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FUSION MIDDLEWARE
GOLDENGATE

ORACLE GOLDENGATE 11*g*

REAL-TIME ACCESS TO REAL-TIME
INFORMATION
KEY FEATURES
High-performance data replication
Heterogeneous sources and targets
Conflict detection and resolution
Real-time and deferred apply
Event marker infrastructure
Flexible topology support
Data encryption
ETL and JMS integration
Routing and compression
Automated memory management
Initial load capability

KEY BENEFITS
Enhance decision-making with real-time
    data
Access mission-critical applications
    without disruption
Increase IT flexibility with heterogeneous
    infrastructure support
Enable high-performance data replication
    with minimal impact on production
    systems
Ensure transactional integrity across
    heterogeneous source and target
    systems

To succeed in today's competitive environment, you need real-time information. This requires a platform that can unite information from disparate systems across your enterprise without compromising availability and performance. Oracle GoldenGate 11g is a high-performance software application for real-time transactional change data capture, transformation, and delivery, offering log-based bidirectional data replication. The application enables you to ensure that your critical systems are operational 24/7, and the associated data is distributed across the enterprise to optimize decision-making.

Real-Time Access to Real-Time Information

Business-critical systems must offer the highest availability, ensure fast and easy access to the right data, and quickly adapt to changing business and IT demands. With transaction volume increasing at an exponential rate as more and more business processes are conducted online, many organizations need a better solution to collect and deliver immediate access to the tremendous amount of enterprise data.

Oracle GoldenGate 11*g* provides real-time capture, transformation, routing, and delivery of database transactions across heterogeneous systems. The software facilitates high-performance, low-impact data movement with subsecond latency to a wide variety of databases and platforms while maintaining transaction integrity.

What's New in Oracle GoldenGate 11*g* Release 2?

Oracle GoldenGate 11*g* Release 2 offers tighter integration with Oracle Database, support for additional heterogeneous systems and global deployments, improved performance, security, and flexibility. Oracle GoldenGate 11*g*R2 's new features include:

- Integrated Capture to support all Oracle Database and Oracle Exadata compression types, as well as XML Object Relational, XML Binary data types

- Intelligent Conflict Detection and Resolution for Active-Active and Multi-Master implementations

- Expanded support for global deployments, including support for multi-byte and character set conversions

- Improved security with added support for Federal Information Protection Standard (FIPS)

- Enhanced manageability and monitoring utilizing Oracle Enterprise Manager

- Increased extensibility by taking defined actions based on an event record in the transaction log or in the Trail file.

- Expanded heterogeneity via:
    - Log-based capture from IBM DB2 on i-Series (AS/400)

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-     o   Delivery to PostgreSQL
  - o   New data types supported for Microsoft SQL Server, Sybase, and MySQL
  - o   Teradata multi-byte DDL support
  - o   IBM z/OS improved initial load performance
- Certification for near zero downtime upgrade for Oracle Communications Billing and Revenue Management applications

Using Oracle GoldenGate 11gR2 customers can reduce IT costs and risk, while achieving a faster time to value for operational and analytical systems. Oracle GoldenGate leverages a component-based architecture to help companies address the continuous availability and real-time integration demands of enterprise systems.

Maintain Continuous Availability to Critical Systems

Oracle GoldenGate 11gR2 helps organizations eliminate the downtime caused by both unplanned and planned outages, and improve system performance and scalability. The software can be configured to support the following scenarios:

o **Zero-downtime operations.** Enable uninterrupted business operations during system upgrade, migration, and maintenance activities.

o **Disaster recovery and data protection.** Create and maintain an immediate failover with up-to-the-minute data to minimize recovery time for mission-critical systems—deploy with Oracle Database across database versions or operating systems, or in non-Oracle environments.

o **Data distribution.** Synchronize data for distributed applications in real time across geographies for reliable access to timely data.

o **Query offloading.** Ensure high performance for production systems while still supporting necessary read-only activities by replicating data between heterogeneous sources and targets.

Enable Real-Time Data Integration Across the Enterprise

Oracle GoldenGate 11gR2 captures and delivers real-time change data to data warehouses, operational data stores, reporting systems, and other online transaction processing (OLTP) databases with minimal performance impact. This access to real-time information enables improved business insight.

o **Real-time data warehousing.** Provide continuous, real-time capture and delivery of the most-recent change data between OLTP systems and the data warehouse. Oracle GoldenGate integrates easily with Oracle Data Integrator Enterprise Edition 11g and other extract, transform, and load (ETL) solutions. Oracle GoldenGate 11g is certified to capture from and deliver to Oracle Exadata Storage Server to enable real-time data warehousing or data consolidation solutions.

o **Operational reporting.** Offload reporting activity from production databases to lower-cost secondary systems with current data for real-time reporting. Oracle GoldenGate 11g is certified to support major Oracle applications, including Oracle E-Business Suite, JD

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Edwards, PeopleSoft and Siebel CRM, for operational reporting solutions.

o **Operational data integration.** Integrate operational data between OLTP systems in real time. Enable service-oriented architectures, including Oracle SOA Suite, to operate with real-time data by publishing changed data via Java Message Service (JMS) using Oracle GoldenGate Application Adapters.

Robust Modular Architecture

The Oracle GoldenGate software architecture is comprised of three primary components: Capture, Trail Files, and Delivery. This modular approach allows each component to perform its tasks independently of the others, accelerating data replication and ensuring data integrity.
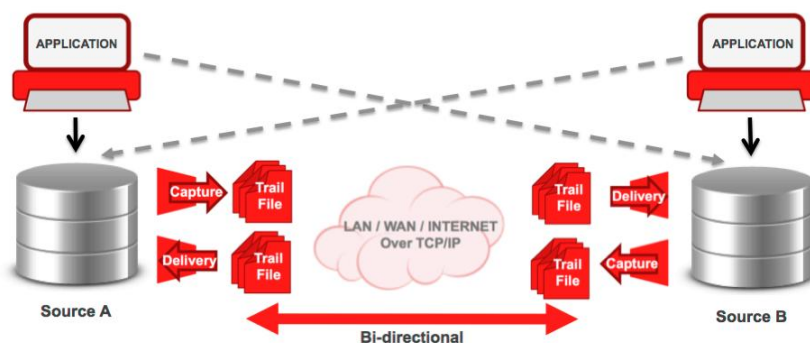
Figure 1: Oracle GoldenGate leverages a component-based architecture to optimize real-time information access and availability.

Capture

Oracle GoldenGate's Capture module resides on the source database and looks for new transactional activity. The Capture module reads the result of insert, update, and delete operations by directly accessing the database transaction (redo) logs, and then immediately captures new and changed data for distribution.

The Capture module only moves committed transactions—filtering out intermediate activities and rolled-back operations—which not only reduces infrastructure load but also eliminates potential data inconsistencies. Further optimization is achieved through transaction grouping and optional compression features.

Oracle GoldenGate 11*g* can also capture messages from JMS messaging systems to deliver to heterogeneous databases in real time for scalable and reliable data distribution.

With the new Integrated Capture for Oracle Database, Oracle GoldenGate now supports all flavors of compression used by Oracle Database and Oracle Exadata, including support for Exadata Hybrid Columnar Compression (EHCC), OLTP, and Segment compression. Integrated Capture also adds distributed transaction support for XA (distributed) and PDML (parallel DML) transactions on Oracle RAC. Finally, XML Object Relational and XML Binary data types are supported along with LOB full and partial reads (selective update) from the redo log.

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Trail Files

Oracle GoldenGate's Trail Files contain the database operations for the changed data in a transportable, platform-independent data format. Trail Files are a critical component within Oracle GoldenGate's optimized queuing mechanism. They reside on the source and/or target server but exist outside of the database to ensure heterogeneity, improved reliability, and minimal data loss. This architecture minimizes impact to the source system because no additional tables or queries to the database are required to support the data capture process. The Capture module reads once, and then immediately moves the captured data to the external Trail File for delivery to the target(s).

In the event of an outage at the source and/or target, the Trail Files contain the most-recent data up to the point of the outage, and the data is applied once the systems are online again.

Delivery

Oracle GoldenGate's Delivery module takes the changed data from the latest Trail File and applies it to the target database using native SQL for the appropriate relational database management system. The Delivery module applies each transaction in the same order as it was committed and within the same transactional context as at the source, enabling consistency and referential integrity at the target. To enhance IT flexibility, captured data can also be delivered to a Java Message Service destination or as a flat file using Oracle GoldenGate Application Adapters.

Key Features and Benefits

Oracle GoldenGate 11*g*R2 provides the following features and benefits that enable you to achieve real-time data integration and continuous availability for mission-critical systems:

Real-time data. Immediately captures, routes, transforms, and delivers transactional data to other systems with subsecond latency. Improves organizational decision-making through enterprise-wide visibility into accurate, up-to-date information.

Heterogeneous support. Supports heterogeneous databases and platforms to increase IT flexibility. Extracts data from existing IT investments and lowers your total cost of ownership while unifying data from all enterprise systems.

Reliability. Delivers all committed records to the target, even in the event of network outages. Moves data without requiring system interruption or outage windows.

High performance with low impact. Moves thousands of transactions per second with negligible impact on source and target systems. Enables to access critical information in real time without bogging down production systems.

Transaction integrity. Maintains transaction commit boundaries and atomicity, consistency, isolation, and durability (ACID) properties as transactions are moved between source and target systems. Ensures data consistency and referential integrity across multiple masters, back-up systems, and reporting databases.

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Integration. Integrates with Oracle Data Integrator Enterprise Edition and complements other ETL solutions. Via Oracle GoldenGate Application Adapters, it allows to capture from, or deliver to, Java Message Service–based messaging solutions such as Oracle WebLogic.

Flexible topology support. Moves data in one-source-to-one-target, one-to-many, many-to-one, many-to-many, cascading, and bidirectional configurations.

Conflict detection and resolution. Enables conflict detection and resolution in multi-master configurations where two systems can modify separate instances of the same table.

Event based infrastructure. Triggers immediate actions based on specific database operations captured and stored in Trail Files.

Routing and compression. Utilizes TCP/IP to send data and eliminate geographical distance constraints. Applies additional compression to the data as it is routed.

Data encryption. Securely transmits data for domestic and international applications with variable key length encryption.

Deferred apply. Applies data immediately or at a deferred time chosen by the user, without losing transaction integrity.

Automated memory management. Automatically adjusts transaction memory based on the size and number of transactions being capturing.

Bounded Recovery. Persists uncommitted operations to disk to enable fast and simple data recovery for long running transactions in the event that the replication process is interrupted.

Conclusion

Oracle GoldenGate 11gR2 helps organizations harness the value of their IT investments and improve business operations by providing continuous access to mission-critical information in real time. With support for a wide array of continuous availability, disaster tolerance, and data integration scenarios, the software provides a modular foundation that easily scales to address the high-volume, low-impact data integration challenges faced by enterprises today.

Contact Us

For more information about Oracle GoldenGate visit oracle.com or call +1.800.ORACLE1 to speak to an Oracle representative.

Oracle is committed to developing practices and products that help protect the environment

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