

Oracle GoldenGate Microservices Architecture

Level 4 DBA - 75 Interview Questions & Answers

Architecture | AdminClient | Extract & Replicat | Performance | Security | HA/DR | Migration
| Troubleshooting

Purpose: A senior-level interview handbook for experienced Oracle DBAs preparing for GoldenGate Microservices Architecture interviews.

This guide focuses on clear operational reasoning: what to check, why it matters, which commands to use, and what a senior DBA should conclude from the evidence.

Contents

Questions 1-9 - Architecture & Core Microservices

Questions 10-20 - Administration, Monitoring & Capture

Questions 21-30 - Replicat, Performance & Troubleshooting

Questions 31-42 - Trails, Distribution & Security

Questions 43-54 - Classic vs MA, Automation & Operational Scenarios

Questions 55-64 - Sizing, Bottleneck Analysis & Enterprise Operations

Questions 65-70 - Topology, Bidirectional Replication & Migration

Questions 71-75 - Advanced Level 4 Incident & Leadership Scenarios

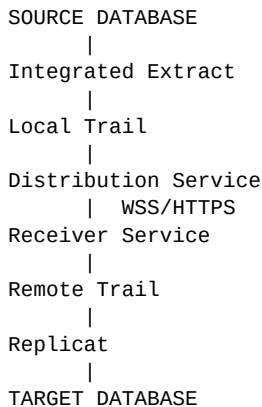
Quick command reference

```
INFO ALL
INFO EXTRACT <name> DETAIL
INFO REPLICAT <name> DETAIL
LAG EXTRACT <name>
LAG REPLICAT <name>
STATS EXTRACT <name> TOTAL
STATS REPLICAT <name> TOTAL
VIEW REPORT <process>
DBLOGIN USERIDALIAS <alias>
```

Architecture & Core Microservices

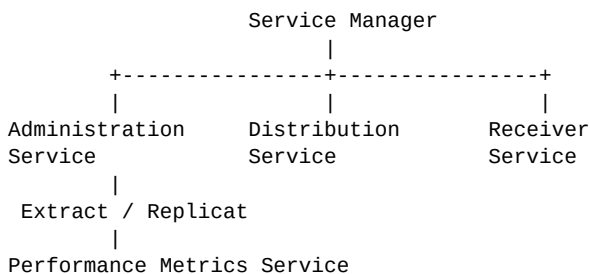
1. What is Oracle GoldenGate Microservices Architecture?

Answer: Oracle GoldenGate Microservices Architecture (MA) is a service-oriented implementation of GoldenGate. Instead of relying primarily on GGSCI and a single Manager process, MA exposes management and transport functions through independent services and REST APIs. The core services are Service Manager, Administration Service, Distribution Service, Receiver Service, and Performance Metrics Service. Administration can be performed through web interfaces, AdminClient, and REST APIs.



2. Explain the Oracle GoldenGate Microservices Architecture.

Answer: MA separates administration, transport, reception, and monitoring into dedicated services. Service Manager provides the management entry point. Administration Service manages Extract and Replicat. Distribution Service reads source trails and sends records over the network. Receiver Service accepts the records and writes destination trails. Performance Metrics Service collects operational and performance data.



3. What is Service Manager?

Answer: Service Manager is the management entry point for a Microservices deployment. It manages deployments and services, provides access to MA service endpoints, and is involved in user and certificate administration. A single Service Manager can manage multiple deployments.

4. What is a GoldenGate Deployment?

Answer: A deployment is an isolated GoldenGate runtime environment that contains service configuration, Extract/Replicat definitions, parameter files, trail-related configuration, reports, checkpoints, and other deployment-specific files. The software installation is separated from deployment configuration, which makes patching and upgrades easier because multiple deployments can use a GoldenGate home while keeping runtime data isolated.

5. What is Administration Service?

Answer: Administration Service is the MA component used to create, alter, start, stop, and monitor Extract and Replicat processes. It also exposes parameter file management, reports, credentials, checkpoints, and process information through the web UI, AdminClient, and REST API.

```
INFO ALL
INFO EXTRACT EXT01 DETAIL
INFO REPLICAT REP01 DETAIL
START EXTRACT EXT01
STOP REPLICAT REP01
```

6. What is Distribution Service?

Answer: Distribution Service moves GoldenGate trail data from a source deployment toward one or more destination deployments. It replaces much of the role traditionally handled by a Data Pump Extract. A distribution path defines the source trail, destination endpoint, target trail, security settings, and related transport properties.

```
Extract -> Local Trail -> Distribution Service -> Receiver Service -> Remote Trail
```

7. What is Receiver Service?

Answer: Receiver Service runs at the destination deployment. It receives trail records from Distribution Service, authenticates the incoming connection, and writes the data into the destination trail that Replicat consumes.

8. What is Performance Metrics Service?

Answer: Performance Metrics Service collects health and performance information for GoldenGate. Typical metrics include process status, lag, throughput, transaction rates, CPU-related statistics, and other operational measurements that can be used by GoldenGate monitoring and external observability tools.

9. What replaces GGSCI in Microservices Architecture?

Answer: AdminClient is the command-line administration interface for MA. It connects to Administration Service through REST-based interfaces and provides familiar GoldenGate commands for process management.

```
cd $OGG_HOME/bin
./adminclient
CONNECT https://oggserver:16000 DEPLOYMENT PROD AS oggadmin PASSWORD password
```

Administration, Monitoring & Capture

10. How do you check GoldenGate processes using AdminClient?

Answer: Use INFO ALL for an overall process view, and INFO EXTRACT or INFO REPLICAT for a specific process. DETAIL provides more configuration and checkpoint information.

```
INFO ALL
INFO EXTRACT EXT01
INFO EXTRACT EXT01 DETAIL
INFO REPLICAT REP01
INFO REPLICAT REP01 DETAIL
```

11. How do you start and stop Extract?

Answer: Use START EXTRACT and STOP EXTRACT. A forced stop should only be used when a normal stop is not completing and the operational impact is understood.

```
START EXTRACT EXT01
STOP EXTRACT EXT01
STOP EXTRACT EXT01 !
RESTART EXTRACT EXT01
```

12. How do you start and stop Replicat?

Answer: Use START REPLICAT, STOP REPLICAT, and RESTART REPLICAT from AdminClient.

```
START REPLICAT REP01
STOP REPLICAT REP01
RESTART REPLICAT REP01
```

13. How do you view Extract statistics?

Answer: Use STATS EXTRACT to see operation counts and processing activity. TOTAL is useful for a cumulative view. The important values normally include inserts, updates, deletes, discards, and total operations.

```
STATS EXTRACT EXT01
STATS EXTRACT EXT01 TOTAL
```

14. How do you view Replicat statistics?

Answer: Use STATS REPLICAT. It helps determine whether Replicat is actively applying records and which tables are contributing most of the workload.

```
STATS REPLICAT REP01
STATS REPLICAT REP01 TOTAL
```

15. How do you check GoldenGate lag?

Answer: Use LAG EXTRACT and LAG REPLICAT for process-level lag. For a complete end-to-end view, also use the GoldenGate heartbeat mechanism because process lag alone does not always represent user-visible replication latency.

```
LAG EXTRACT EXT01
LAG REPLICAT REP01
```

16. What is the GoldenGate heartbeat table?

Answer: Heartbeat functionality inserts and propagates heartbeat records through the replication topology so GoldenGate can measure end-to-end latency. It is especially useful when monitoring complex source-to-target paths because it measures the journey through capture, distribution, reception, and apply.

```
DBLOGIN USERIDALIAS ggadmin
ADD HEARTBEATTABLE
```

17. What is Integrated Extract?

Answer: Integrated Extract uses the Oracle database LogMining Server to capture changes from redo. It is tightly integrated with Oracle database redo processing, supports RAC well, handles complex Oracle datatypes, and uses database log mining infrastructure for transaction reconstruction.

Oracle Redo -> LogMining Server -> Integrated Extract -> GoldenGate Trail

18. How do you register Integrated Extract?

Answer: Connect to the database with a credential alias, register the Extract with the Oracle database, create the Extract in integrated mode, and attach an output trail. Registration creates the database-side capture metadata required by integrated capture.

```
DBLOGIN USERIDALIAS ggadmin
REGISTER EXTRACT EXT01 DATABASE
ADD EXTRACT EXT01 INTEGRATED TRANLOG BEGIN NOW
ADD EXTTRAIL ./dirdat/ea EXTRACT EXT01
```

19. How do you unregister Extract?

Answer: Stop and remove the Extract only after confirming that replication can safely be retired. Then unregister the integrated Extract from the database so the associated capture metadata is removed.

```
STOP EXTRACT EXT01
DELETE EXTRACT EXT01
UNREGISTER EXTRACT EXT01 DATABASE
```

20. What supplemental logging is required?

Answer: GoldenGate needs enough redo information to uniquely identify changed rows. Enable appropriate database supplemental logging and then configure GoldenGate schema- or table-level supplemental logging with SCHEMATRANDATA or TRANDATA.

```
ALTER DATABASE ADD SUPPLEMENTAL LOG DATA;

DBLOGIN USERIDALIAS ggadmin
ADD SCHEMATRANDATA HR
ADD TRANDATA HR.EMPLOYEES
INFO TRANDATA HR.EMPLOYEES
```

Replicat, Performance & Troubleshooting

21. Difference between ADD TRANDATA and ADD SCHEMATRANDATA?

Answer: ADD TRANDATA applies GoldenGate supplemental logging to selected tables. ADD SCHEMATRANDATA manages the requirement at schema level and is easier to maintain when many tables are replicated or new tables are frequently created.

```
ADD TRANDATA HR.EMP
ADD SCHEMATRANDATA HR
```

22. Explain Replicat types.

Answer: Common apply modes include non-integrated/classic Replicat, Integrated Replicat, Parallel Replicat, Coordinated Replicat, and initial-load style Replicat processes. The correct choice depends on target database type, GoldenGate release, datatype support, transaction characteristics, and performance requirements.

23. What is Integrated Replicat?

Answer: Integrated Replicat works with Oracle database inbound apply infrastructure. The database is able to understand transaction dependencies and dispatch independent work to apply servers while preserving transactional integrity. This provides better concurrency than simple serial apply for many Oracle workloads.

GoldenGate Trail -> Integrated Replicat -> Inbound Server -> Apply Servers -> Oracle Database

24. What is Parallel Replicat?

Answer: Parallel Replicat improves target apply performance by scheduling and executing independent transactions concurrently. Its mapper and scheduler analyze dependencies and distribute work to parallel apply threads while preserving ordering where required.

Trail -> Parallel Replicat -> Mapper -> Scheduler -> Apply threads

25. What is the difference between Integrated Replicat and Parallel Replicat?

Answer: Integrated Replicat relies heavily on Oracle database inbound apply infrastructure for parallel execution. Parallel Replicat adds GoldenGate-side mapping and scheduling mechanisms and can provide high parallelism for suitable workloads. For modern Oracle targets, evaluate Parallel Replicat first when performance is a primary requirement, but always verify datatype, feature, and release compatibility.

26. How do you tune Replicat parallelism?

Answer: Do not increase parallelism blindly. First identify whether the target is CPU-bound, I/O-bound, blocked, or constrained by transaction dependencies. Check hot tables, commit latency, index maintenance, and large transactions. Then increase apply parallelism gradually and measure throughput and waits after each change.

```
MAP HR.*, TARGET HR.*;  
DBOPTIONS INTEGRATEDPARAMS (PARALLELISM 4)
```

Level 4 point: tuning is an evidence-based process. More threads can reduce performance if the target is already CPU saturated or if the workload is dominated by dependent transactions.

27. What is BATCHSQL?

Answer: BATCHSQL groups similar SQL operations into batches to reduce database round trips and improve apply throughput for suitable workloads. It is especially useful where there are many small DML operations, but must be tested because the benefit depends on SQL shape and transaction patterns.

```
BATCHSQL
```

28. Your Replicat lag increases continuously. What do you check?

Answer: First determine whether the backlog is really at Replicat or earlier in the pipeline. Confirm Extract lag, Distribution path status, Receiver throughput, trail growth, and Replicat statistics. On the target, check waits, blocking sessions, hot objects, indexes, triggers, constraints, commit latency, CPU, storage, and transaction size. If Replicat is the bottleneck, then consider parallelism or batching after fixing database-side constraints.

```
INFO ALL  
LAG REPLICAT REP01  
STATS REPLICAT REP01 TOTAL  
SEND REPLICAT REP01 STATUS
```

```
SELECT event, COUNT(*)  
FROM v$session  
WHERE module LIKE '%OGG%'  
GROUP BY event;
```

29. Extract is running but not capturing transactions. What would you check?

Answer: Check process detail, statistics, and the report file. Then verify database login, Extract registration, supplemental logging, TABLE parameters, PDB/container configuration, redo availability, archived logs, filters, and whether the application is actually changing objects included by the Extract. In integrated mode also check LogMiner-related health and capture metadata.

```
INFO EXTRACT EXT01 DETAIL  
STATS EXTRACT EXT01  
VIEW REPORT EXT01
```

30. What happens when GoldenGate Extract crashes?

Answer: Extract uses checkpoints so that after restart it resumes from a known processing position rather than starting at the current end of redo. Correct checkpointing and trail handling prevent loss of captured changes and avoid unnecessary duplicate processing.

```
START EXTRACT EXT01
```

Trails, Distribution & Security

31. What happens when Replicat crashes?

Answer: Replicat resumes from its checkpoint when restarted. GoldenGate checkpointing keeps track of the trail position and commit state so the process can continue consistently. Before restarting after an ABEND, review the report and error cause to ensure the failure will not immediately repeat.

```
START REPLICAT REP01
```

32. What is a GoldenGate checkpoint?

Answer: A checkpoint records a process recovery position. Depending on the process and database it may include redo or trail position, sequence number, RBA, commit position, or CSN-related information. Checkpoints make restart and recovery deterministic.

33. What is RBA?

Answer: RBA means Relative Byte Address. In a trail context, the trail sequence number plus RBA identify a specific byte position from which a process can resume or which can be examined with Logdump.

```
Trail sequence: 452
RBA: 17894523
```

34. What is CSN?

Answer: CSN means Commit Sequence Number. It represents transaction commit ordering. For Oracle, it relates to the database commit position/SCN concept and can be used when positioning GoldenGate processes for controlled recovery or instantiation.

35. What is the purpose of a GoldenGate trail?

Answer: Trails provide persistent intermediate storage between capture and apply. They decouple source processing from the network and target database, provide restartability, allow buffering during outages, support multiple downstream consumers, and make troubleshooting possible through trail inspection.

36. How do you inspect a GoldenGate trail?

Answer: Use Logdump. Open the relevant trail file, enable headers and detail, and advance through records. Logdump is valuable for confirming whether a specific transaction was captured, checking before/after images, and isolating whether a problem occurred before or after the trail was written.

```
logdump
OPEN ./dirdat/aa000000123
GHDR ON
DETAIL ON
DETAIL DATA
NEXT
```

37. What is a Distribution Path?

Answer: A Distribution Path tells Distribution Service what source trail to read and where to send it. It includes the Receiver endpoint, destination trail, network/security settings, and other transport properties. Multiple paths can be configured from the same Distribution Service.

38. What protocol is normally used between Distribution and Receiver Services?

Answer: Secure deployments commonly use secure WebSocket communication (WSS) protected by TLS. The production design should use trusted certificates and restrict communication to the required source, destination, and ports.

39. How would you secure GoldenGate Microservices?

Answer: Use HTTPS/WSS, TLS or mTLS where appropriate, CA-signed certificates, strong role separation, credential stores, least-privilege database accounts, encrypted trails where required, restrictive firewall rules, hardened OS permissions, password and certificate rotation, and certificate-expiry monitoring. Avoid plaintext passwords in parameter files.

40. Why should USERIDALIAS be used?

Answer: USERIDALIAS references credentials stored in the GoldenGate credential store instead of embedding usernames and passwords in parameter files. This reduces plaintext exposure and simplifies password rotation.

```
USERIDALIAS ggadmin
```

41. How would you configure firewall rules for GoldenGate MA?

Answer: Allow only required management and replication flows. Restrict the administrator network to Service Manager/Administration Service ports and restrict source GoldenGate hosts to the destination Receiver Service ports. Avoid broad any-to-any rules and document each source, destination, protocol, and purpose.

42. What is Target-Initiated Distribution Path?

Answer: In the normal model, the source Distribution Service initiates the connection to the destination Receiver. A target-initiated path reverses the connection initiation pattern and is useful when source-side outbound connectivity is constrained by DMZ or firewall policy. It can simplify secure designs where only specific inbound/outbound directions are permitted.

Classic vs MA, Automation & Operational Scenarios

43. Difference between Classic Architecture and Microservices Architecture?

Answer: Classic Architecture uses Manager and GGSCI as the central administration model. Microservices Architecture uses Service Manager plus dedicated Administration, Distribution, Receiver, and Performance Metrics services, with web UI and REST API support. MA is more API-centric and separates transport/management responsibilities into individual services.

44. Does Microservices Architecture still use Extract and Replicat?

Answer: Yes. MA changes the management and trail transport architecture, but the core replication flow remains Extract -> Trail -> Replicat.

```
Extract -> Trail -> Replicat
```

45. Can GoldenGate MA be automated?

Answer: Yes. REST APIs make deployment provisioning, process creation, start/stop, health checks, statistics collection, monitoring integration, and other administration tasks automatable. In mature environments, automate repeatable operational tasks while keeping credentials out of scripts and adding appropriate approval controls for destructive actions.

46. Scenario: Extract is RUNNING but lag is 45 minutes.

Answer: First verify whether the lag is real and whether Extract is advancing. Check LAG, INFO DETAIL, STATS, and the report file. Correlate the time with redo generation, archive availability, long-running transactions, LogMiner performance, CPU, memory, and storage. Very large open transactions can make capture appear stalled because commit ordering prevents progress from being visible as expected.

```
LAG EXTRACT EXT01
INFO EXTRACT EXT01 DETAIL
STATS EXTRACT EXT01
VIEW REPORT EXT01
```

47. Scenario: Replicat ABENDs with duplicate records.

Answer: Determine whether the duplicate is a symptom of bad instantiation, wrong start position, target-side application writes, replay of an already-applied range, or incorrect key definition. Review the report, identify the table and key, compare source and target, and verify the original initial-load SCN. Do not immediately suppress ORA-00001 or turn on collision handling because that can hide a systemic synchronization problem.

48. When should HANDLECOLLISIONS be used?

Answer: HANDLECOLLISIONS is intended for controlled synchronization/initial-load overlap situations where inserts, updates, or deletes may temporarily encounter already-present or missing rows. Remove it once the target is synchronized. Leaving it enabled in steady state can mask real data-consistency defects.

```
HANDLECOLLISIONS
```

49. How do you troubleshoot OGG process ABEND?

Answer: Start with INFO ALL and process DETAIL, then open the report. Capture the GoldenGate error code and any database error, inspect discard files, parameter syntax, trail availability, connectivity, filesystem space/permissions, checkpoint position, and recent configuration changes. Fix the root cause before restart whenever possible.

```
INFO ALL
INFO REPLICAT REP01 DETAIL
VIEW REPORT REP01
```

50. Replicat fails with ORA-00001. What does this mean?

Answer: ORA-00001 is a uniqueness violation. In replication it often indicates a target row already exists because of an incorrect initial load, wrong start SCN, replayed data, target-side writes, or an incorrect key mapping. Compare the conflicting key on source and target and determine whether the target should be corrected, the position adjusted, or the replication design changed.

51. Replicat fails with ORA-01403 / no data found type condition. What would you check?

Answer: This generally means an UPDATE or DELETE was applied for a row that is not present on the target. Check whether the initial load was complete, whether earlier operations were skipped, whether filters differ between capture and apply, whether the target application is changing the same tables, and whether the MAP or key definition is correct.

52. What are collision errors?

Answer: Typical collision patterns are an INSERT where the target row already exists, an UPDATE where the target row does not exist, or a DELETE where the target row does not exist. Persistent collisions usually indicate source/target synchronization or process-position problems.

53. How do you troubleshoot data mismatch between source and target?

Answer: Identify the affected table and key range, determine when divergence began, verify Extract inclusion and supplemental logging, inspect trail records, review Replicat mapping/filtering, check discard/report files, and determine whether target-side applications changed the data. For large-scale reconciliation, use an appropriate comparison tool such as Oracle GoldenGate Veridata when available.

54. What happens if the network between source and target fails?

Answer: Extract can continue writing local trails while the source trail filesystem has capacity. Distribution Service cannot deliver the backlog until the network or Receiver returns. Once connectivity is restored, the path resumes and catches up. The operational risk becomes trail disk exhaustion, so capacity and alerts are critical.

Sizing, Bottleneck Analysis & Enterprise Operations

55. What happens if the target database goes down?

Answer: Capture and distribution can continue and remote trails accumulate on the target GoldenGate host. Replicat cannot apply while the target database is unavailable. After the database returns, fix any connection issue and restart Replicat if needed; it resumes from its checkpoint. Ensure the destination trail filesystem is sized for the maximum outage window.

56. How do you size trail filesystem capacity?

Answer: Estimate the GoldenGate trail generation rate, multiply it by the required outage retention period, and add safety margin for workload spikes and operational recovery. Use observed trail growth rather than assuming redo size equals trail size.

Example:
Trail generation = 500 GB/day
Required outage tolerance = 2 days
Raw requirement = ~1 TB
With 30-50% safety margin = ~1.3-1.5 TB or more

57. Why might Extract trail files grow rapidly?

Answer: Rapid local trail growth can be caused by heavy DML, a stopped or failed Distribution Path, network failure, an unavailable Receiver, target host outage, or trail purge/retention misconfiguration. Check both workload increase and downstream delivery status.

58. How do you determine GoldenGate bottleneck location?

Answer: Break the topology into stages and measure each one: source database -> Extract -> local trail -> Distribution -> network -> Receiver -> remote trail -> Replicat -> target database. Compare checkpoint progression, lag, throughput, and trail growth at each boundary. This stage-by-stage method avoids incorrectly blaming Replicat for upstream problems.

Source DB -> Extract -> Local Trail -> Distribution -> Network -> Receiver -> Remote Trail -> Replicat -> Target

59. What target database problems cause Replicat lag?

Answer: Common causes include CPU saturation, slow storage, blocking locks, missing or inefficient indexes, excessive index maintenance, slow commit latency, triggers, foreign keys, hot blocks, unique-key contention, Resource Manager restrictions, excessive concurrency, and large dependent transactions.

60. What source database issues cause Extract lag?

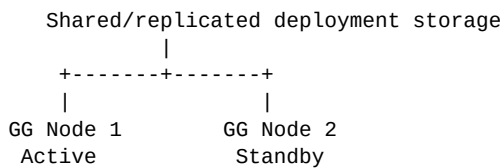
Answer: Examples include LogMiner pressure, CPU/memory saturation, redo or archive I/O issues, archive log unavailability, very large transactions, RAC thread issues, database connectivity problems, and unusually high redo generation. Correlate the lag with database and application workload at the exact incident time.

61. How do you monitor GoldenGate at enterprise level?

Answer: Monitor process availability, Extract and Replicat lag, heartbeat latency, Distribution Path status, local/remote trail filesystem utilization, restart/ABEND events, throughput, checkpoint movement, database connectivity, credential/certificate health, and certificate expiration. Feed MA metrics and REST API results into enterprise monitoring and alerting.

62. How would you build HA for GoldenGate Microservices?

Answer: Use at least two GoldenGate hosts or equivalent HA capability, resilient/shared or replicated storage where appropriate, controlled service failover, and a stable client/network endpoint such as VIP/load balancer if supported by the design. Ensure deployments, trails, checkpoints, credentials, certificates, and database connectivity are available after failover. Test process restart and failback as part of DR exercises.



63. Can two Extracts capture the same tables?

Answer: Yes, two Extracts can capture overlapping tables, for example one for DR and another for reporting. However, this increases capture overhead and trail generation. Where practical, fan out from a single capture trail using multiple Distribution Paths rather than duplicating capture.

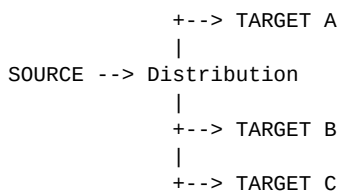
64. Can multiple Replicats consume the same trail?

Answer: Yes, as long as each Replicat has its own checkpoint state and the mappings are designed correctly. This can be used to split table groups or apply the same trail into different target structures.

Topology, Bidirectional Replication & Migration

65. Can Distribution Service send one trail to multiple targets?

Answer: Yes. This is a common fan-out design. One local trail can feed multiple Distribution Paths, each targeting a different Receiver Service or deployment.



66. What is GoldenGate bidirectional replication?

Answer: Bidirectional replication allows changes to flow in both directions between databases. It requires careful loop prevention, conflict detection/resolution, key-generation strategy, application ownership rules, DDL handling, and latency management. It is substantially more complex than unidirectional replication because the same logical data can be changed at both sites.

67. How do you avoid replication loops?

Answer: A replicated transaction must be prevented from being recaptured and sent back to its origin. The exact method depends on GoldenGate mode, database, and topology. Integrated Oracle configurations can use database/GoldenGate metadata mechanisms to distinguish replicated transactions; other designs may require explicit tagging or filtering. Always test loop prevention during failover and bidirectional cutover scenarios.

68. How would you perform zero/near-zero downtime migration with GoldenGate?

Answer: Build and load the target, configure supplemental logging and capture, start CDC from a position aligned with the initial load, allow the target to catch up, validate data, then quiesce source writes during cutover. Wait for lag to reach zero, validate final transactions, redirect application connectivity, and keep a rollback plan until the target is accepted.

1. Build target
2. Initial load
3. Record/align SCN
4. Configure supplemental logging
5. Configure Extract
6. Configure Distribution Path
7. Configure Replicat
8. Start CDC from correct position
9. Catch up
10. Validate
11. Stop writes
12. Drain lag to zero
13. Final validation
14. Redirect application

69. Why is the SCN important during migration?

Answer: The target initial load represents a specific point in source history. GoldenGate CDC must start from a position that exactly matches that point. Starting too early can replay transactions already present in the target; starting too late can miss transactions. Correct SCN alignment is therefore fundamental to consistent instantiation.

70. Scenario: 10 TB Oracle database migration using GoldenGate. How would you design it?

Answer: Use a bulk data movement mechanism such as RMAN/backup/storage-based copy for the 10 TB initial load and use GoldenGate for change data capture during the copy and restore period. Start Integrated Extract on the source, distribute trails securely, and use an appropriately tuned Replicat on the target. Align CDC with the backup/restore SCN, monitor trail capacity throughout the long initial load, and validate before cutover.

```
SOURCE 10 TB DB
|
|-- RMAN/backup initial load -----> TARGET DB
|
Integrated Extract -> Trail -> Distribution -> WSS -> Receiver -> Trail -> Parallel/Integrated Replicat -> TARGET DB
```

Advanced Level 4 Incident & Leadership Scenarios

71. GoldenGate lag suddenly jumps from 5 seconds to 2 hours. How do you approach the incident?

Answer: Treat it as a pipeline incident. Determine exactly which component first stopped advancing: Extract, local trail distribution, network, Receiver, Replicat, or the target database. Correlate the start time with application batch jobs, large transactions, deployment changes, database patching, network events, storage latency, or process restarts. Restore the constrained stage first, then measure catch-up rate and forecast whether additional tuning is necessary.

Extract lag? -> Distribution lag? -> Receiver backlog? -> Replicat lag? -> Target DB waits?

72. What is your GoldenGate production health-check checklist?

Answer: Check INFO ALL, Extract/Replicat lag, statistics, heartbeat latency, Distribution Paths, local and remote trail space, trail retention/purge behavior, reports/discards, database sessions and waits, supplemental logging, credential health, certificate expiration, REST service status, and GoldenGate patch level. A Level 4 health check should also identify trends rather than only current status.

```
INFO ALL
LAG EXTRACT <name>
LAG REPLICAT <name>
STATS EXTRACT <name> TOTAL
STATS REPLICAT <name> TOTAL
```

73. What logs do you collect before raising an Oracle SR?

Answer: Collect GoldenGate report and error/event logs, process parameter files, INFO/DETAIL output, deployment and trail information, database alert/trace data, GoldenGate/database/OS versions, timestamps, exact error messages, recent changes, impact, restart attempts, and the last known good state. The objective is to give Support enough evidence to reproduce or isolate the failure without repeated information requests.

74. What is the difference between process lag and heartbeat lag?

Answer: Process lag measures the delay observed by an individual GoldenGate process relative to the records it is processing. Heartbeat lag follows a generated heartbeat transaction through the topology and therefore provides a better end-to-end view of replication latency. Use both because they answer different operational questions.

75. What would you expect from a Level 4 GoldenGate DBA?

Answer: A Level 4 DBA should independently design, implement, secure, tune, and troubleshoot GoldenGate. The role should cover MA installation and deployment design, TLS/mTLS, Extract/Replicat configuration, high-volume performance tuning, Logdump analysis, data reconciliation, zero-downtime migration, Data Guard and failover integration, HA/DR design, REST automation, upgrades/rollback, bidirectional replication, incident leadership, and clear root-cause analysis. The expectation is ownership of the complete replication service, not only process start/stop commands.

Interview tip: demonstrate a structured troubleshooting method, show the commands you would run, explain what each result means, and describe the safe corrective action and rollback path.

10 High-Value Scenario Questions to Practise

1. Replicat is running but lag is continuously increasing. How do you identify the bottleneck?
2. Integrated Extract is running but not capturing a particular table. What checks do you perform?
3. GoldenGate replication breaks following an Oracle Data Guard switchover. How do you recover it?
4. How would you migrate a 10 TB Oracle database with less than 15 minutes of downtime?
5. A Replicat encounters ORA-00001 on thousands of rows after initial load. What went wrong and how would you fix it?
6. The network is unavailable for six hours. Explain what happens at every GoldenGate layer and how you calculate required trail space.
7. How would you securely deploy GoldenGate Microservices across two data centres separated by firewalls?
8. How would you determine whether lag originates in Extract, Distribution Service, network, Receiver Service, Replicat, or the target database?
9. How would you design GoldenGate HA so that failure of the GoldenGate server itself does not stop replication for an extended period?
10. How do you upgrade GoldenGate Microservices with minimal replication interruption and provide a rollback plan?

Use the scenario-focused companion PDF for full step-by-step model answers to these ten questions.

Reference Notes

GoldenGate command syntax and feature availability can vary by release and database platform. In an interview, state the release you have worked with and confirm any release-specific syntax against Oracle documentation before production execution.

Relevant Oracle documentation areas: GoldenGate Microservices Architecture overview and components, AdminClient, Integrated Extract, Integrated/Parallel Replicat, heartbeat tables, BATCHSQL, trail/logdump, security/TLS, REST APIs, and current GoldenGate release documentation.