



Oracle Database Management

Oracle Database software is a relational database management system delivering high levels of reliability, performance and scalability. With the TELEHOUSE Management Framework, TELEHOUSE provides the highest level of support and management to ensure the availability and performance of your Oracle Database.

Correlation Engine Technology

Integalis' correlation engine technology includes APIs for reading alerts and messages from a variety of tools such as HP OpenView, NetIQ AppManager and HP Insight Manager, among others. The correlation engine and filters correlate, validate, and auto-resolve routine alerts, allowing our analysts to focus on complex and proactive analysis of pre-screened, validated events. On average, 98% of incoming alerts and messages are automatically resolved by the correlation engine. By capturing and prioritizing the relevant data, the correlation engine enables exceptionally efficient incident management that improves your system performance.

Expert Analysts

Dedicated Oracle database experts ensure high performance and availability of your Oracle environment. Support analysts are available 24x7 to respond to system events and for direct customer support through phone or email. With over eight years of focused experience in managed services and thousands of applications under management, TELEHOUSE successfully manages complex environments.

ITIL Best Practices

TELEHOUSE employs the IT Infrastructure Library (ITIL) Service Delivery and Service Support processes of Incident, Problem, Configuration, Change, Release, Service Level, Availability, and Capacity Management. These standardized ITIL processes define our services and ensure consistent and measurable performance. TELEHOUSE's Management Action Plans (MAPs) are incident management best practices which correspond to every event type that is monitored.

Managed Components

1) Oracle Database Availability:

TELEHOUSE will monitor and verify that the application is running and functional. Critical system processes and daemons will also be monitored to ensure they are running within established parameters. Server restarts will be completed in the event of a system crash, panic, or halt, and the acceptance of client connections will be verified.

2) Oracle Database Instances:

TELEHOUSE will monitor each separate instance of your Oracle Database, as well as Listener or SQL*Net (Net8/Oracle Names) to ensure that the database is active. If it terminates abnormally, standard procedures are followed to restart the database or listener. Subsequently, a thorough root cause analysis is performed to determine the core issue.

3) Configuration File Changes:

TELEHOUSE will advise you when changes are made within the Configuration files to ensure that unauthorized changes are not being made to your system.

4) Oracle Log File Monitoring:

TELEHOUSE will monitor application logs looking for specific keywords and phrases indicating critical issues to investigate. Additional keywords can be added at any time and keywords that are determined to be ineffective can be removed. In Oracle, all issues that need to be addressed within the log file are seen as "ORA - XXX", where "XXX" represents an error number relative to Oracle.

5) Cluster Management:

TELEHOUSE will monitor for node changes to ensure the database successfully changes state and is working properly in the event of a failover incident. Once stability has been achieved, analysts will troubleshoot the root cause of the event, make necessary changes

Managed Components for Oracle Database

- Oracle Database Availability
- Oracle Database Instances
- Oracle Database Configuration File Changes
- Oracle Log File Monitoring
- Cluster Management
- Replication Management
- Database Parameter Tuning
- Performance Management and Statistical Tracking
- Storage Allocation Management
- Patch Management
- Backup Monitoring and Verification

TELEHOUSE Management Framework Value

- Leverage TELEHOUSE's best-of-breed monitoring technologies and proven implementation processes to provide rapid and effective management.
- Gain visibility into your IT environment by viewing ticket, performance, and trend details through the customer portal.
- Rely on expert analysts, ITIL best practices and Management Action Plans (MAPs) to improve the stability and availability of your environment.

For more information visit
www.TELEHOUSE.com



Oracle Performance Statistics Collected

- Storage - Space allocation distribution
- Sessions - Number of Oracle sessions per instance
- Processes - Number of Oracle processes per instance
- Buffer Hit Ratio - Ratio for number of buffer hits on an instance
- Sort (Disk/Memory) - Number of sorts by disk or by memory
- Transactions - Transaction activity in a database instance

Oracle Listener Events Monitored

- Log error
- Listener unavailable database instance

Oracle Database Events Monitored

- Offline tablespace
- Tablespace assignment
- Broken job
- Invalid object
- Temp segment location
- Rollback segment location
- Configuration parameter change
- Segment allocation Oracle Instance

Oracle Instance Events Monitored

- Deadlock detected
- File number limit warning / error
- Lock limit warning / error
- Log error / warning / info
- Archiver stopped
- Cursor limit warning
- Internal error
- Process limit warning
- Session limit warning
- Process count mismatch
- Startup / shutdown failed
- Instance unavailable database instance

to prevent future occurrences and restore the database to normal functions within the change management program.

6) Replication Management:

TELEHOUSE will monitor the successful transfer of data to the replication database.

7) Database Parameter Tuning:

TELEHOUSE analysts proactively work to ensure optimal performance and availability of the Oracle database through regularly scheduled checks of critical database components such as locks, buffer pool hit ratios, tablespaces, log activities, sorts, and other important parameters.

DB_Block_Buffer_Cache:

Tuned to optimize cache hit ratio by adjusting the number of database block buffers allocated to the instance

Shared_Pool_Size:

Total memory available to the combined Oracle DBMS processes

Sort_Area_Size:

Tune sorts in memory

Cursors:

Maximum number of open cursors at any given time and cache them

Processes:

Maximum number of connections to Oracle at any given time

Log_Buffer:

Tune log buffer to reduce waits on check pointing, etc.

Archive_File_Information:

Assists with recovery after any adverse event

8) Performance Management and Statistical Tracking:

TELEHOUSE will identify, troubleshoot and resolve performance issues while key system statistics are collected and warehoused on a historical basis.

9) Storage Allocation Management:

Each table/index in the instance is monitored to ensure that it is able to extend as needed for normal growth within its tablespace. If sufficient free space is not available for future

growth the TELEHOUSE analyst immediately logs on to the system and allocates additional space to the tablespace.

10) Oracle Patch Management:

TELEHOUSE will, on a periodic basis, review installed patches vs. latest available from Oracle and make recommendations for upgrades. Depending on the selected support option, TELEHOUSE will schedule with the customer and install the appropriate patch-sets.

11) Backup Monitoring and Verification:

TELEHOUSE will monitor the operation of backup processes and notify the customer or third party backup vendor if any failure occurs. TELEHOUSE will, on a quarterly basis, verify the proper operation of the backup processes. This verification can include a test for the recovery of data if a test server is provided by the customer.

12) Database Recovery:

In the event of a database failure, TELEHOUSE will recover and restore the data from the latest available backup file.

Event Resolution Example

The following example demonstrates the Silver, Gold, and Platinum service responses for a common Oracle event: **Check TNS Connection**.

TELEHOUSE Silver

For TELEHOUSE Silver services, the customer will receive notification of validated events. A TELEHOUSE Analyst will consult the Management Action Plan for this event. The MAP dictates that the analyst will perform the following:

- 1) Log on to the system to check the status of the database
- 2) If the database is available then verify the status of the listener
- 3) Inform the customer of the issue

On average, the initial response time is less than five minutes.



TELEHOUSE Silver, Gold, Platinum Support Overview	Silver	Gold	Platinum
→ 24x7 Support Center coverage	✓	✓	✓
→ Event correlation and validation with correlation engine technology	✓	✓	✓
→ Customer portal (system health, ticket reports, performance reports)	✓	✓	✓
→ Ticket tracking, communication, notification and escalation management	✓	✓	✓
→ Management Action Plans with validation and notification steps	✓	✓	✓
→ Incident management (detection, classification, notification, recording, and closure)	✓	✓	✓
→ Project management for installation	✓	✓	✓
→ Oracle log file parsing using specific keywords	✓	✓	✓
→ Validation of Oracle server response to requests	✓	✓	✓
→ Memory usage monitoring for each DB instance and process	✓	✓	✓
→ Individual Oracle instance availability monitoring	✓	✓	✓
→ Oracle server-specific file change monitoring	✓	✓	✓
→ Provide Oracle services performance graphs		✓	✓
→ Monitor cluster availability and response at the software layer		✓	✓
→ Management Action Plans with validation, troubleshooting, resolution and escalation steps		✓	✓
→ Incident resolution based on MAP procedures (restarts of processes, services, servers, etc.)		✓	✓
→ Primary Analyst assigned to every account for incident investigation, diagnosis, and control		✓	✓
→ Proactive problem identification		✓	✓
→ Configuration identification, status, verification and audit		✓	✓
→ Availability, response time, trend, and performance reporting and analysis		✓	✓
→ Patch reporting and analysis		✓	✓
→ Analyze repetitive critical Oracle diagnostic log file errors and suggest corrective action		✓	✓
→ Suggest changes to optimize the Oracle configuration files		✓	✓
→ Allocate additional space as required for growth		✓	✓
→ Monitor usage by Oracle active sessions			✓
→ Advise of availability and usage of CPU, I/O, and resources (such as Active User Connections)			✓
→ In clustered environments, review alert patterns and suggest corrective action			✓
→ Project management resource assigned for installation and ongoing account maintenance			✓
→ Complete problem management with incident root cause analysis, when appropriate			✓
→ Enterprise account management with complete understanding of architecture			✓
→ Change management coordination, review, risk assessment and justification*			✓
→ Release management planning, deployment and acceptance*			✓
→ Monitor ticket activity (24 hour report) and work to reduce false-positive and non-critical items			✓
→ Streamline resolution procedures to reduce resolution times of tickets			✓
→ Configuration management (identification, planning, control and optimization)			✓
→ Oracle patch maintenance and installation (minor releases within the same version only)			✓
→ Install and apply fixes to security vulnerabilities according to industry standards			✓
→ Analyze database segments and log switch intervals to identify and correct improper sizing			✓
→ Analyze database objects and sparsely populated indexes on a quarterly basis (rebuild as necessary**)			✓
→ Advise of potential security issues (default user passwords, storing passwords for database links, etc.)			✓
→ Identify row chaining/migration on a quarterly basis (rebuild the objects as necessary**)			✓
→ Tune buffer cache, shared pool, dictionary cache, library cache, etc.			✓
→ Perform database refresh on a quarterly basis (regular business hours only)			✓
→ Check critical database components (locks, buffer pool hit ratios, tablespaces, log activities and sorts)			✓
→ Database user account management			✓
→ Monitor and verify that backup processes are functioning properly			✓
→ Clustered Environments: Review cluster alert patterns and perform changes to resolve recurring issues			✓

**Time and material charges will apply *TELEHOUSE provides change management for all objects that are contracted under the Platinum support option. This includes both TELEHOUSE and customer initiated changes. For objects not under TELEHOUSE management, such as custom code or content, TELEHOUSE will perform the change control activities and documentation steps normally associated with change management only if the Enterprise Change Management option is purchased separately. For further details, please refer to the Change Management Technical Specification.



Support Options Summary TELEHOUSE Silver

Infrastructure and Application Monitoring

- Customer Portal Access*
- Project Management*
- Incident Management (Validation, Notification, and Escalation)
- Reporting

TELEHOUSE Gold

Infrastructure and Application Resolution

- All the features of Silver, plus
- Incident Resolution
- Proactive Problem Identification
- Configuration Identification
- Reporting and Analysis

TELEHOUSE Platinum

Infrastructure & Application Management. All the features of Gold, plus

- Problem Management (Error Control, Root Cause Analysis)
- Change Management
- Configuration Management
- Release Management
- Reporting and Proactive Services (Performance Tuning, Customized Services)

* Please see the Consulting Services technical specification for details.

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TELEHOUSE Gold

For TELEHOUSE Gold services, a Primary Analyst is assigned to every account and understands the configuration of the environment. Rather than escalating directly to the customer, the same Oracle event is now escalated to a Primary Analyst. The Primary Analyst consults their predefined set of troubleshooting and resolution steps in the Management Action Plan. For the same Oracle event, the Primary Analyst will perform the following troubleshooting and resolution steps:

- 1) If the database is down, check the alert log for any errors
- 2) Review the log files to investigate the reason for the shutdown
- 3) Start the database
- 4) If the listener is down, check the listener log for errors and start the listener
- 5) Inform the customer about the actions taken

In addition, the Primary Analyst will watch for a trend of these types of issues to proactively advise the customer of configuration changes to stabilize the environment.

TELEHOUSE Platinum

For TELEHOUSE Platinum services, the Primary Analyst will also understand the architecture of the environment. With this more in-depth understanding of your environment, the Primary Analyst can perform many proactive tasks such as installing and applying fixes to security vulnerabilities to adhere to high security standards, analyzing database segments and log switch intervals to identify and correct improper sizing; analyzing database objects and sparsely populated indexes, advising of potential

security issues, such as using default user passwords and storing passwords for database links, checking for invalid/corrupted objects and disabled constraints and triggers, and providing feedback on the disaster recovery plan for the database.

Consulting Services for Silver, Gold and Platinum

TELEHOUSE will perform the following activities as part of its engagement service:

- Audit and document site requirements
- Establish and maintain Virtual Private Network (VPN) connectivity
- Deploy client-agent management tools
- Configure the customer portal for customers to view performance trends and analysis

These services are detailed in the technical specification for TELEHOUSE Consulting Services.

Version and Patch Support Policy:

TELEHOUSE supports vendor-supported software versions defined as those versions that are under maintenance and being patched by the vendor.

Customers must have maintenance agreements in place and systems should be patched to within six months of the vendor's most recent available patches.

Exceptions to this as well as overall supported applications, will only be considered on a special approval basis and will require an engineering review and contract addendum.