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Solaris

Oracle Solaris Cluster What's New

Oracle Solaris Cluster 4 is a comprehensive High Availability and Disaster Recovery solution for Oracle SPARC and x86 environments based on Oracle Solaris 11. It combines extreme service availability for applications and virtualized workloads, operational flexibility, agile deployments and simplified administration for traditional or cloud-based deployments.

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 and platform services such as Zones and Oracle VM Server for SPARC 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 and services failover, thereby significantly reducing recovery time.

Oracle Solaris Cluster delivers out-of-the-box support for a large number of applications and databases from Oracle and mainstream ISVs, providing plug-ins that substantially increase uptime through application specific behavior. These plug-ins do not require any development or scripting tasks and enable immediate deployment in bare-metal systems or virtual environments. In addition, the Oracle Solaris Cluster agent toolkit permits adding custom applications into the cluster framework with minimal effort and maximum flexibility. Oracle Solaris Cluster extends High Availability (HA) to include multi-site, multi-cluster disaster recovery for protecting business services from the consequences of disasters. It automates application failover, and coordinates with application, storage, and host-based replication solutions. It also adds orchestrated recovery of multiple applications and their respective replication solutions offering significant gains in terms of reliability, speed of recovery and reduced risk. Oracle Solaris Cluster is engineered from the ground up to support the stringent requirements of multi-tier mission critical environments. It delivers application high availability in Oracle SuperCluster engineered systems and is part of a series of Oracle Optimized Solutions as the high availability component.

Key Business Benefits

- Increased application uptime
- Reliable and fast disaster recovery
- No compromise availability with maximized flexibility and minimized complexity

Key Features

Oracle Solaris Cluster enables customers to build highly available enterprise environments based on Oracle Solaris. It offers:

- Deep integration with Oracle Solaris for fastest failure detection and recovery
- Flexible virtualization support for Oracle Solaris Zones, Oracle Solaris Kernel Zones and Oracle VM for SPARC domains
- Pre-tested, out-of-the-box application support for reliable and automated application service recovery
- Orchestrated multi-tiered application failover and data replication management across multiple sites
- Agile deployment across virtualization and bare-metal environments with Oracle Solaris Unified Archives
- One-step update for operating system and cluster software
- Oracle x86 and SPARC server support

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SIMPLIFIED OPERATIONS, REDUCED COST

Oracle Solaris Cluster is integrated with the Oracle Solaris life cycle management tools providing simplified and secure deployments and updates. With the latest browser user interface, access to status, configuration and management operations are centralized and complexity is hidden through resource specific wizards reducing time and knowledge required to operate clustered environment.

WHAT'S NEW IN ORACLE SOLARIS CLUSTER

- Oracle Solaris Cluster 4.4 (Oracle Solaris 11.4)
- Oracle Solaris Cluster 4.3 (Oracle Solaris 11.3 and 11.2)
- Oracle Solaris Cluster 4.2 (Oracle Solaris 11.2 and 11.1)
- Oracle Solaris Cluster 4.1 (Oracle Solaris 11.1)

ORACLE SOLARIS CLUSTER 4.4

Operations and Life-Cycle Management

PUPPET SUPPORT

Simplifying the system and applications support, Oracle Solaris Cluster now includes Puppet support. Puppet is cross-platform software that you can use to automate and enforce the configuration management of most major subsystems. You can use Puppet to perform several common system configuration tasks.

SIMPLIFIED INSTALLATION

We've simplified installation with centralized installation. You can now install Oracle Solaris Cluster across all nodes via an interactive user interface.

USER INTERFACE

New wizards and sub-wizards allow you to easily perform Kernel Zone live migration as well as create Zones on Shared Storage over NFS, administer Oracle WebLogic Oracle Solaris Cluster configuration, manage Disaster Recovery Framework configurations and directly manage Oracle Solaris Zone Clusters.

Virtualization

SCALABLE SERVICES FOR EXCLUSIVE IP ZONE CLUSTER

You can now use Scalable Services (load balancing) on Exclusive IP Zones.

IMMUTABLE ZONE CLUSTERS

Protect your applications as systems with Immutable Zone Clusters. You can now have your Zones in the cluster be immutable, providing an additional line of defense for your systems.

Networking

PRECISION TIME PROTOCOL

You can now configure Oracle Solaris Cluster to use high resolution timing protocol, giving better timing accuracy.

Application Integration

NEWLY SUPPORTED APPLICATIONS

Oracle Solaris Cluster includes out of the box support for a new set of applications. It delivers application specific monitoring and failover procedures to enable faster failure detection and recovery for the following new versions:

- MySQL 5.7

- NFS v4.1

ORACLE SOLARIS CLUSTER 4.3

Operations and Life-Cycle Management

NEW CONFIGURATION WIZARDS IN CLUSTER MANAGEMENT GUI

The graphical management interface now offers additional built-in wizards guiding the administrator step by step through the creation of a cluster. It helps with adding HA to VMs making it easy to set-up automatic monitoring and failover for Oracle Solaris Zones or Oracle VM for SPARC domains. It also includes simplified configuration of disaster recovery orchestration by defining groups of clusters, resources and their order of failover and recovery. This tool lowers the complexity of administrating clusters, limits configuration errors and reduces the learning curve.

Virtualization

ZONE IMPORT FOR ORACLE SOLARIS ZONE CLUSTER

Oracle Solaris Cluster already included the capability to add HA to an existing Zone, enabling monitoring of the Zone and its automatic local or remote restart. Now it is possible to dynamically add an existing Zone as a node of a Zone cluster. This facilitates the deployment of pre-configured, pre-installed environments (for example those created with VM templates) into virtual clusters composed of Zones. Zone clusters behave like physical clusters and enable the use of application agents with fine-grained application level monitoring delivering faster failure detection, and customized restart procedures delivering faster recovery.

KERNEL ZONES LIVE MIGRATION IN HA ZONES AGENT

Oracle Solaris Cluster Zones High Availability (HA) agent can now control live migration of Kernel Zones in addition to offering manual cold migration and automated failover triggered by outage. With Oracle Solaris Cluster, administrators now have a single tool they can use to manage Kernel Zones availability efficiently: it minimizes the impact of planned and unplanned downtime and enables workload load balancing across the data center without application interruption.

ZONES OVER SHARED STORAGE FOR HA ZONES AGENT

The Oracle Solaris Zones on shared storage (ZOSS) feature allows Zones to be placed on Fibre Channel storage area network (FC-SAN) and Internet Small Computer System Interface (iSCSI)

devices, where they can be managed automatically by the operating system. The HA Zones agent can now be used with such Zones, making it easier to upgrade without reconfiguration from simple Zones using ZOSS to highly-available Zones.

Networking

IP OVER LINK AGGREGATION FOR PUBLIC NETWORK

Oracle Solaris Cluster offers applications highly available network access through its public networking interfaces. In addition to IP Multipathing (IPMP), this new release supports IP over link aggregation (either in 802.3ad mode or with Datalink Multipathing) VNICs, the use of link aggregation combines simplified network configurations for Zones and Zones clusters with improved network availability and performance.

Disaster Recovery

ORACLE SOLARIS ZFS SNAPSHOT REPLICATION

Oracle Solaris ZFS snapshots can now be used as the host-based data replication solution for geographically separated clusters. It enables application data stored in a ZFS file system or in a ZFS volume in a primary cluster to be regularly replicated to a secondary cluster. In case of a primary site outage or planned maintenance, the application can be restarted with the latest replicated data on the secondary cluster, minimizing data loss and avoiding data corruption as well as reducing time to recovery. ZFS snapshots are available at no license cost and can be used with any type of storage to enable disaster recovery across a large range of applications and configurations.

ORACLE GOLDENGATE REPLICATION

Oracle GoldenGate is an application-based data replication facility that maintains one or more standby databases as synchronized replicas of a production database. It is now supported in an Oracle Solaris Cluster geographically separated multi-cluster configuration enabling orchestrated disaster recovery for database deployments such Oracle Database or MySQL.

Application Integration

NEWLY SUPPORTED APPLICATIONS

Oracle Solaris Cluster includes out of the box support for a new set of applications. It delivers application specific monitoring and failover procedures to enable faster failure detection and recovery for:

- Oracle Essbase (11.1.2)

- Oracle Communications ASAP (7.2)

- IBM WebSphere Message Queue (8.0)

ORACLE SOLARIS CLUSTER 4.2

Virtualization

KERNEL ZONES HIGH AVAILABILITY

Oracle Solaris Cluster 4.2 adds support for Oracle Solaris Kernel Zones to its HA Zone agent providing monitoring, automatic restart and failover as well as warm migration, combining resiliency

and resource optimization with the additional flexibility of having Zones with independent kernel versions and patch levels.

Load and dependency management for Oracle VM for SPARC guests

The HA agent for Oracle VM for SPARC has been enhanced to better leverage load and dependency management during Live Migration. Excess workload can be evicted before the switchover of a guest domain is executed, leading to higher rate of success for the migration, thereby reducing the potential downtime of the VM.

Lifecycle and operations management

NEW BROWSER-BASED MANAGEMENT INTERFACE

The new graphical user interface offers single point access to status, configuration and management capabilities. Its topology, tree and table views offer easy navigation inside cluster instances both in local or multi-cluster configurations facilitating operations, monitoring, and diagnostics.

Unified Archives for cluster deployment and cloning

Recovered or cloned easily and rapidly either as physical clusters or virtual clusters.

Increased safety with secure Automated Installer deployments

Installations using the Automated Installer are now more secure through authentication and encryption/decryption of the communication between the Installer and the cluster nodes as well as through the use of HTTPS repository locations.

Enhanced SNMP service

The SNMP service can now be configured to send events for cluster configuration and status changes. This facilitates monitoring from external system management tools using SNMP as the communication protocol.

Disaster recovery

DISASTER RECOVERY ORCHESTRATION

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 across multiple sites offering significant gains in terms of reliability, speed of recovery and reduced risk.

Application Integration

GENERIC DATA SERVICE AGENT TOOLKIT VERSION 2

Agent (or data service) development allows you to deploy your application within the Oracle Solaris Cluster infrastructure. The Generic Data Service (GDS) has been designed and developed by Oracle Solaris Cluster engineering to reduce the complexity associated with data service development. GDS v2 further increases flexibility, ease of use and security of this already trusted and robust development tool.

SUPPORT FOR LATEST DATABASE VERSION AND ECOSYSTEM COMPONENTS

Oracle 12.1 new RAC database options: Oracle Multitenant, service agent, policy managed database; ACFS

New Oracle applications

- J.D. Edwards EnterpriseOne 9.1

- Oracle Exalogic Traffic Director 11.1.1.7

- GoldenGate 12c

New application versions

- Oracle Business Intelligence 11.1.1.7 (new on Oracle Solaris 11)

- Oracle Siebel 8.2.2

- TimesTen 11.2.2

- Weblogic Server 12.1

- MySQL 5.5

- SAP Sybase 15.7

- SAP LiveCache/MaxDB 7.9

- Samba 3.6.23

- PostgreSQL 9.2

ORACLE SOLARIS CLUSTER 4.1

Virtualization

ORACLE SOLARIS 10 ZONE CLUSTER

Oracle Solaris 10 can now be deployed inside an Oracle Solaris Zone cluster in addition to Oracle Solaris 11. This new feature enables the deployment of Oracle Solaris 10 applications in a protective clustering environment within an Oracle Solaris 11 based system. Customers can thus leverage Oracle Solaris 11 best of breed features such as network virtualization and enhanced installation tools while minimizing the risk to new application environments by deploying tested and mature Oracle Solaris 10 solutions. The resulting benefits are protected customer investments and lower TCO.

EXCLUSIVE IP IN ORACLE SOLARIS ZONE CLUSTER

Oracle Solaris Zone cluster Oracle Solaris 11 default. This enables the use of all advantages of the Oracle Solaris network virtualization within a Zone cluster.

Availability

DYNAMIC RECONFIGURATION FOR M8000/M9000 MEMORY BOARDS

Oracle Solaris Cluster now enables the replacement of a system board with kernel memory through Dynamic Reconfiguration on a live Cluster node. The heartbeat monitoring for the node being updated is suspended and re-enabled at the completion of the reconfiguration operation. This feature delivers improved serviceability for M- 8000/9000 servers by facilitating repair situations in which halting the node is not desired. It lowers the risk and time when the remaining cluster node represents a single point of failure.

SDP/INFINIBAND (IB) INTEGRATION FOR ORACLE SUPERCLUSTER

This tighter integration between Oracle Solaris Cluster and SDP simplifies configuration when using IB as the cluster interconnect as well as providing a faster and more reliable link failure detection. This feature enables SDP to quickly failover connections upon single link failure and enables applications to quickly initiate recovery upon node failure.

FASTER FAILURE DETECTION AND FAIL-FAST FOR STORAGE

It is now possible to define an upper bound limit for I/O probes, which leads to faster reporting of a device failure. In addition, a fail-fast option is available, for an immediate reboot of a node when a storage error is detected. Those options enable the reduction of storage failure detection time from minutes to seconds and improve service recovery time.

IMPROVED PROTECTION FOR HA-ZFS DATA INTEGRITY

With this version Oracle Solaris Cluster offers improved protection for ZFS in an HA configuration. With even more verifications that a ZFS pool is not in an imported state on any of the nodes in the current cluster before importing the pool it further avoids possible data corruption due to multiple imports.

IMPROVED PER-NODE DEPENDENCY MANAGEMENT

With the per-node resource dependencies, it becomes simpler to configure separate failover IP addresses for each node eliminating the TCP timeout on the client side when a cluster node goes down. The client can recover immediately by connecting to a different server enabling a reduction of service downtime from minutes to seconds.

Disaster Recovery

ZFS STORAGE APPLIANCE REPLICATION

This release adds the support of ZFS Storage Appliance replication for geo clusters. It enables automated disaster recovery in geographically dispersed multi-cluster configurations equipped with ZFS Storage Appliance (ZFS SA) such as SPARC SuperCluster. It coordinates the ZFS SA replication mechanism and the application failover procedures, allowing for safer recovery procedures in case of maintenance operations or complete site failure.

Security

FULL SUPPORT OF ORACLE SOLARIS TRUSTED EXTENSIONS ON ORACLE SOLARIS 11.1

This release extends the support of Oracle Solaris Trusted Extensions to any validated Oracle Solaris Cluster configurations based on Oracle Solaris Zone clusters on Oracle Solaris 11.1.

Oracle Solaris Cluster provides High Availability in multi-level security environments for mission-critical applications with this feature.

AGENT FRAMEWORK SECURITY ENHANCEMENTS

This new version facilitates the development of new agents by providing appropriate methods to store sensitive information in secure data store and to develop agents that must run without root privileges.

Ease of Use

CONFIGURATION WIZARDS FOR ZONE CLUSTER, PEOPLESOFT AND WEBLOGIC SERVER

The configuration wizards guide the users through the resource configuration step-by- step. It automatically discovers default values and auto-selects them to minimize manual interaction. It also presents possible options for multiple choices, allows manual entry of values and verifies the validity of the choices. The wizards help avoid configuration errors, lower the need for training for beginners and save time for advanced users.

Application Integration

New applications

- Oracle Web Tier for Oracle Fusion 11.1.1.4 and 11.1.1.5

- Oracle PeopleSoft Job Scheduler 8.52

- Oracle External Proxy 10gR2, 11gR1 and 11gR2

New application versions

- Oracle E-Business Suite 12.1

- Oracle iPlanet Web Server 7.0

- Oracle PeopleSoft App Server 8.52

- Oracle WebLogic Server 10.3.5, 10.3.6

- Glassfish Server MQ 4.5.2

- MySQL Cluster 7.2

- SAP 7.3

Note: The Oracle Solaris Cluster qualification list is regularly updated. Please check the Oracle Solaris Cluster Compatibility guide.

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