and administrative isolation through delegated administration extended to the virtual cluster • Support for mission-critical Oracle Solaris 10 and Oracle Solaris 11 applications in Oracle Solaris 10 and 11 zone clusters
Oracle Solaris failover zones	Oracle Solaris failover zones provide availability for the deployment of zones through zone monitoring and automatic local and remote restart of a zone in case of failure. Dependencies on resources or other zones are managed as well as load balancing and priority policies. Zones can also be migrated through a single command to a different system for maintenance or resource optimization. With Oracle Solaris Kernel Zones warm or live migration can be used. This feature is ideal for packaged workloads and supports both Oracle Solaris 11 and Oracle Solaris 10 zones on Oracle Solaris 11 (and Oracle Solaris 8 and 9 zones on Oracle Solaris 10).

Oracle VM Server for SPARC support	Oracle Solaris Cluster provides high availability to Oracle VM Server for SPARC domains through monitoring, automatic restart and failover, management of resource dependencies, and cluster load-balancing. When the domain is configured as a standard cluster node, Oracle Solaris Cluster provides automated failover and management of the applications running within the virtual guest. When the domain is configured as a failover resource, the guest domain itself is automatically restarted locally or on another system in the event of a failure. Upon request, it can also be moved across systems using live migration.

DISASTER RECOVERY

Campus cluster	To limit service outages due to a local outage (such as a power cut or building flooding), it is possible to stretch a cluster across a campus or metropolitan area. Oracle Solaris Cluster automates the failover procedures in the event of an outage, minimizing human error and improving the recovery time and overall availability of the protected services. Supported storage replication solutions include EMC SRDF, HDS Truecopy*, and Universal Replicator* (HUR). * on Oracle Solaris 10
Geographic cluster	Oracle Solaris Cluster Geographic Edition allows applications to recover rapidly and reliably after a disaster. It uses redundant clusters separated by a long distance and a redundant and secure infrastructure between these clusters. Combined with data replication software, this option enables services to tolerate disasters by migrating even multitiered applications to a geographically separated secondary cluster in an automated, orchestrated manner. Any supported application can be deployed, including applications in an Oracle Solaris Zones configuration. Supported replication technologies include ZFS snapshot, StorageTek Availability Suite, Oracle Active Data Guard, Oracle GoldenGate, MySQL replication, Oracle ZFS Storage Appliance replication, HDS Truecopy*, Universal Replicator*, and EMC SRDF. For replication technologies that are not supported out of the box, a script-based replication module can be used to enable integration. * on Oracle Solaris 10

PRETESTED, SUPPORTED COMPONENTS

Choice of storage technologies	Oracle Solaris Cluster can be used in combination with different storage technologies such as FC, SCSI, iSCSI, and NAS storage.
Choice of file systems and volume manager	Root file systems: UFS, ZFS [Veritas VxFS*] Failover file systems: ZFS, UFS, NFS, QFS, [Veritas VxFS*] Cluster file systems: PxFS, shared QFS (with Oracle Real Application Clusters [Oracle RAC]), Oracle ASM Cluster File System (Oracle ACFS) Volume managers: , Oracle Automatic Storage Management (Oracle ASM), ZFS (on top of ZFS file system), [Veritas VxVM*] * on Oracle Solaris 10
Choice of networking technologies and protocols	InfiniBand, fast/gigabit/10 gigabit Ethernet, IPMP, trunking, DLMP, jumbo frames, VLAN, IPv4, IPv6, SCTP, and RDS
Choice of servers	Up to 8 x86 servers from Oracle or up to 16 SPARC-based servers from Oracle

EASE OF OPERATIONS

Graphical user interface (GUI)	The new web-based user interface offers a single point of management for Oracle Solaris Cluster deployments. It provides topology, tree, and table views for easier operation and faster diagnostics. Built-in wizards are included within the GUI, guiding the administrator step by step through the creation of a cluster, the setup of HA for virtual machines, and the configuration of DR orchestration.
Easy-to-use command-line interface (CLI)	The object-oriented CLI provides a consistent and familiar structure across the entire command set, making it easy to learn and use, thereby limiting human error. Command logging enables tracking and replay.
Compatibility with Oracle Solaris lifecycle management tools	Oracle Solaris Cluster offers a streamlined and secure installation experience through the use of the Oracle Solaris Image Packaging System (IPS), the Oracle Solaris Automated Installer, and the new Oracle Solaris Unified Archive tools. Cluster archives can be created and redeployed as physical clones or virtual clones with zone clusters. The use of an alternate boot environment, IPS dependency checking, and ZFS snapshots together with rolling upgrades provide safe, reliable, and fast updates of cluster software.
Oracle RAC 10*g*, 11*g*, 12*c* integration and administration	Automatic installation and wizard-led configuration enable faster setup of Oracle RAC and Oracle ASM with Oracle Solaris Cluster. Specific Oracle RAC management integration enables faster failure detection and simplified administration.

SECURITY

Oracle Solaris 10 and 11	Reduced risk of insider attacks with Oracle Solaris Trusted Extensions and role-based access control (RBAC)

Integrated Cloud Applications & Platform Services

APPLICATION SUPPORT

Increased Availability and Simplified Service Deployment for These Applications:

Oracle Solaris 11	Oracle Communications ASAP Oracle Database and Oracle RAC 11*g* and 12*c* Oracle E-Business Suite Oracle Essbase Oracle External Proxy Oracle Exalogic Traffic Director Oracle GoldenGate Oracle iPlanet Web Server Oracle JD Edwards Enterprise One application server Oracle PeopleSoft Application Server and Job Scheduler Oracle Siebel Gateway and Server Oracle Solaris Zones (HA agent) Oracle TimesTen In-Memory Database Oracle VM Server for SPARC (HA agent) Oracle WebLogic Server Oracle Web Tier for Oracle Fusion Middleware Apache Web Server, Tomcat DHCP, DNS, NFS GlassFish Server Message Queue IBM WebSphere Message Queue MySQL, MySQL Cluster PostrgreSQL Samba SAP NetWeaver, SAP liveCache, Max DB, Sybase ASE
Oracle Solaris 10	Oracle Application Server Oracle Business Intelligence Enterprise Edition Oracle Communications Enterprise Mobility Server Oracle Communication Messaging Server Oracle Database and Oracle RAC 10*g*, 11*g*, and 12*c* Oracle E-Business Suite Oracle External Proxy Oracle Grid Engine Oracle iPlanet Web Server, Oracle iPlanet Web Proxy Server MySQL, MySQL Cluster Oracle PeopleSoft Application Server and PeopleSoft Process Scheduler Oracle Siebel CRM Oracle Solaris Containers (HA agent) Oracle TimesTen In-Memory Database Oracle VM Server for SPARC (HA agent) Oracle WebLogic Server Oracle Web Tier for Oracle Fusion Middleware Sun Service Provisioning System Sun Java System Message Queue Sun Java System Directory Server

	Agfa IMPAX Apache Proxy Server (HA and scalable) Apache Web Server (HA and scalable) Apache Tomcat DNS ,DHCP, NFS IBM WebSphere Message Queue , IBM WebSphere Message Broker Informix Dynamic Server Kerberos PostgreSQL Samba SAP, SAP liveCache, SAP Enqueue Server ,SAP SAPDB/Max DB SWIFT Alliance Access ,SWIFT Alliance Gateway Sybase ASE Note: Also available from third-party vendor: Symantec Netbackup, IBM DB2