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Monitoring Enterprise Environments with Zabbix

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Agenda of the Day

- ⚡ Challenges in enterprise-grade environments
- ⚡ Zabbix in enterprise environments
- ⚡ Use Cases
- ⚡ Conclusion and Q&A



Challenges in enterprise-grade environments

Monitoring Goals

Business Goals:

- ⚡ Capacity planning
- ⚡ Cost reduction
- ⚡ Tracking KPIs and SLAs
- ⚡ Business Service monitoring
- ⚡ Providing monitoring as a service

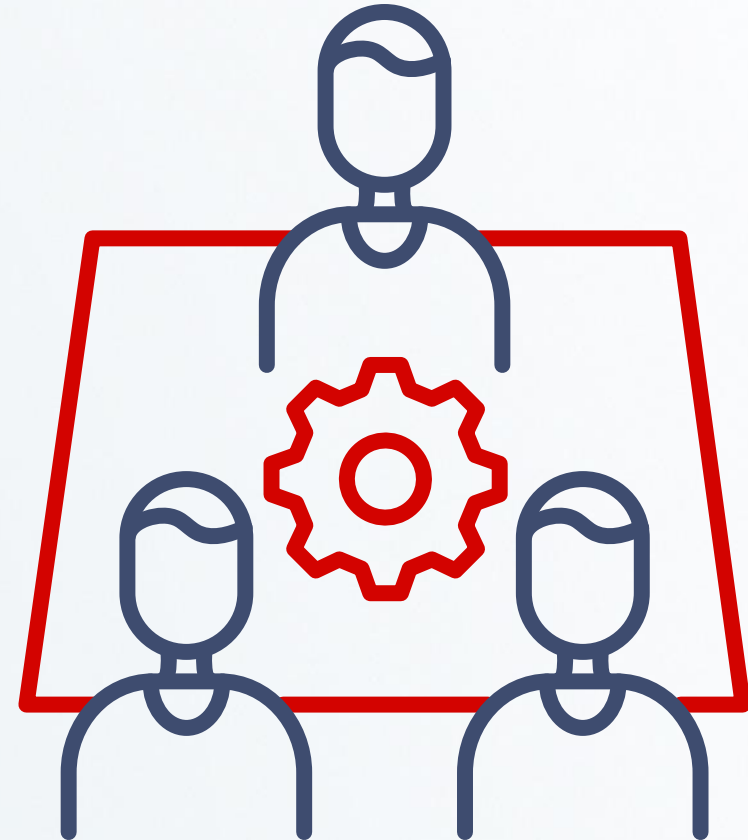
Infrastructure Goals:

- ⚡ Monitor behavior of IT systems
- ⚡ Detection bottlenecks
- ⚡ Automatic problem remediation
- ⚡ Flexible alerting logic
- ⚡ Security, Scalability, HA ...

Monitoring Requirements

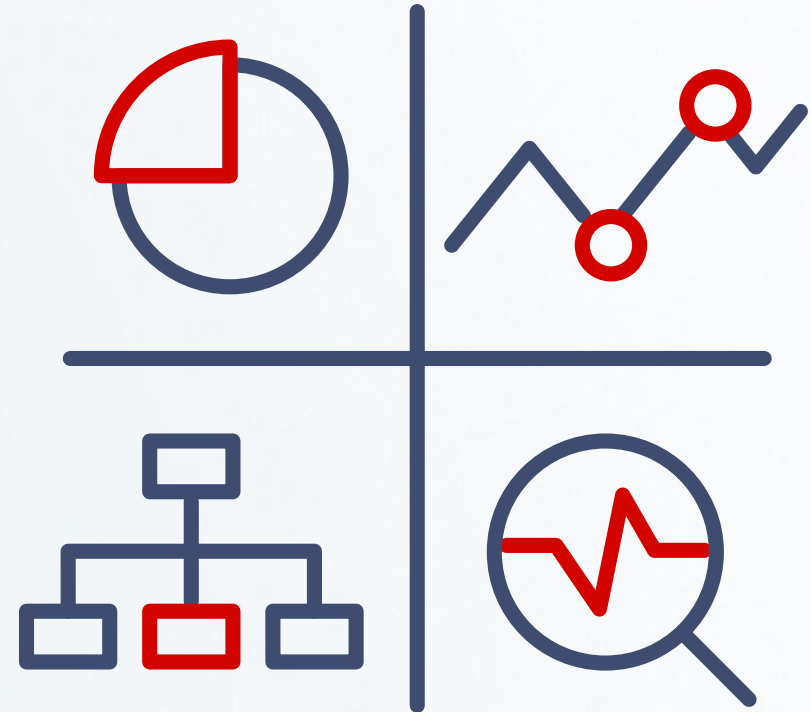
After high-level goals, let's look at technological requirements:

- What to monitor?
- What monitoring approaches and technologies can we use?
- How long do we wish to retain our data?
- How do we wish to visualize our data?
- Any additional infrastructure requirements, e.g.: redundancy and scalability
- Do we wish to provide our solution as a service?
- Do we need to integrate our monitoring solution with other services?



Industry specific requirements

- **IT/Telecom** – IT infrastructure load, user analytics, availability of towers, business services
- **Aviation** – Hardware diagnostics, underlying infrastructure, booking and flight information
- **Banking & Finance** – Core system availability and load, hardware (ATMs), potential security issues
- **Retail** - Monitoring physical shops, cashiers outages, available stocks, planning orders based on sales
- **Logistics and transportation** - Current location, sensor data
- **Energy Sector** – Availability of power plants, system outages, status of sensors, consumption based forecast



Choosing a Monitoring Solution

Once we have defined goals, requirements and use cases, we need to find a fitting solution (more to consider depending on specific company policy):

- Free or commercial?
- Open source or closed source?
- Does it provide a single pane of glass?
- Security, redundancy, scalability?
- Ease of use, available documentation
- Out of the box integration with 3d party solutions
- What commercial support options does the product offer?



Zabbix in enterprise environments

Architecture and Redundancy

Zabbix allows easily to deploy scalable and redundant architectures:

- Scalability from hundreds to millions of metrics
- Edge computing horizontal scalability with Zabbix Proxy
- Easy load balancing for Zabbix Frontend
- Redundancy with automated failover HA Cluster for Zabbix Server



Proxy groups ? Create proxy group

[Filter](#)

<input type="checkbox"/> Name ▲	State	Failover period	Online proxies	Minimum proxies	Proxies
<input type="checkbox"/> Amsterdam		1m	0	3	
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<input type="checkbox"/> Riga	Online	5m	5	5	6 proxy01, proxy02, proxy03, proxy04, proxy05, proxy06
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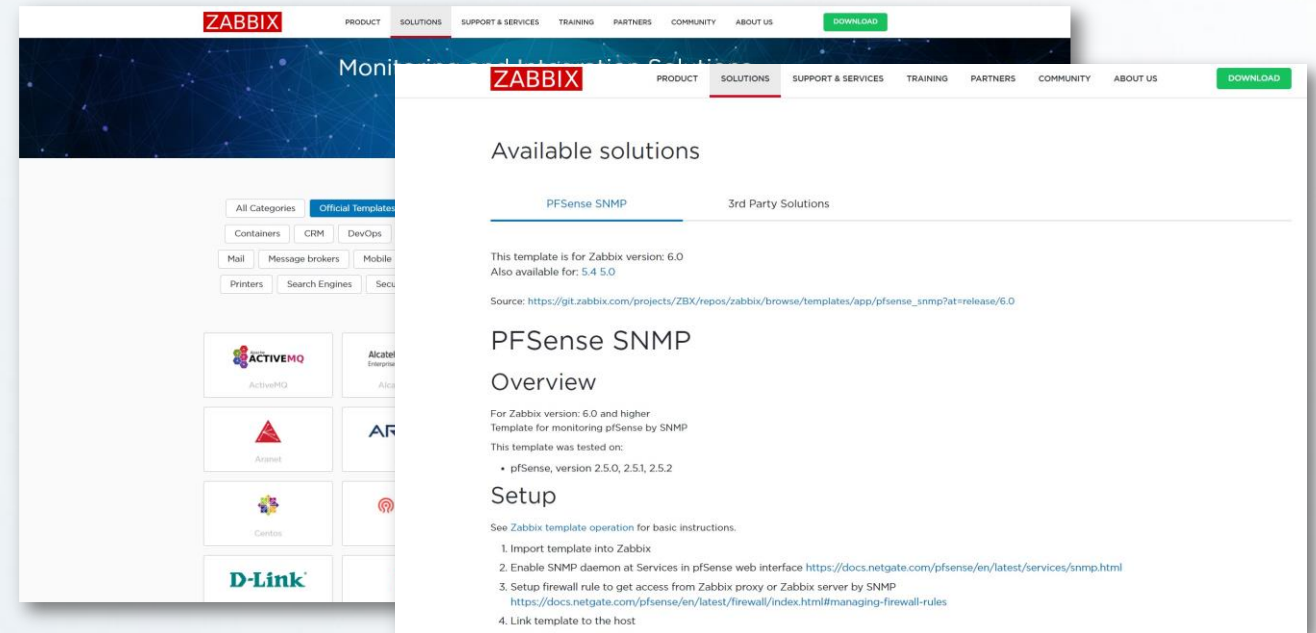
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Integrations and Templates

Effortless and out of the box:

- Over 300 out of the box templates
- Available for most popular platforms
- Integrations with ticketing systems, collaboration platforms for enhanced alerting
- Each template provides detailed documentation
- Full list available at <https://zabbix.com/integrations>



Flexible functionalities



Multiple data collection



Data Preprocessing



Problem detection



ML and Forecasting



Network Discovery



Low level Discovery



Alerting and Notification



Reporting



Zabbix API

Enterprise Grade Security


Full stack data protection:

- Strong encryption between all Zabbix components (PSK and certificate)
- Storing secrets in external vaults (CyberArk and Hashicorp)
- Multiple authentication methods: Open LDAP, Active Directory, SAML, HTTP)
- Just In Time (JIT) user provisioning
- Multi Factor Authentication (Zabbix 7.0)
- Access control with user roles and restricted data access
- Audit log with GUI and REST API access

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NVC4MMZGQHPQMQTDOYBA7B04B2OXHRUY

Verification code

Sign in

Support and Services



Use cases

Top companies trust Zabbix

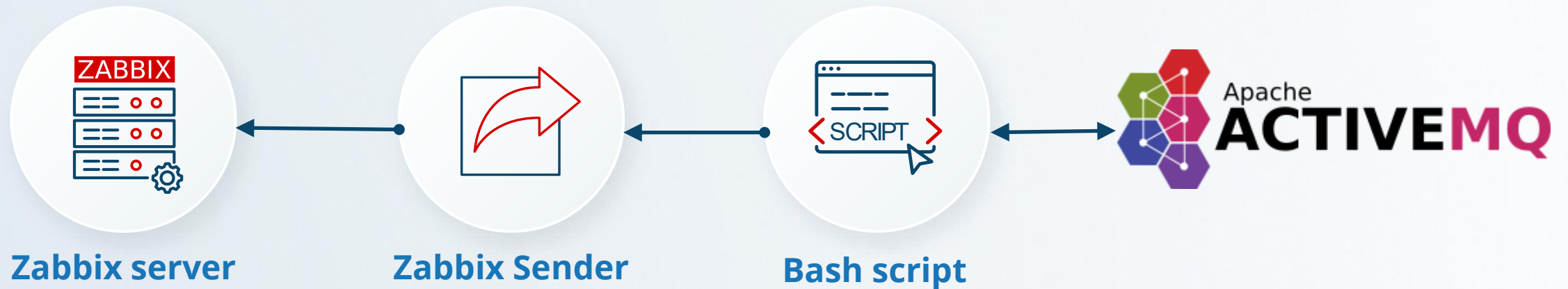
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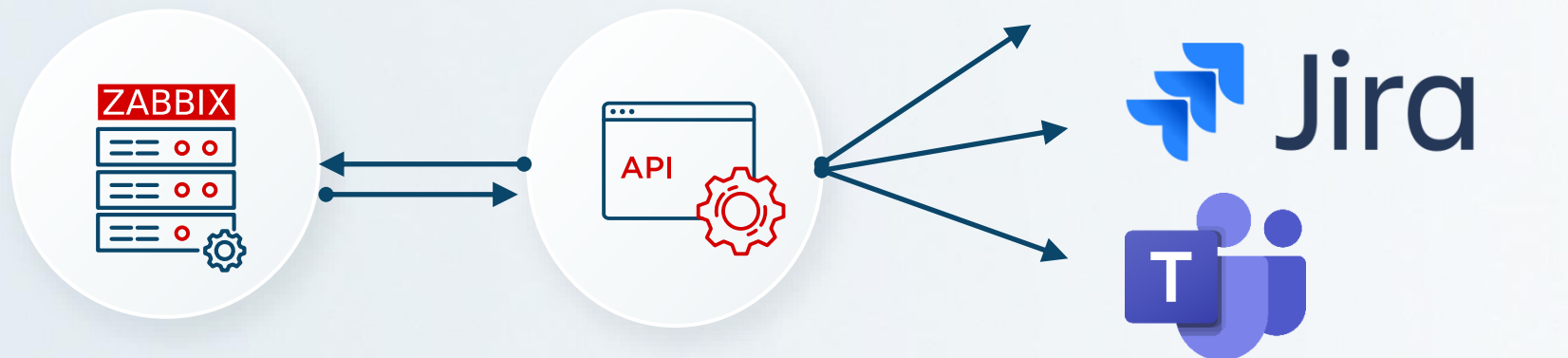
- Infrabel maintains Belgium's railway infrastructure
- Zabbix is used as a service in multiple internal company departments (EMMA, BigData, etc.)
- Infrabel uses only LTS versions (current is 6.0.14), total number of servers 19, proxies 114 and growing
- Applications metrics: OS monitoring, applications monitoring, railway infrastructure monitoring (train delays, etc.)



- Zabbix retrieves and monitors data from ActiveMQ
- Data is retrieved via custom bash scripts and sent via Zabbix sender to the Zabbix server and proxies



- Zabbix is integrated with 3rd party ticketing system
- Zabbix API is used to get retrieve the problems related to a specific set of triggers
- Alerts are forwarded to the ticketing system and the issues are assigned to responsible teams



Food processing plant

- Zabbix is used to monitor temperature, CO2 and humidity sensors and freezer door states
- Zabbix monitors ~20 sensors
- Sensors collect metrics and forward them to Zabbix for evaluation by triggers

- Scheduled reports are sent containing temperature overviews
- Monthly temperature overview
- Monthly incident overview
- Reports are generated per each freezer



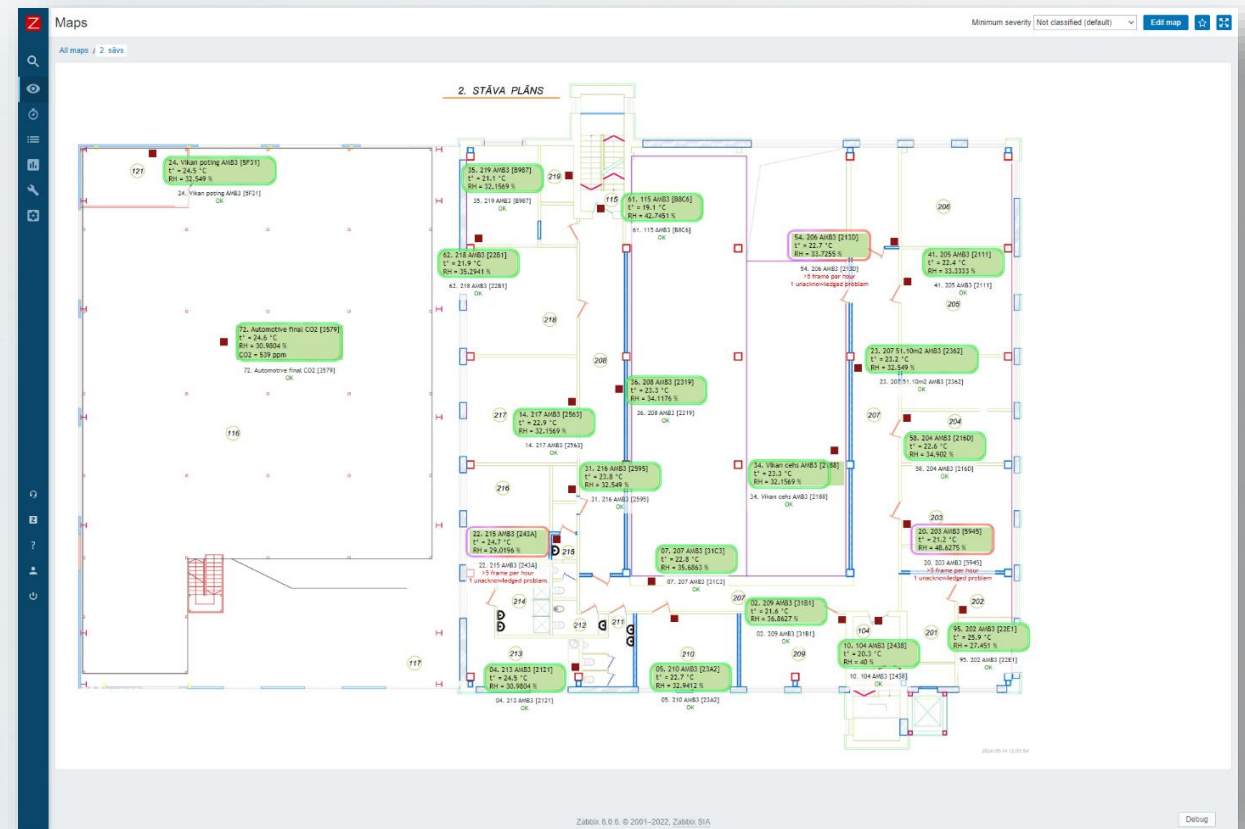
Electronic manufacturing plant

- Zabbix is used to monitor CO2, humidity and temperature sensors at an Electronics manufacturing plant
- Zabbix monitors ~50 sensors
- Sensors generate alarms and forward them to Zabbix
- Zabbix actions perform various alerting functions
- Notify the responsible staff via email messages
- React to a variety of environmental metric changes (ex: forward alerts to fire alarm controller)



Electronic manufacturing plant

- Sensor data is collected via LoRa gateways
- Data is then forwarded to ChirpStack server
- ChirpStack - open-source LoRaWAN Network server
- Data is collected, verified and parsed
- The parsed data is sent to Zabbix trapper items via Zabbix sender



Oil and gas industries

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Renewable energy production

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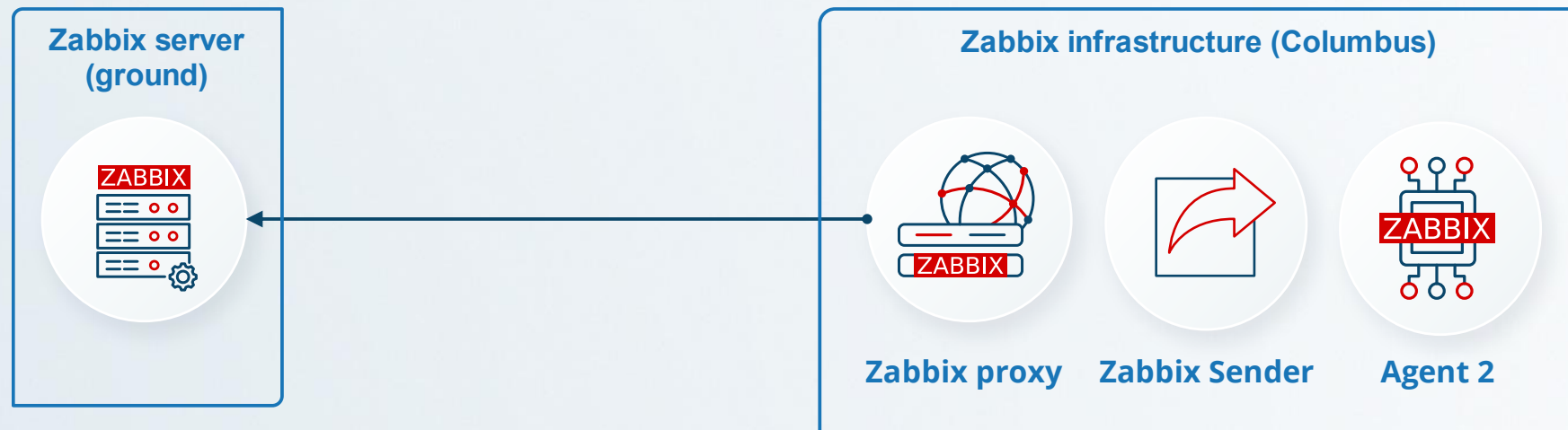




- The European Space Agency (ESA) is a 22-member intergovernmental body devoted to space exploration.
- With its headquarters in Paris and a staff of around 2,200 people globally as of 2018, the ESA was founded in 1975. Its 2023 annual budget was €7.08 billion.
- Zabbix performs monitoring on the European module of the International Space Station - Columbus
- Zabbix collects metrics from the Columbus Data Management Infrastructure (CDMI)



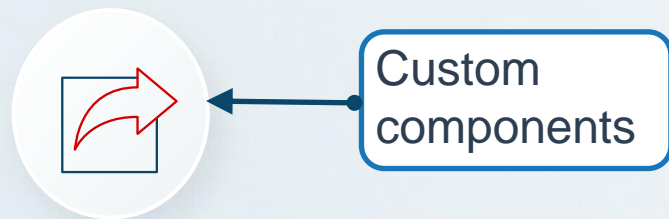
- Zabbix proxy deployed in the European module
- Zabbix server and frontend is deployed in the ground DC
- In case of the link being down, proxy keeps the collected metrics
- Once the link is restored, proxy sends the missing data back to the Zabbix server



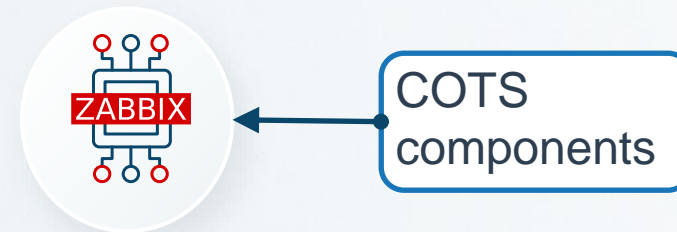
Flight and ground infrastructure made up almost entirely of VMs/LXC running services

Data is collected in a variety of ways:

- Zabbix agent 2
- Native checks mixed with user parameters for Commercial-off-the-shelf components
- Zabbix sender for custom components



Zabbix Sender



Agent 2 (active)
User parameter 1
User parameter 2

...

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Thank you!
Q&A

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