WORLD DIRECT
<we code your digital future>

How an open source first strategy helps you to replace your engine at full speed!

WORLD DIRECT

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One of the **largest software development** companies in the west of Austria.

As a **100% subsidiary** of **A1 Telekom Austria** we **develop** and **operate** products and services for the **digital future** of every Austrian.

In the middle of the **Tyrolean Alps** and **4 more locations** in **Austria**.

#YOUR DIGITAL FUTURE

Our Biggest Challenge

Hosted Communication Service

- Multi-Tenant **VoIP platform**
- Based on the Cisco Callmanager
- Growth of 4000 - 6000 endpoints p.a. in Austria
- Cisco launched a product and tried to take **over** our **customers**

We took a new approach – transforming our platform with **Asterisk** and **Kubernetes**, putting **Open Source first**.

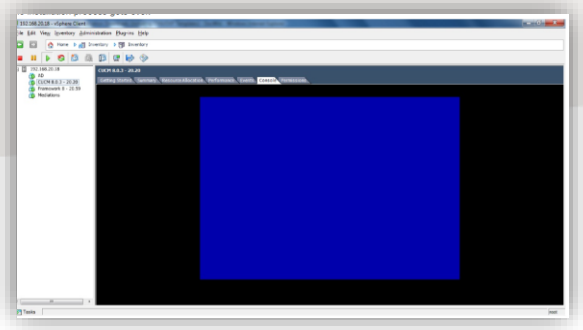
Goal for the Session

- How and What we **switched** from **closed-** to **open source**
- How **Kubernetes** (k8s) and the new **open-source** stack **changed the game**
  - for scaling, failover and resilience
  - for the team
- … and how it enabled new marketing/sales opportunities

Thinking about going open source? It might just be the right time

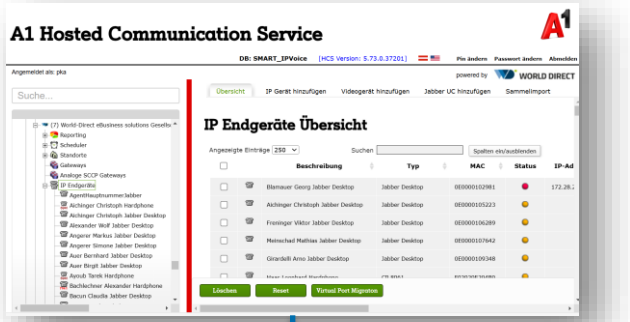
Back to 2005

Old Architecture Key Facts

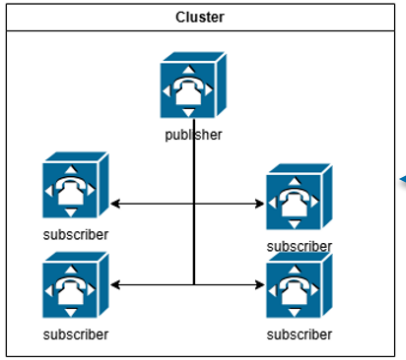


75.000 Endpoints

SIP/RTP



Cisco Callmanager
Windows Servers

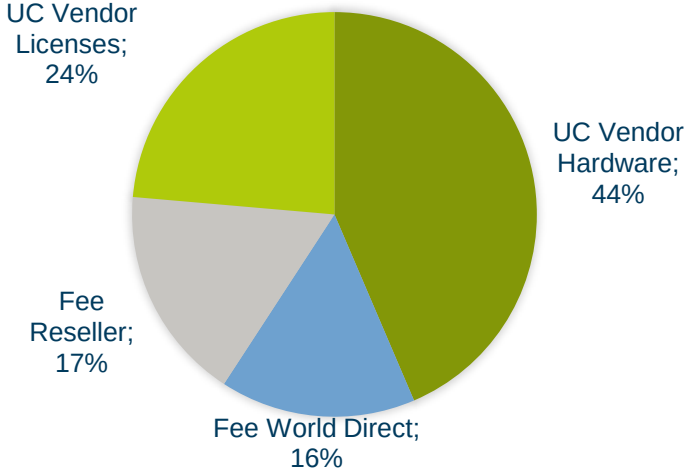


administration

~100 (virtual) Server

- High risk big bang updates
- No customer level scaling
- No service specific scaling
- Specific hardware required

Old Cost Structure

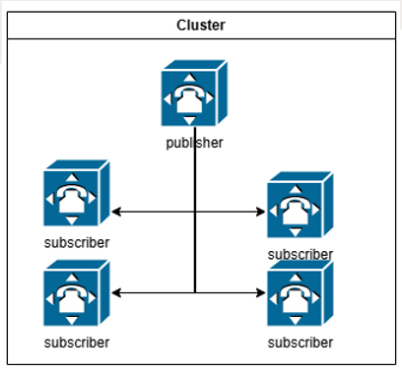


Early on Decisions

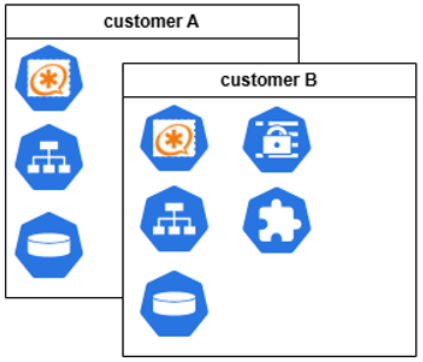
- **No vendor lock-in**
  - Use open source where possible and reasonable
- **We need to get to a first release fast**
  - **Integrate software** and do not rebuild everything
- **Scaling and long downtimes**
  - Kubernetes and “microservice” architecture
  - Splitting up tenants ensures data integrity and security

Asterisk on Kubernetes

The new Architecture - Overview



~100 (virtual) Server



4400++ Pods

Cisco Callmanger => Asterisk and **Kamailio** for core telephony

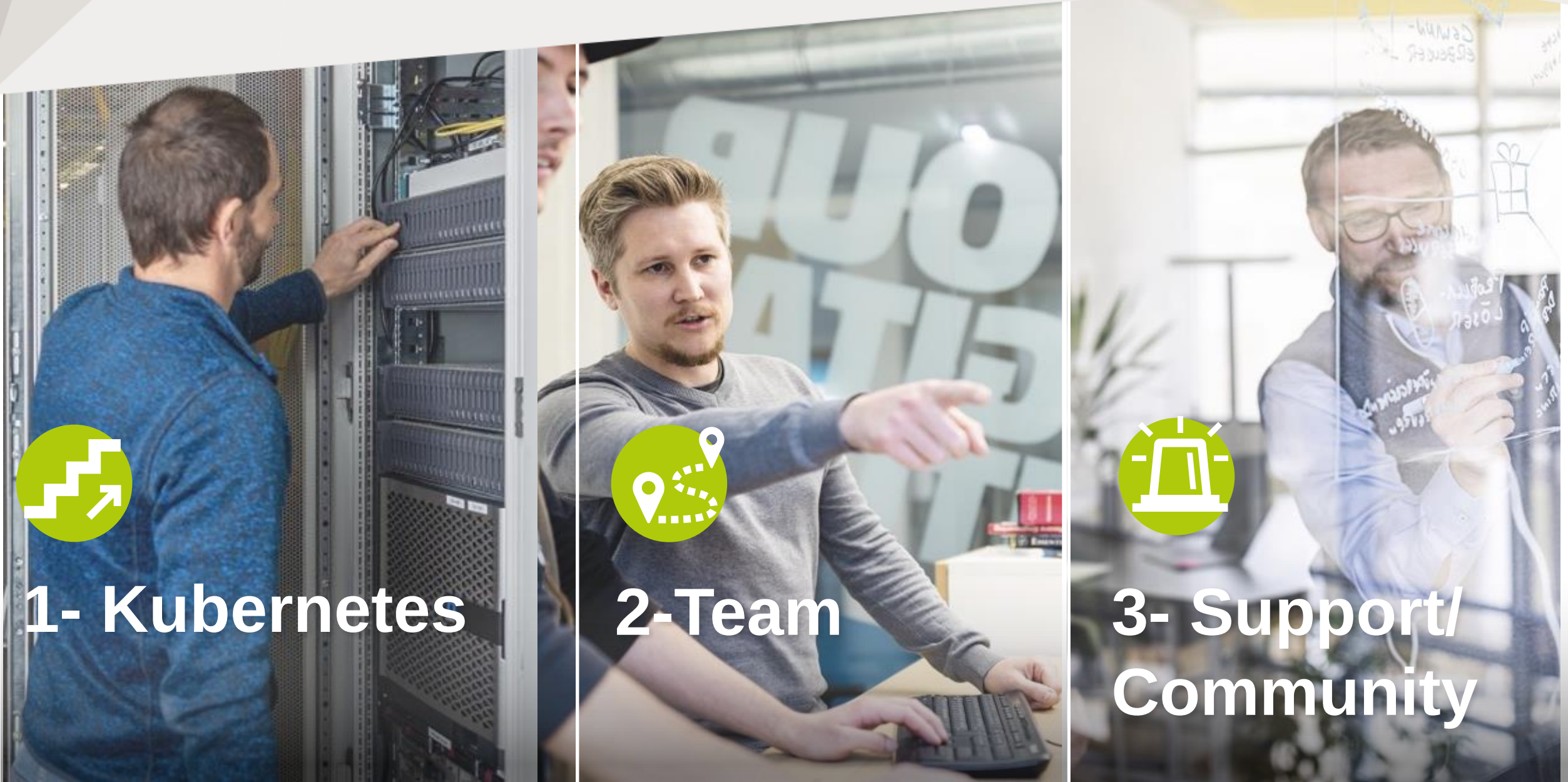
VMWare => Kubernetes for deployment, scaling, redundancy…

Custom Auth. => APISix and **Keycloak** for authorization, authentication and API management

MSSQL => MinIO, **MySQL**, **KeyDB** for persistency

Loki, **Grafana**, **Zabbix** for monitoring and alarming

Our 3 Major Insights



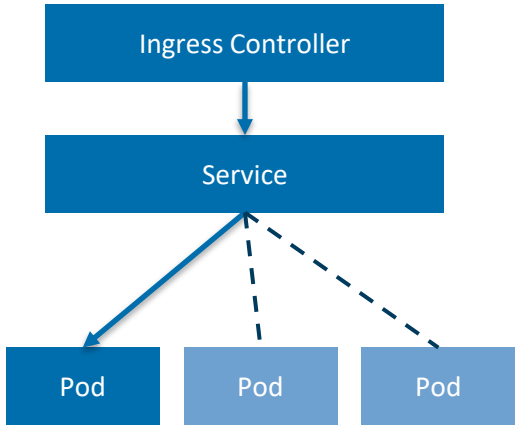
1- Technology

Problem to Solve: Scaling – Kubernetes

Kubernetes comes with “out of the box” scaling

Horizontal scaling

- De- or increase # of pods per service
- K8s services dynamically distributes traffic

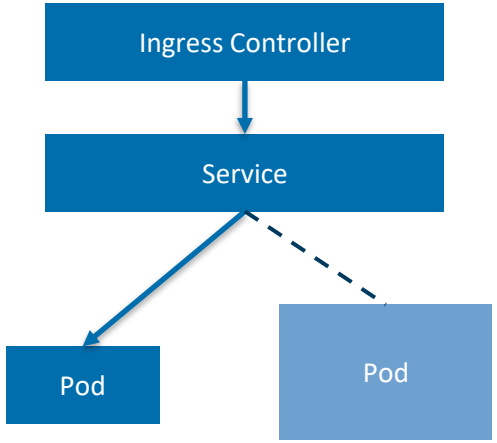


- for stateless services
- without interruption

example: webpage

Vertical scaling

- De- or increase the resources of a pod
- K8s helps with update strategys (rolling updates)



- for stateful/complex services
- usually needs a restart

example: databases

```yaml
apiVersion: autoscaling/v2
kind: HorizontalPodAutoscaler
metadata:
  name: example-hpa
spec:
  scaleTargetRef:
    apiVersion: apps/v1
    kind: Deployment
    name: my-app
  minReplicas: 2
  maxReplicas: 10
  metrics:
    - type: Resource
      resource:
        name: cpu
        target:
          type: Utilization
          averageUtilization: 80
```

1- Technology

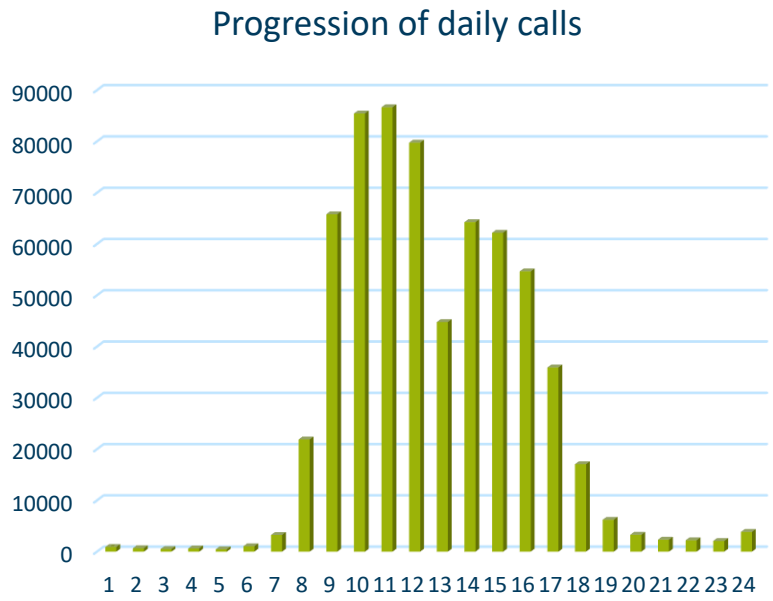
Scaling – Voice-specific Problems

Voip systems have:

- Time of day dependent traffic
- Traffic bursts
- Latency sensitive traffic

Realtime, stateful traffic challenges
Kubernetes scalability

- **Horizontal** scaling does not work for Asterisk(**stateful**)
- **Vertical** has **interruptions**



1- Technology

Problem to Solve: Failover and Resilience Layer

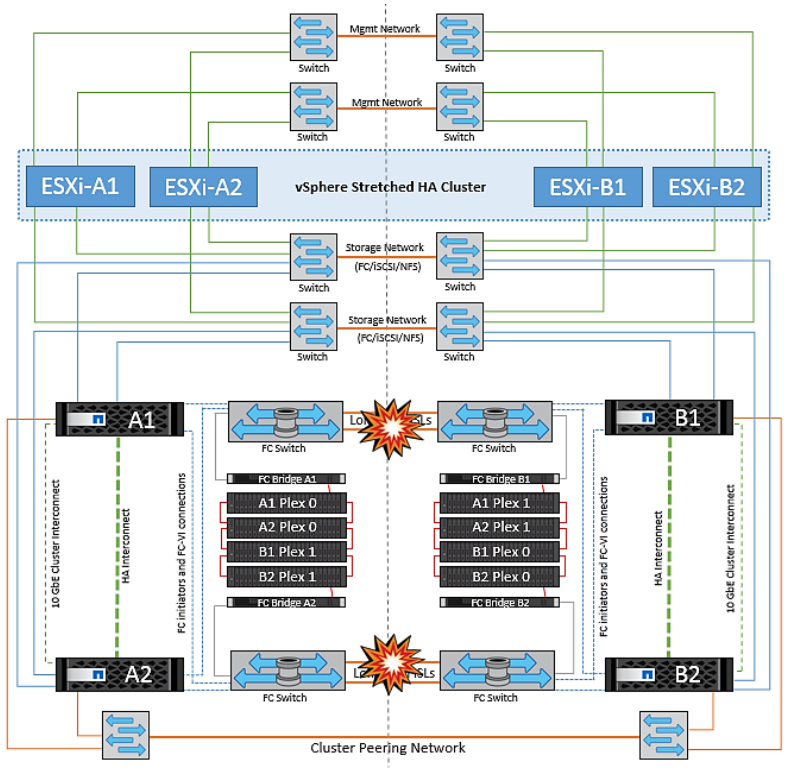
“Broadcom is increasing the cost of VMware for some customers by boosting the minimum purchase from 16 cores to 72 cores per CPU”

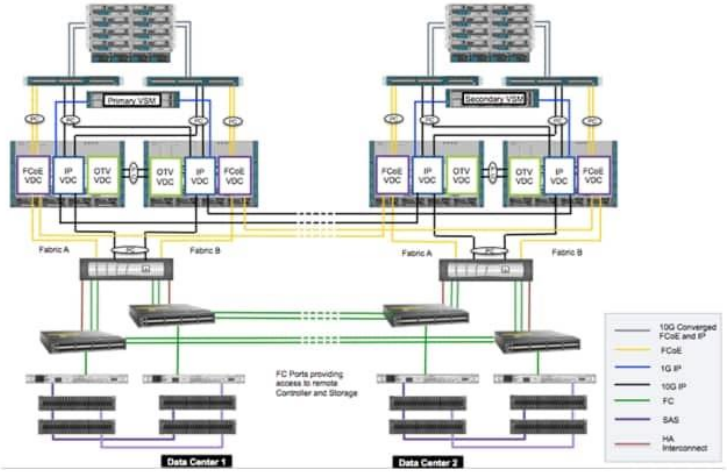
Redundancy mechanisms can be….

complex

dependent on certain hard- and software

costly





1- Technology

Failover and Resilience Layer

- **No specialized computing hardware needed**
  - Kubernetes comes with Ingress Controllers
- **Self healing**
  - Readiness & liveness Probes for nodes, pods, regions (KubeFed)

K8s ingress is optimized for web traffic

Traffic is freely routed

Routing needs heavy adaptions for RTP

2- Team

Training, Learning, Motivation

- Learning material is freely available
  - source code, tutorials, discord,..
  - (not only expensive) commercial trainings such as Udemy
- Development material is free
  - No or lower license costs for development / test systems

- Commitment
  - Filing a ticket isn’t very fulfilling
  - Getting a PR accepted makes you part of a community

    “Work that makes a difference"

3- Support / Community

Our Experience

Our Experience

- Huge communities with an open culture to share, teach an optimize
  - Even so, gaining acceptance in the community can be tricky at times
- Fairness
  - Participation can have many forms: code, teaching, time, sponsoring

- Commitment from all sides required
- Licensing is not trivial (MIT, Apache, BSD, ISC, GNU, EPL,AGPL,…)

Reducing Risk

- Open Source does not mean that there is no commercial support

How Open Source enabled new Markets for us

Data Sovereignty

Marketing

- if your software is used, developers advertise it for free
- Its easier to present at open-source events e.g. Astricon

20.1.2025 - European solution for Europe

- For all organizations with high security requirements
- For companies that are critical of American and Chinese providers

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