11 Diagnosability

This section describes the new diagnosability features.

General

Cluster Health Monitor Improved Diagnosability

Cluster Health Monitor introduces a new diagnostic ability to listen for critical component events that could indicate pending or actual failure and report these with recommended corrective actions. In some cases, these actions may be executed autonomously. Such events and actions could then be captured and admins notified through components such as Trace File Analyzer.

Improving the robustness and reliability of the Oracle Database hosting infrastructure is a critical business requirement for enterprises. This improved ability to detect and correct at first failure and self-heal autonomously delivers value by improving business continuity.

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Diagnosability 23ai Improvements

These are existing features but changes and enhancements to functionality and default values.

Decreases time to identify and address critical events in the database. Changes tracing limits to be more reasonable than being unlimited and facilitates content identification so that customers are aware what trace data is provided to Oracle for further diagnosis.

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Enhanced Cluster Health Advisor Support for Oracle Pluggable Databases

Cluster Health Advisor's (CHA) diagnostics capability is extended to support 4K pluggable databases (PDBs) from 256. This is critical for Oracle Autonomous Database deployments. CHA's problem detection and root cause analysis improves accuracy by considering database events such as reconfiguration. This improves detection, analysis, and targeted preventative actions for problems, such as instance evictions.

By adding this support to Cluster Health Advisor, performance and availability are kept in line with the deployment size. The business continuity of critical applications is preserved with improved prognostics and targeted preventive actions.

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Reduce Time to Resolve

Add Verified SQL Plan Baseline

The SQL plan management API (`DBMS_SPM`) includes a new procedure called `ADD_VERIFIED_SQL_PLAN_BASELINE`. It searches the cursor cache, AWR, and automatic SQL tuning set to establish which execution plan is best for a specified SQL statement. It creates an accepted SQL plan baseline for the best plan.

This feature provides improved performance management.

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CMAN Diagnostics and Logging Enhancements

Using the command line interface, you can now monitor statistics for all database service registration operations (such as register, update, or unregister) that the Oracle Connection Manager (CMAN) listener performs. You can also view additional diagnostic details about service registration events in the CMAN and listener log files.

This feature enables you to evaluate statistics about service registration operations at both global and instance levels, analyze their traffic, and diagnose registration issues.

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DBMS_DICTIONARY_CHECK PL/SQL Package

`DBMS_DICTIONARY_CHECK` is a read-only and light weight PL/SQL package procedure that helps you identify database dictionary inconsistencies that are manifested in unexpected entries in the RDBMS dictionary tables or invalid references between dictionary tables. Database dictionary inconsistencies can cause process failures and, in some cases, instances crash. `DBMS_DICTIONARY_CHECK` assists you in identifying such inconsistencies and provides a guided remediation to resolve the problem and avoid such database failures.

This feature improves database availability thus reducing the management and maintenance time for environments utilizing this package.

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Estimate the Space Saved with Deduplication

Before you enable deduplication, you can estimate the space that you can save by enabling advanced LOB deduplication for existing LOBS.

This enables you to take an informed decision to enable deduplication. Advanced LOB Deduplication enables Oracle Database to automatically detect duplicate LOB data within a LOB column or partition, and conserve space by storing only one copy of the data.

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Extent-Based Scrubbing

Automatic Storage Management (ASM) extent-based scrubbing changes the granularity level on which ASM scrubs data from a file and disk group level to the extent level.

Compared to scrubbing the whole file, scrubbing specific extent sets significantly reduces the scrubbing turn-around time, improves the data availability, and minimizes the performance impact.

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High Availability Diagnosability Using the DBMS_SCHEDULER Package

The Scheduler In-Memory Tracing feature is aimed at designing and implementing tools for the collection and temporary in-memory storage of scheduler trace messages generated during process execution.

It is critical to successfully restart jobs when they are interrupted by forced shut downs, like a forced patching cycle. With the addition of High Availability (HA) diagnostics in the `DBMS_SCHEDULER` package, you will be able to add real-time in-memory diagnostics during forced shut downs, and address any issues that result from these diagnostics.

This feature provides benefits like easier collection of trace messages generated since the initial failure, reduction in user interaction to collect traces, and significant reduction in multiple requests of problem reproduction.

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In-Memory Advisor

The In-Memory Advisor is now part of Oracle Database and has two components: (1) an eligibility test that identifies databases that are not good candidates for Database In-Memory and (2) an advisor with enhanced analysis capability to better identify workloads that will benefit from Database In-Memory.

The In-Memory Advisor makes it easier and faster to identify databases that can take advantage of Database In-Memory. The In-Memory Advisor is now built into the database in place of having to install a separate standalone utility. An eligibility test provides the ability to quickly eliminate workloads that will not benefit from Database In-Memory, saving time and effort. An enhanced analysis capability that makes identification of analytic workloads that will benefit from Database In-Memory simpler and more accurate. Together, these two components make it much simpler to decide where and when to use Database In-Memory.

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Oracle Call Interface (OCI) APIs to Enable Client-Side Tracing

New Oracle Call Interface (OCI) APIs allow applications to enable and disable client-side OCI diagnostic tracing dynamically without the need to update configuration files or set environment variables.

This feature allows developers to improve OCI application problem troubleshooting and reduce issue resolution time.

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Rename LOB Segment

To rename an existing LOB segment users perform an operation such as `ALTER TABLE ... MOVE`, which could perform slowly since the operation physically moves the LOB data as part of the renaming.

This enhancement improves the performance of renaming a LOB segment, at the table, partition and subpartition level by eliminating the physical movement of the LOB data.

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