

Industrial and government applications in the Cloud

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Thales Group

A global company with 68,000 employees and €13.1 billion in revenues



Countries

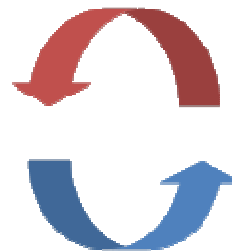
50 countries



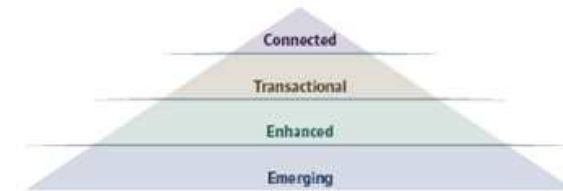
Divisions

7 divisions

- Defence & Security C4I Systems
- Air Operations
- Avionics
- Space
- Defence Mission Systems
- Land Defence
- Transportation Systems

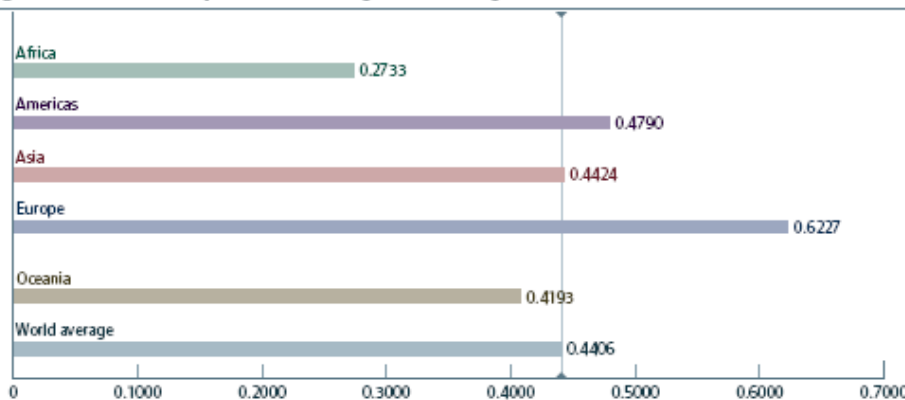


E-Government in the world



- 4 stages of online service deployment:
 - Emerging: information on public policy, governance, laws, regulations ...
 - Enhanced: one-way communication with citizens (ex.: downloadable forms)
 - Transactional: two-way communication with citizens (ex.: filling taxes)
 - Connected: proactivity in requesting information and opinions from citizens, across ministry boundaries (citizen centric approach)

E-government development index regional averages



Top 20 countries in e-government development

Rank	Country	E-government development index value
1	Republic of Korea	0.8785
2	United States	0.8510
3	Canada	0.8448
4	United Kingdom	0.8147
5	Netherlands	0.8097
6	Norway	0.8020
7	Denmark	0.7872
8	Australia	0.7863
9	Spain	0.7516
10	France	0.7510
11	Singapore	0.7476
12	Sweden	0.7474
13	Bahrain	0.7363
14	New Zealand	0.7311
15	Germany	0.7309
16	Belgium	0.7225
17	Japan	0.7152
18	Switzerland	0.7136
19	Finland	0.6967
20	Estonia	0.6965

Source : United Nation E-Government Survey 2010

Particularity & Requirements (1)

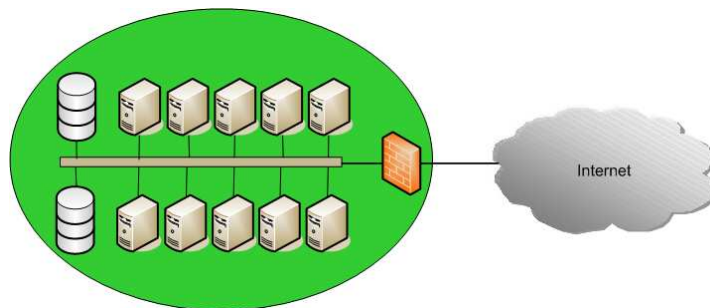
- Several domains addressed like:
 - Health (ex. in France: the electronic social insurance card *Vitale*),
 - Administrative procedure (ex.: possibility to notify online a change of address to several public authorities at once),
 - Tax (ex.: tax portal which enables the filing of personal income and corporate returns and the online payment of taxes),
 - Procurement (ex. in France: country-wide eProcurement platform marches-publics.gouv.fr),
 - ...
- Large-scale:
 - Potentially billion of users
 - Ten of thousands simultaneous connections

Particularity & Requirements (2)

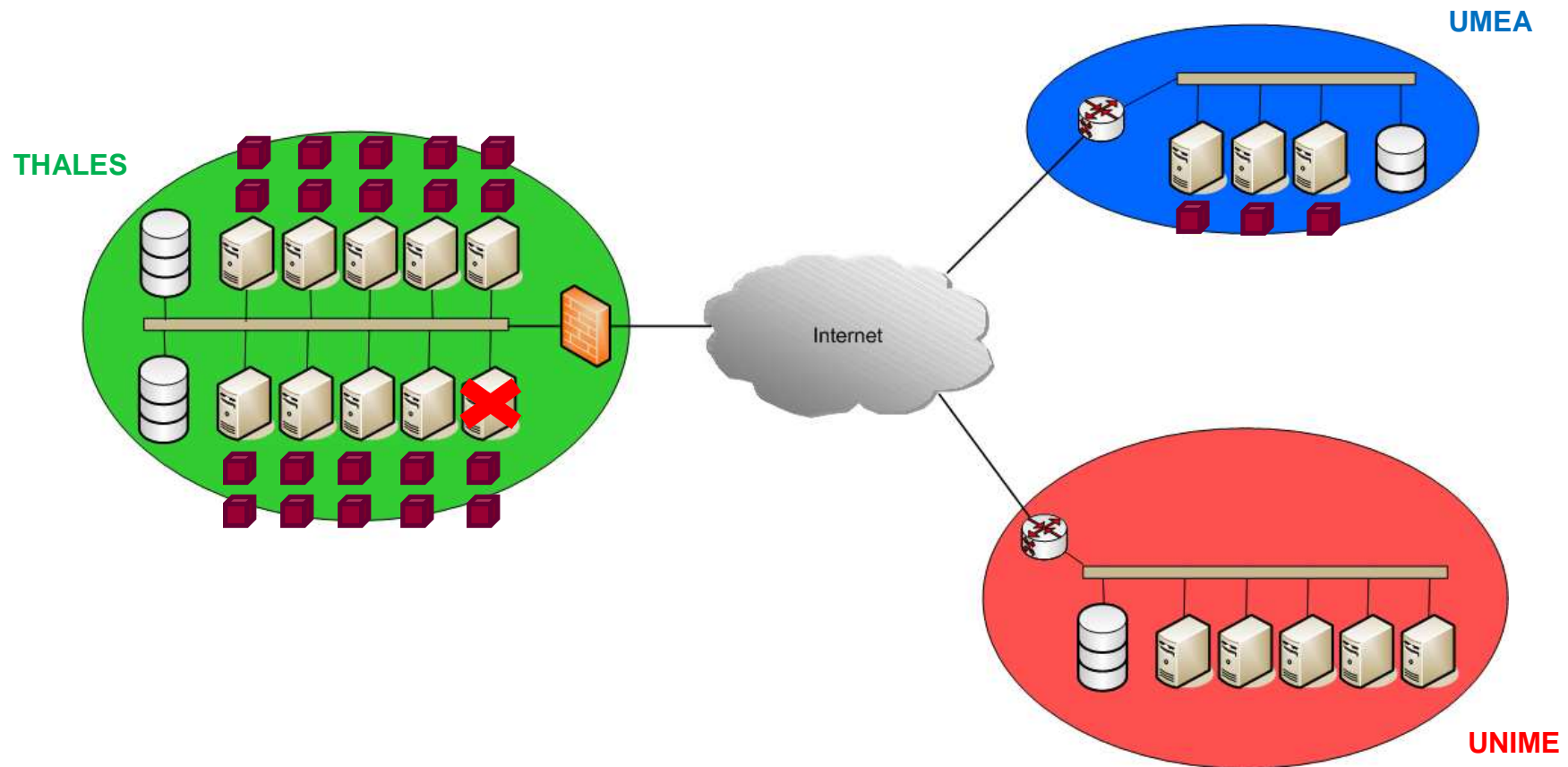
- Possible seasonality of the demand
 - Example: tax portal
 - good candidate to be run in a cloud infrastructure
- Security:
 - Isolation
 - Data protection
 - Loss, destruction, leakage, theft
 - Compliance
 - Data location
 - Law & regulations
 - Trust
 - SLA & Audit
 - Data ownership (requisition, ...)
 - Identity and access management (authentication, access control)

Significant tests & results

- Multi-tiered application
- 4 scenarii addressed:
 - Automatic provisioning
 - Elasticity
 - Federation
 - Migration
- Over 3 interconnected testbeds

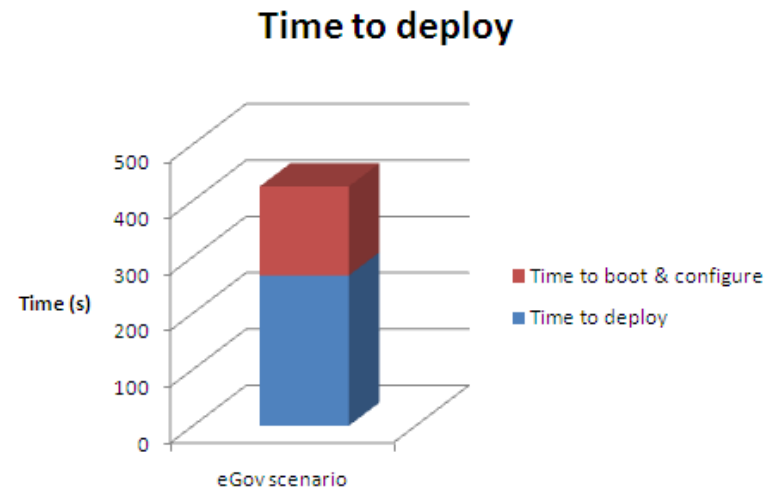


Example of scenario



Lesson learned: Provisioning

- Provisioning managed through Service Manifest
 - Multi-tiered and complex architecture
 - Application packaged into virtual machines
 - Activation Engine managing dynamic configuration of application components, as well as their dependencies
- Automatic provisioning is a key feature: eGov is deployed in few minutes!



Lesson learned: Elasticity

- Elasticity managed through Manifest
- Monitoring: need to define and collect KPI (Key Performance Indicators)
 - Related to the end-user experience
 - Able to identify the source of the contention (where to add virtual machines)
- Managing elasticity:
 - When scaling-up, load balancing should redirect the requests to the less loaded machines
 - When scaling-down, the pending requests have to be managed (ex.: in 2 steps with a withdrawal at load balancing first, and then a sleep before to stop)

Lesson learned: Federation

- Deployment on 3 interconnected testbeds (Thales France, UniMe Italy, UMEA Sweden)
- Provisioning, elasticity across sites
- Data Export Control
 - Able to restrict the VM localization to a specified area (linked to use-case requirement of data not transferred outside the country boundaries)
 - Managed in the application's Manifest (affinity flag)

Lesson learned: Performance

- Several possible configurations for disk and network

