Managing containers in Azure: What could possibly go wrong?

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Agenda

- Who am I
- Arxus
- Demo
- Questions

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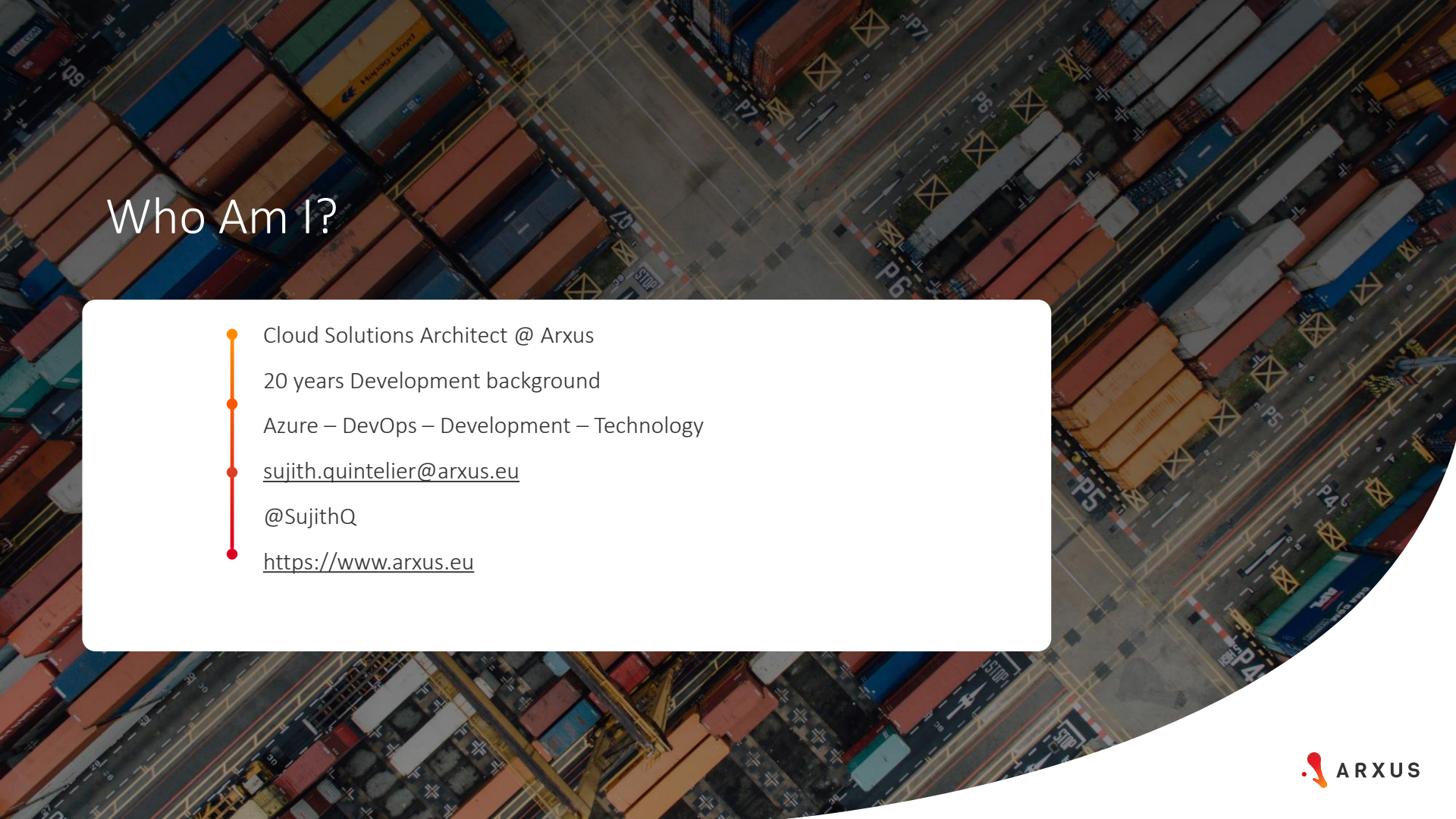

Who Am I?

- Cloud Solutions Architect @ Arxus
- 20 years Development background
- Azure – DevOps – Development – Technology
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- @SujithQ
- https://www.arxus.eu

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Ready to embrace business first cloud solutions?

Get in contact and we'll have an Arxus expert reach out to answer any questions and get the ball rolling.

Message us at info@arxus.eu to find out more about how we can help your start-up on the path to success.

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Complaints

- *Slower build time*
- *Losing data*
- *Configuration issues*
- *Secrets*
- *Cluster management*
- *…*

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Knowledge

- *Lack of knowledge about containers*
- *Quick and dirty*
- *Threat containers like VMs*
- *Security is not kept in mind*
- *How to Update Applications*
- *Maintenance*

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Container

- *A container is a standard unit of software that packages up code and all its dependencies, so the application runs quickly and reliably from one computing environment to another. A Docker container image is a lightweight, standalone, executable package of software that includes everything needed to run an application: code, runtime, system tools, system libraries and settings.*

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Containers

Tips

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Containers

- *Use Caching*
- *Reduce Image Size*
- *Maintainability*
- *Reproducibility*

Caching

1. *Order of build steps is important*
2. *Use specific COPY statements*
3. *Identify cachable units*

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Image size

4. *Remove unnecessary dependencies*
5. *Remove package manager cache*

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Maintainability

6. *Use official images when possible*
7. *Use more specific tags*
8. *Look for minimal flavors*

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Reproducibility

9. *Build from source*
10. *Fetch dependencies in separated step*
11. *Use multi-stage builds*

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Containers

Demo

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General issues

Common mistakes

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General issues

- *Knowledge/Expertise*
- *All at once*
- *No Orchestrator*
- *Multiple services in one container*
- *Persist data (state)*
- *Threating container as VM*
- *Store sensitive data*
- *No monitoring*
- *Run as root*

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Run As Root

Demo

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Containers in Azure

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Containers in Azure

- *AKS*
- *ACI*
- *ACR*
- *Web App for Containers*
- *Service Fabric*
- *Windows Containers*
- *Azure Red Hat OpenShift*

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AKS

Mistakes

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AKS

- *No Service Mesh*
- *Expose all services via PIP*
- *No Logging*
- *Expose Dashboard via Ingress*
- *No Logical or Physical separation*
- *No Quotas defined*
- *Out of date of Linux nodes*
- https://docs.microsoft.com/en-us/azure/aks/best-practices

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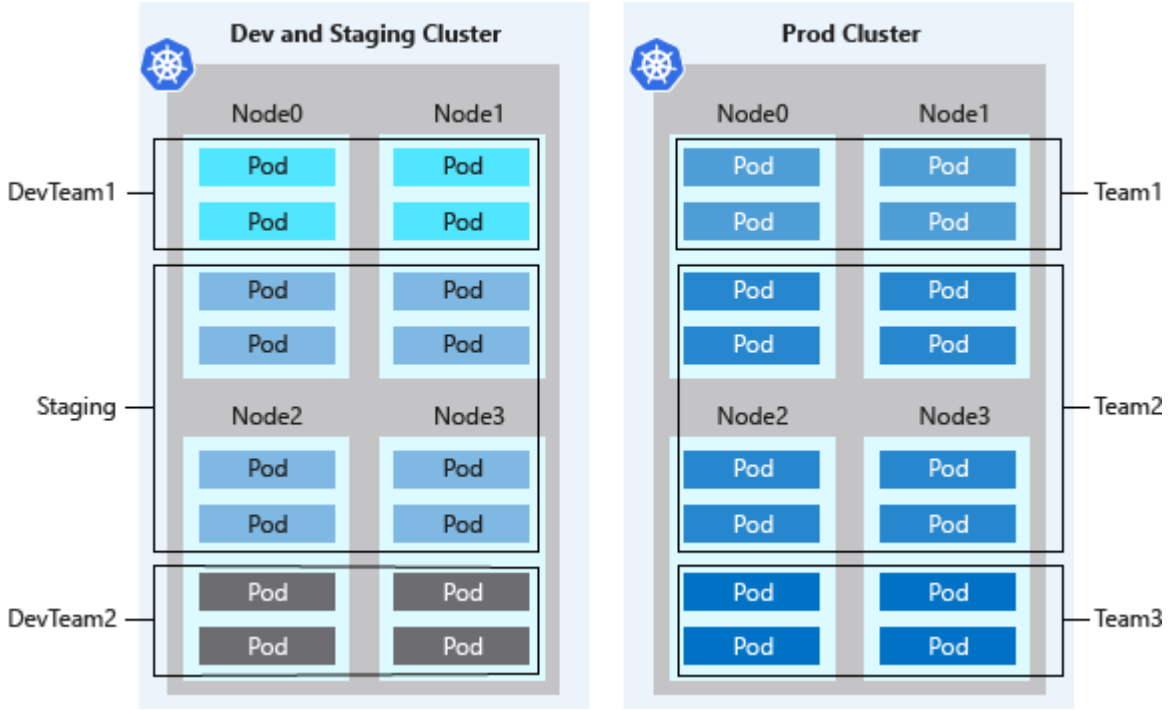
Logical separation



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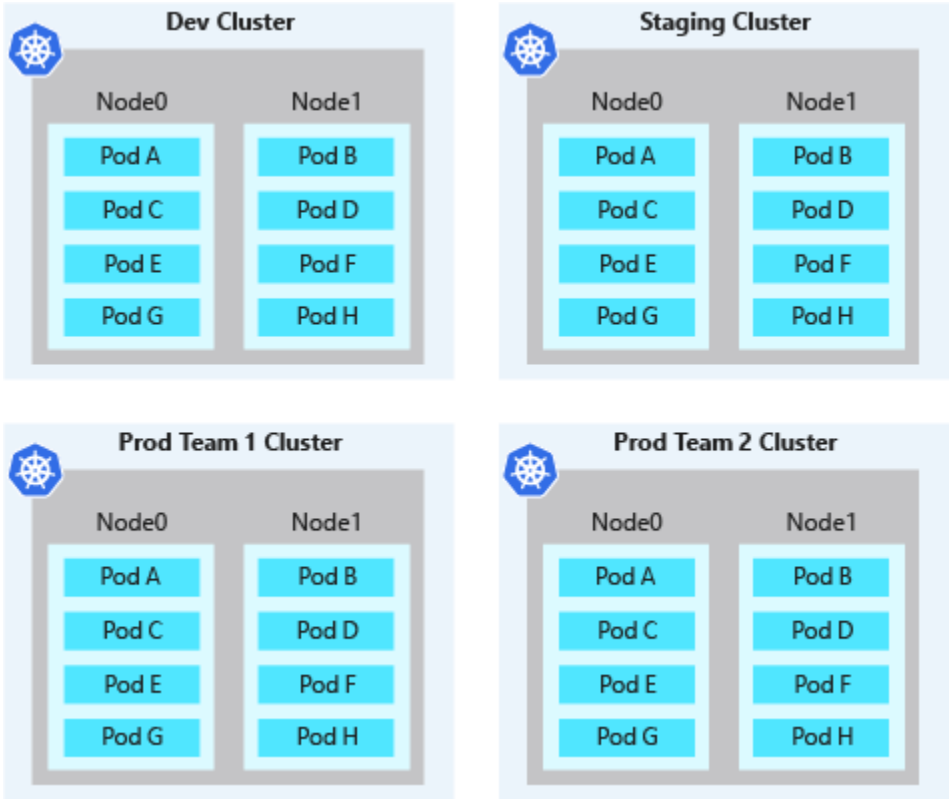
Physical separation



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Quota

YAML

```yaml
apiVersion: v1
kind: ResourceQuota
metadata:
  name: dev-app-team
spec:
  hard:
    cpu: "10"
    memory: 20Gi
    pods: "10"
```

YAML

```yaml
kind: Pod
apiVersion: v1
metadata:
  name: mypod
spec:
  containers:
  - name: mypod
    image: nginx:1.15.5
    resources:
      requests:
        cpu: 100m
        memory: 128Mi
      limits:
        cpu: 250m
        memory: 256Mi
```

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ACI

Mistakes

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ACI

- *Startup time*
  - *Size*
- *Logging*
  - *Azure File Share*
- *Secrets*
  - *secureValue*

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ACR

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- *Base Image out of date*

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Questions

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