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answers to oracle 11g 2nd edition

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Answers to Oracle /11g 2nd Edition: A Complete Guide

Oracle Database 11g has long been a cornerstone for enterprise data management. The 2nd edition of the Oracle 11g documentation and community forums contain a wealth of information, but finding the exact answer you need can still be challenging. Whether you're a DBA, a developer, or a system administrator, you'll often encounter questions that require precise, context specific solutions. This article compiles the most common inquiries and delivers clear, actionable answers—specifically tailored to Oracle /11g 2nd Edition.

Why Focus on Oracle /11g 2nd Edition?

Oracle 11g introduced several groundbreaking features such as Real Application Clusters (RAC), Automatic Storage Management (ASM), and the Data Guard architecture. The 2nd edition of the official documentation, released in 2015, reflects updates to these features and addresses real world usage scenarios. Many organizations still run Oracle 11g Enterprise Edition 2nd Generation (11.2.0.4) because it offers a stable, well tested platform with enterprise grade support. Knowing the exact answers to common Oracle 11g 2nd Edition questions saves time, reduces downtime, and ensures compliance with best practices.

Common Oracle /11g 2nd Edition Questions

- How do I install and configure Oracle /11g 2nd Edition on a Linux server?
- What are the recommended memory settings for optimal performance?
- How can I enable and use Automatic Storage Management (ASM) effectively?
- What steps should I follow to set up Data Guard for disaster recovery?
- Which SQL tuning techniques are most effective in Oracle /11g?
- How do I secure my database against unauthorized access?
- What troubleshooting steps address "ORA xxxx" error codes?

Below, each question is addressed in detail, providing step by step instructions, best practice tips, and links to official Oracle resources where appropriate.

Installing Oracle /11g 2nd Edition on Linux

Prerequisites

1. Root access or sudo privileges on the target machine.
2. Supported Linux distribution: Oracle Linux 6.x/7.x, Red Hat Enterprise Linux 6.x/7.x, or SUSE Linux Enterprise 10/11.
3. At least 2 /GB of RAM (4 /GB recommended for production).
4. Minimum 10 /GB of free disk space for the database files.
5. Network connectivity to Oracle's public repositories for patch updates.

Installation Steps

1. Download the Oracle Software: Visit the Oracle Technology Network (OTN) and download the "Oracle Database 11g Release 2 (11.2.0.4) for Linux x86 64."

2. Extract the Archive: Use tar -xzvf linux.x64_11gR2_database_1of2.zip and tar -xzvf linux.x64_11gR2_database_2of2.zip to unpack the files.

3. Create the Oracle User:\n\nuseradd -m -s /bin/bash oracle\npasswd oracle\nmkdir /u01\nchown oracle:oinstall /u01\nchmod 775 /u01\n\n

4. Set Environment Variables:\n\nexport ORACLE_BASE=/u01/app/oracle\nexport ORACLE_HOME=$ORACLE_BASE/product/11.2.0/dbhome_1\nexport PATH=$PATH:$ORACLE_HOME/bin\nexport LD_LIBRARY_PATH=$ORACLE_HOME/lib:/lib:/usr/lib\nexport CLASSPATH=$ORACLE_HOME/jlib:$ORACLE_HOME/rdbms/jlib\n\n

5. Run the Installer: Switch to the oracle user and execute ./runInstaller from the extracted directory. Follow the GUI prompts, selecting the “Database” installation type.

6. Apply the Root Script: When prompted, run the root script provided by the installer to set permissions and create necessary system accounts.

7. Configure the Database: Use the Database Configuration Assistant (DBCA) to create a new database or clone an existing one. Specify the character set, storage options, and memory allocation.

Post Installation Tasks

- Install the latest patch set updates (PSU) for security and performance.
- Configure ASM if you plan to use it for block storage.
- Set up listener.ora and tnsnames.ora for network connectivity.
- Enable and configure the Oracle Enterprise Manager (OEM) for monitoring.

Memory Management: SGA and PGA Settings

Optimizing memory is critical for Oracle 11g performance. The System Global Area (SGA) and Program Global Area (PGA) should be sized based on workload and available RAM.

Recommended SGA Settings

- SGA_TARGET: Set to 70–80% of total RAM for a dedicated database instance.
- DB_CACHE_SIZE: Allocate 60–70% of SGA for buffer cache.
- REDO_LOG_BUFFER_SIZE: 5–10 /MB for small workloads, up to 50 /MB for heavy write operations.

Recommended PGA Settings

- PGA_AGGREGATE_TARGET: Allocate 20–30% of total RAM for sorting and hash operations.
- Use V$PGASTAT to monitor PGA usage and adjust accordingly.

Using Automatic Storage Management (ASM)

ASM simplifies storage by abstracting physical disks into a logical pool. It offers high availability and performance, especially for large databases.

Enabling ASM

1. During installation, select the “ASM” option in the DBCA wizard.
2. Create a disk group:\n\nasmcmd mkgroup DATA -t NORMAL -m 3 -d /dev/sdb,/dev/sdc\n\n
3. Set the DISKGROUP_DATA parameter in init.ora to point to the newly created group.

Managing Disk Groups

- Use asmcmd ls to list disk groups.
- Add or remove disks with asmcmd mkdisk and asmcmd rmdisk.
- Monitor space usage via v$asm_diskgroup.

Setting Up Data Guard for Disaster Recovery

Data Guard maintains a synchronized standby database, ensuring minimal data loss in case of primary database failure.

Prerequisites

- Primary and standby servers with identical Oracle /11g versions.
- Network connectivity between the two servers.
- Shared storage or a reliable network file system for redo logs.

Configuration Steps

1. On the primary database, enable LOG_ARCHIVE_DEST_2 pointing to the standby server:\n\nALTER SYSTEM SET LOG_ARCHIVE_DEST_2='LOCATION=/u01/archivelogs/standby';\n\n
2. Set up the standby database using the Data Guard configuration wizard or manual creation via dbca with the “Data Guard” option.
3. Configure listener.ora and tnsnames.ora on both servers for remote connectivity.
4. Create a standby control file and start the Data Guard broker:\n\nALTER DATABASE RECOVER MANAGED STANDBY DATABASE USING CURRENT LOGFILE DISCONNECT FROM SESSION;\n\n
5. Verify synchronization with SELECT * FROM v$dataguard_stats;.

SQL Tuning Techniques for Oracle /11g

Efficient SQL queries reduce CPU load and improve response times. Oracle 11g offers several tools and hints for tuning.

Using SQL Tuning Advisor

1. Identify a slow query in AWR or ASH reports.
2. Run the Advisor:\n\nEXEC DBMS_SQLTUNE.ADVISOR_RUN('SQL_ID', 'TUNING_SET', 'DEFAULT', 'DEFAULT', 'DEFAULT', 'DEFAULT', 'DEFAULT', 'DEFAULT');\n\n
3. Review the report and implement recommended changes such as index creation or query rewrite.

Indexing Strategies

- Create composite indexes for queries with multiple predicates.
- Use function based indexes for expressions (e.g., LOWER(col)).
- Avoid over indexing; each index consumes disk space and slows writes.

Partitioning Large Tables

Range or list partitioning can dramatically improve query performance and maintenance.

- Define partitions on date columns for time series data.
- Use subpartitioning for high cardinality columns.
- Archive old partitions to separate tablespaces.

Securing Oracle /11g 2nd Edition

Security is paramount. Oracle /11g provides several layers of protection, from authentication to auditing.

Authentication and Authorization

- Enable OS authentication with OS_AUTHENT_PREFIX.
- Use role based access control (RBAC) and least privilege principles.

- Implement password policies via DBMS_CRYPTO.

Transparent Data Encryption (TDE)

1. Create a wallet:\n\nsqlplus / as sysdba\nALTER SYSTEM SET ENCRYPTION WALLET OPEN IDENTIFIED BY "wallet_password";\n\n
2. Encrypt tablespaces:\n\nALTER TABLESPACE USERS ENCRYPT USING 'AES256' DEFAULT STORAGE (ENCRYPT);\n\n
3. Set up automatic wallet management for failover scenarios.

Auditing

- Enable fine grained auditing with DBMS_FGA.
- Use the unified audit trail for compliance reporting.
- Export audit logs to external systems (SIEM) via Oracle Enterprise Manager.

Troubleshooting Common ORA Error Codes

Encountering ORA errors can be frustrating, but most have straightforward solutions.

ORA 01555: Snapshot too old

- Increase UNDO_RETENTION and UNDO_TABLESPACE size.
- Reduce long-running queries or batch jobs.
- Enable Flashback Query for short term recovery.

ORA 00020: Maximum number of processes exceeded

- Increase PROCESSES parameter.
- Identify runaway sessions via v$process and terminate them.

ORA 01400: Cannot insert NULL into column

- Check NOT NULL constraints and default values.
- Validate application data before insertion.

Best Practices for Oracle /11g 2nd Edition

- Always apply the latest PSU and critical patch sets.
- Regularly backup using RMAN and test restores.
- Monitor performance with OEM or third party tools.
- Document configuration changes in a change log.
- Schedule maintenance windows and inform stakeholders.
- Use the Oracle Enterprise Manager Cloud Control for centralized management.

Additional Resources

Baca Juga (Artikel Terkait)

- **advanced engineering electromagnetics solution manual edition hardcover by balanis constantine a published by wiley**

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