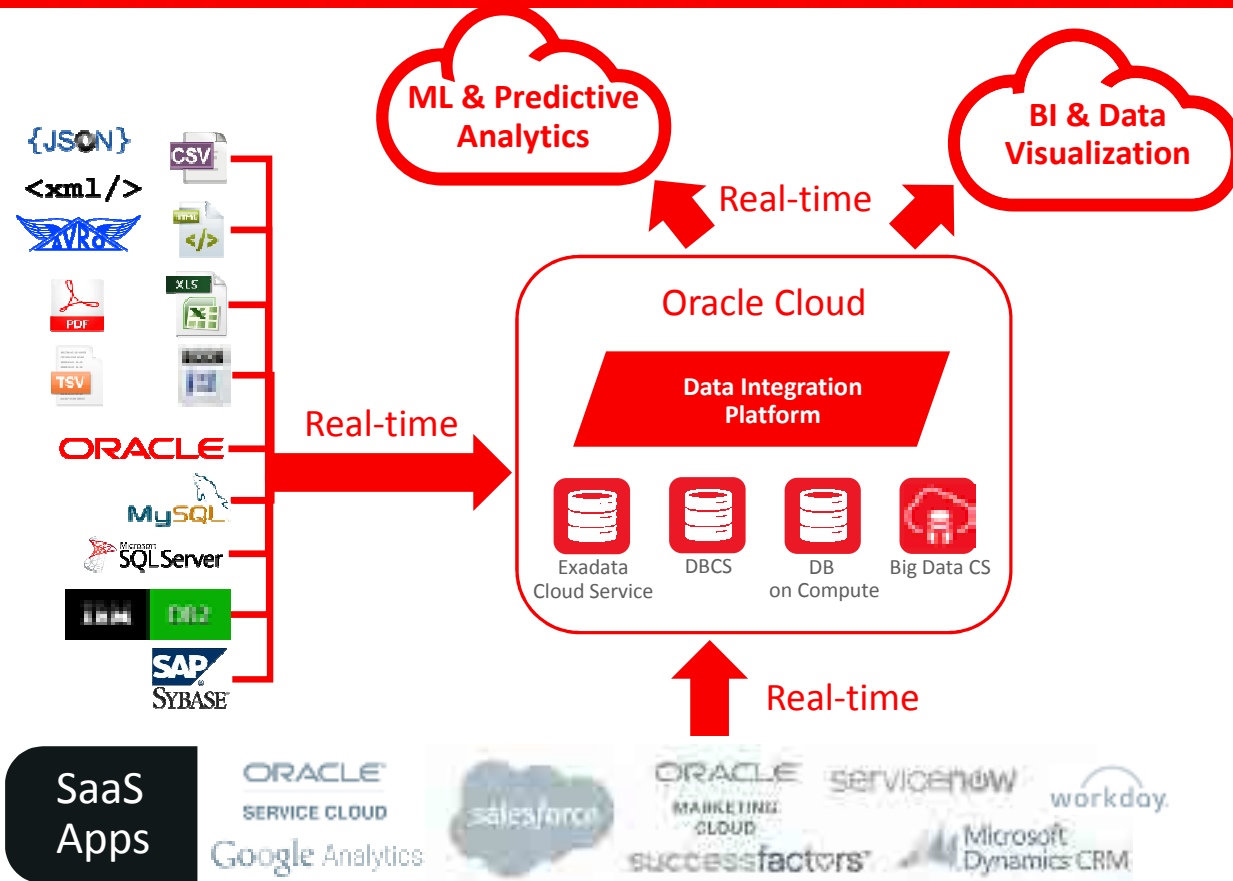
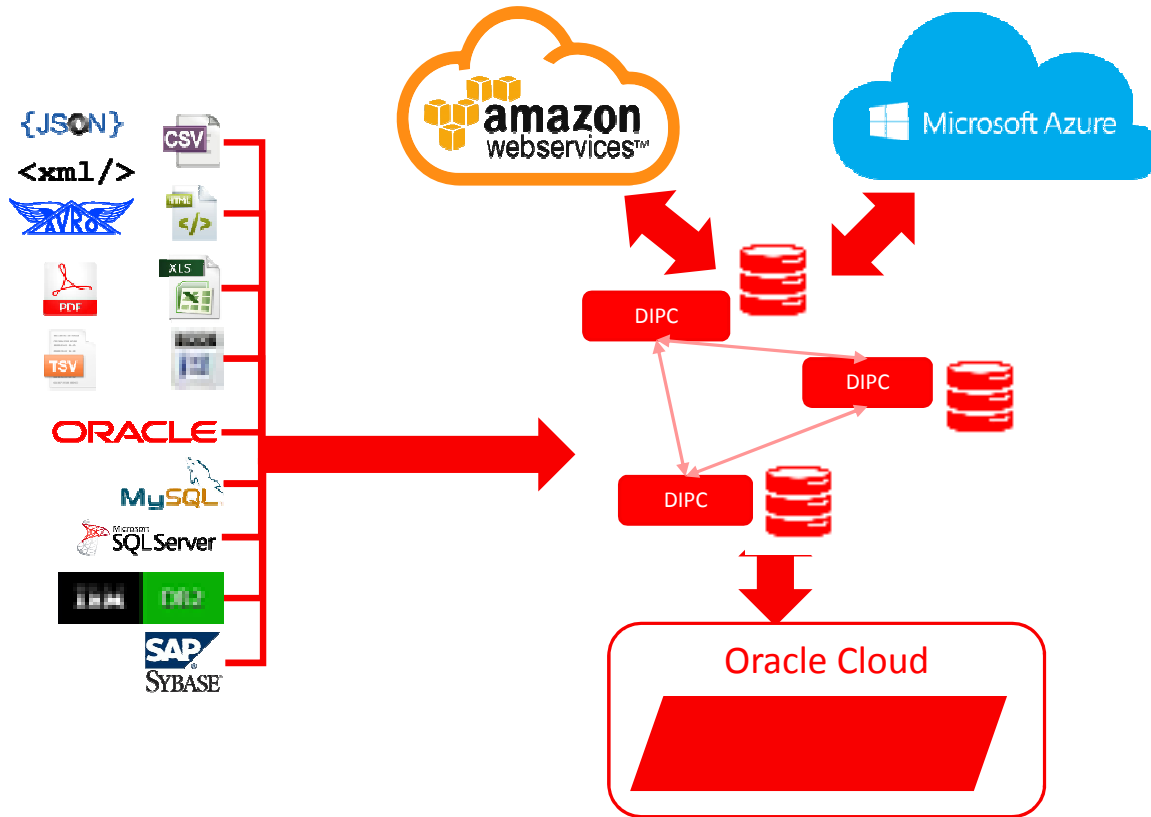


Real-Time Data Warehouse



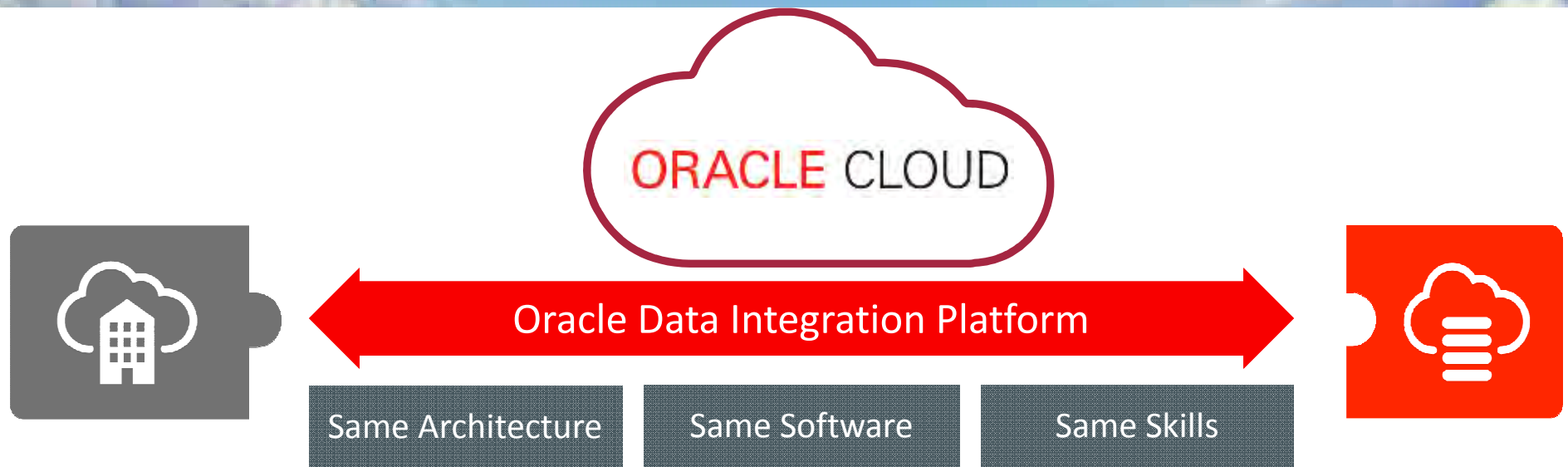
- Lower the costs of your EDW running on PaaS or IaaS offering
- Fastest data movement **in real-time or batch**
- Maximize performance for your Data Integration and Data Warehouse processes with cloud computing
- Consolidate all your data into one place for cross LOB analytics
- Innovate with the latest technologies in database and big data for faster and greater insight

Business Continuity & Heterogeneous Cloud



- Fully realize a multi-cloud vendor strategy with Data Integration Platform Cloud Service
- Move data easily between Oracle Cloud and other clouds
- Move data in real-time to ensure high availability and zero downtime migrations
- Supports data integration across heterogeneous environments with core GoldenGate
- Integrated with HA solutions

Easily Move to Cloud with Oracle Data Integration Platform



Complete: Everything You Need for Data Integration and Data Governance

100% Compatible with existing on-premises deployments

Full portability across Hybrid Clouds

VERITAS™



Migration To Cloud Infrastructure

Kalyan Villuri

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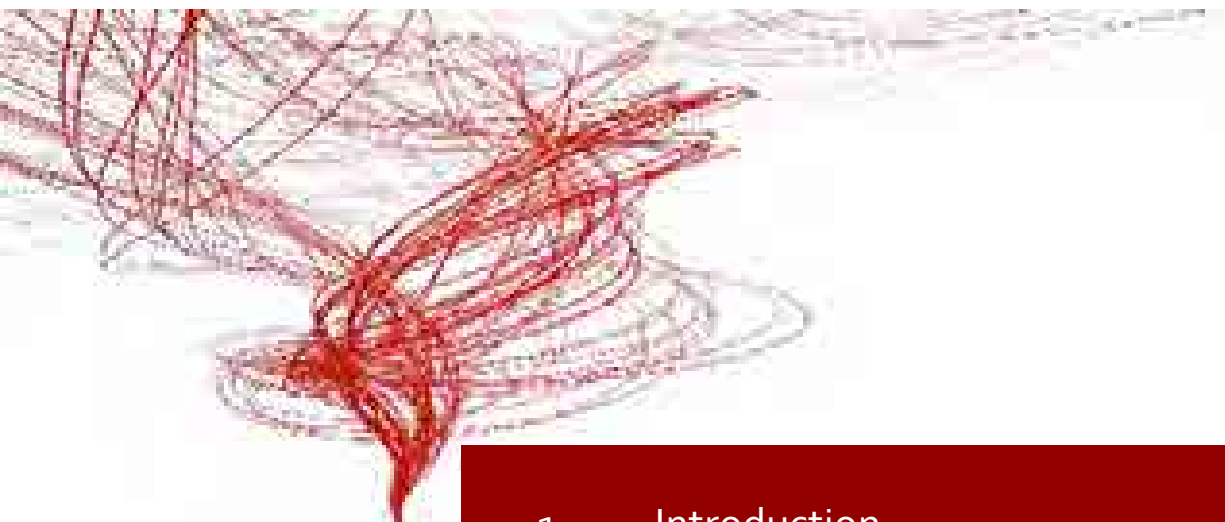
The truth in information.



1	Introduction
2	GoldenGate deployment in Veritas
3	GG use cases

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1 Introduction

2 GoldenGate deployment in Veritas

3 GG use cases

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Introduction

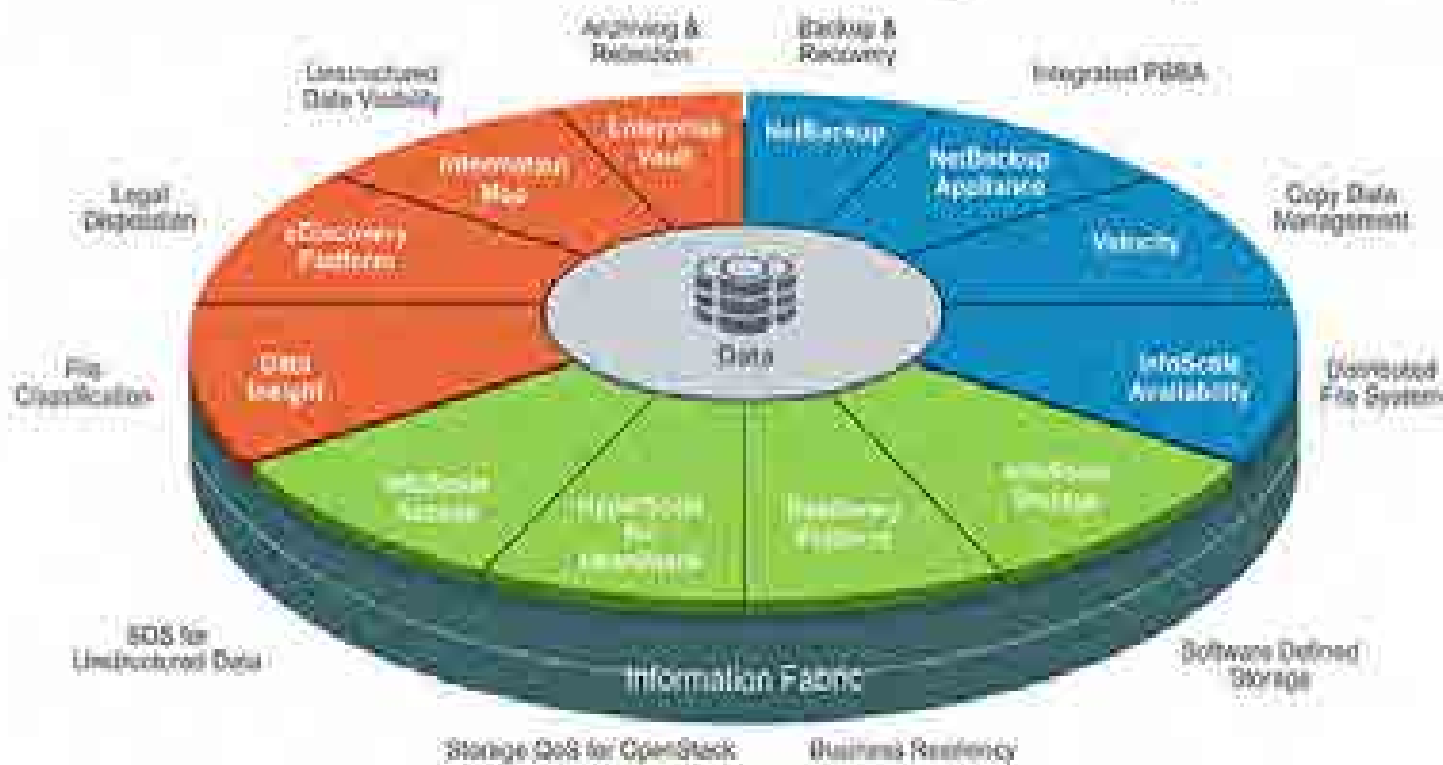
- **Who we are :**

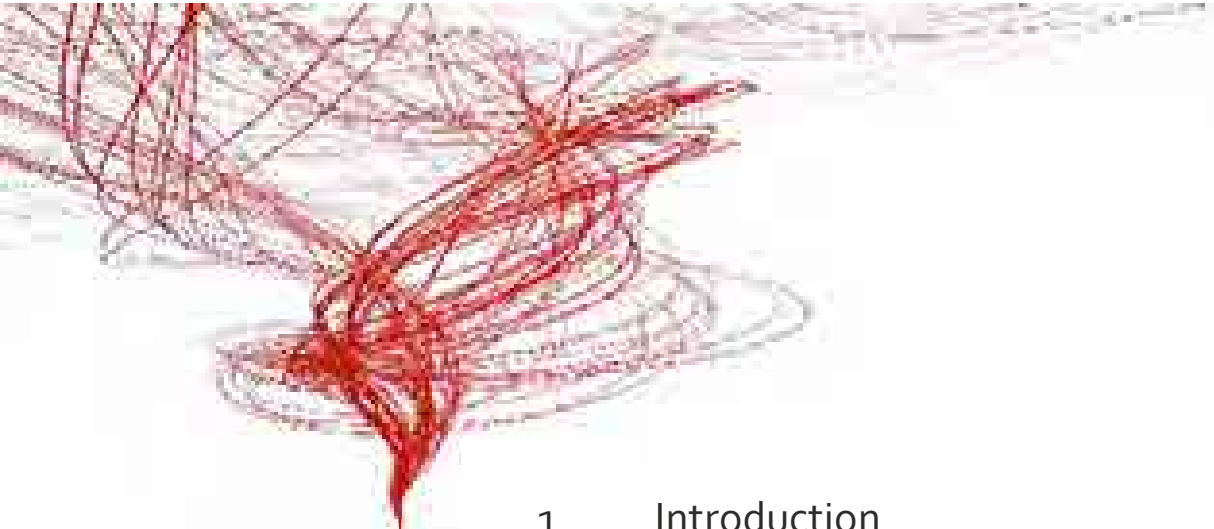
Veritas Technologies LLC is a data management company with more than 8200 employees, partners with the largest technology leaders, including Amazon, Cisco, Fujitsu, Google, Hitachi, HP, IBM, Microsoft, NetApp, Open Stack, Symantec, and many more

- **What we do:**

Veritas Technologies empowers businesses of all sizes to discover the truth in information—their most important digital asset. Using the Veritas platform, customers can accelerate their digital transformation and solve pressing IT and business challenges including multi-cloud data management, data protection, storage optimization, compliance readiness and workload portability—with no cloud vendor lock-in. 86% percent of Fortune 500 companies rely on Veritas today to reveal data insights that drive competitive advantage.

The Veritas Portfolio of Information Management Capabilities





1 Introduction

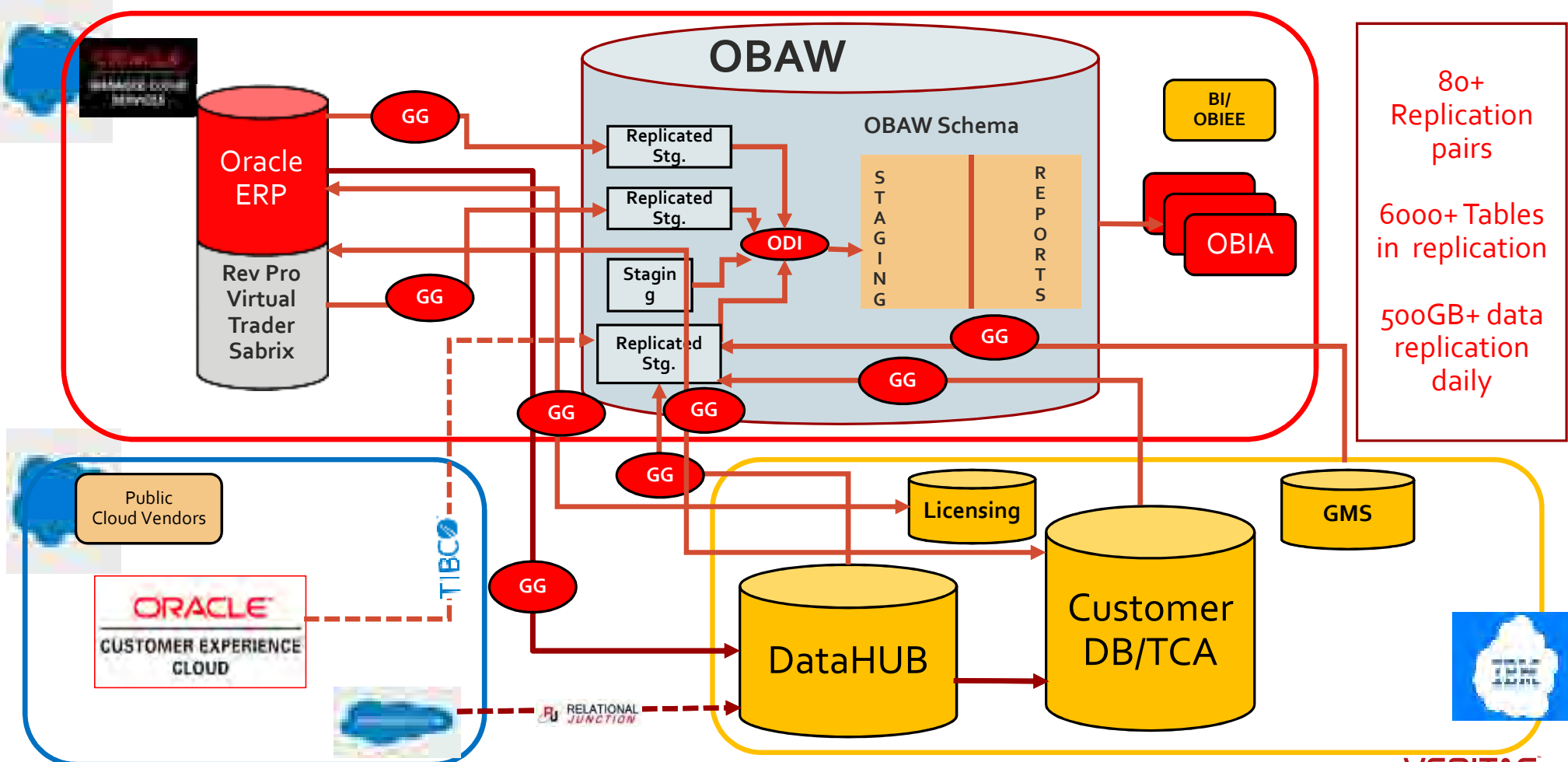
2 GoldenGate deployment in Veritas

3 GG use cases

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Veritas Ecosystem



80+ Replication pairs
 6000+ Tables in replication
 500GB+ data replication daily

Accomplishments

Datacenter Migration

- Data Center Migration
- 129 DBs/200+ servers
- 45+ GG replication pairs between cloud databases
- DBs migrated to new Data center using Dataguard and GoldenGate

GG Upgrade

- 80+ GG pairs
- 6000+ tables
- Data flow 500+ GB per day
- Used integrated PARALLELISM to Improve GG performance

Bi directional replication

- GG replications from Licensing to ERP
- GG Bi directional replication setup

GG Heartbeat Implementation

- Configured GG Heartbeat table setup for all environments
- Developed real time Dashboard Displaying Latency with most accurate timestamp along with "Data As Of" and Hosted on WebLogic server
- Upgraded Heartbeat table configuration to GoldenGate 12.2

Veridata Installation

- Configured GoldenGate Veridata 12.1.3 for Out of sync Data comparison and repair.
- Automated OOS Report in HTML notification
- Configured 6000+ tables in 144 Veridata Jobs
- Veridata monitors 80+ GG pairs

GoldenGate Event Capture

- Golden Gate delete event capture
- Golden Gate replication from EBS to OBIEE



1 Introduction

2 GoldenGate deployment in Veritas

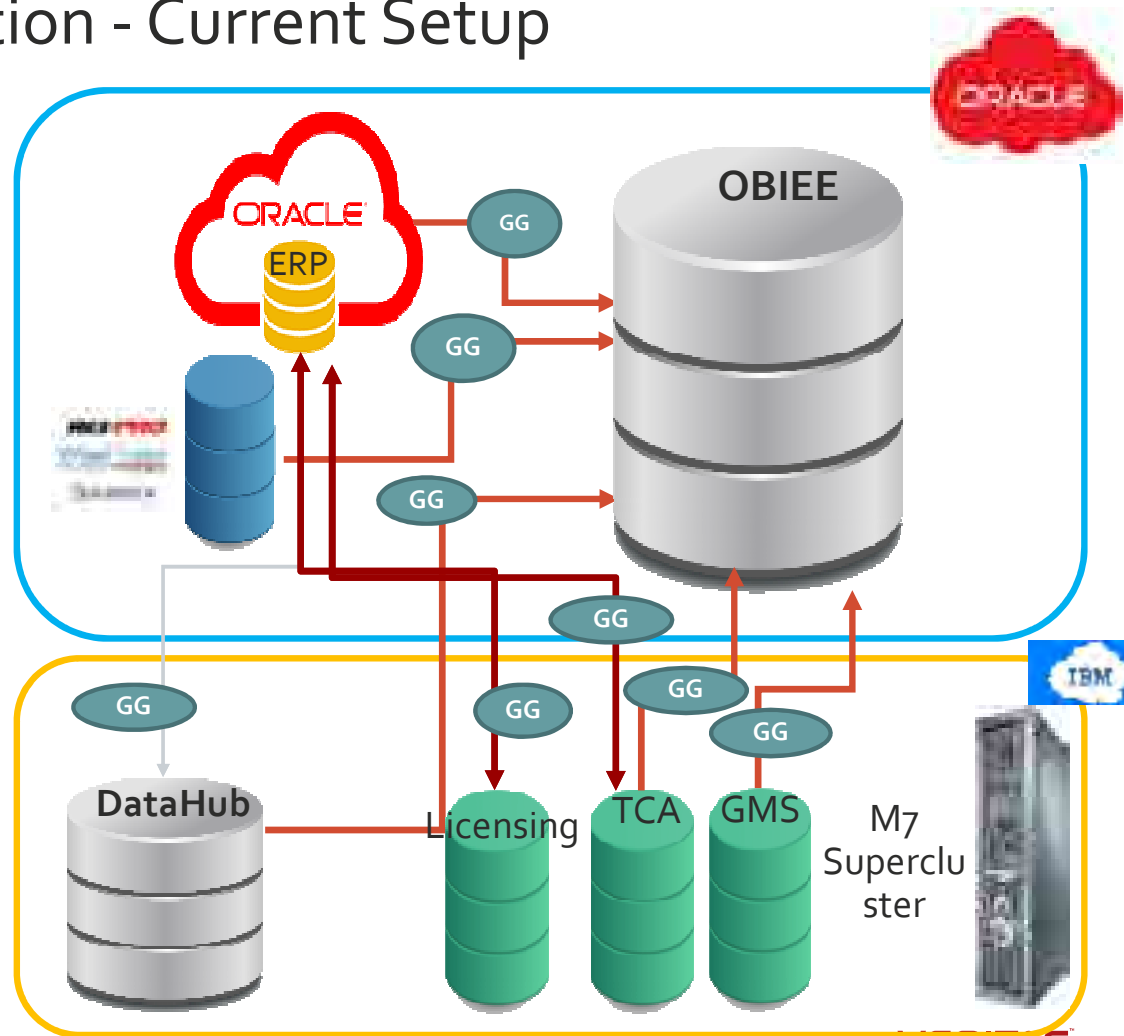
3 GG use cases

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VERITAS GoldenGate Replication - Current Setup

- Oracle GoldenGate Version 12.2.0.1 along with Oracle 12c and 11.2.0.4
- Separate GoldenGate homes for oracle 11g and 12c databases
- All GoldenGate processes are using integrated mode with parallelism enabled
- Total 80 GoldenGate pairs and 6000+ tables in replication between cloud databases.
- Approximately 500+ GB real time being replicated between cloud databases
- Minus Query based monitoring scripts were used earlier for comparing tables on source and target databases.
- Oracle GoldenGate Veridata tool replaced the manual scripts for the tables in replication comparison and fixing out of sync issues.
- GG Heartbeat table for GoldenGate process status and lag monitoring
- All GoldenGate pairs configured using Conflict Detection and Resolution



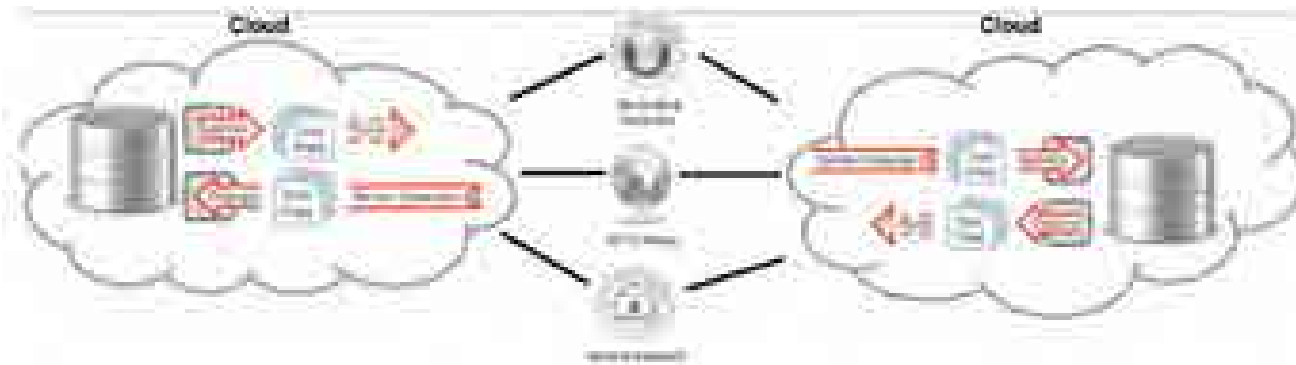
GG Replication Setup between cloud databases

Why its important:

As per the recent data survey, more than 50% of total data will be stored in Public and Private cloud systems by the year 2020

Minimum Requirements:

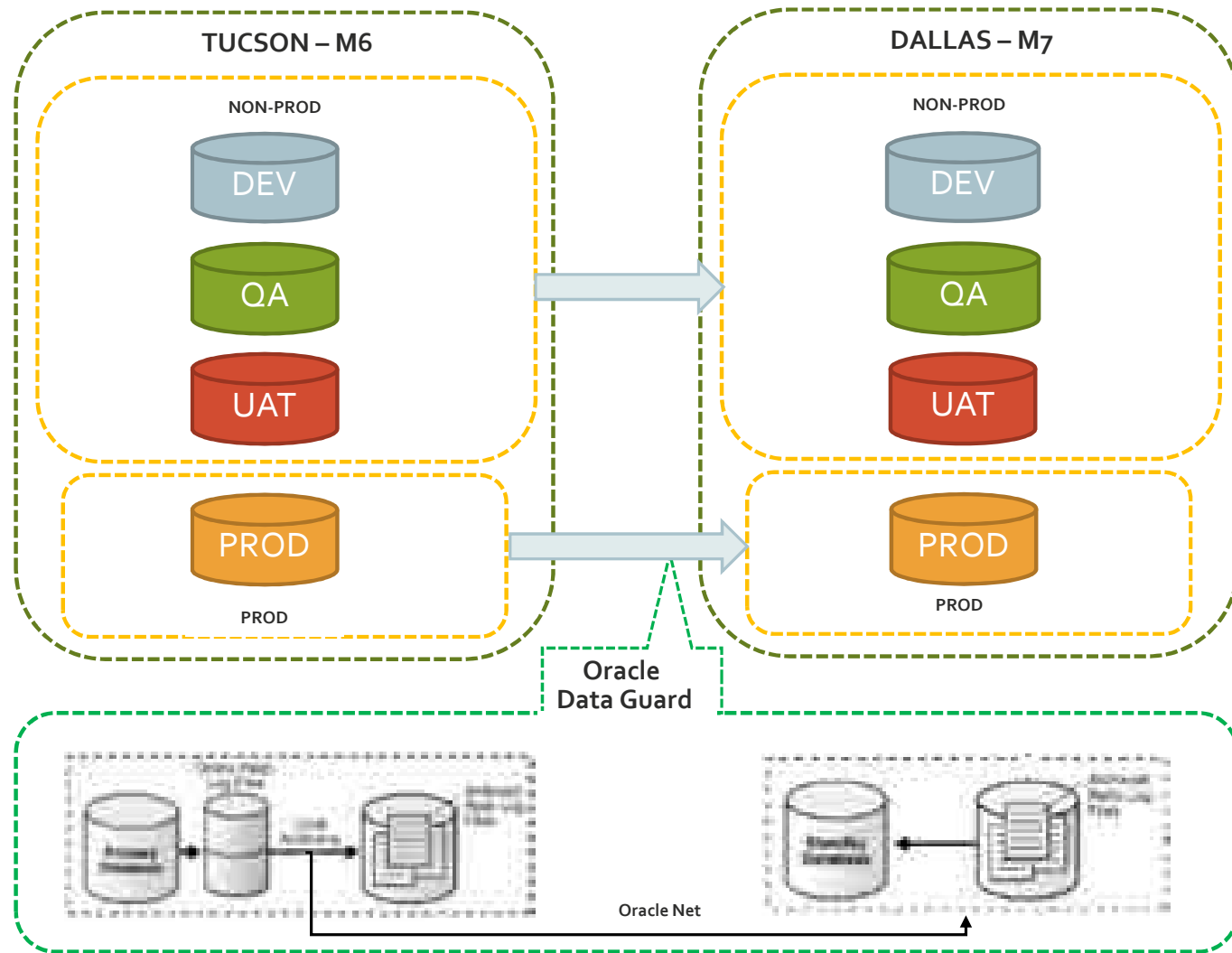
- Systems - Do ensure the source and target systems are defined
- Network - it can be either P2P, internet or MPLS circuit, do ensure sufficient bandwidth is in place for the volume of the data being replicated
- Security - Do ensure the source and target system IP Addresses are Natted/Masked to ensure the security
- Channel Encryption - Do ensure GG data being replicated is encrypted



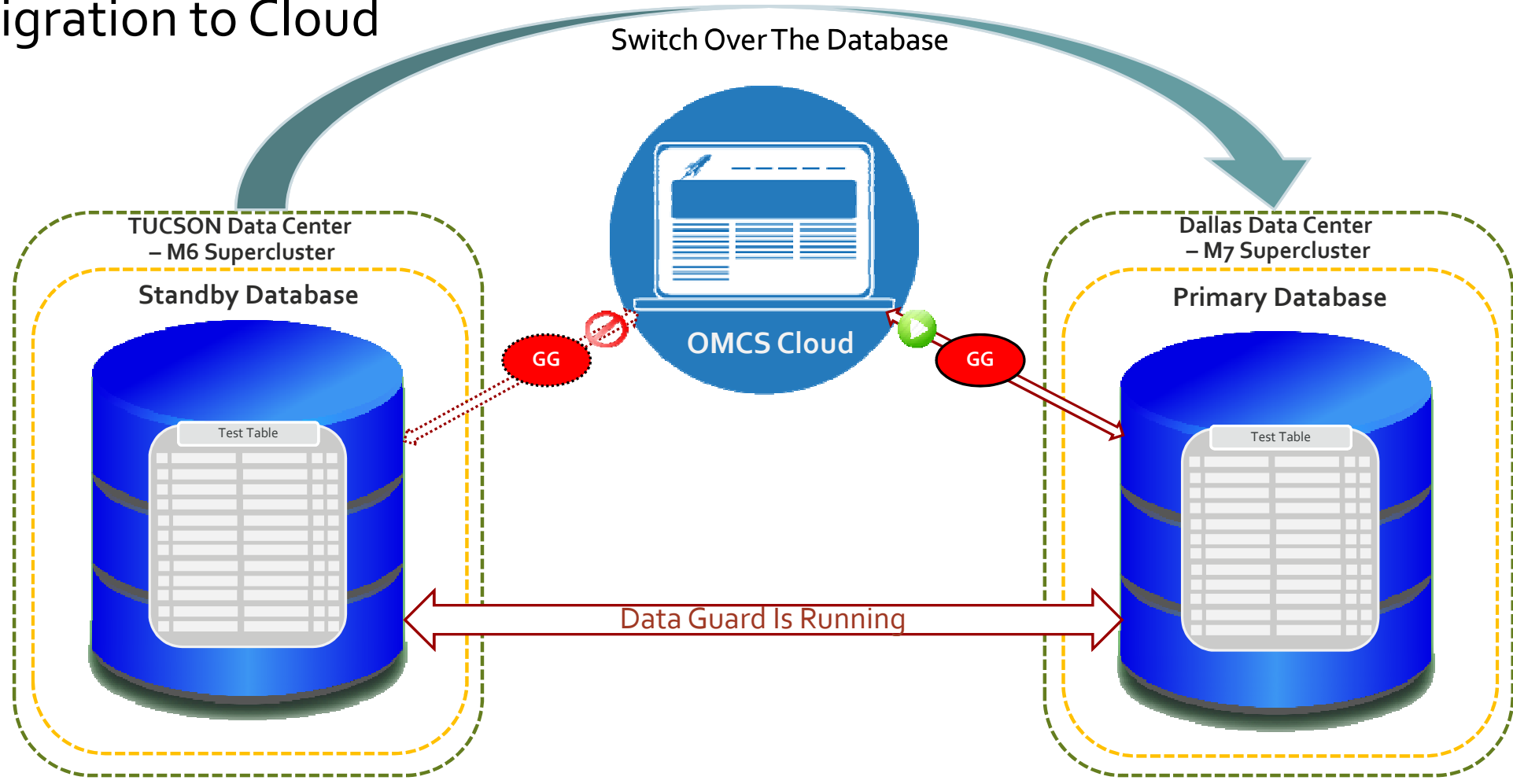
Datacenter Migration

Migration to cloud Infrastructure

- 129 DBs/200+ servers
- 45+ GG replication pairs
- Total 129 Applications
- 800+ total application and database servers
- DBs migrated to new Data center using Dataguard
- Without the need for GG rebuild
- Not a single transaction was lost



Migration to Cloud



Licensing GG replication



- Bi-Directional replication is set between IBM cloud and ORACLE cloud environment in VERITAS
- Bi-Directional Replication also known as Active-Active Replication
- Applications perform DML/DDL activities on both Databases

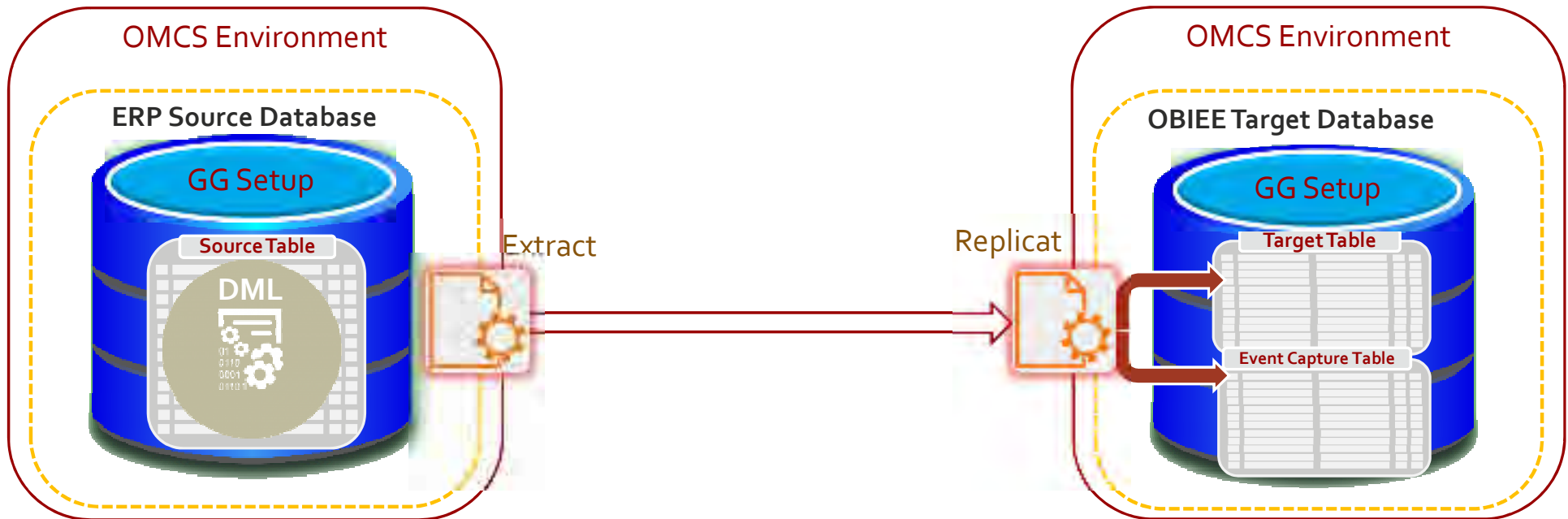
Revpro Delete Event Capture Using GG

Event Capture Extract Parameters.

```
TABLE REVPRO.RPRO_RI_PS_WF_DET,TOKENS(CSCN =
@GETENV('TRANSACTION','CSN'),
RSID = @GETENV('RECORD','RSN')), GETBEFORECOLS(ON UPDATE ALL);
```

Event Capture Replicat Parameters.

```
MAP REVPRO.RPRO_RI_PS_WF_DET, TARGET STAGE_EBSR12.RPRO_RI_PS_WF_DET_HIST,&
COLMAP
(LINK_TRANS_ID=LINK_TRANS_ID,PERIOD_NAME=PERIOD_NAME,RUN_SEQ=RUN_SEQ,
LAST_UPDATE = @GETENV('GGHEADER','COMMITTIMESTAMP'), &
TRAN_TYPE=@GETENV('GGHEADER','OPTYPE'), &
BEFORE_AFTER=@GETENV('GGHEADER','BEFOREAFTERINDICATOR'), &
RSID=@TOKEN('RSID'), &
CSCN=@TOKEN('CSCN')),INSERTALLRECORDS,FILTER (@STREQ (@GETENV('GGHEADER',
'OPTYPE'),'DELETE'));
```



Automatic Heartbeat Table

The screenshot shows the 'GOLDEN GATE LATENCY DASHBOARD (PROD)' with a table of replication paths. The table has columns for Source, Target, Lag, and Status. The data is as follows:

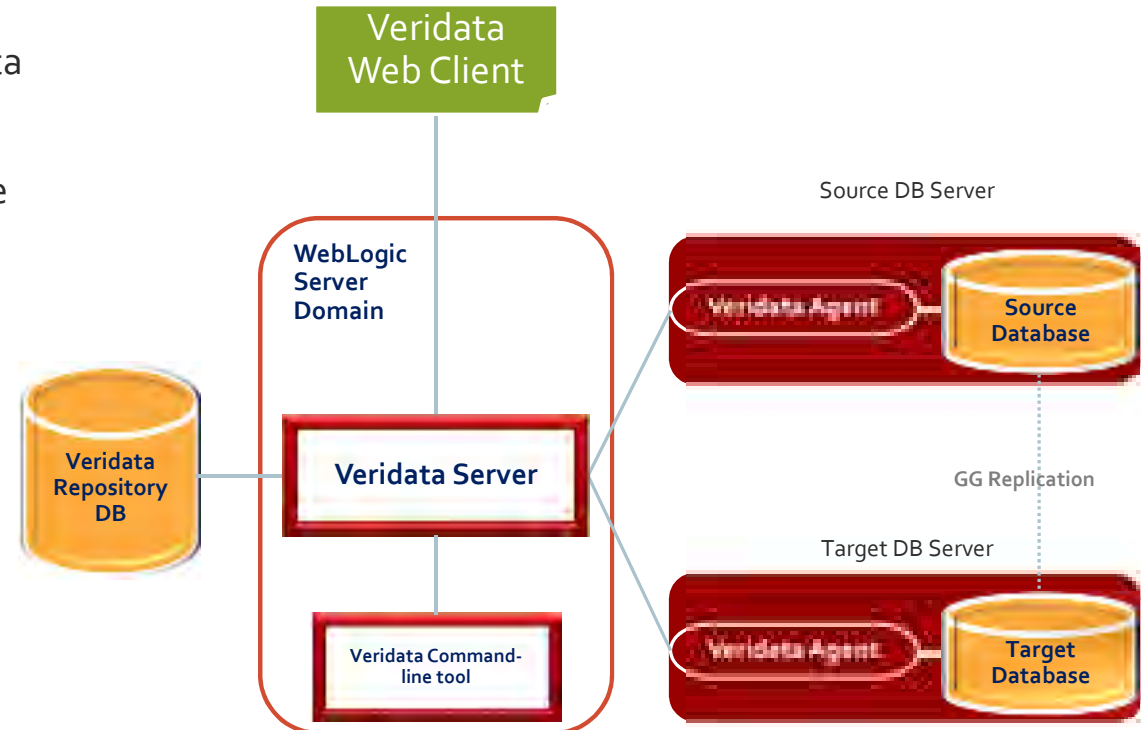
Source	Target	Lag	Status
PROD1	PROD2	00:00:00.000	OK
PROD2	PROD3	00:00:00.000	OK
PROD3	PROD4	00:00:00.000	OK
PROD4	PROD5	00:00:00.000	OK
PROD5	PROD6	00:00:00.000	OK
PROD6	PROD7	00:00:00.000	OK
PROD7	PROD8	00:00:00.000	OK
PROD8	PROD9	00:00:00.000	OK
PROD9	PROD10	00:00:00.000	OK

- Intelligent Functionality
- Automatically discovers replication topology
- Unidirectional, bi-directional, N-way...
- Automatically propagates heartbeats along replication paths
- Shows incoming and outgoing lags in replication paths in each database for active scenarios
- Easy to configure and create dashboard
- Execute GGSCI command ADD HEARTBEATABLE at each database

Single Click Golden Gate Latency Dashboard Using Heartbeat Table

Goldengate Veridata Implementation

- Goldengate Veridata 12.1.3 is a high-speed data comparison solution that identifies and reports data discrepancies between two databases
- Out-Of-Sync Data:
 - Facilitates the repair of out-of sync data in live database environments
 - Ability to select which tables and rows should be repaired and when
- No disruption to business systems while repair operations.
- Architecture consist of Veridata Server along with Veridata Repository database for storing configuration information
- Veridata agents needs to be deployed on the targets those we want to monitor
- Veridata Web User Interface is browser based graphical user interface which will allows us to review status and output of comparisons
- Customized the Out-Of-Sync report to html file email notification



Veridata Configuration



Veridata Configuration Summary

Veridata Agents	28
GG Pairs	80
GG Tables	6000+
Veridata Group Configurations	148
Veridata Jobs Configuration	144
Daily Data replication	500+ GB

GoldenGate Version Upgrade to 12.2

Take Extract information with Below command

-INFO EXTRACT <ext_name>,SHOWCH and

-info <ext_name>,detail

Take Replicate information with Below Command

-lag <Replicat Name>

-stop <Replicat Name>

Once All processes are stopped

-ddl_disable.sql,ddl_remove.sql,marker_remove.sql

Copy all parameter files and dircd (Credential store) file to new 12.2 home
& Run below scripts from New OGG 12.2 home

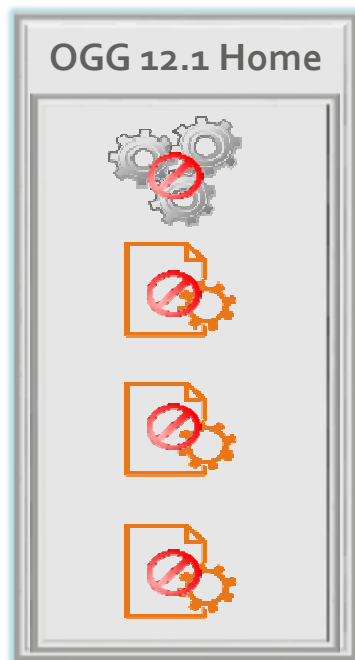
-marker_setup.sql,ddl_setup.sql,role_setup,ddl_enable,ulg.sql,ddl_pin

start manager process and add extract/pump process in new 12.2 home.

ADD extract with SCN (Lower SCN which we took it from Old GG info)

ADD EXTRACT E01OBIEP, INTEGRATED TRANLOG,SCN <take scn from step 3(lower scn)>

ADD EXTTRAIL ./dirdat/MP, EXTRACT E01OBIEP, megabytes 2000

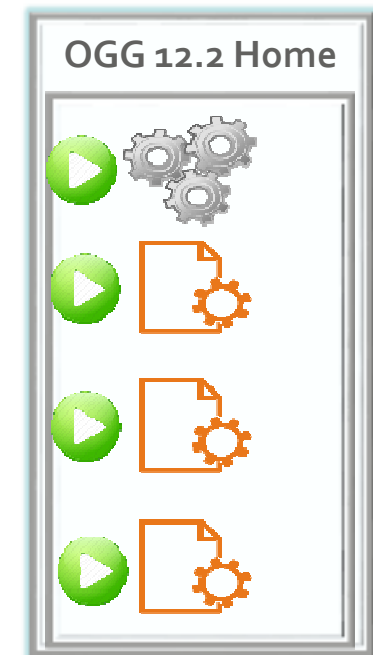


Stop MGR

Stop Extract

Stop Pump

Stop Replicat



Start MGR

Start Extract

Start Pump

Start Replicat

Q & A

Thank you!

Kalyan Villuri

Kalyan.villuri@veritas.com

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- If you're interested, please fill out the 1-page form at <http://bit.ly/2vIH1Sg>
uppercase I lowercase l
- **To show our appreciation, we will post all participants their choice from a wide selection of thank-you gifts.**

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Presentations on:

Oracle
Data Integration
Platform Cloud

Oracle
Data Integrator

Oracle
GoldenGate

Oracle
Enterprise
Data Quality

Oracle
Enterprise
Metadata
Management

Hands-on Labs:

Oracle GoldenGate
Real-Time Data Replication
in the Cloud
HOL7715

Oracle
Enterprise Data Quality
HOL7653

ODI and OGG
for Big Data
HOL7708

Oracle
Data Integration
Platform Cloud
HOL7673

Demo Stations:

The EXchange
Integration Area
- Moscone West

The EXchange
Data Management Area
- Moscone West

The EXchange
Analytics & Big Data Area
- Moscone West

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Sunday, October 1

- Lift and Shift Workloads to Cloud with Oracle Data Integration Platform Cloud [SUN6653]
- Data Movement between On-Prem, Fusion ERP Cloud, Fusion HCM Cloud and Salesforce [SUN7286]
- **Accelerate Migration to Cloud Infrastructure with Data Integration Platform [SUN6896]**

Monday, October 2

- Oracle Data Integration Platform Strategy and Roadmap [CON6646]
- Filling Your Data Lake with Potable Data, Using Data Integration [CON5465]
- GoldenGate : Deep Dive into Automating OGG using the new Microservices [CON6569]
- Oracle Data Integration Platform: Foundation for Cloud Integration [CON6650]
- Oracle Data Integration Platform Empowers Enterprise Grade Big Data Solutions [CON6893]
- Oracle Data Integration Platform Cloud Deep Dive [CON6651]
- Oracle GoldenGate Cloud Service: Real-Time Data Replication in the Cloud [HOL7715]

Tuesday, October 3

- Oracle Data Integrator Product Update and Strategy [CON6654]
- Oracle Enterprise Data Quality: Product Overview and Roadmap [CON6656]
- Accelerate Cloud On-Boarding Using Oracle GoldenGate Cloud Service [CON6894]
- Oracle Enterprise Data Quality for All Types of Data [HOL7653]
- Oracle Data Integration Platform: a Cornerstone for Big Data [CON6655]
- GoldenGate: MAA and Best Practices for Oracle GoldenGate Microservices [CON6570]
- Oracle GoldenGate Product Update and Strategy [CON6897]

Wednesday, October 4

- A Practical Path to Enterprise Data Governance at Energy Australia [CON6657]
- Oracle Data Integrator and Oracle GoldenGate for Big Data [HOL7708]
- Introduction to Oracle Data Integration Platform Cloud [HOL7673]
- An Enterprise Databus: GoldenGate in the Cloud Working with Kafka and Spark [CON6895]
- GoldenGate: Best Practices & Deep Dive on OGG 12.3 Microservices at Cloud [CON6568]
- Oracle GoldenGate for Big Data [CON6898]
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