We Make It Fly

Airbus Information Management
Automation, our way to the future
Laurent Peres
Infrastructure Project Manager

Aeronautical, and Space enthusiast

Likes traveling
- Asia
- US
- South America
- Western Europe

Toulouse
Like in “Nothing To Lose”
Our global workforce is united by a passion for aviation and restless desire to create better ways to fly.

55,000 Employees
€50.96 billion Annual revenue*
10yrs Backlog
400 Operators
Our aircrafts are a familiar sight around the world.

An Airbus takes off or lands every 1.4 seconds.

18,234 Aircraft sold
60 Produced monthly
25,000+ Daily flights
10,991 Delivered

Data to end February 2018
The most global aerospace player – close to our customers worldwide.
1500 Information System professionals located around the world wherever Airbus operates.
### Airbus IT Infrastructure

<table>
<thead>
<tr>
<th>SUPPLIERS</th>
<th>AIRBUS Commercial Aircraft</th>
<th>AIRBUS other divisions</th>
<th>CUSTOMERS</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>106 000 users</td>
<td>96 000 users</td>
<td>94 000 users</td>
<td>72 000 users</td>
<td>368 000</td>
</tr>
<tr>
<td>21 000 PCs</td>
<td>61 000 PCs</td>
<td>5 000 PCs</td>
<td></td>
<td>87 000</td>
</tr>
<tr>
<td>33 000 mailboxes</td>
<td>77 000 mailboxes</td>
<td>34 000 mailboxes</td>
<td></td>
<td>144 000</td>
</tr>
<tr>
<td></td>
<td>6 600 printers</td>
<td></td>
<td></td>
<td>6 600</td>
</tr>
<tr>
<td></td>
<td>75 000 fixed phones</td>
<td></td>
<td></td>
<td>75 000</td>
</tr>
<tr>
<td></td>
<td>32 400 mobile phones</td>
<td></td>
<td></td>
<td>33 000</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>433 000 network ports</td>
</tr>
<tr>
<td>5 000 WiFi access points</td>
</tr>
<tr>
<td>27 000 Servers</td>
</tr>
<tr>
<td>19 billion transactions per year on SAP</td>
</tr>
<tr>
<td>17 petabytes on storage</td>
</tr>
<tr>
<td>4.2 petabytes on High performance computing</td>
</tr>
<tr>
<td>1.2 petaFLOPS on High performance computing</td>
</tr>
<tr>
<td>4 200 MIPS on Mainframe</td>
</tr>
</tbody>
</table>

Red Hat Summit - San Francisco - May 2018
Digital Accelerator

Key enabler for digitalisation

Set-up and support digital platforms for:
• Public Cloud
• Big Data
• Internet of Things
• API Mgt
• Monitoring & Security
• IT Service Management
• DevOps pipeline
• Open Source solutions

Using the latest technologies, build and operate enterprise digital platforms that operate at huge scale and speed

Making digital platforms & services available to the business via self service

Enabled through Open Source solutions, Automation, Big Data, IoT, API, Self Service and Cloud technologies

Enables Airbus to bring value to market faster, reducing costs whilst improving quality
Open source at Airbus

2008
Start promotion of Open Source Software solutions

2013
OpenDCIM Implementation

2014
Linux as preferred operating system for servers

2015
OpenStack
Cloud management
Hadoop Big Data environment
Asset management via iTop

2016
LifeRay User centric Portal
Paas with Openshift
Decision Tree with Drools

2017-2018
DevOps & Automated Entry Into Service
Automation - Context

Scope:
- Deployment and operation of applications
- Configuration, check, remediation

Drivers:
- Large & Multi-Technology environments
- Frequent applications update
- Business critical applications

Methodology & Technologies:
DevOps chain including:
From the PoC to the Project

Proof of Concept:
• Identify potential solutions with Gartner
• Extensive evaluation of the solutions
• Test deployments with automation solutions

Results:
• Ansible Tower: Simplicity, efficiency, cost
• Orchestrator: Successfully deployed selected applications

KEY FIGURES
PoC on 100 Hosts
8 market tools identified
6 kept for deeper analysis
2 selected
Enables

• Application deployment
• Middleware deployment
• Patch deployment
• Configuration check

• Configuration modification
• Remediation
• Maintenance

Features

• External access for Airbus suppliers
• Collaborative platform on Automation
• Center of Expertise
• Pricing model & catalogue available
• Training capabilities

KEY FIGURES

Built for 20,000 nodes

3 Tower Clusters

4.5 FTE team

99.7% SLA (Theory)

99.95% SLA (Observed)
Automation - Orchestration

Orchestrator - Automic

APIs - Plugins

Plan  Sources  Artifacts  Deploy  Test  Monitor  New need

JIRA  GitHub  JFrog Artifactory  A  sonarqube  splunk

New need  New need  New need
Automation – Key figures & Use Cases

- More than 100 projects on going
- Over 400 users registered
- Between 50,000 and 60,000 jobs launched per month

**File Conversion Service project**

Applicative & Middleware deployment + Setup

1 FTE
5 days of scripting
21 Servers – 6 Databases – 11 Storage CIs

**Before:**
- 1 year project
- 10 days / loop

**After:**
- 3 months
- 20 min / loop

Reduced team – 1FTE
Days needed to script
Reduced lead time
Frequent updates
Business autonomy and flexibility
Average criticality application
**Automation – Use Cases**

**SPLUNK**

**Used for:** Deployment / Installation / Standardization / Compliance  
**Targets:** INT / VAL / PROD – LAN / DMZ / AWS  
**Servers:** 90 core servers  
**Roles:** 20 roles for transversal and specific needs  
**Survey:** Multiple variables managed with surveys  
**Timeline:** 15 minutes Vs 5 days for a manual deployment  
**Workflow:** Extensive usage of workflow manager

Reduced team – 1FTE  
Reduced lead time  
Server consistency  
No human mistake
- 4 years Ansible experience
- Built in-house plugin for networking devices support
- Switched back to native modules when available
- Expanding Ansible usage (Load balancers, Infoblox, IPAM…)

Dynamic inventory
- Statistics
- Fact checking
- Building VRF at European scale
- Large scale upgrade
- Renewal of switch credentials
Airbus sites & AWS connections managed through Ansible

Two-step Ansible transition:
✓ Generate configuration
✓ Apply configuration

Efficiency: All needs in less than 10 roles

Integration into CI/CD deployment processes ongoing
Automation - Next steps forecast

10/2016
PoC

02/2017
Decision

04/2017
Start deployment

2018

2019

2000 hosts

6 000 hosts

10 000 hosts

Work / Study in progress:

• Network devices integration with Ansible Tower
• Windows 2016 servers deployment, configuration and patching with Ansible Tower
• Linux servers management including configuration and patching
• Integration with ITSM tool
• Integration with Automic orchestrator
• Integration in the full DevOps pipeline
Next steps - Automation from End to End

- Full automation from request to delivery
- Be user and self service centric
- Offer a single catalogue to aggregate all products
- Fully integrated with ITSM tool
- In line with ITIL best practices
Automation - Challenges

**Risks**
- Developments are required
- Governance to be adapted
- Multiple technologies to cover
- Partial coverage
- Will to promote and invest in Automation
- Find the right resources

**Opportunities**
- Alignment with market best practices
- Federate existing Automation initiatives
- Adapt Operational processes
- Mass Reuse
- New way of working
- Create centers of competence

**Earnings**
- Focus on support and expertise
- Reduce lead time
- Cost savings
- Focus on added value activities
- Compliant with customer needs
- Enforced consistency
- Team work and knowledge sharing
Airbus IT skills

- Cloud Architect
- Data Governance
- Software Developer
- Technology Platform Owner
- Technology Engineer
- Scrum Master
- Test automation
- Tribe Manager
- Guild Manager
- UX UI Specialist
- DevOps Engineer
Thank you