MAINTAINING DATA SYSTEMS FOR THE SINGLE ELECTRICITY MARKET (SEM)

DARREN MOORE : 14 NOV 2014

SEMO

Single Electricity Market Operator (SEMO), is the Market Operator for the wholesale electricity market on the Island of Ireland.

SEMO has the responsibility for the ongoing maintenance and support of business critical systems essential to the market. This includes the Central Market Systems that provide the scheduling and settlement function for the Single Electricity Market (SEM); Reserve Constrained Unit Commitment and the Auction Management Platform for both the Moyle and the East West Interconnectors. The seamless operation of these systems are essential to participants and ensure the smooth running of the market.

Copyright © EirGrid/SONI 2013

SEMO

3 key areas exist for maintaining the data systems which operate the wholesale electricity market and contribute to the operation of the Energy Grid.

Copyright © EirGrid/SONI 2013

SEMO

1St : 24 * 7 Market.

2nd : Bug/Data Fixes.

3rd : Bi Annual Releases.

Copyright © EirGrid/SONI 2013

1st : 24 * 7 : Oracle MAA

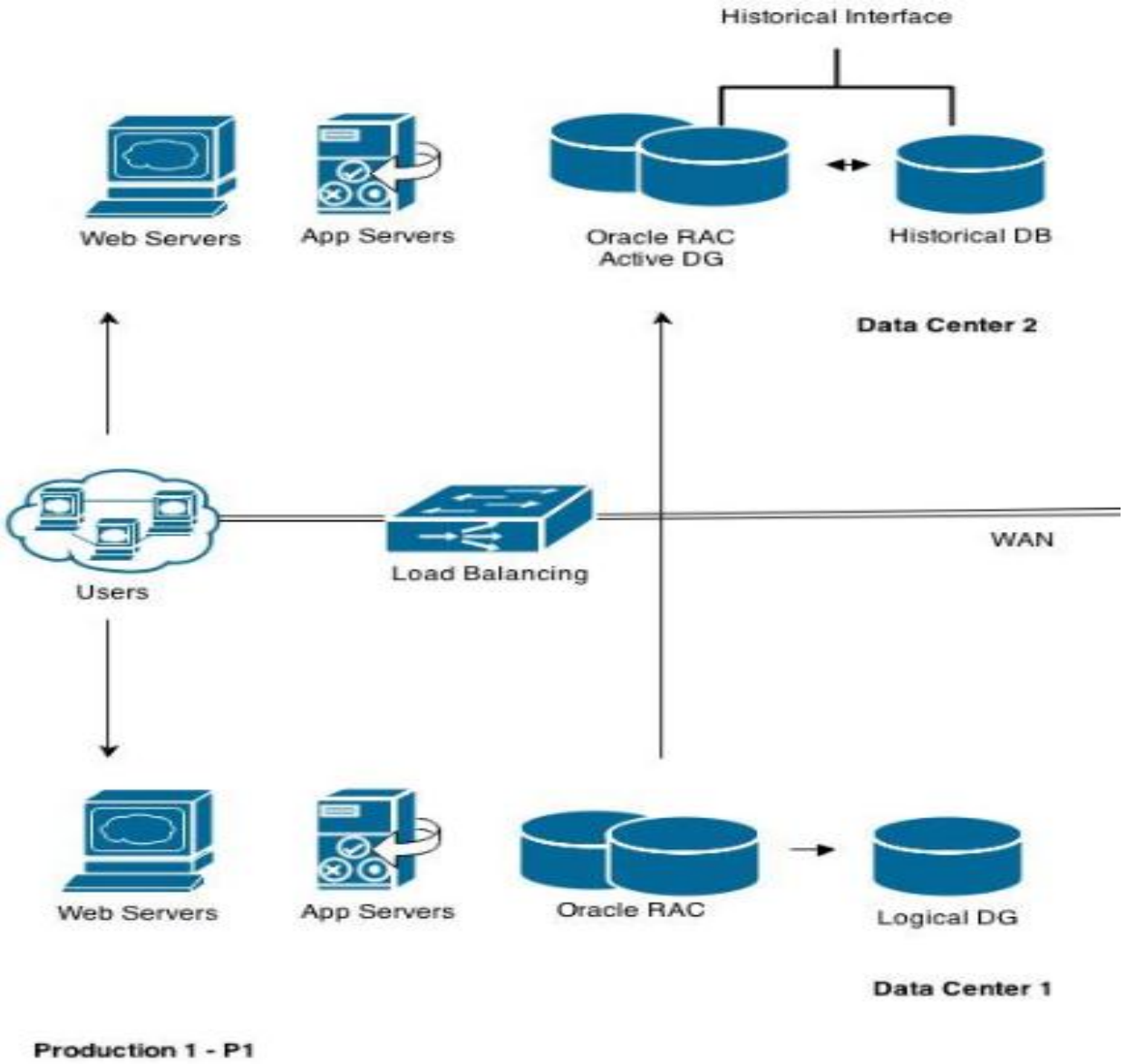
SEMO provides 24 * 7 internal/external facing systems and interfaces which are:

- Regulated by CER.
- Operate within stringent KPI's.
- RTO of seconds to minutes.
- RPO of zero to near zero.

To achieve this the database estate references the Oracle MAA Reference Architecture.

Gold Tier offering Comprehensive HA/DR With RTO of seconds to Minutes , RPO zero to near zero.

- ❑ Oracle RAC
- ❑ Oracle Active Data Guard
- ❑ 12c Cloud Control



12c Cloud Control

Copyright © EirGrid/SONI 2013

2nd : Bug Data fixes : Golden Gate

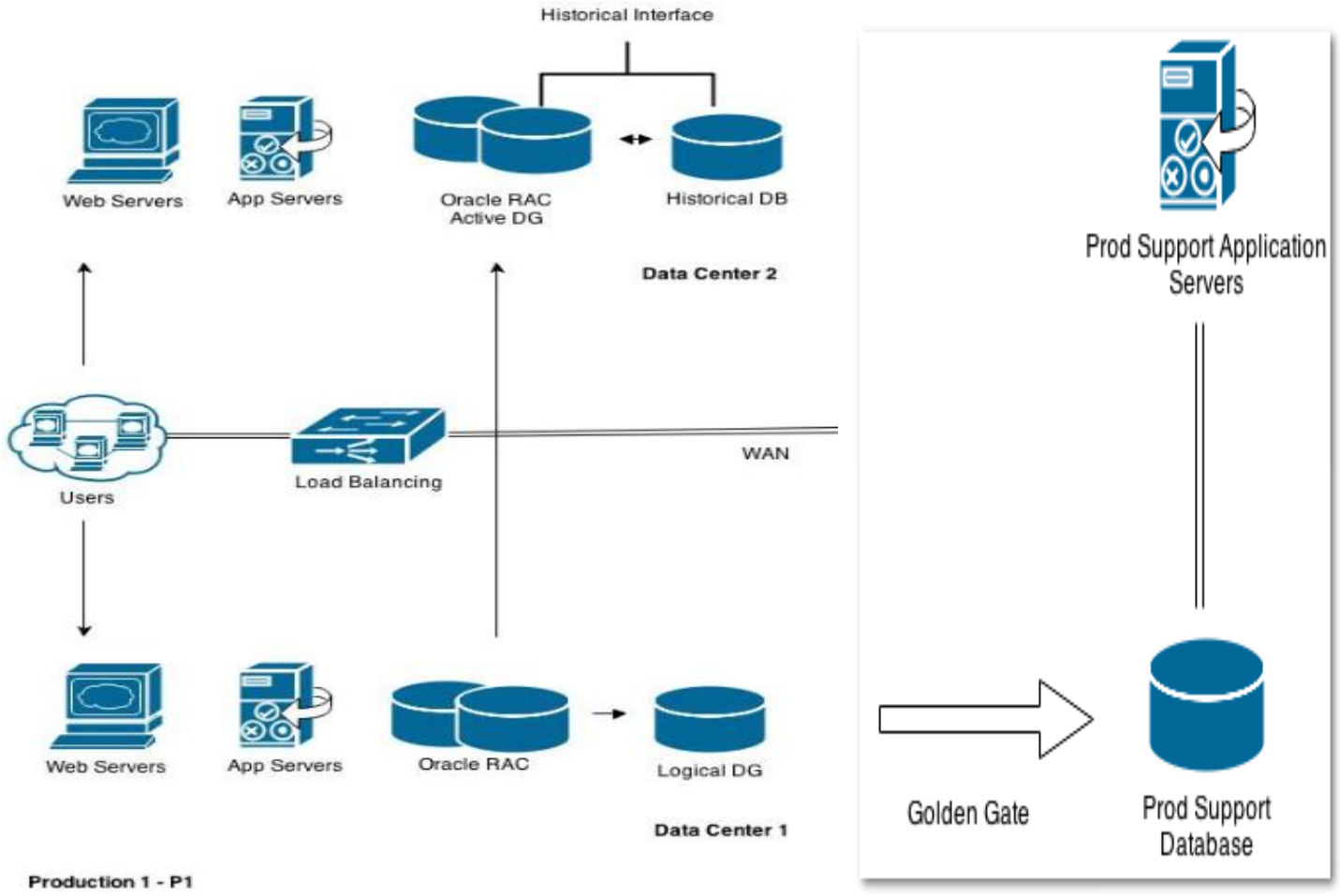
SEM has a requirement to deliver bug and data fixes within hours of the event. This requires:

In Sync Prod Copy of a 3TB database.

Ability to roll the database backward and forward to reply the event.

Real Time Replication : Bug & Data Fixes

- ❑ Oracle Golden Gate
- ❑ Oracle Flashback Database
- ❑ Oracle Golden Gate Veridata
- ❑ 12c Cloud Control



Stage 1 : Open GG Environment

- ❑ Stop GG Replication
- ❑ Create a GRP
- ❑ Start Prod Support Apps
- ❑ Wait until Bug Data fix resolution

Stage 2 : Sync GG Environment

- ❑ Isolate DB from Apps
- ❑ Flash database back to GRP
- ❑ Start GG Replication

12c Cloud Control

Veridata

Copyright © EirGrid/SONI 2013

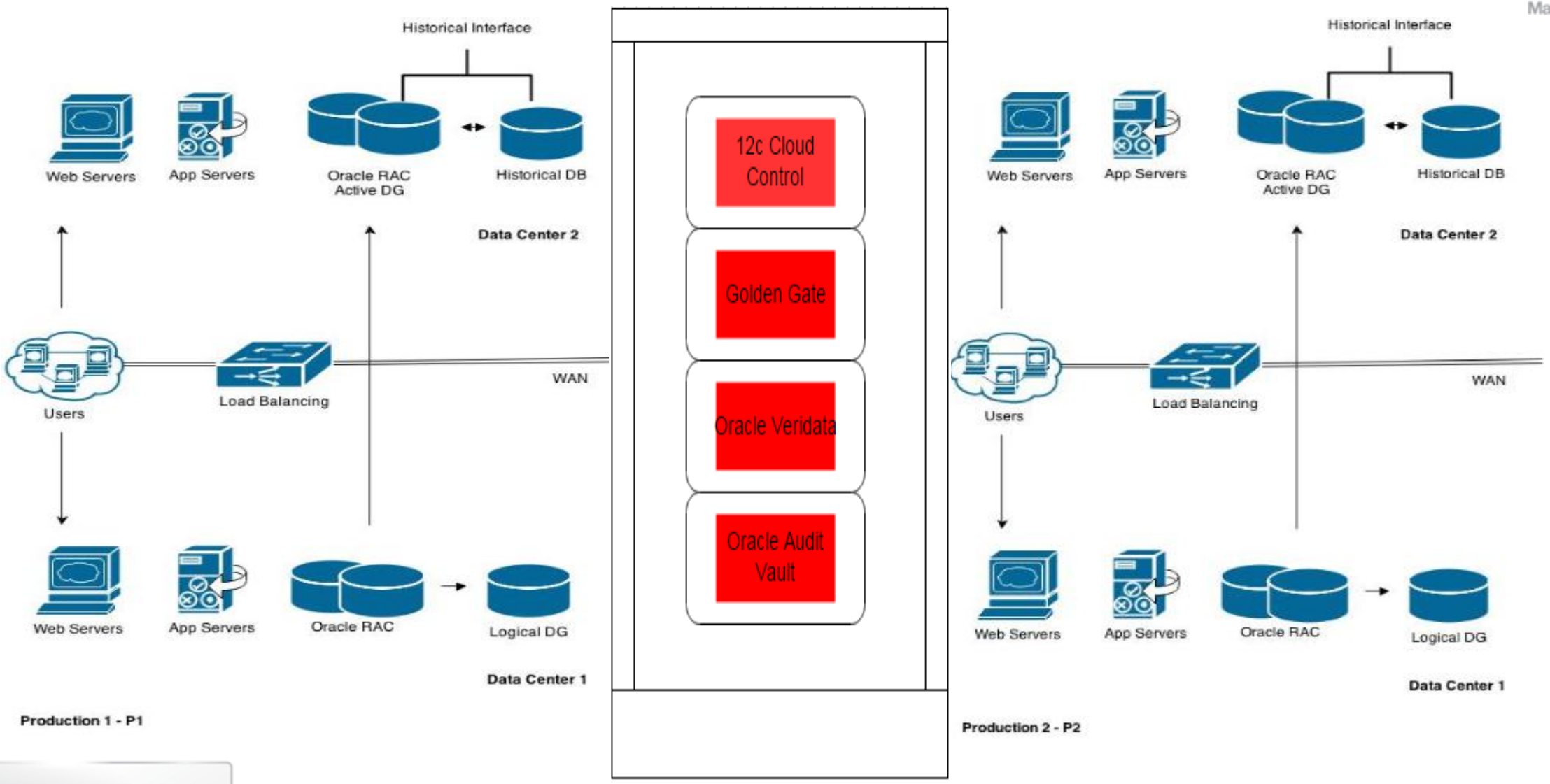
3rd Bi Annual Releases : Private Cloud

SEMO has a requirement to provide support for 2 Bi – Annual Market Releases with a maintenance window of 12 hours.

SEMO Oracle Private Cloud

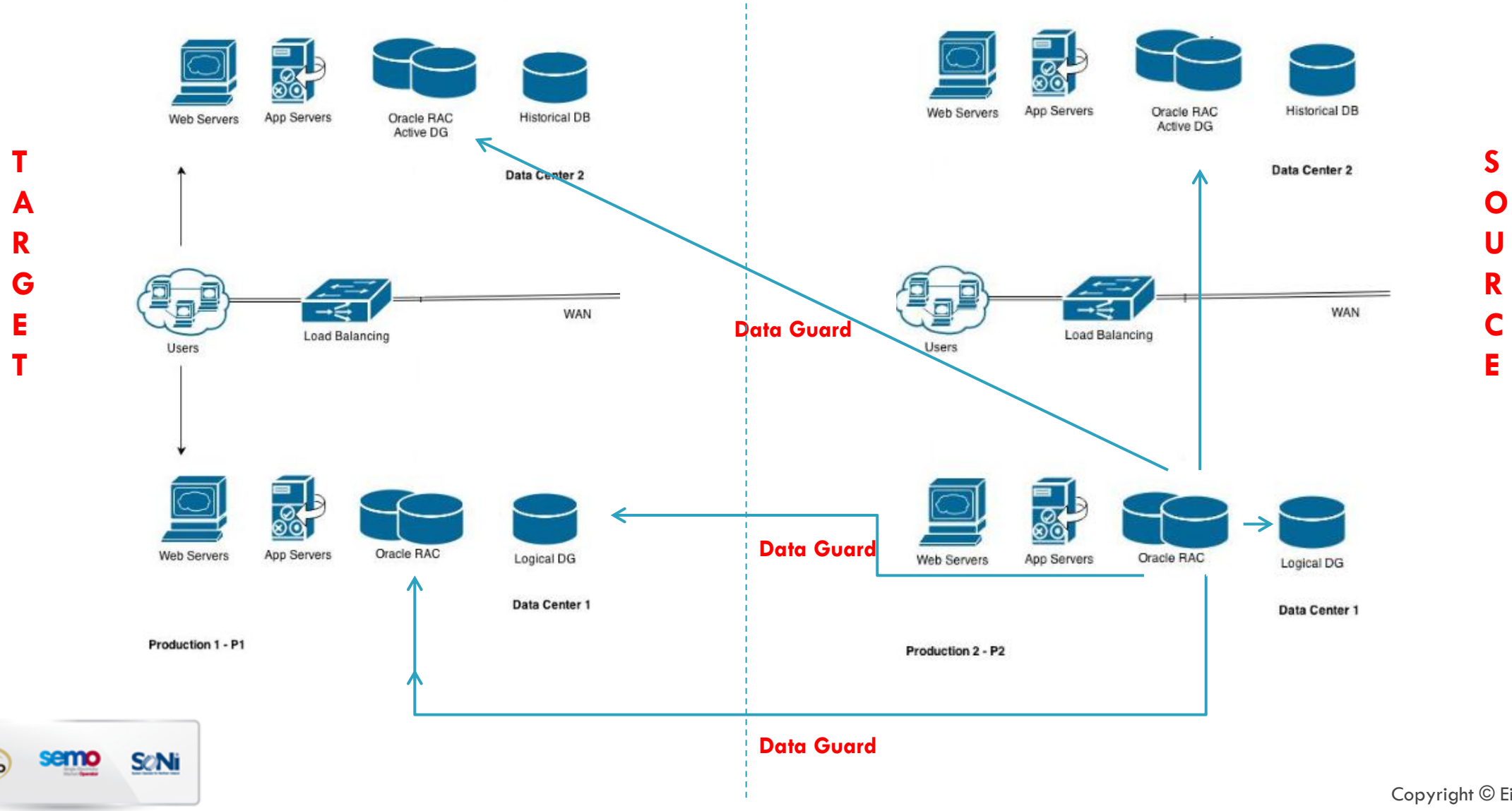
- ❑ SEMO Oracle Private Cloud
- ❑ Bi Annual Release: Data Guard Option
- ❑ Bi Annual Release: Golden Gate Option

SEMO PRIVATE CLOUD



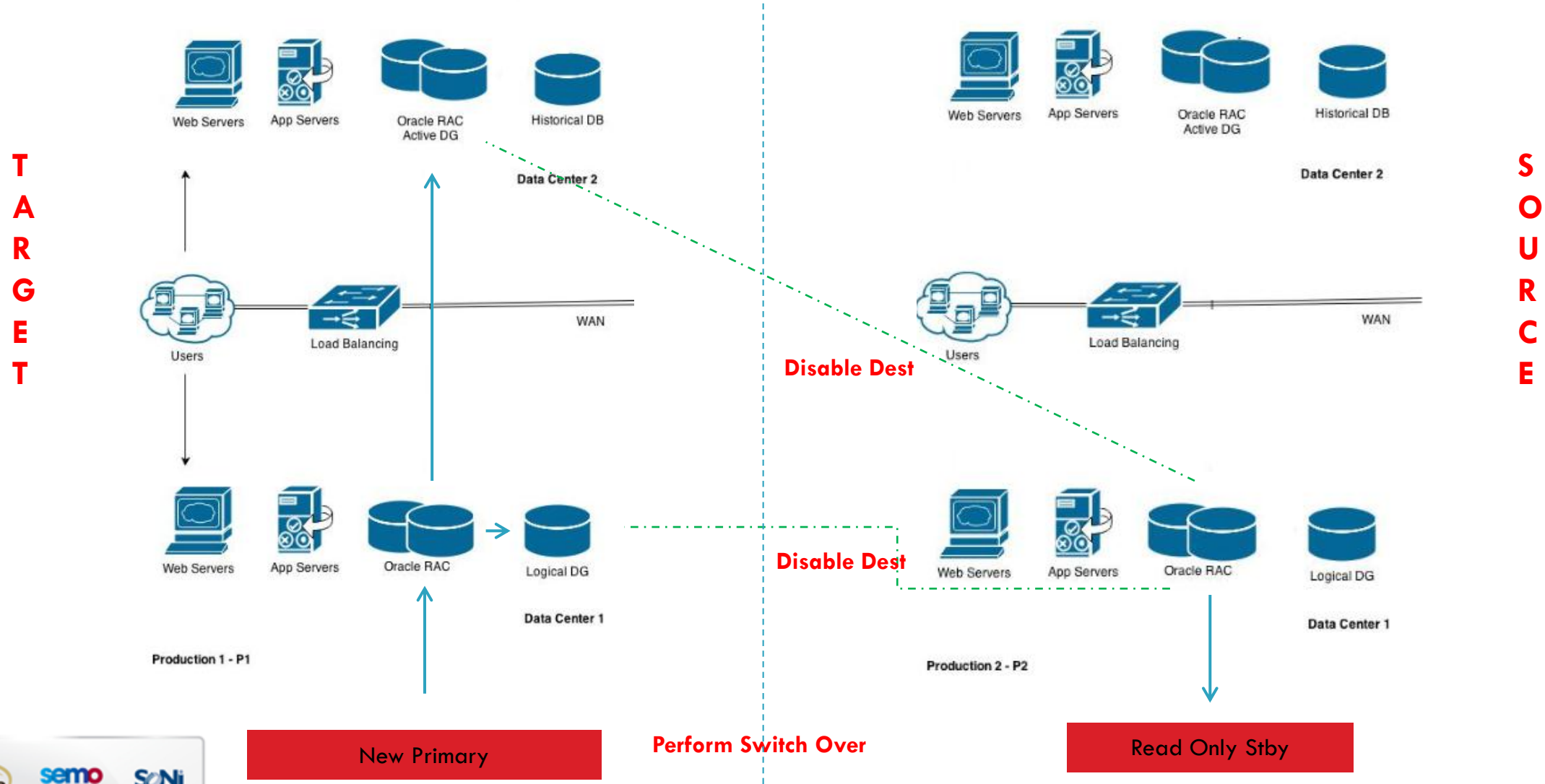
Copyright © EirGrid/SONI 2013

Bi Annual Release : Data Guard Option



Copyright © EirGrid/SONI 2013

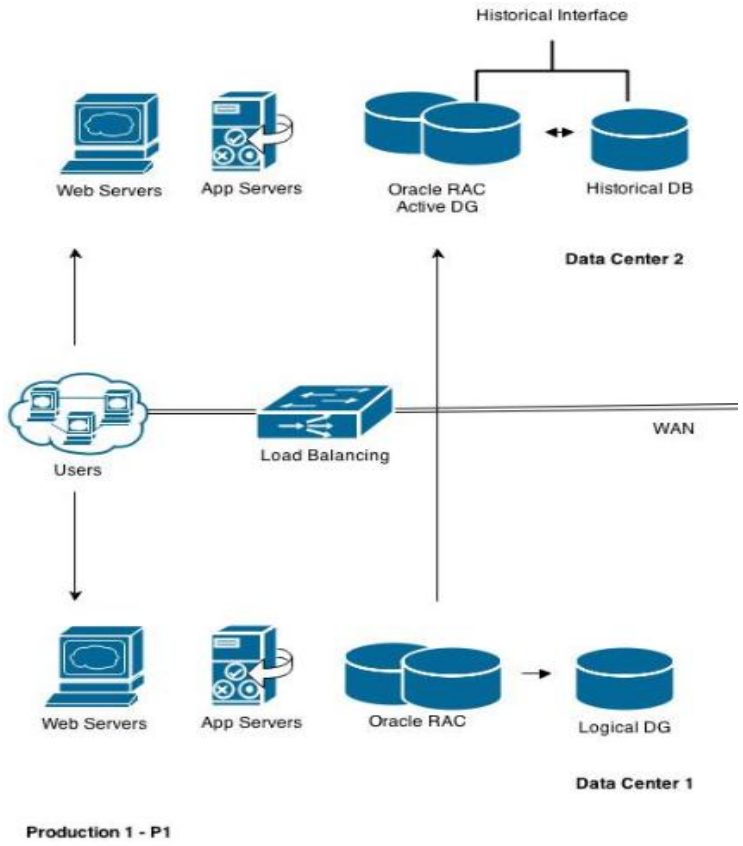
Bi Annual Release : Data Guard Option



Copyright © EirGrid/SONI 2013

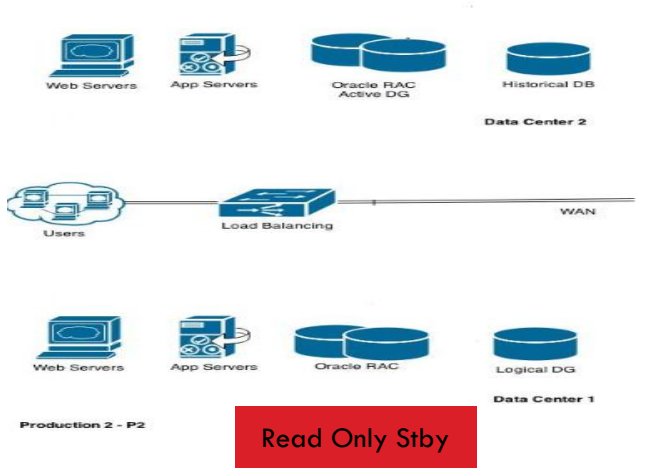
Bi Annual Release : Data Guard Option

TARGET



New Primary

SOURCE

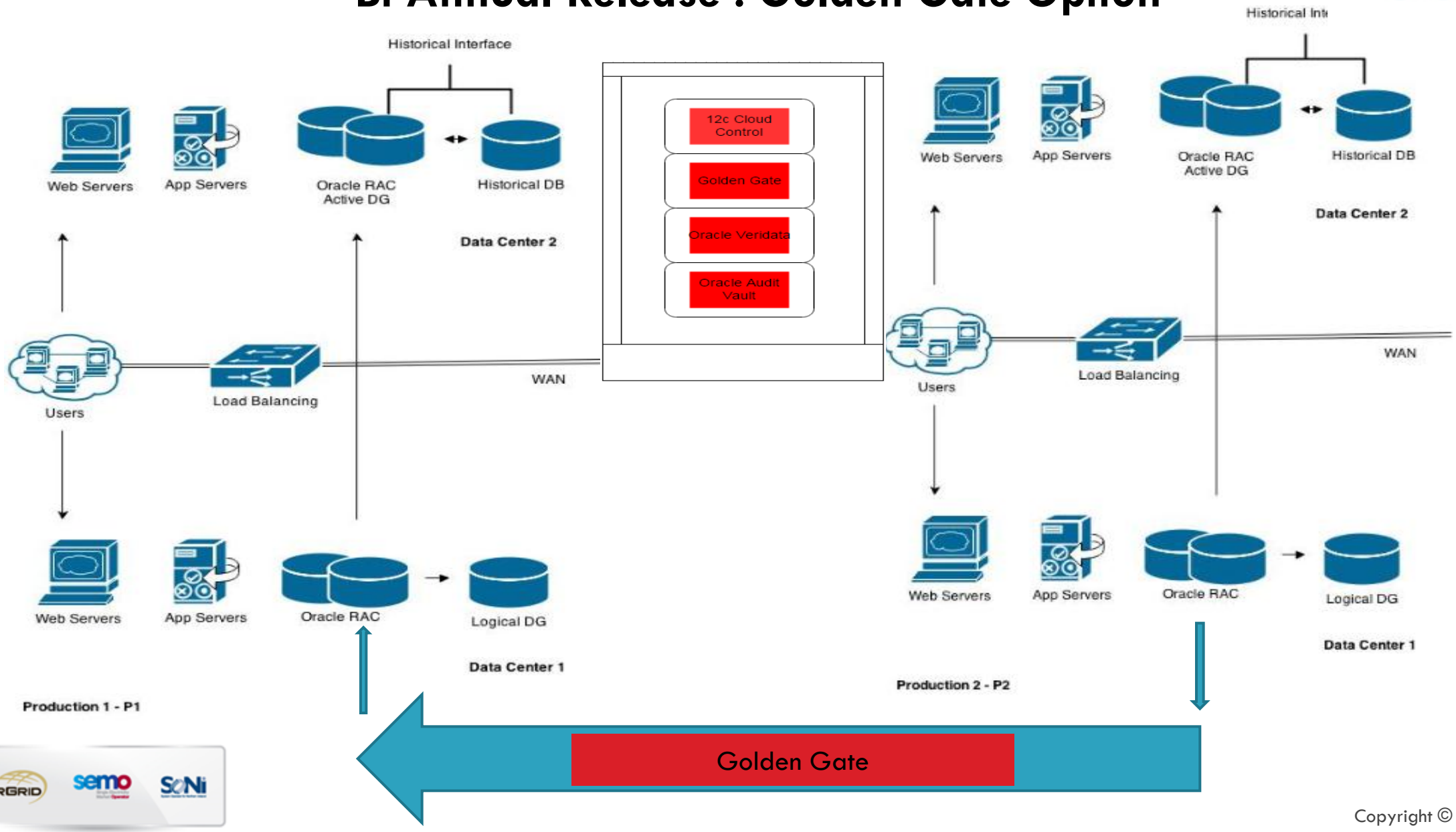


Read Only Stby

- ❑ Create GRP
- ❑ Apply Release Scripts
- ❑ Archive Database Partitions
- ❑ NAT Rules
- ❑ Target is now Production

Copyright © EirGrid/SONI 2013

Bi Annual Release : Golden Gate Option



Copyright © EirGrid/SONI 2013

Bi Annual Release : Golden Gate Option

Using Golden Gate , Veridata and Cloud Control
Allows SEMO to perform the following ahead of time

- ❑ Create All Data Guard Environments
- ❑ Perform Oracle PSU's / Upgrades on Target
- ❑ Archive Partitions/ Index Builds

Release window of minutes : near real time.

Copyright © EirGrid/SONI 2013

SEMO

3 key areas exists for maintaining the data systems which operate the wholesale electricity market on the Island of Ireland and contribute to the operation of the Energy Grid.

1St : 24 * 7 Market.

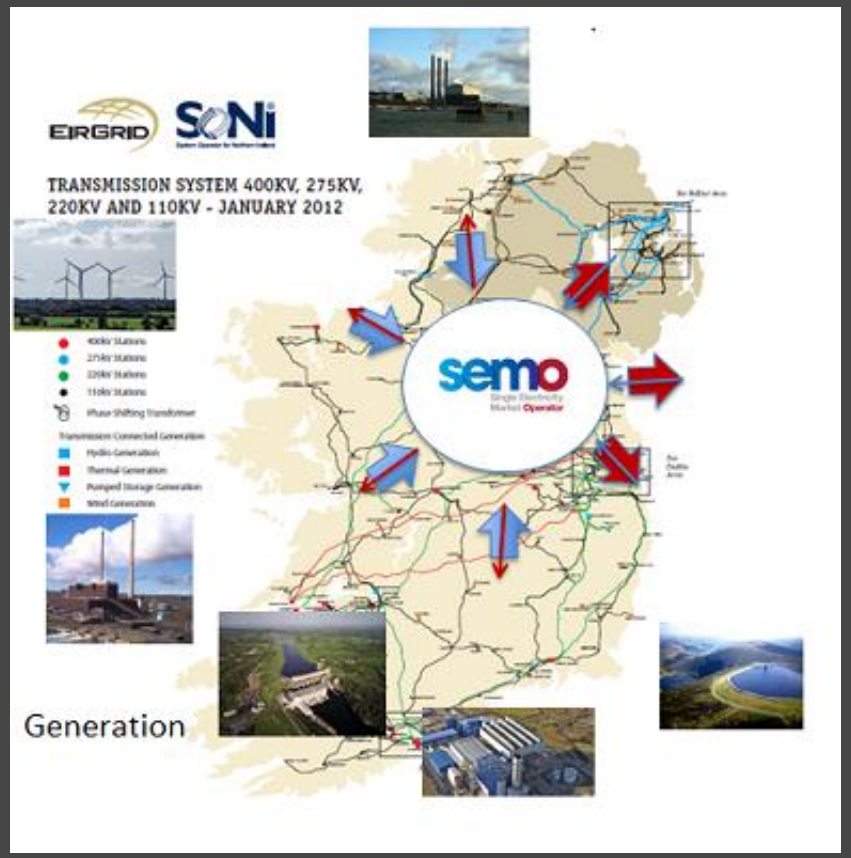
2nd : Bug/Data Fixes.

3rd : Bi Annual Releases.

SEMO Private Cloud

- ❑ Oracle MAA : RAC/ Data guard
- ❑ Oracle Cloud Control
- ❑ Oracle Golden Gate
- ❑ Oracle Veridata

Copyright © EirGrid/SONI 2013



http://www.sem-o.com

http://www.eirgrid.ie

http://www.allislandproject.org

http://www.cer.ie

Questions and Answers