Oracle High Availability in Amadeus Mission Critical Applications

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Amadeus Data Processing
Data Services

Amadeus in a few words

Amadeus is a technology company dedicated to the **global travel industry**.

We are present in **195 countries** with a worldwide team of more than 11,000 people.

Our solutions help improve the **business performance** of travel agencies, corporations, airlines, airports, hotels, railways and more.

Our customers

amadeus

Amadeus Global Operations

Central Data Centre in Erding, Germany

Erding

1.6+ billion transactions processed per day

502+ million travel agency bookings processed in 2013

615+ million Passengers Boarded (PBs) in 2013

95% of the world's scheduled network airline seats

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Architecture overview

Open Back End – including Departure Control Systems
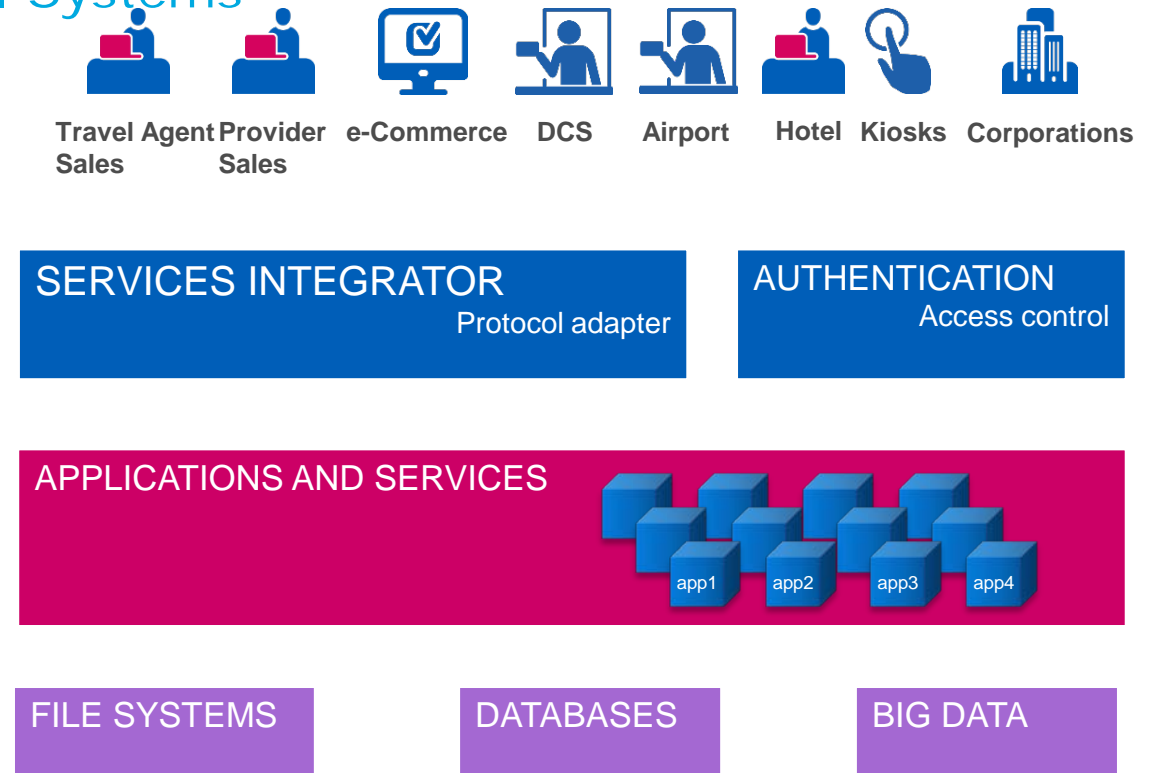
Service oriented

- Layered
- Modular
- Composite services
- Service self-registration

Highly distributed design

- Hundreds of interconnected servers

Scalability

- Scale out: Additional servers bring capacity on demand
- Scale up: Processing power benefits from evolutions in the semiconductor industry

Travel Agent Sales **Provider Sales** **e-Commerce** **DCS** **Airport** **Hotel** **Kiosks** **Corporations**

SERVICES INTEGRATOR
Protocol adapter

AUTHENTICATION
Access control

APPLICATIONS AND SERVICES
app1 app2 app3 app4

FILE SYSTEMS

DATABASES

BIG DATA

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Mission Critical Applications
Current DB topology

- CRS services in Active/Passive
  - Role-switch: internal process to free computing resources
  - Rolling PSU and one off-patches
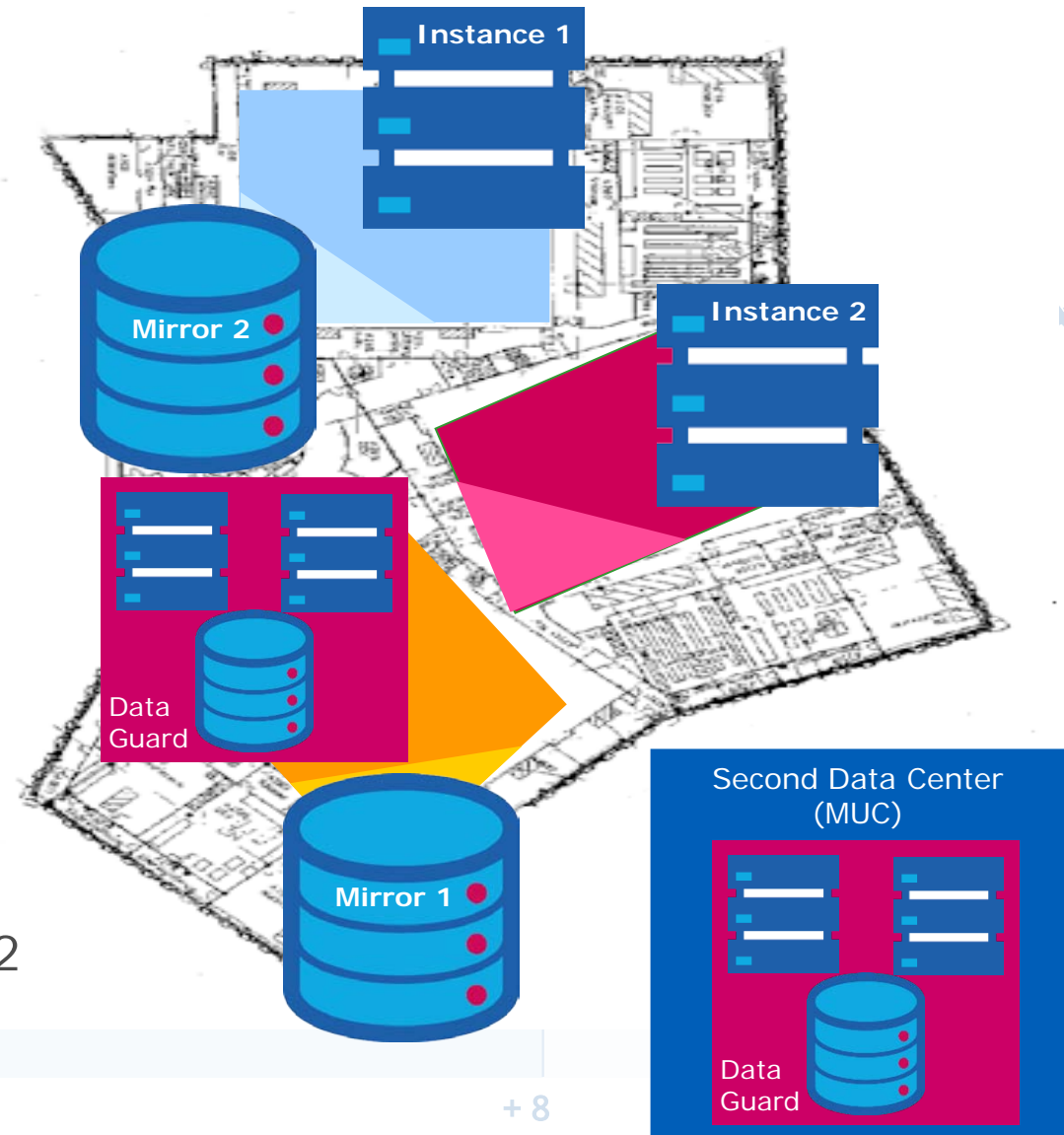- ASM in normal redundancy with failure groups in different fire-cells
  - Volume mirroring leveraged for storage evolution
- Amadeus MW instrumented for recovery
  - Leveraging similar concepts as of TAF and FAN
- Data Guard in Maximum Performance Mode
  - Planned switch over using Data Guard Broker: 2 minutes
  - Exadata for isolation and consolidation
  - Flashback DB enabled in DG: 36 hours/900GB flashback in less than 30 minutes
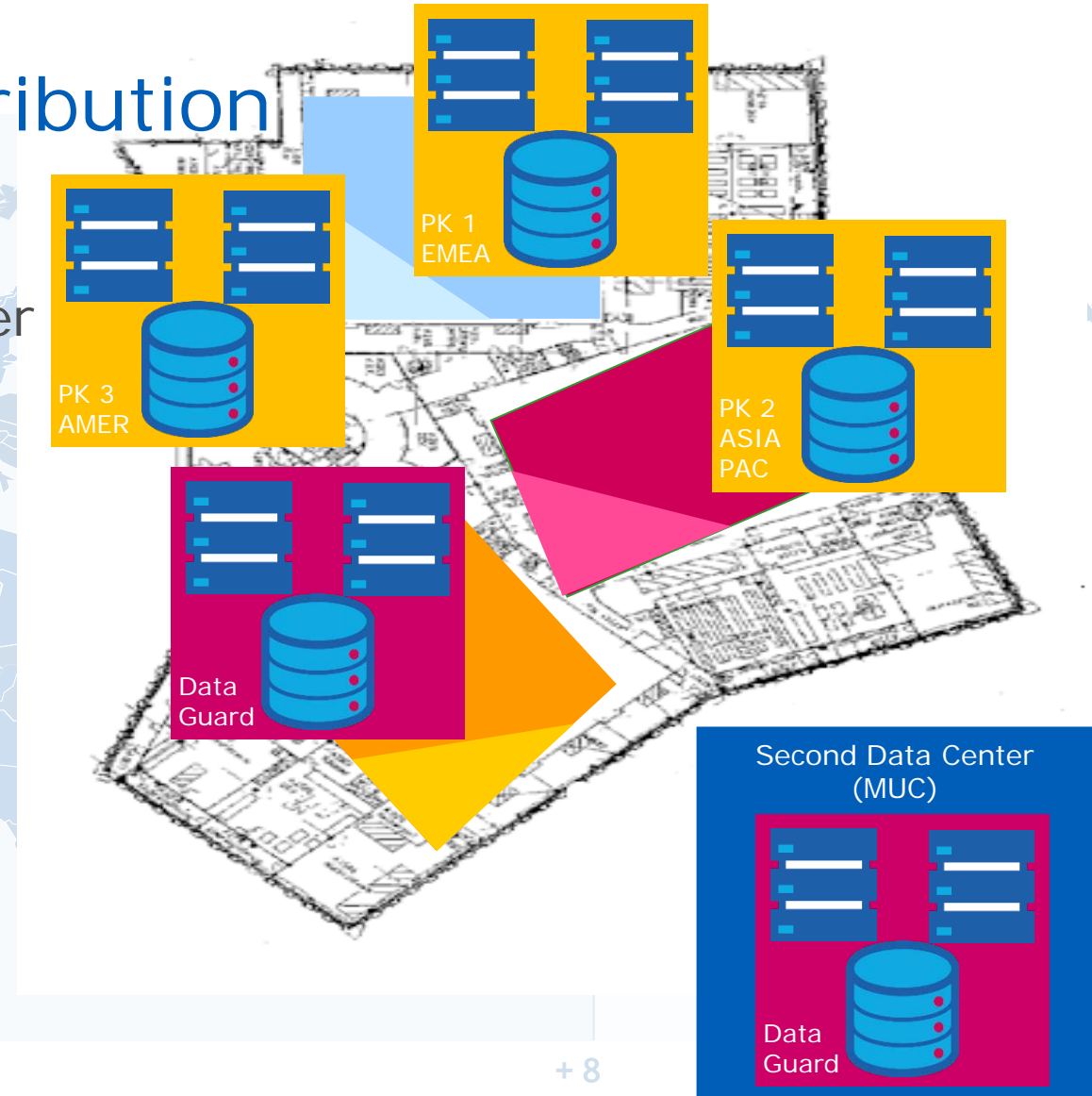
Instance 1

Instance 2

Mirror 2

Data Guard

Mirror 1

Second Data Center (MUC)

Data Guard

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Mission Critical Applications
DB futures – Isolation and distribution

__ **Infrastructure enhancements**
- Minimize the shared components in order to mitigate impact

__ **Oracle features**
- RAC in a box for rolling patches
  - Retaining the manageability for patch management
- ASM and other HA enhancements
  - Improved manageability of our platforms
- 12c Application Continuity / Transaction Guard
  - To be studied

PK 1
EMEA

PK 3
AMER

PK 2
ASIA
PAC

Data
Guard

Second Data Center
(MUC)

Data
Guard

Bad Homburg

London

Erding

Miami

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Mission Critical Applications
DB futures – DR in the Cloud

Oracle features

- 12c Active Data Guard Far Sync Replication
  - Improved resiliency in cross continent replications

- 12c Global Data Services
  - Simplification of the App-to-DB connectivity settings
  - Improved resilience against failures
  - Workload balancing
    - Monitoring purpose
    - RO workloads

… and beyond

- Distribution of Amadeus services in the Cloud
  - DR services to start
  - Own and third party data centers
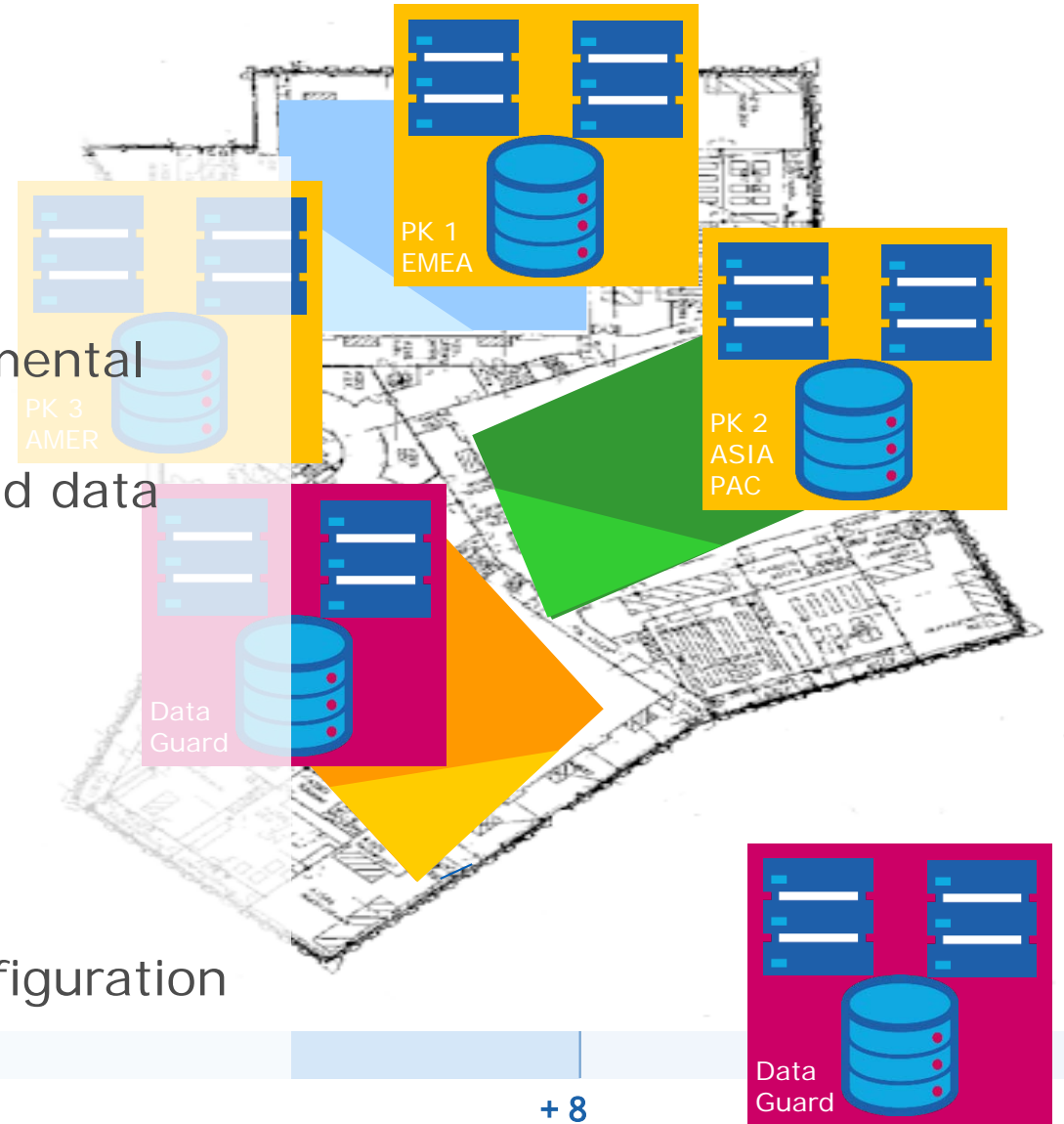   - Licensing model under negotiation

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Mission Critical Applications
Transform while perform

Oracle GoldenGate

- Zero (minimum) down-time for upgrades
- Bi-directional cross version/endian ➔ fundamental feature to allow the fallback
- Reorganization enabler ➔ Data dictionary and data objects

- 12c
  - Improved manageability
    - Tuned upgrade use case
    - Integration with Global Data Services
  - Complements Active Data Guard in MAA configuration

Data Guard

Data

PK 3
AMER

PK 1
EMEA

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ASIA
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Data Guard

Data Guard

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_____ Thank you

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