



# Replicate Data Between Environments

Oracle GoldenGate 12c

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Oracle Public Sector  
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## Safe Harbor Statement

The following is intended to outline our general product direction. It is intended for information purposes only, and may not be incorporated into any contract. 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 for Oracle's products remains at the sole discretion of Oracle.

The logo is a red, shield-shaped emblem with a white outline and six rounded protrusions at the corners. It is centered on a background of light blue rays radiating from the center. The text is white and stacked vertically within the shield.

ORACLE®  
**DATA**  
**INTEGRATION**  
PLATFORM



# Program Agenda

- 1 Oracle GoldenGate Overview
- 2 Oracle GoldenGate 12.2
- 3 Oracle GoldenGate for Big Data
- 4 Oracle GoldenGate Foundation Suite
- 5 Oracle GoldenGate Cloud Service

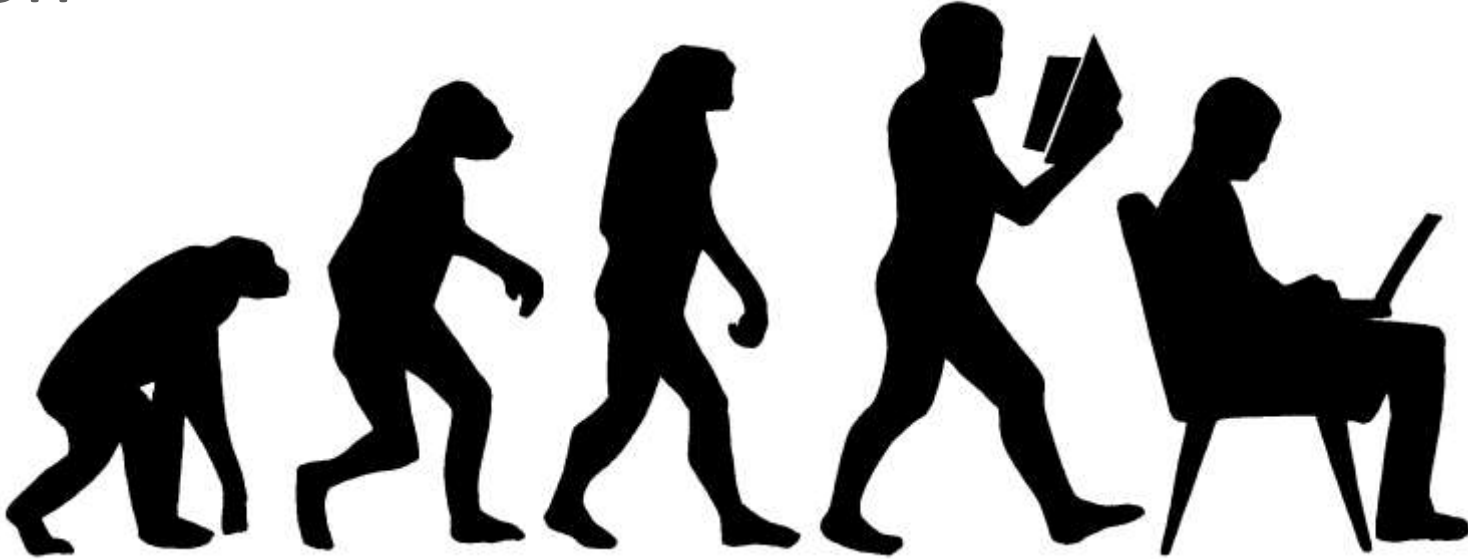


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# Evolution



Evolution of Oracle GoldenGate Platform (20 Years)

Introduced world class  
Transactional Data  
Management Solution

Performance, Ease of Use,  
Heterogeneity

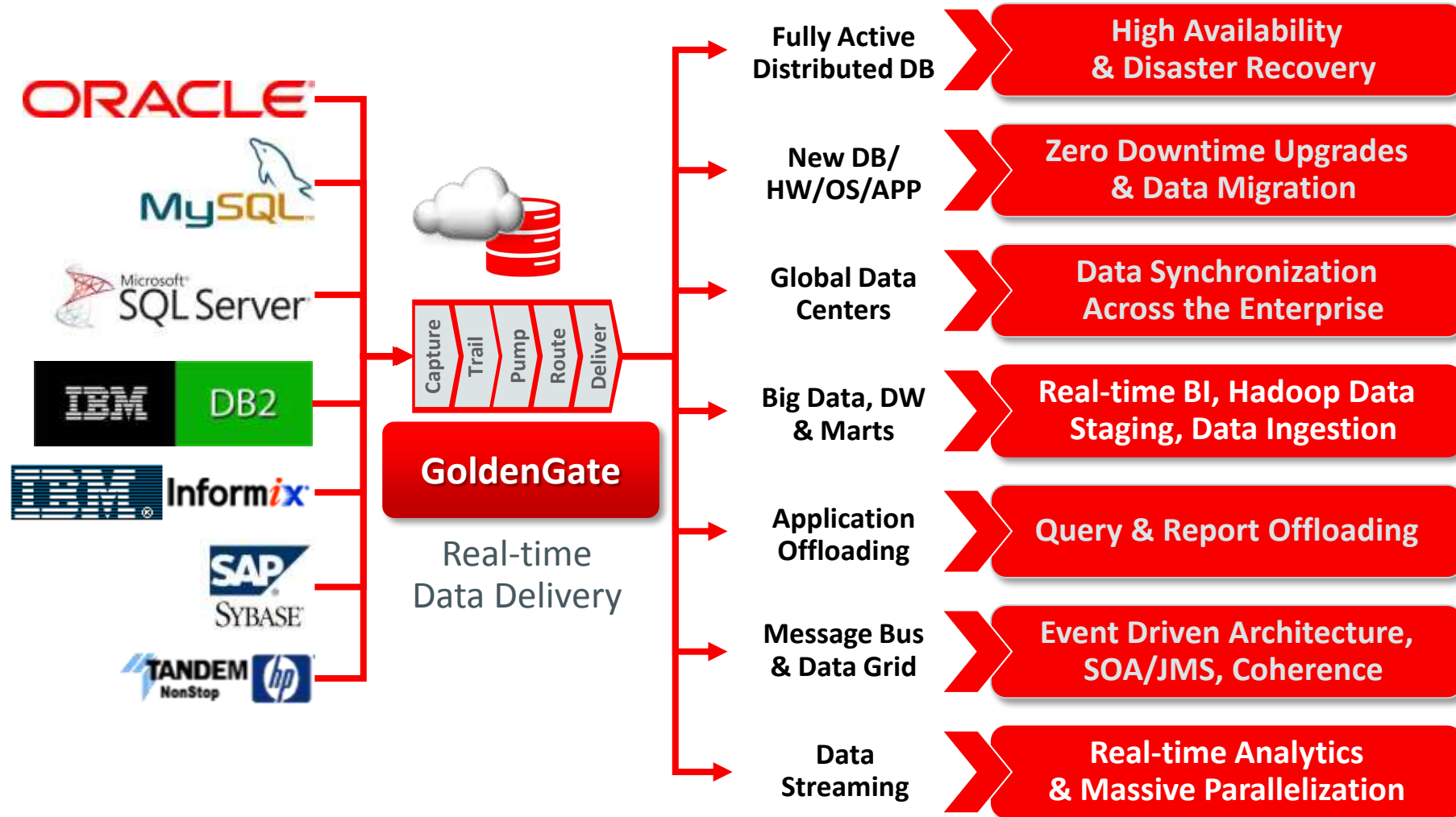
Usability, Manageability,  
Cloud and Big Data

**IT GETS BETTER**



# Oracle GoldenGate

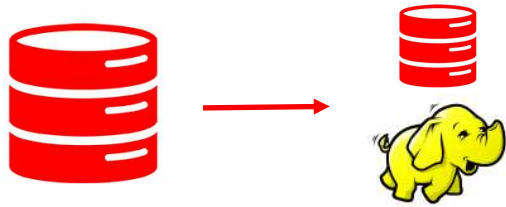
## Use cases



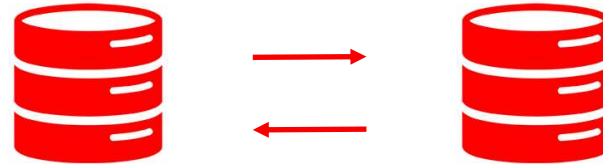
# Oracle GoldenGate Flexible Deployment Models



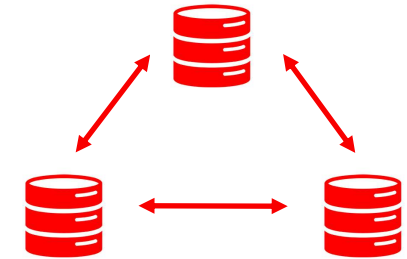
## Operational Reporting



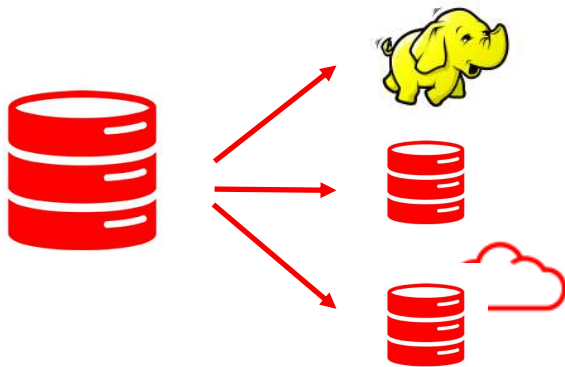
## Migrations, Continuous Availability



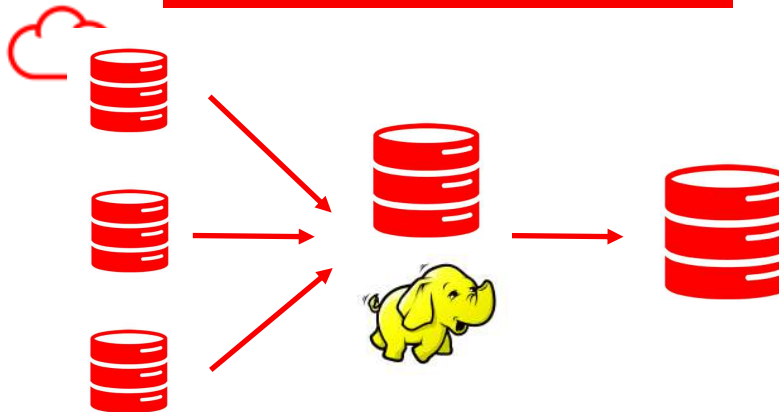
## Load Balancing



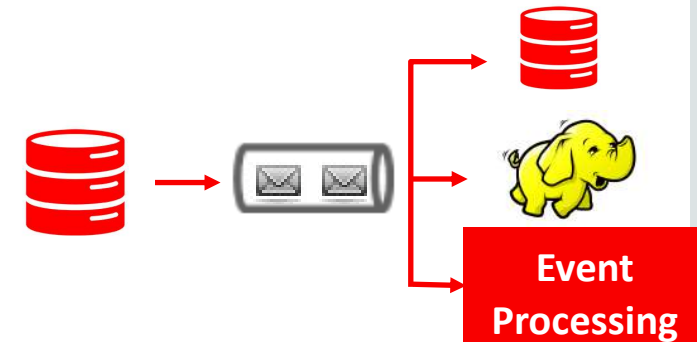
## Information Hubs



## Real-time Data Warehousing

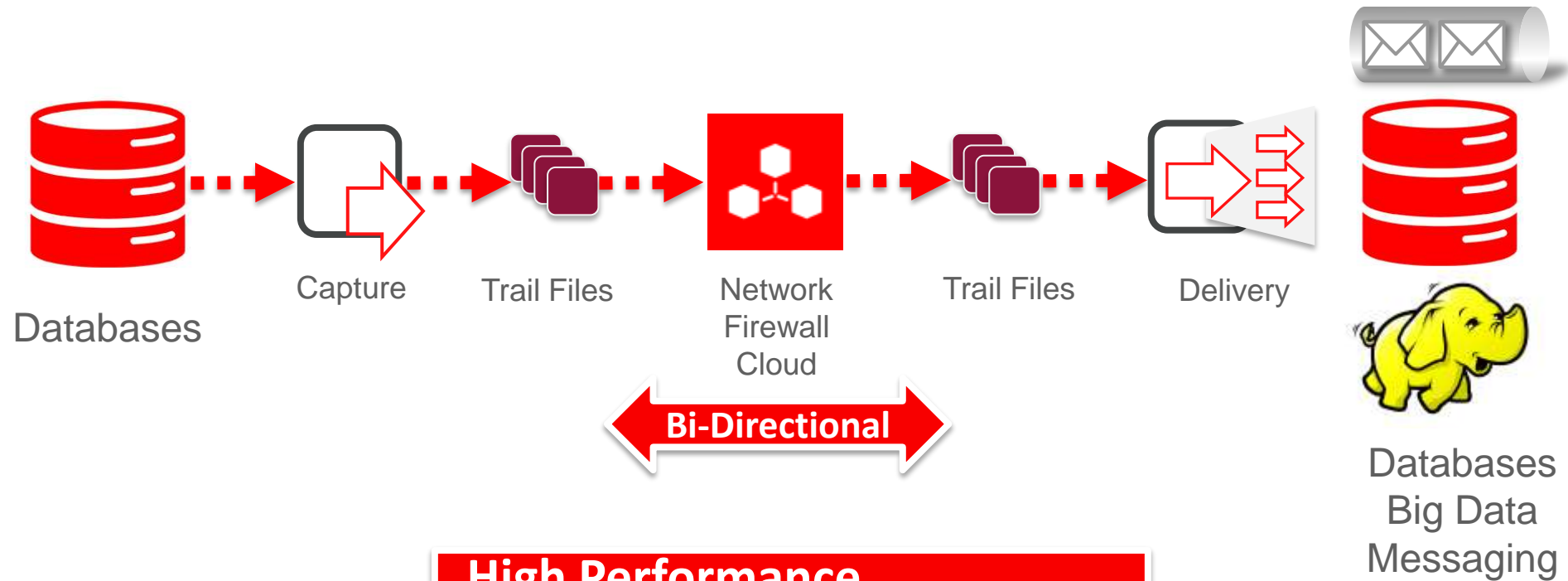


## Streaming Analytics





# Oracle GoldenGate Modular Architecture



**High Performance**  
**Low Impact and Non-Intrusive**  
**Flexible and Heterogeneous**  
**Resilient and FIPS Secure**  
**Big Data and Cloud Ready**



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# Oracle GoldenGate 12.1

## **Optimized for Oracle Database 12c**

Multitenant and Cloud-based Real-Time Replication

## **Integrated Delivery for the Oracle Database**

Leveraging lightweight Streaming API built Exclusively for Oracle GoldenGate

## **Coordinated Delivery for All Databases**

Orchestrates the High-Speed Apply Processes & Simplifies Setup and Management

## **Improved Ease of Use**

Automatic Discard File, Enhanced Debugging, and Schema Wildcarding

## **Expanded Heterogeneity**

12c Brings Support for New Databases and Enhancements to Existing Supported Platforms

## **Enhanced High Availability**

Integration with Data Guard FSFO for Automated & Transparent failover of Components

## **Tighter Security**

Integration with the Oracle Credential Store and Oracle Wallet for encrypted user details

## **Expanded Oracle Application and Technology Support**

Active/Active ATG, Low Downtime E-Business Suite Migrations and Coherence Integration

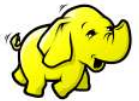


## Business Goals for Oracle GoldenGate 12.2

**Usability**

**Manageability**

**Improved  
Performance**



**Optimized for Big Data and Cloud**



# Oracle GoldenGate 12.2

## Metadata in Trail (Goodbye SOURCEDEFS)

Self Describing Trail files for Simplified User Experience

## Parameter Simplification

Verify run-time Parameters and Parameter Check Utility for Productivity and Operational Simplicity

## Automatic Heartbeat

Real-time end-to-end replication lag Operational Ease of Use

## Big Data Support Out of the Box

Brand new Replicat for Big Data targets to enable seamless integration with Big Data

## Expanded Heterogeneity

Brings Support for New Databases and Enhancements to Existing Supported Platforms

## Cloud Ready

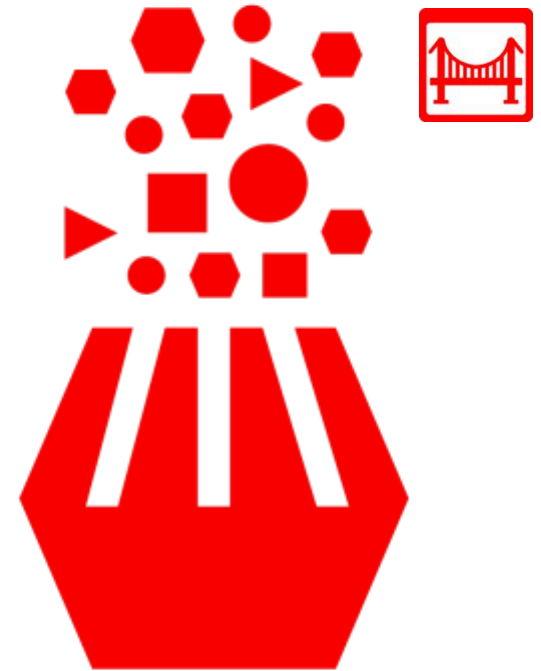
GoldenGate Cloud Service

## Enhanced Monitoring and Performance

New Metrics for Diagnostics and Reduced CPU Usage for Extract and Replicat

## Expanded Oracle Support

Invisible Column support, Datapump and Clusterware Integration





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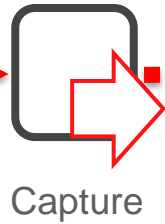


# Oracle GoldenGate for Big Data 12.2

**GoldenGate  
for Big Data**



Heterogeneous  
Databases



Capture



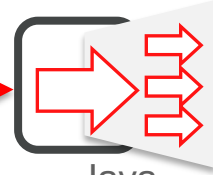
Trail Files



Network  
Firewall  
Cloud



Trail Files



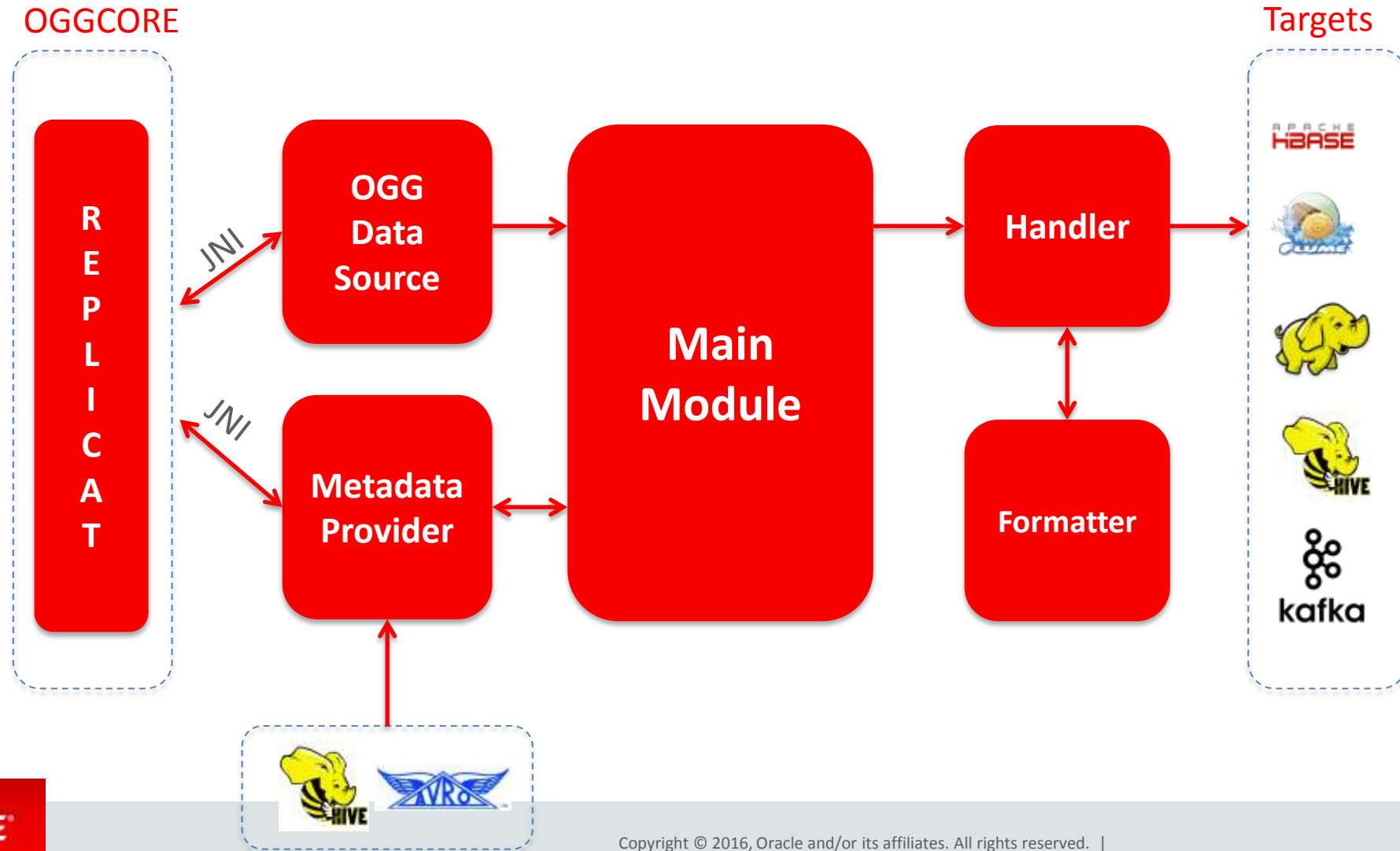
Java  
enabled  
Replicat



- Flume
- HBASE
- HDFS
- Hive
- Kafka
- NoSQL



# OGG for Big Data – Java Module (v12.2.x)





# Oracle GoldenGate for Big Data 12.2

## Dedicated Replicat

Java Enabled Replicat for seamless end-to-end Big Data Integration

## Declarative Design

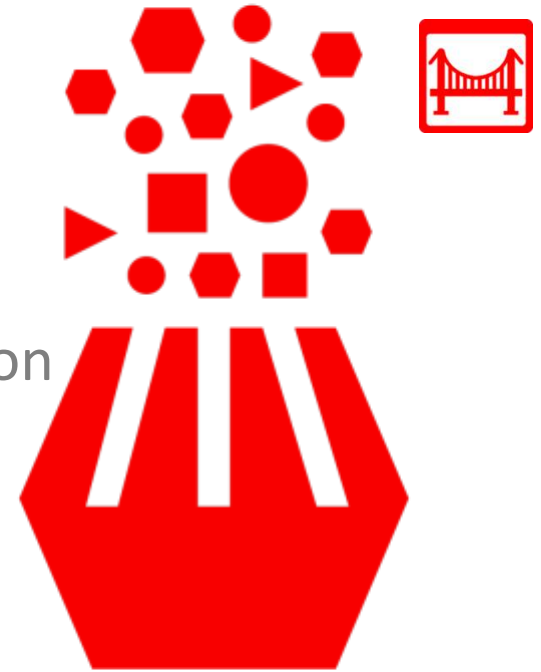
No hand coding of Java to simplify mappings

## Broad Target Type Support

Supports Hbase, Hive, HDFS, Flume and Kafka OOTB but can be easily extended

## Extensible and Customizable format support

Supports AVRO, JSON and XML OOTB but can easily be customized





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# Oracle GoldenGate Foundation Suite



## OGGFS - New Package

- Oracle GoldenGate Foundation Suite includes:
  1. OGG Studio - Only way to purchase OGG Studio
  2. OGG Veridata
  3. OGG Management Pack (EM Plug-in, Monitor, Director)
- Previous purchase of 2 & 3 can be used toward OGGFS upon approval

# (OGGFS) Oracle GoldenGate Studio

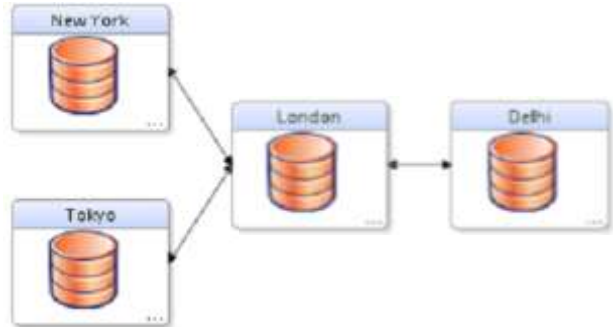


We Want to Help You Make Your Real-Time Enterprise a Reality

- Improve IT productivity by reducing the time to design and deploy new replication solutions.
- Best practice wizards with templates and auto mapping make real-time data integration easier to deploy throughout the enterprise.
- Allows development, QA and production teams to work off of the same page ensuring continuity.
- All changes and history are stored securely in a central database repository.

# GoldenGate Studio

Design Once; Deploy to Many

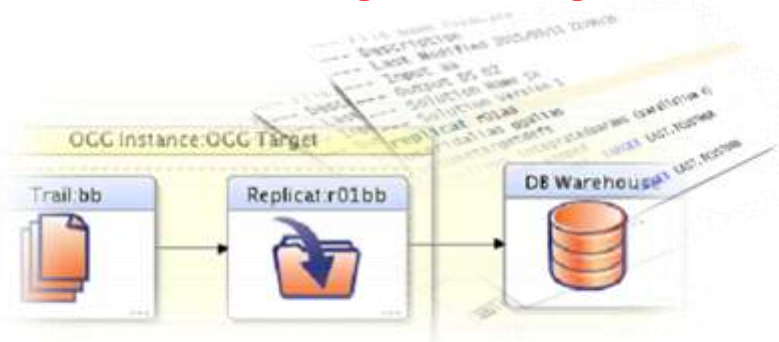
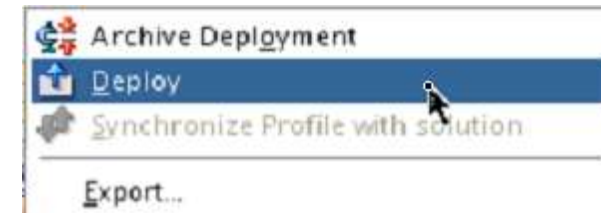


**Design**

Target	Mapped From
WEST	-
AABC	AABC.ZIFAE.UMCONDITION
ADR1252	ADR1252
AGR_1251	AGR_1251



**Deploy**

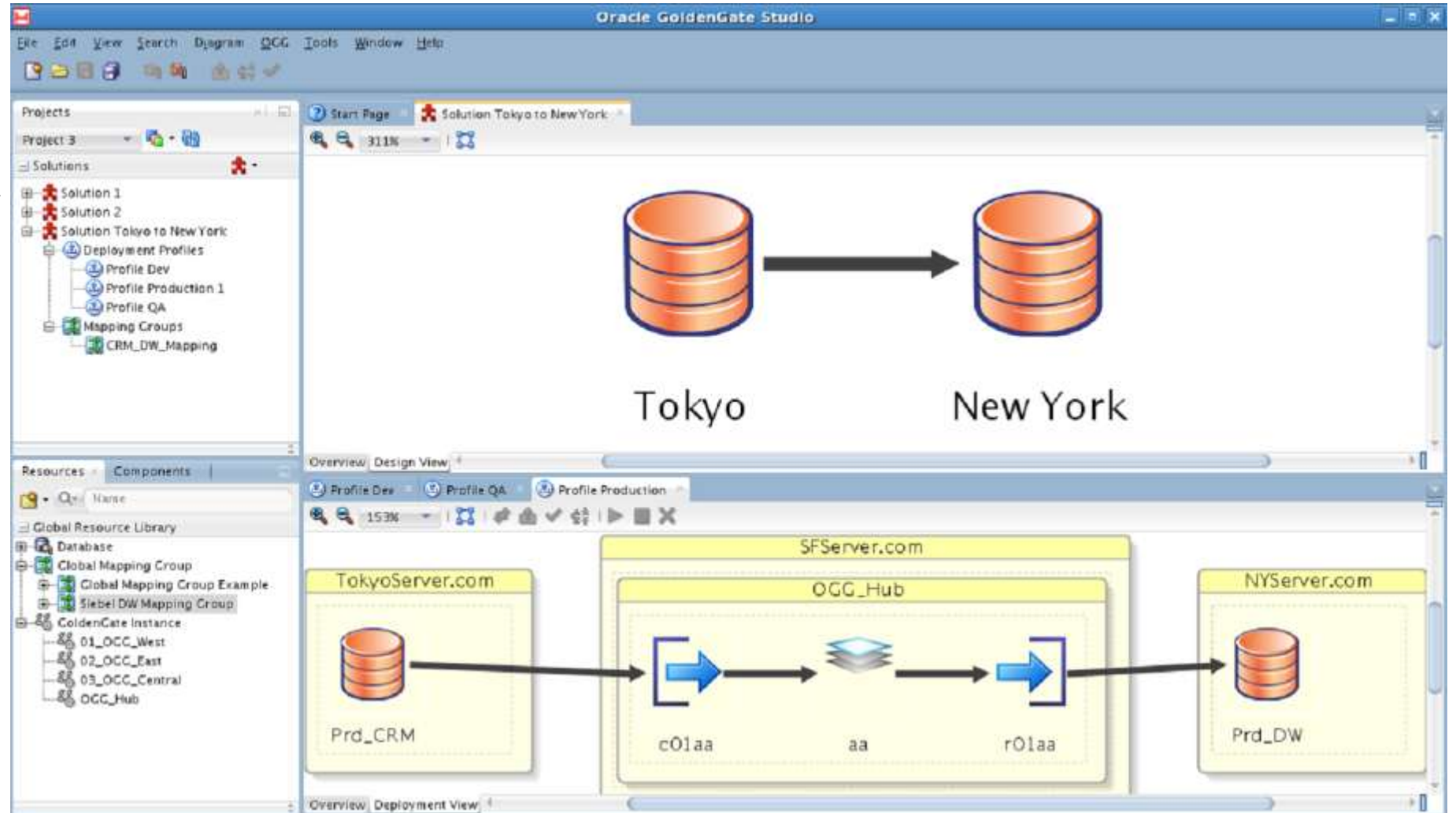


# Oracle GoldenGate Studio



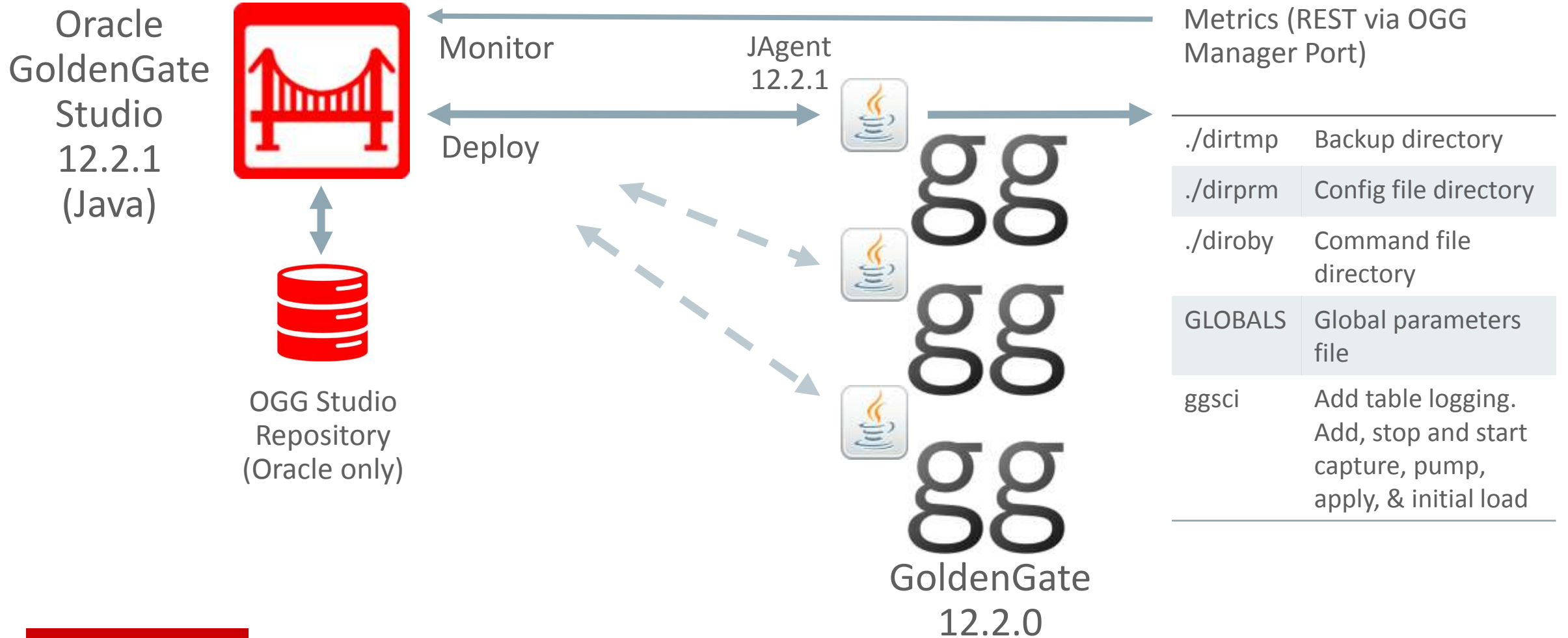
## Separating Logical From The Physical

1. One Project contains many Solutions
2. Solutions contain one Logical Design and many Physical Deployments
3. Global Resources are shared across projects



# Oracle GoldenGate Studio

## Product Architecture for Online Deployments





# (OGGFS) Oracle GoldenGate Management Pack

## Monitoring

- Status of replication components – Up or Down?
- Time lag between those components – How far behind?
- Warning and error messages – Do I need to be concerned?
- Transaction volumes – How much data?

## Management

- Change the Status of replication components – Start and Stop
- Reconfigure components – increase parallelism, tweak parameters
- View all warning and error messages - see what led up to event
- Audit management activity – who did what and when?





# (OGGFS) EM Plug-in

ORACLE Enterprise Manager Cloud Control 12c

Enterprise Targets Favorites History Search Target N

### Oracle GoldenGate Homepage

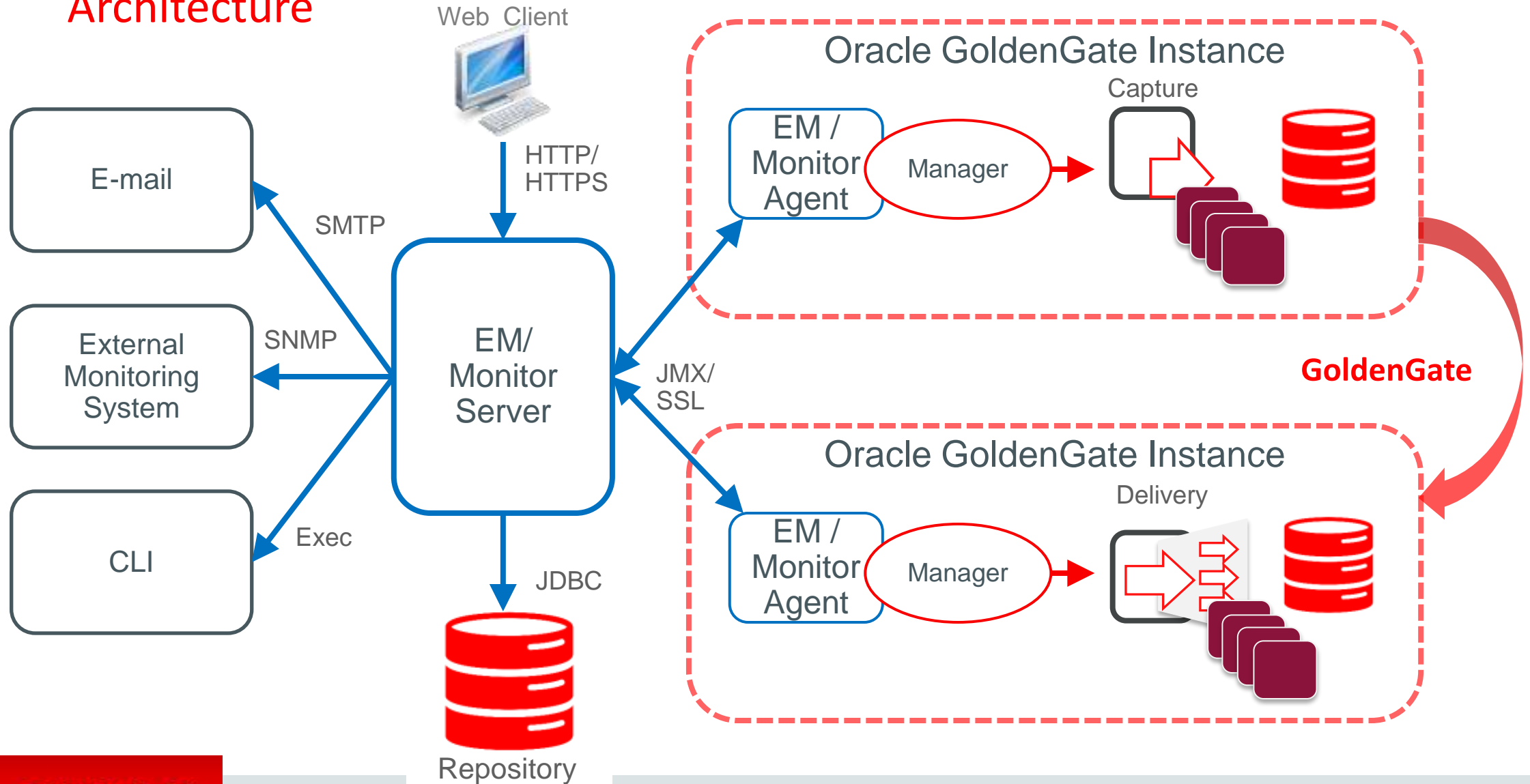
Status All Lag All Customize

Target Name	Target Type	Status	Lag (Sec)	Lag Trend	Total Operations	Delta Operations	Delta Operations Per Second	Incidents				Seconds Since Last OGG Checkpoint
								⊖	⊗	⚠	🚩	
1 Siebel CRM Prod (:5559)	Oracle GoldenGate	↑	4					0	0	0	0	61
MGR	Manager	↑						0	0	0	0	
R02DD	Replicat	↑	2		308860	129998	2167	0	0	0	0	53
EAA	Extract	↑	2		54320	2836	47	0	0	0	0	61
R01DD	Replicat	↑	4		309745	74845	1247	0	0	0	0	59
PAABB	Extract	↑	2		51484	2036	34	0	0	0	0	60
R03DD	Replicat	↑	2		309281	124110	2069	0	0	0	0	53
2 CRM ODS Prod (:5550)	Oracle GoldenGate	↑	4					0	0	0	0	67
MGR	Manager	↑						0	0	0	0	
R03BB	Replicat	↑	4		5303420	936	16	0	0	0	0	57
ECC	Extract	↑	1		99408	9880	165	0	0	0	0	63
PCCDD	Extract	↑	3		15555247	8356	139	0	0	0	0	50
R01BB	Replicat	↑	4		5402032	972	16	0	0	0	0	67
R02BB	Replicat	↑	4		5176853	1596	27	0	0	0	0	64
3 Siebel CRM+ QA (:5450)	Oracle GoldenGate	↓	4					2	0	0	0	56
R01HH	Replicat	↑	0		0	0	0	0	0	0	0	0
EEE	Extract	↓	1		8683608	0	0	1	0	0	0	0
PEEFF	Extract	↑	3		7894680	0	0	0	0	0	0	0
MGR	Manager	↑						0	0	0	0	
R03HH	Replicat	↑	3		0	0	0	0	0	0	0	56

# (OGGFS) Oracle GoldenGate Monitor / EM Plug-in



## Architecture



# (OGGFS) Oracle GoldenGate Veridata



## Top Reasons We See Why Data Goes Out of Sync

1. Human Error. We work in very complex, error prone environments
2. Source data is unknowingly corrupted
  - You inherited bad data
  - Out of bounds Globalization characters & bad dates become NULLs during DB copy
3. Target data is accidentally deleted or updated outside of replication
4. "Nologging" set for source transactions
5. Gaps during data instantiation
6. Application upgrades not coordinated between source and target

# (OGGFS) Oracle GoldenGate Veridata



## Overview

- High-speed heterogeneous data comparison and repair
- Works with or without Oracle GoldenGate data replication
  - Can import OGG table mappings
- Low impact
  - No table locking
  - Data hashing, sorting, and comparison happen outside the database
  - Supports data subsetting
- Maintains comparison audit history and detailed statistics
- Delta Comparisons for tables with Update Timestamp, ora\_rowscn, and custom logic
- LDAP/Single sign on integration

# (OGGFS) Oracle GoldenGate Veridata Dashboard



**ORACLE GoldenGate Veridata** Logout | About | Help

Welcome, ggadmin!

View:  Finished Jobs  Running Jobs Refresh

**Chart**

**Compare Pair status for Finished Jobs for last 60 day(s)**  
Total Compare Pairs Processed: 594

Status	Count
In-Sync	570
Out-Of-Sync	24
Failed	0
Canceled	0

**Finished Jobs for last 60 day(s)**

Run Jobs Completed

- MyComparisonJob1 - Start Time: Jul 9, 2014 5:51:05 PM, End Time: Jul 9, 2014 5:51:23 PM (Compare Pairs - Processed: 99, [Out-Of-Sync: 4](#), Failed: 0)
- MyComparisonJob1 - Start Time: Jul 9, 2014 9:59:47 AM, End Time: Jul 9, 2014 10:00:10 AM (Compare Pairs - Processed: 99, [Out-Of-Sync: 4](#), Failed: 0)
- MyComparisonJob2 - Start Time: Jul 7, 2014 5:52:58 PM, End Time: Jul 7, 2014 5:53:26 PM (Compare Pairs - Processed: 99, [Out-Of-Sync: 4](#), Failed: 0)
- MyComparisonJob2 - Start Time: Jul 7, 2014 5:44:34 PM, End Time: Jul 7, 2014 5:45:03 PM (Compare Pairs - Processed: 99, [Out-Of-Sync: 4](#), Failed: 0)
- MyComparisonJob2 - Start Time: Jul 7, 2014 5:38:25 PM, End Time: Jul 7, 2014 5:39:02 PM (Compare Pairs - Processed: 99, [Out-Of-Sync: 4](#), Failed: 0)
- MyComparisonJob2 - Start Time: Jul 7, 2014 3:39:15 AM, End Time: Jul 7, 2014 3:39:45 AM (Compare Pairs - Processed: 99, [Out-Of-Sync: 4](#), Failed: 0)

# (OGGFS) Oracle GoldenGate Veridata

## Summarize and Repair Out of Sync Data



**Job testBigRepairJob**

	Compare Pairs	Rows	Inserts	Updates	Deletes	Bytes
Initial Out-Of-Sync	7	1462	165	1135	162	
Repaired	0	0	0	0	0	
Failed Repair	0	0	0	0	0	
Not Repaired	7	1462	165	1135	162	

**Repair Configuration Options**

Database User Name:

Password:

Job Profile:   [Set Override Run Options...](#)

**1 Repair Groups**

- testBigRepairJob Compare Run Start Time: Mar 12, 2014 1:07:03 PM, Duration: 00:00:05(Compare pairs - Initial Out-Of-Sync: 7, Repaired: 0, Repair failed: 0)
  - TYPES Compare Run Start Time: Mar 12, 2014 1:07:03 PM, Duration: 00:00:05(Compare pairs - Initial Out-Of-Sync: 7, Repaired: 0, Repair failed: 0)
    - I18N\_TYPES Compare Run Start Time: Mar 12, 2014 1:07:07 PM, Duration: 00:00:01(Rows compared: 10, Initial Out-Of-Sync: 8, Repaired: 0, Repair failed: 0)
    - CHAR\_TYPES Compare Run Start Time: Mar 12, 2014 1:07:07 PM, Duration: 00:00:01(Rows compared: 320, Initial Out-Of-Sync: 256, Repaired: 0, Repair failed: 0)

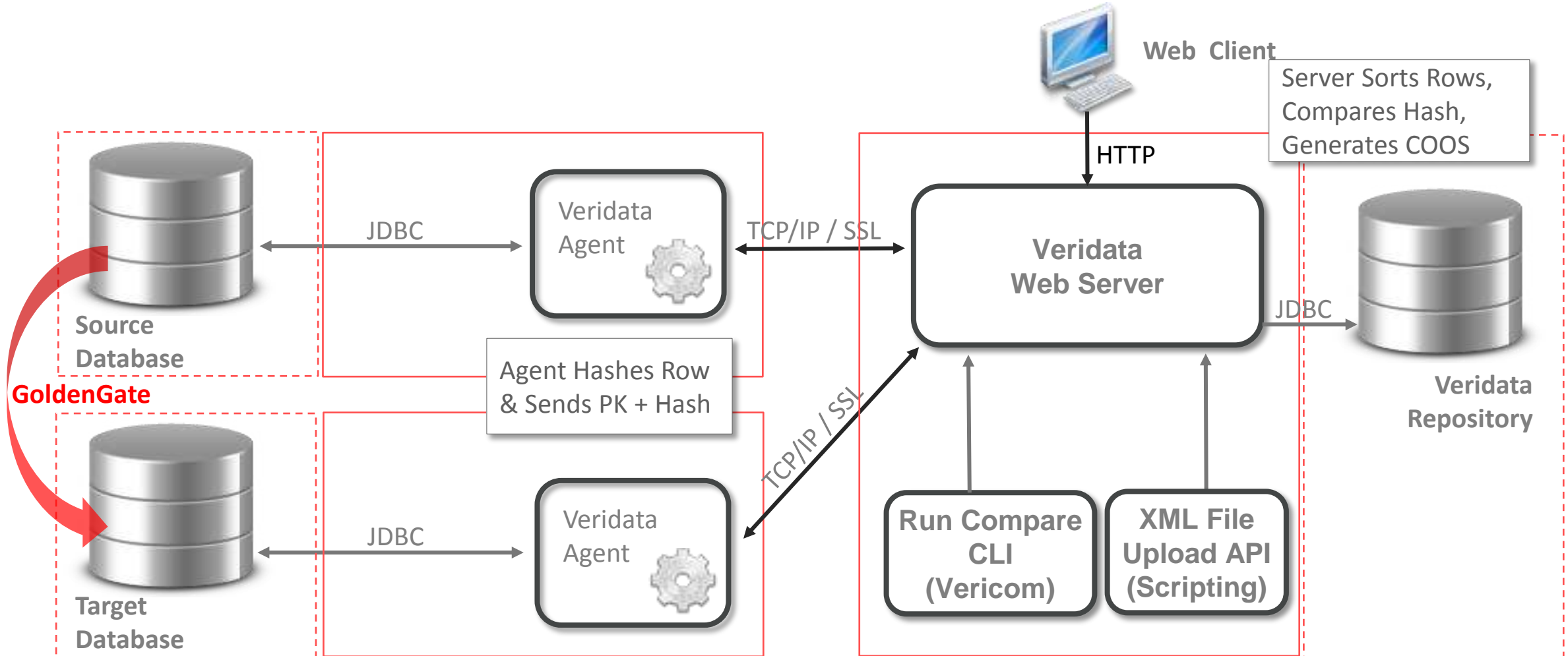
	Rows	Inserts	Updates	Deletes	Bytes
Initial Out-Of-Sync	256	32	192	32	
Repaired	0	0	0	0	
Failed Repair	0	0	0	0	
Not Repaired	256	32	192	32	

**Out-Of-Sync Rows Details**

Any Repair Status:  Any Operation:  All Columns:

Select	Status	Operation	*KEY_COL (NUMBER)	CHAR_COL (CHAR)	NOCHAR_COL (NCHAR)	VARCHAR_COL (VARCHAR2)	NVARCHAR_COL (NVARCHAR2)	STRINGEN_COL (VARCHAR2)
<input checked="" type="checkbox"/>		Insert	1	empty	empty	empty	empty	empty
<input checked="" type="checkbox"/>		Delete	2	ABCDEFGHJ	ABCDEFGHJ	ABCDEFGHJ	ABCDEFGHJ	ABCDEFGHJ
<input checked="" type="checkbox"/>		Update	3	XYZ	XYZ	XYZ	XYZ	XYZ
<input checked="" type="checkbox"/>		Update	4	abcde	abcde	abcde	abcde	abcde

# (OGGFS) Oracle GoldenGate Veridata Architecture





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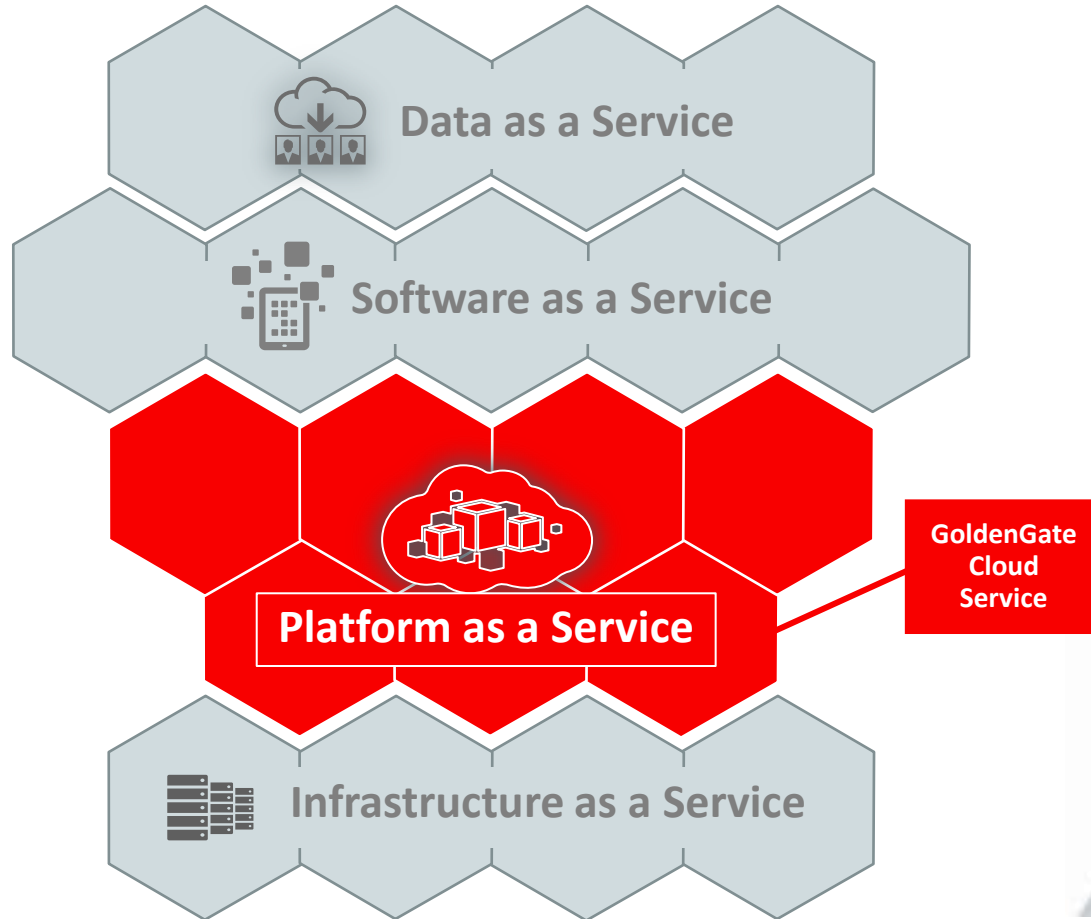
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# Oracle Cloud Strategy

## Industry's Most Comprehensive Cloud Platform Strategy

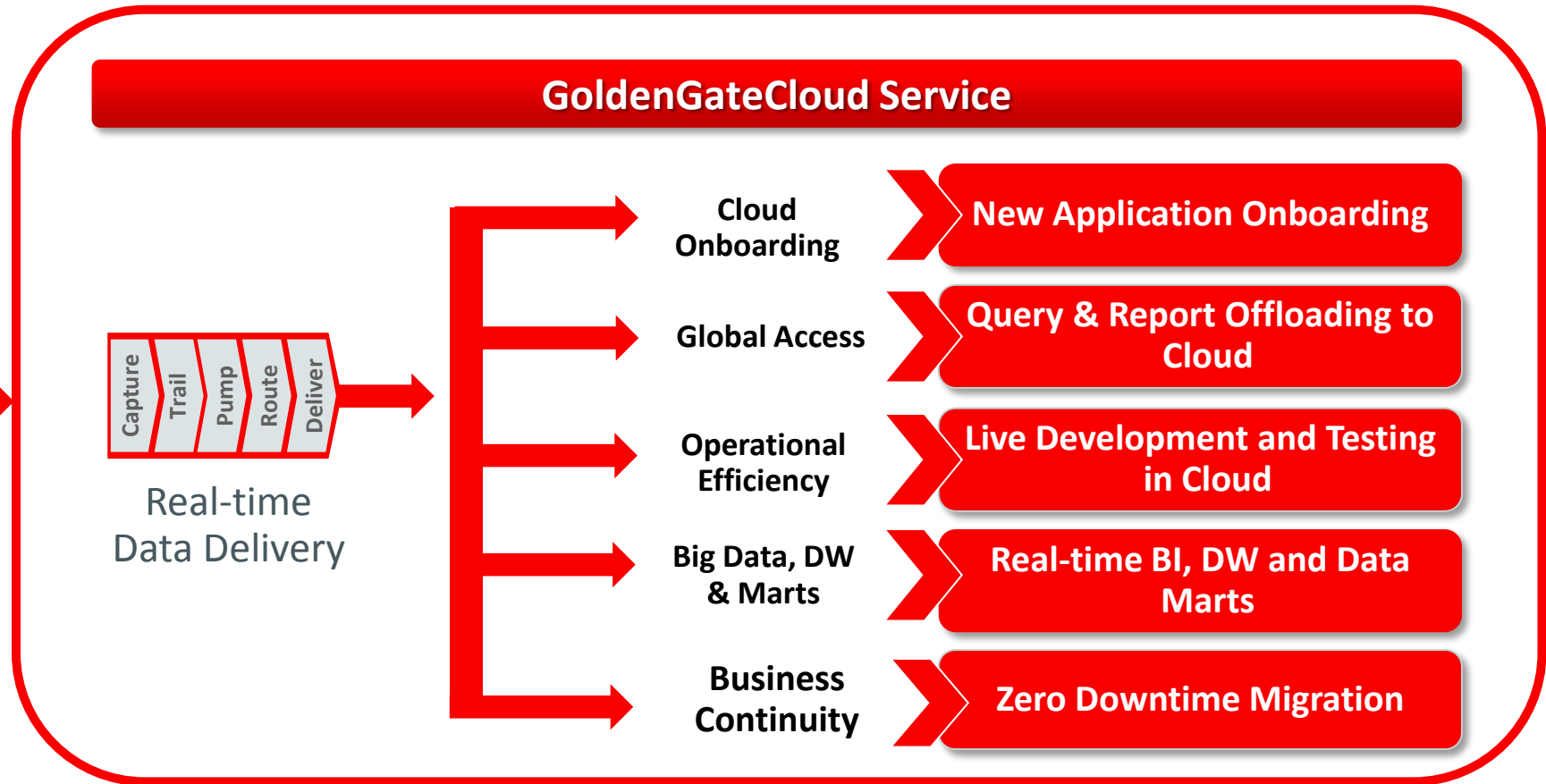


**Bring Oracle's leading Database and Middleware Technology Software to customers and partners anywhere in the World through the Internet**

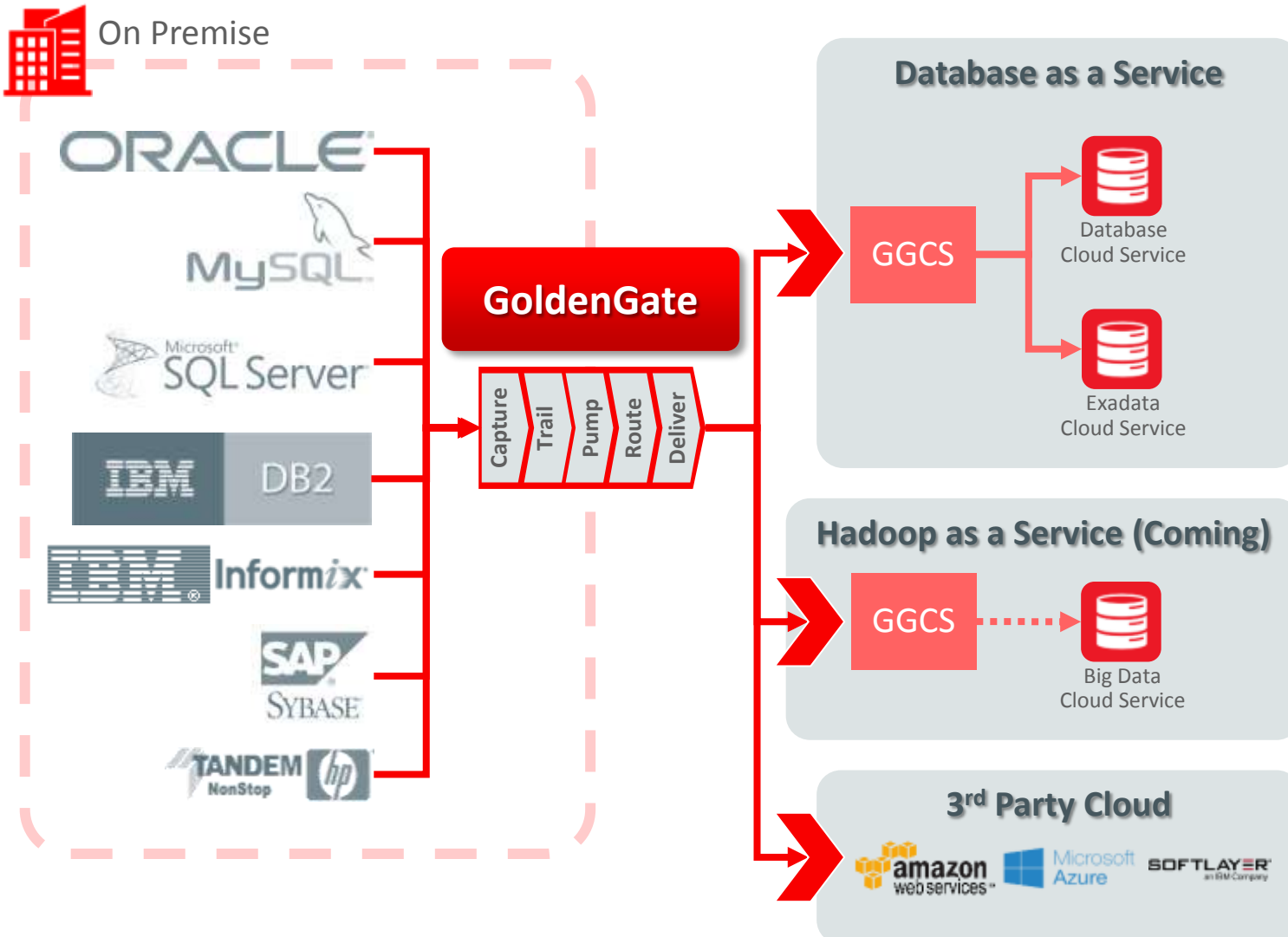


# Oracle GoldenGate Cloud Service

## Use cases



# NEW: Oracle GoldenGate Cloud Service



## GoldenGate Cloud Service

- ✓ Available in the Public Cloud via Subscription or Hourly basis

## Key Benefits

- ✓ **Oracle Database Cloud Service** delivery via GoldenGate
- ✓ **Exadata Cloud Service** delivery via GoldenGate
- ✓ **Big Data Cloud Service** delivery to Hadoop and NoSQL

## 3<sup>rd</sup> Party Cloud

- ✓ **More Choices** run as BYOL on other Clouds for delivery to any supported Database

# Questions





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