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Oracle GoldenGate Statement of Direction

June 2024

Purpose statement

This document provides an overview of the strategic product plans for GoldenGate products and related high availability products from Oracle. It is a continuation of the GoldenGate Statement of Direction provided since 2009, following the acquisition of GoldenGate Software and it is intended solely to help you assess the business benefits of investing in Oracle's high availability and data integration solutions.

Disclaimer

This document is for informational purposes only and is intended solely to assist you in planning for the implementation and upgrade of the product features described. It is not a commitment to deliver any material, code, or functionality, and should not be relied upon in making purchasing decisions. The development, release, and timing of any features or functionality described in this document remains at the sole discretion of Oracle. Due to the nature of the product architecture, it may not be possible to safely include all features described in this document without risking significant destabilization of the code.

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Introduction

In September 2009, Oracle completed the acquisition of GoldenGate Software, the leader in providing heterogeneous real time data across the enterprise for purposes of real time data integration, data replication, data streaming, high availability, and data center cost reduction. GoldenGate provides critical real time data needs for heterogeneous databases working with heterogeneous applications.

The GoldenGate technology relates to existing Oracle products and features, including Oracle Database Logminer, Oracle Streams and XStream APIs. This document clarifies Oracle's strategic intent regarding GoldenGate and related Oracle products.

High Availability Use Case

Oracle provides a comprehensive continuous availability solution for protecting against all types of planned and unplanned downtime. The following products are key components of Oracle's high availability solutions.

Oracle GoldenGate

Oracle GoldenGate delivers an enterprise-wide solution for all heterogeneous real time data access, streaming and delivery needs. By reading database logs, Oracle GoldenGate avoids impact to the source database and ensures reliable, transactionally consistent delivery of database transactions across wide area or local networks. With its flexible, modular architecture, Oracle GoldenGate solves a wide range of high availability challenges, including active-active deployments, data distribution for infrastructure cost reduction and high availability, and zero downtime migrations and upgrades.

Oracle GoldenGate is the strategic replication solution for Oracle Databases and for non-Oracle databases, with proven success in a wide range of demanding industries and mission critical use cases.

Oracle Active Data Guard

Oracle Data Guard provides disaster recovery (DR) and data availability for the Oracle Database, enabling very fast failover to a physical standby database in the event of a failure. Oracle Active Data Guard enables the physical standby database to be open for read-only traffic, and also used for fast incremental backups. Oracle Active Data Guard also provides transparent data protection by automatically repairing corrupted data blocks on the primary database using the valid data blocks from the physical standby database, and vice versa.

Oracle Active Data Guard continues to be the strategic disaster recovery and data protection solution for Oracle databases, ensuring the physical standby database remains synchronized with the primary database through synchronous or asynchronous transmission of redo blocks at very low latencies to ensure continuous availability.

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Using GoldenGate and Data Guard Together

Since GoldenGate 10g, a license to Oracle GoldenGate includes a license for Oracle Active Data Guard because these products offer advantages when used together. For example, a primary database may be protected using an Active Data Guard physical standby while at the same time, using Oracle GoldenGate it is possible to set up bi-directional replication configurations from this primary database to many other databases. These may be Oracle or non-Oracle databases configured in a hardware and OS platform that is different from that of the primary database. Enabling such a fully active, globally distributed and highly available configuration is one of the unique value propositions of implementing Oracle GoldenGate together with Oracle Active Data Guard.

There is no other solution available in the market that offers such flexibility and functionality.

Data Integration Use Case

Leading companies have recognized the importance of taking a strategic approach to data integration to reduce costs, enable business intelligence, and unlock operational efficiencies. Oracle offers a complete set of data integration solutions, led by the Oracle GoldenGate platform.

Oracle GoldenGate

As Oracle's solution for enterprise-wide heterogeneous real time data access and delivery needs, Oracle GoldenGate complements Oracle Data Integrator Enterprise Edition for data integration. By reading transaction logs, Oracle GoldenGate imposes minimal impact on transactional systems and maintains transactional integrity across databases. Oracle GoldenGate moves data with very low latencies in the most demanding operational and business intelligence environments.

Oracle GoldenGate is Oracle's strategic solution for real time data integration. It enables non-invasive operational reporting and other types of query offloading by maintaining a real-time replica that can be on a different database platform and less expensive hardware. In combination with Oracle Data Integrator Enterprise Edition for transformation, Oracle GoldenGate makes real time business intelligence possible, allowing companies to combine insight about the current state with historical context.

Stream Integration with Oracle GoldenGate for Big Data

Beginning with Oracle GoldenGate for Big Data 12.3, the Oracle Stream Analytics capabilities were included with GoldenGate. Oracle Stream Analytics provides a low-code stream processing capability for high-speed, low-latency data transformations (ie; Continuous ETL) when the data events come from GoldenGate. The tool also provides for rich integration with Machine Learning (ML), AI and direct support for time series analysis. These integration and analytic capabilities provide a complete real-time data transformation capability for GoldenGate for Big Data Targets and GoldenGate for Distributed Applications and Analytics customers.

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Batch Processing

GoldenGate provides an integrated feature for initializing databases (ie: Initial Load Replicat) that can perform a batch load to populate databases and other data stores. This initial load capability is not a solution for high volume data transformations; for high volume data transformations in real-time we recommend stream integration (*see section above*).

For large scale batch ETL processing in the Oracle ecosystem, there are a number of embedded ETL solutions available. For example, Oracle Data Integrator Enterprise Edition for enterprise IT use cases, Oracle Data Sync for Oracle Analytics, and OCI Data Integration for Oracle Cloud Infrastructure. Oracle GoldenGate data replication is complementary may be used in combination with any Oracle or 3rd party batch ETL processing solution.

GoldenGate Strategic Architecture

GoldenGate software has been supporting world-class enterprise use cases since 1998, as part of the ongoing investments in GoldenGate there have been important updates and evolutions to the software architecture.

Integrated Extract for Oracle Database

Since GoldenGate 11.2.1, the Integrated Extract approach has been the strategic path forward for GoldenGate, it utilizes APIs that run inside the Oracle Database engine to ensure the highest levels of performance and breadth of features.

Microservices Architecture Components

Beginning in 2017, with launch of GoldenGate 12.3, the core architecture of GoldenGate began to shift focus to the newer GoldenGate Microservice Architecture. GoldenGate Microservices have been developed for a Cloud-first, self-service architecture – they are more secure, easier to administer, simpler to upgrade and the Microservices Architecture is the strategic focus going forward for the GoldenGate platform.

GoldenGate Microservices Architecture is interoperable with GoldenGate Classic Architecture, so in most cases a phased, step-by-step transition is possible. Oracle strongly encourages all existing GoldenGate customers to begin their transition to the GoldenGate Microservices Architecture as soon as feasible.

Monitoring GoldenGate

With the future of GoldenGate being focused on Microservices Architecture, there are newer and more modern approaches to graphical user interfaces and monitoring that will be focused on. For example, native REST-based APIs with embedded graphics libraries and complete JSON support are the go-forward investment approach.

GoldenGate Performance Metrics Server, Oracle Enterprise Manager and Oracle Management Cloud all support monitoring GoldenGate using the newest Microservices APIs.

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Oracle XStream API

Beginning in Oracle Database 11.2, the XStream API has been made broadly available for low-level transaction replication in/out of the database. This is suitable for developers who wish to utilize low-level, high-speed access directly to database change logs and who also wish to manage transaction semantic themselves or in their own software programs. Using the XStream APIs requires a license for the Oracle GoldenGate product.

Ongoing Non-Oracle Data Store Support

Oracle GoldenGate is optimized for a wide range of databases to provide the best performance for capturing and delivering data in non-Oracle environments.

At its core, GoldenGate has been designed to abstract the differences between databases, whether open systems, relational, legacy, or open source.

Support for IBM databases, Sybase, MySQL, Postgres, MariaDB, Amazon Aurora and other non-Oracle systems are an integral part of the GoldenGate strategy, Oracle will continue to invest in this kind of broad heterogeneous database support to ensure Oracle GoldenGate can be the single enterprise-wide infrastructure for all real time data distribution needs.

Microsoft SQL Server Clarifications

As part of its commitment to heterogeneity Oracle GoldenGate is designed to provide optimized support for SQL Server databases. In addition to delivering into SQL Server, Oracle GoldenGate has supported Capture from SQL Server via direct access to its transaction log. Unfortunately, Microsoft decided to end the program under which Oracle can read the SQL Server transaction log using private APIs. As a result, Oracle may no longer license GoldenGate for SQL Server "Classic Extract" to new customers who had not purchased an Oracle GoldenGate for Non-Oracle license prior to June 1, 2016.

For all new customers since June 1, 2016, a new GoldenGate for SQL Server "CDC Extract" is available. This newer CDC Extract method utilizes Microsoft's Change Data Capture features to stage DML operations, and therefore the runtime characteristics of GoldenGate for SQL Server (e.g. object and data type support, process overhead, and performance) are now more dependent and integrated with the SQL Server engine itself. Going forward, this will be the preferred approach for additional new functionality for GoldenGate with Microsoft SQL Server. The Oracle commitment to heterogeneity in database platform support is unchanged and the Oracle GoldenGate team will continue to invest accordingly in our support for SQL Server.

Hewlett Packard Enterprise NonStop Clarifications

GoldenGate Software had its origins on the HPE NonStop platform, and many customers running HPE NonStop systems have standardized on GoldenGate for high availability. Oracle will also continue to innovate and enhance the GoldenGate technology to expand to broader use cases with HPE Nonstop platforms. Beginning with Oracle GoldenGate 12.2 the HPE Nonstop systems

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based on x86-architecture have been fully certified and supported by GoldenGate.

Due to decline in overall market demand, general purpose GoldenGate support for HPE Nonstop SQL/MX Database will be terminal at GoldenGate 21.12.0.0.0. If the SQL/MX customer has special circumstances or if the use case is in regards to a Migration scenario, please refer to the Database Migrations section of this document for details about how to handle your support requirements.

Teradata Clarifications

For over 20 years, the GoldenGate technology has had world class integration for data replication to Teradata data warehouses. Oracle has committed to support these joint customers and to continue to invest in the GoldenGate technology for Teradata deployments. For clarification on GoldenGate Teradata Replication Services (for extract only) see section below "*Extract (Change Capture) for Teradata Access Manager*".

Investments in Cloud, Big Data, Messaging, and NoSQL

Oracle GoldenGate fully supports many non-Oracle Cloud vendors such as Amazon, Microsoft and Google, as well as Big Data, Messaging, and NoSQL technologies such as Object Storage, JMS, HDFS, Hive, HBase, Kafka, Cassandra and other non-relational data stores. Big Data, Messaging, and NoSQL are strategic areas for Oracle and we will continue to invest into a broad range of Big Data technologies for helping enterprises innovate with data, lower their total cost of ownership and improve productivity.

Ongoing Applications Support

GoldenGate Software has fostered strong and long-standing partnerships with some key application vendors, as well as establishing unique and high-value integrations with Oracle Applications (on-premise and SaaS Cloud).

As an important part of the core product strategy, Oracle GoldenGate will continue to support existing application partnerships and will seek to expand into new Oracle and third party applications.

Oracle Applications

Oracle recognizes the value of the GoldenGate technology for helping applications customers avoid downtime and for sharing the critical data assets of those applications for real time business intelligence. Today, Oracle customers use GoldenGate for on premise ERP/CRM application areas as well as many Cloud/SaaS based integrations for ERP clouds and Industry Solutions.

ACI Worldwide, Amdocs and Cerner

For more than 20 years, ACI Worldwide (BASE24™), Amdocs and Cerner customers have trusted GoldenGate for data high availability and analytics data integration. Oracle intends to continue these successful partnerships and will continue to support existing customers.

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Legacy Replication Features

Oracle Streams

Oracle Streams was deprecated in Oracle Database 12c (12.1) and Oracle GoldenGate is the strategic direction for all replication needs. Oracle Database 18c was the terminal release for Oracle Streams and it has been de-supported from Oracle Database 19 onwards. For further information on deprecation of Oracle Streams, please read the following content.

GoldenGate Classic Extract

At the time of acquisition in 2009, the only supported GoldenGate capture process (for Oracle Database) would read transactions directly from the physical redo logs, this is called Classic Extract. From GoldenGate 18.1.0 onward, the Classic Extract has been deprecated and GoldenGate 19.1 is the final supported release of Classic Capture. Oracle strongly encourages all existing GoldenGate customers to begin their transition to the GoldenGate Integrated Extract process as soon as feasible.

GoldenGate Classic Architecture Components

With the release Oracle GoldenGate 21.1 in April 2021, the GoldenGate classic architecture components such as GoldenGate Manager, GoldenGate Command Line Interface, and GoldenGate Extract Pumps have been deprecated. Starting with Oracle GoldenGate 23.4 in May 2024, the legacy classic components are no longer available or supported. The legacy classic components will continue to be supported with standard Oracle Lifetime Support policies for each release that they are made available.

GoldenGate Microservices Architecture is interoperable with GoldenGate Classic Architecture, so a phased, step-by-step transition is possible.

GoldenGate Monitor and Studio

Originally developed as tooling to support the GoldenGate Classic Architecture, Monitor provides administrative monitoring for non-Oracle platforms and Studio provides a graphical development environment (IDE).

GoldenGate Monitor and GoldenGate Studio will continue to be supported with standard Oracle Support policies for each release that they are made available. In the future, Monitor and Studio may be marked as deprecated and may eventually no longer be available in future GoldenGate releases.

GoldenGate Extract for Teradata Access Manager

Oracle GoldenGate Teradata Replication Services has supported capture from Teradata via the jointly-developed Teradata Access Module (TAM), which is a key requirement for Oracle GoldenGate's ability to capture from Teradata. Oracle GoldenGate had supported real-time change data capture for Teradata 14.0, 14.10 and 15.10 using TAM 13.10.

Unfortunately, Teradata has decided to stop the support for Teradata Access Module beyond version 13.10. As a result, Oracle GoldenGate 12.1.2 was the terminal release for capturing changed data from Teradata. Oracle will continue

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to work closely with Teradata to optimize Oracle GoldenGate to deliver to Teradata as a replication target.

If the Teradata use case is in regard to a Migration scenario, please refer to the Database Migrations section of this document.

Informix Database

In April 2017, IBM chose to outsource the Development, Support and Marketing for Informix to the Indian conglomerate HCL Technologies. Subsequently, market demand for GoldenGate use cases with Informix Database (11.7, 12.10, 14.10) has primarily been in support of DB migrations. As such, general purpose support for Informix will be terminal at GoldenGate 12.2.0.2.

If the Informix use case is in regard to a Migration scenario, please refer to the Database Migrations section of this document.

Application Adapters: Flat File and JMS Adapter

Originally the Flat File and JMS Adapters were provided as part of the GoldenGate Application Adapter product. Beginning in GoldenGate 12.3, all the Flat File, JMS (and Java) capabilities have been moved into the GoldenGate for Big Data product.

Going forward, GoldenGate for Big Data Targets and GoldenGate for Distributed Applications and Analytics will be the strategic product packaging for all Flat File, JMS (and Java) handler capabilities. Terminal release for Flat File, JMS (and Java) from within the GoldenGate Application Adapters will be at the 12.2 release.

Migrating Out-of-Support Databases

Occasionally customers are in the situation where they have databases that are very old and may be out of support for either the database policies or the GoldenGate policies. When these situations arise, Oracle may be able to work pro-actively with customers to provide limited support arrangements during the time period of a database migration.

For example, if a customer has a very old version of an Oracle database (eg; 9i / 10g) and they would like to make use of Oracle GoldenGate to perform a low-downtime migration into a newer fully supported Oracle database, it may occasionally be possible for the GoldenGate team to provide limited support for GoldenGate software to aid in that migration, for the duration of the migration period.

Likewise, if there are heterogeneous source databases that are no longer in a valid support period for GoldenGate (eg; Informix , SQL/MX or older versions of any database), it may occasionally be possible for the GoldenGate team to provide limited support for GoldenGate software that is intended to aid in a migration use case, for the duration of the migration period.

Oracle encourages any customer who may be in this situation to contact their Oracle account team for more information about this option.

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Conclusion

Oracle GoldenGate is a business-critical infrastructure in every customer's IT architecture to replicate data in real-time from both Oracle and Non-Oracle system into heterogenous targets. Support and optimization for Oracle and non-Oracle data stores remains a critical part of Oracle's strategy with the Oracle GoldenGate product. This includes broad coverage for non-Oracle databases, cloud providers, big data technologies, messaging systems and applications.

Oracle GoldenGate will continue to support third party applications and will become even more valuable to partner applications as the need for data continuity and real-time analytics increases.

Oracle is committed to the success of GoldenGate customers and will continue to pursue our collective success.

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