AOS/FARMS out of the cloud

T-Systems Airport User Days & Conference |
September, 7-8 2023

‐T‐ Systems   Let's power
higher performance

Cloud FARMS/AOS – Introduction
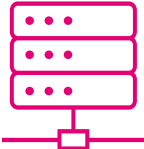
First of all:
- On-Premises solutions are and will remain part of our strategic portfolio and will not be phased out.
- But there are some reasons to think about a cloud solution

What I would like to discuss:
- What does it mean to move AOS or parts of it to the cloud
   - From a technical point of view
    - From an operational point of view

·T· ·Systems·

Let's power
higher performance

Cloud FARMS/AOS – Overview

	On -Premise	**Customer private - Or Public cloud**	**SaaS**
T-Systems Solution Compatibility	✅	✅	✅
Implementation Approach	The customer provides and manages servers in its data center based on an estimate from T-Systems Application Management done by T-Systems	Cloud (private or public) infrastructure based on T-Systems estimation Airport has a contract with cloud provider Application Management done by T-Systems .	T-Systems provides and manages cloud infrastructure T-Systems has a contract with cloud provider Application Management done by T-Systems

T· · ·Systems

Let's power
higher performance

Cloud FARMS/AOS – today
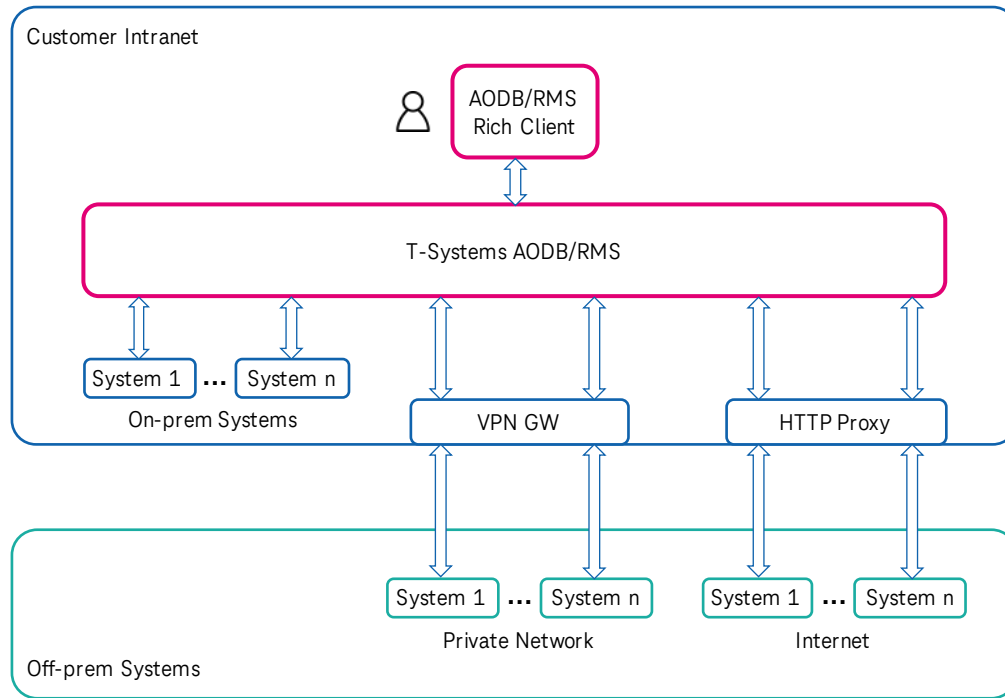
T-Systems AOS/FARMS:

- Control:
  Airport has full control over its hardware, software, and data as everything is managed internally.

- Data Security:
  Since all data is stored internally, airport has more control over security and data privacy.

- Cost Control:
  Costs can be better predicted and spread out over a longer period.

Cloud FARMS/AOS: Migration paths
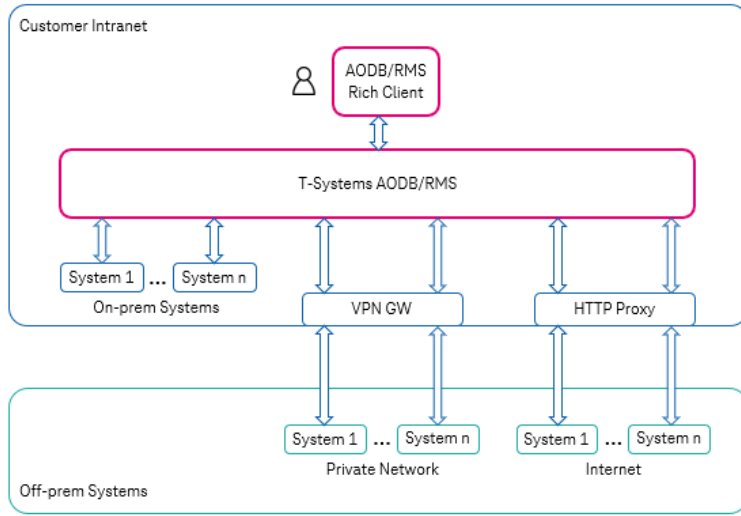
ORACLE => Dedicated HW
Postgres => Virtual Environment

- ORACLE Database
  - Oracle Cloud infrastructure (OCI)
  - Oracle EU Sovereign Cloud

- EDB Postgres Database
  - Private virtual Environment
  - Amazon
  - Azure

What is the difference between public cloud and sovereign cloud?
With public clouds, you could run the risk that your data may be moved outside of the country for innocent reasons, such as backup and recovery operations. Sovereign clouds avoid this risk since they physically exist in the country they support.

· · T · · Systems

Let's power
higher performance

Cloud FARMS/AOS – private or public cloud
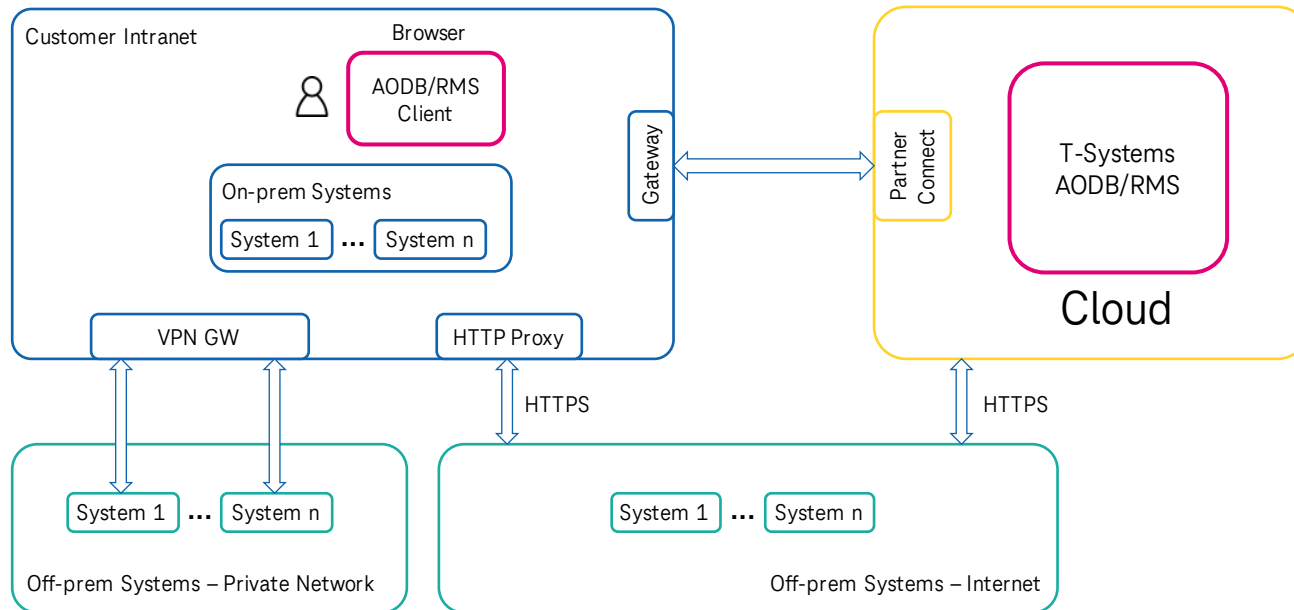
T-Systems Cloud AOS

- **Data Location**
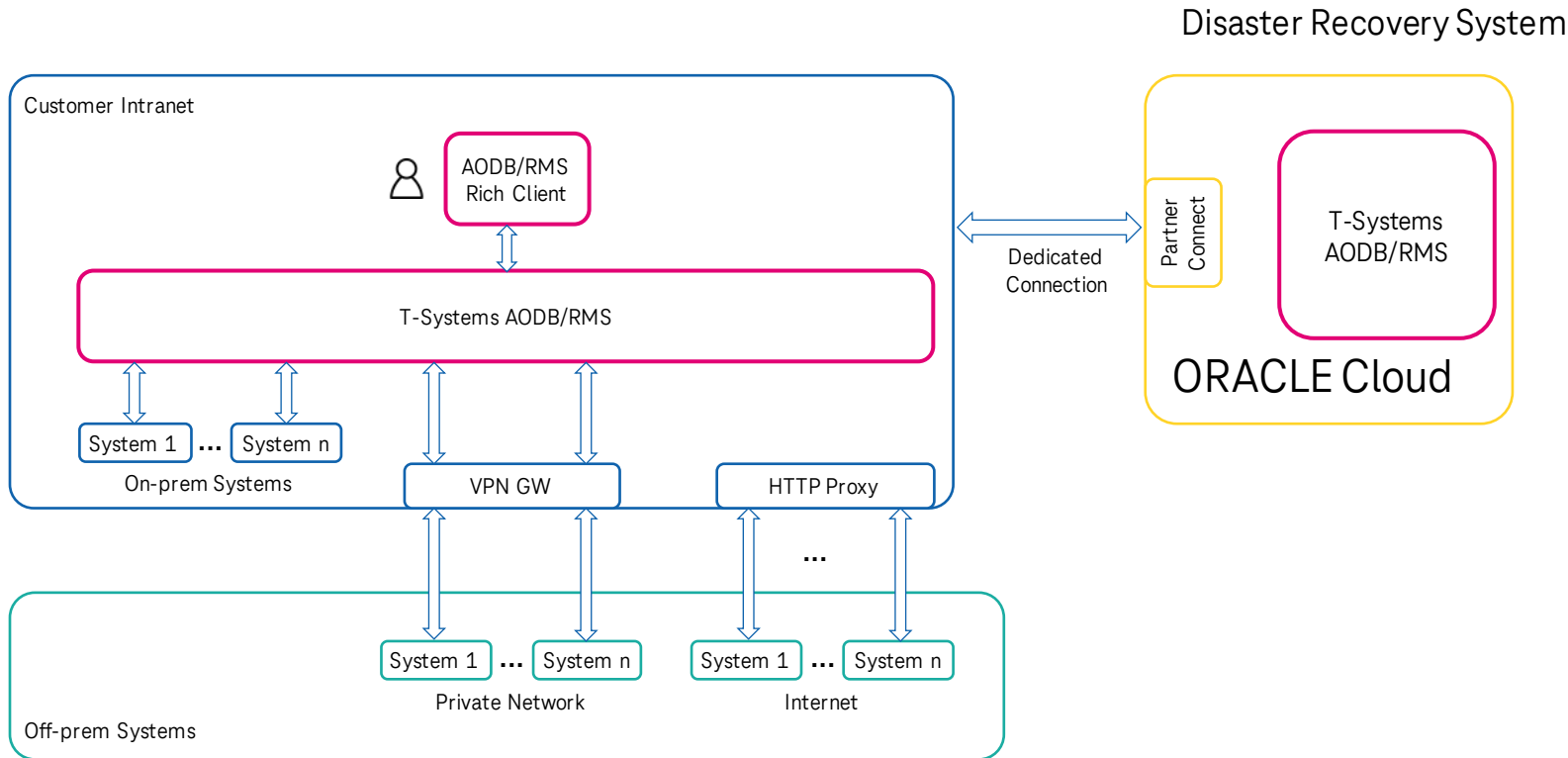 - Private-, Sovereign-, Public Cloud
  - Google, Azure, AWS: EDB Postgres DB
  - ORACLE OCI/Sovereign Cloud
- **Connectivity**
  - Internet 2FA
  - Dedicated connection VPN
- **Contract with cloud provider:**
  - Airport
  - T-Systems -> SaaS

- Rich Client => Browser
- Scalability: Virtually unlimited scalability
- Cost Savings: Require less initial investment as customers only pay for the resources actually used
- Easy to integrate with other cloud environment or 3rd parties (e.g. Airlines, GHs)
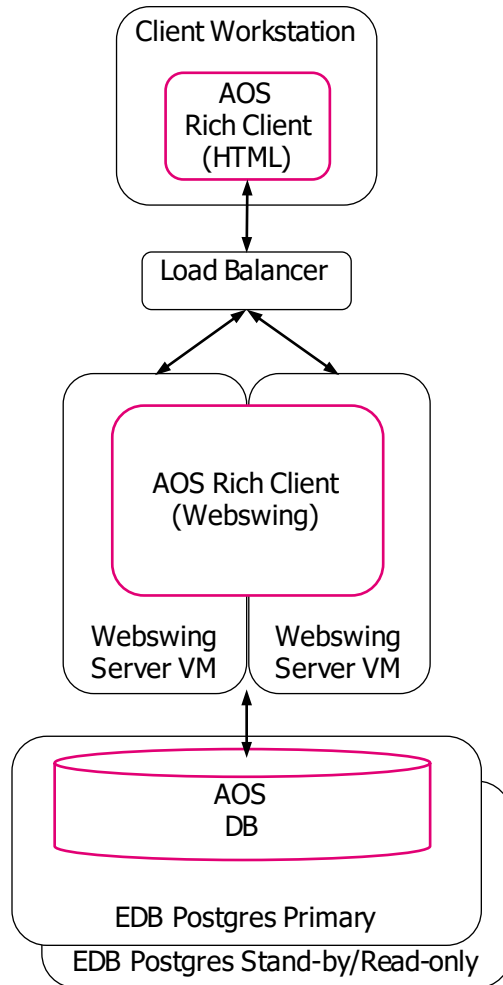
Let's power
higher performance

Cloud FARMS/AOS – Hybride Alternative

Disaster Recovery System

Customer Intranet

AODB/RMS Rich Client

T-Systems AODB/RMS

System 1 ... System n
On-prem Systems

VPN GW

HTTP Proxy

Dedicated Connection

Partner Connect

T-Systems AODB/RMS

ORACLE Cloud

...

Off-prem Systems

System 1 ... System n
Private Network

System 1 ... System n
Internet

T-Systems Cloud AOS

- In case of high availability requirements where disaster recovery systems are necessary

- Disaster Recovery System could also run in a cloud environment

- ORACLE or Postgres depending on the primary database

- Cloud environment is scalable on short notice

- Payment depending on usage.

- Small sizing during standby and increasing during disaster case

Cloud AOS means AOS in a Browser

Client Workstation
> AOS
> Rich Client
> (HTML)

Load Balancer

AOS Rich Client
(Webswing)

Webswing
Server VM

Webswing
Server VM

AOS
DB

EDB Postgres Primary

EDB Postgres Stand-by/Read-only

Browser
Chrome, Edge, Firefox

Webswing
Webswing is a 3rd party software that makes it possible to run Java applications via a web browser.

Benefits
- No need to run or install anything on the local PC
- Improvement of Security
- Almost the same Look & Feel as the FARMS Rich Client
- Separate security enhancements are required for direct use from the Internet

AOS Extension
- More CPU Power and RAM on Serverside as Rich Client
- Up and downloading of local files (flightschedules) is possible.
- Jasper Reports are started in a separate browser window

T··Systems

Let's power
higher performance

Cloud AOS: AOS in a Browser

Benefits

- *Almost the same Look & Feel as the FARMS Rich Client*

AOS Extension

- AOS is running in the Browser

Let's power
higher performance

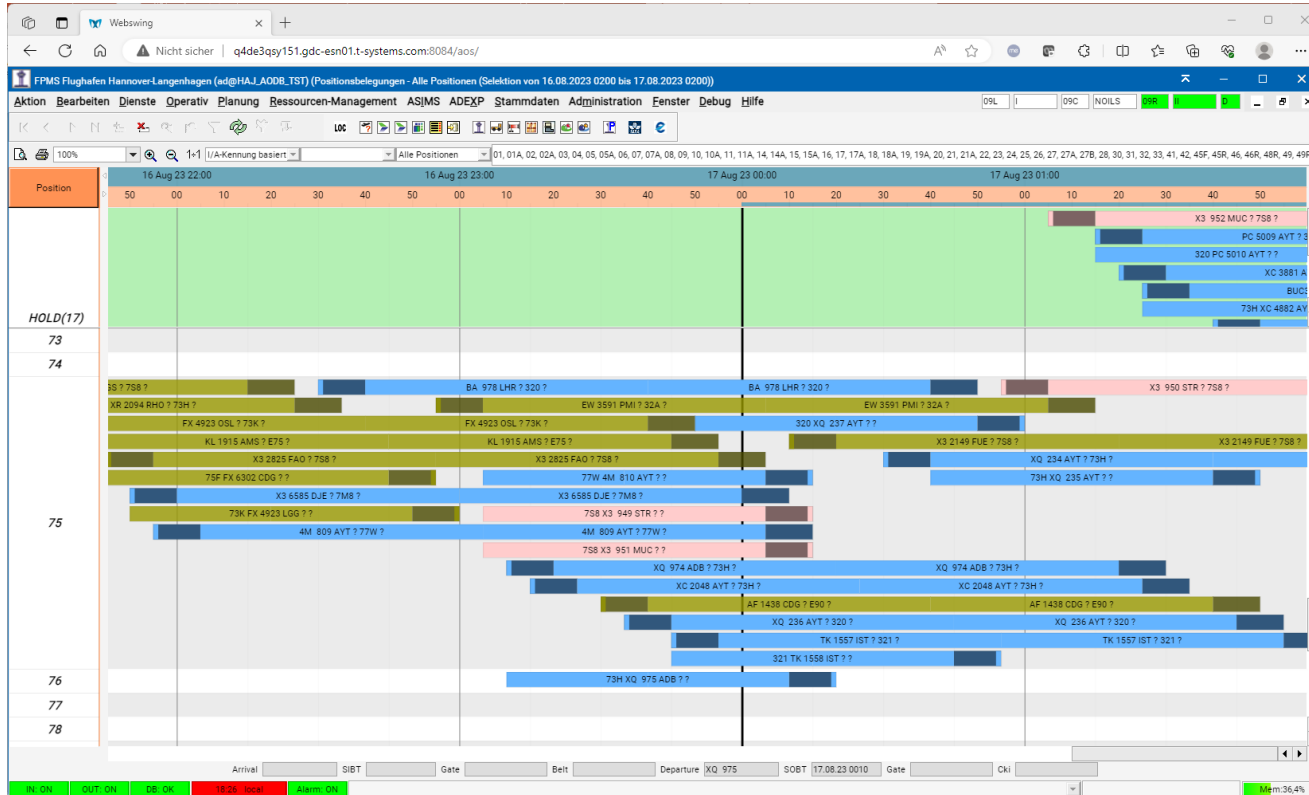# Cloud AOS: FARMS in a Browser

Benefits

- *Almost the same Look & Feel as the FARMS Rich Client*

AOS Extension

- AOS is running in the Browser

Cloud AOS: Gantt in a Browser

Benefits

- *Almost the same Look & Feel as the FARMS Rich Client*

AOS Extension

- AOS is running in the Browser

Let's power
higher performance

Cloud AOS: Managed Services

Software as a Service (SaaS):
- In SaaS, the application software (AOS,FIDS ...) is provided and managed by T-Systems.
- Included Services:
    - Application Management , Maintenance and Operations
    - (availability, release, patch, incident, problem management, etc)
    - 3rd party Software Management (operating system, database, webserver, etc.)
    - Infrastructure Management
    - Backup and Recovery
    - Monitoring, Alerting and Reporting
- T-Systems is responsible for software updates, security, and maintenance.
- Usually hosted in the cloud but also on premises possible
- Airports have limited or no control over the underlying infrastructure and configurations.
- Cost Model: Subscription fees which could base on airport size, number of flights, etc.

Any combination of hosting and managed services is possible and T-Systems is able to deploy its airport solutions in multiple environments (on-premise, in a private cloud and in a public cloud) and also offers SaaS.

T **Systems**

Let's power
higher performance

Cloud FARMS/AOS – Overview

Summary

The choice between these options **depends on factors** such as security requirements, budget, scalability needs, technical expertise, and individual customer requirements.

Hybrid solutions (test, disaster recovery in the cloud) that combine the advantages of different models could be a **first step** in this direction.

T··**Systems**

Let's power
higher performance

Thank you!

Michael Brost
Chapterlead
Airport Management

Michael.Brost@t-systems.com
+49 241 9197189

T· Systems

Let's power
higher performance