Afterlife tales
Troubleshooting Containerized Applications

Ana Maria Mihalceanu

DEV

PROD

WUG-Community

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Pod Phases

PENDING   **RUNNING**   **SUCCEEDED**   **FAILED**   **UNKNOWN**

Deployment-ReplicaSet-Pod

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Why am I forbidden access to a resource?

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Role Base Access Control (RBAC)

Cluster-wide

Resources
(Deployments, Pods, Secrets, Configmaps etc)

Actions (get, create, list, watch etc)

API versions (core, apps, extensions)

ClusterRole

ClusterRoleBinding

Role

RoleBinding

Subjects

User ServiceAccount Group

namespace

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Authorization issues (403)

How to validate permissions for a subject?

Authorization issues - Recommendations

How to validate permissions for a subject?

Administrators check API access with user impersonation
`kubectl auth can-i <action> <resource> --as=<name>`

Authorization issues - Recommendations

How to validate permissions for a user?

Check the audit logs

Grant proper role or cluster role to the subject(s)
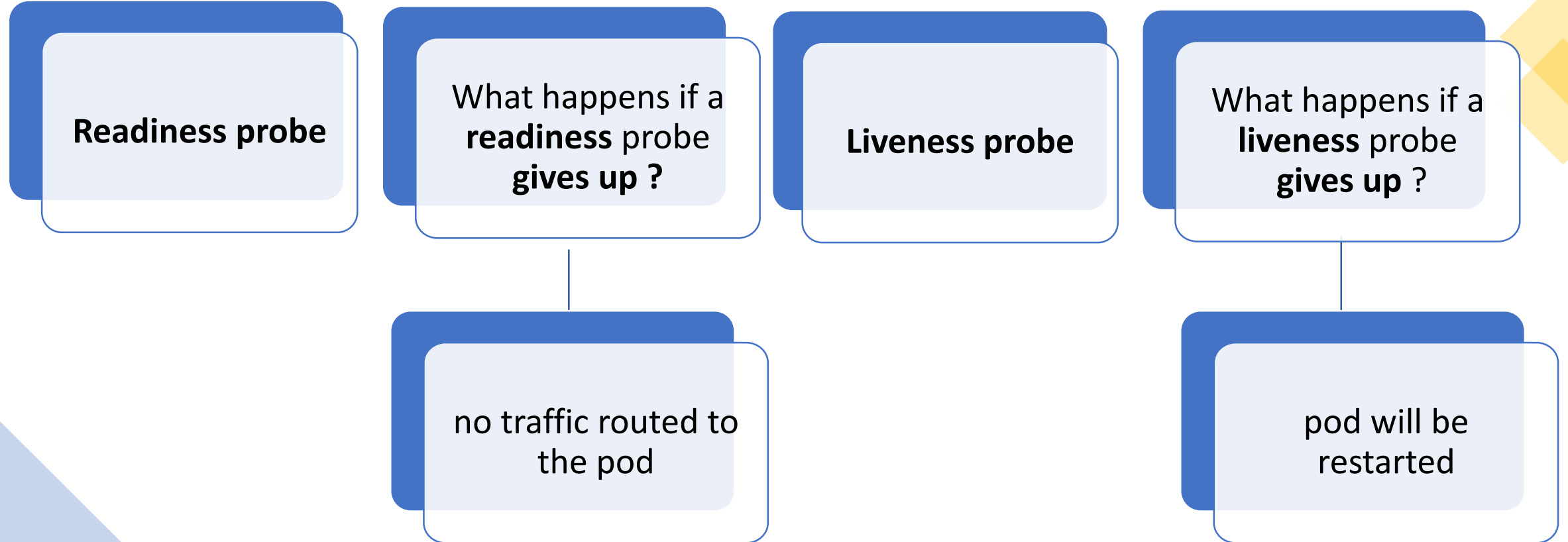
```
kubectl auth reconcile –f <updated-rbac>.yaml
```

What if a Pod is not feeling well?

Health checks – The good

Readiness probe – when the container is **available** for accepting traffic

Liveness probe – when to **restart** a container

Health checks – The (not so) good

Readiness probe

What happens if a **readiness** probe **gives up ?**

Liveness probe

What happens if a **liveness** probe **gives up** ?

no traffic routed to the pod

pod will be restarted

Readiness probe – The not so good

How to overcome a small temporary increase in latency to one dependent service?

Readiness probe – Recommendation

How to overcome a small temporary increase in latency to one dependent service?

Set the **timeout** longer than the **maximum** response time for that dependency.

Readiness probe – The not so good

Is frequency of the readiness probe impacting the **failureThreshold** count?

Readiness probe – Recommendation

Is frequency of the readiness probe impacting the **failureThreshold** count?

Depending on the **periodSeconds** parameter you may want to increase the **failureThreshold** count.

Liveness probe – The not so good

How can I know that the liveness probe verifies the responsiveness of an application?

Liveness probe – Recommendation

How can I know that the liveness probe verifies the responsiveness of an application?

Regularly (exercise and) evaluate deployments, restarts, and failures as part of running an application.

Liveness probe – The not so good

What if the container startup-latency changes over time?

Liveness probe – Recommendation

What if the container startup-latency changes over time?

Adjust **initialDelaySeconds** and **timeout conservatively**.

How you manage disruptions in Kubernetes?

Involuntary Disruptions- Recommendations

How to mitigate involuntary disruptions?

Replicate your application if you need higher availability, use a multi-zone cluster and/or check pod requests and resources.

Voluntary Disruptions- Recommendations

How to mitigate voluntary disruptions?

Using **PodDisruptionBudget**.

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Somehow the Pod is running...an unexpected application version

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Recommendations

How to validate what is running inside a pod?

Get the pod's YAML
```
kubectl get pod <pod> -o yaml > <def>.yaml
```

Recommendations

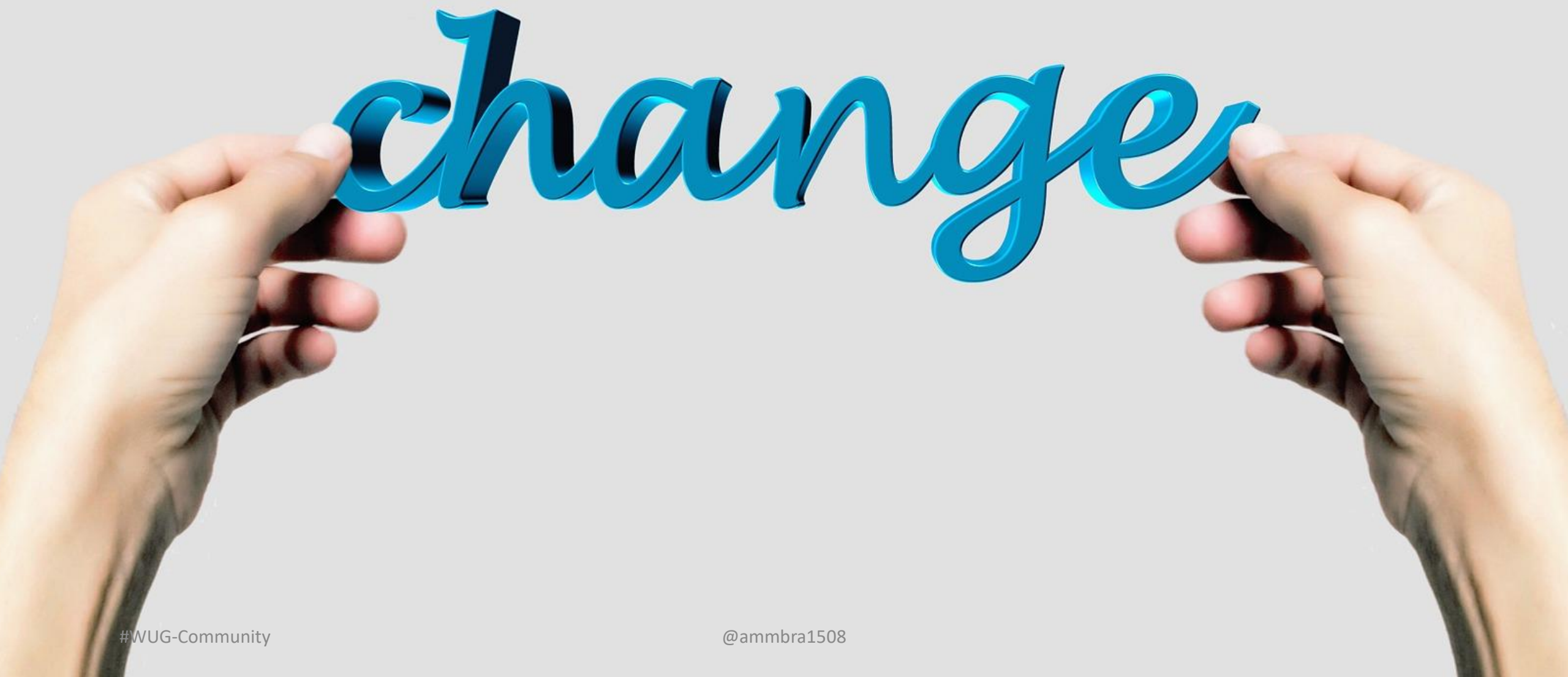How to validate what is running inside a pod?

Get the pod's YAML

Validate it locally

```
kubectl apply -f <resource_def>.yaml --validate
```

Recommendations

How to access what is inside the pod?

```
kubectl exec –it <pod> -- /bin/bash
```

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How can I replace images?

Recommendations

If Image tag has changed but your deployment uses the old tag
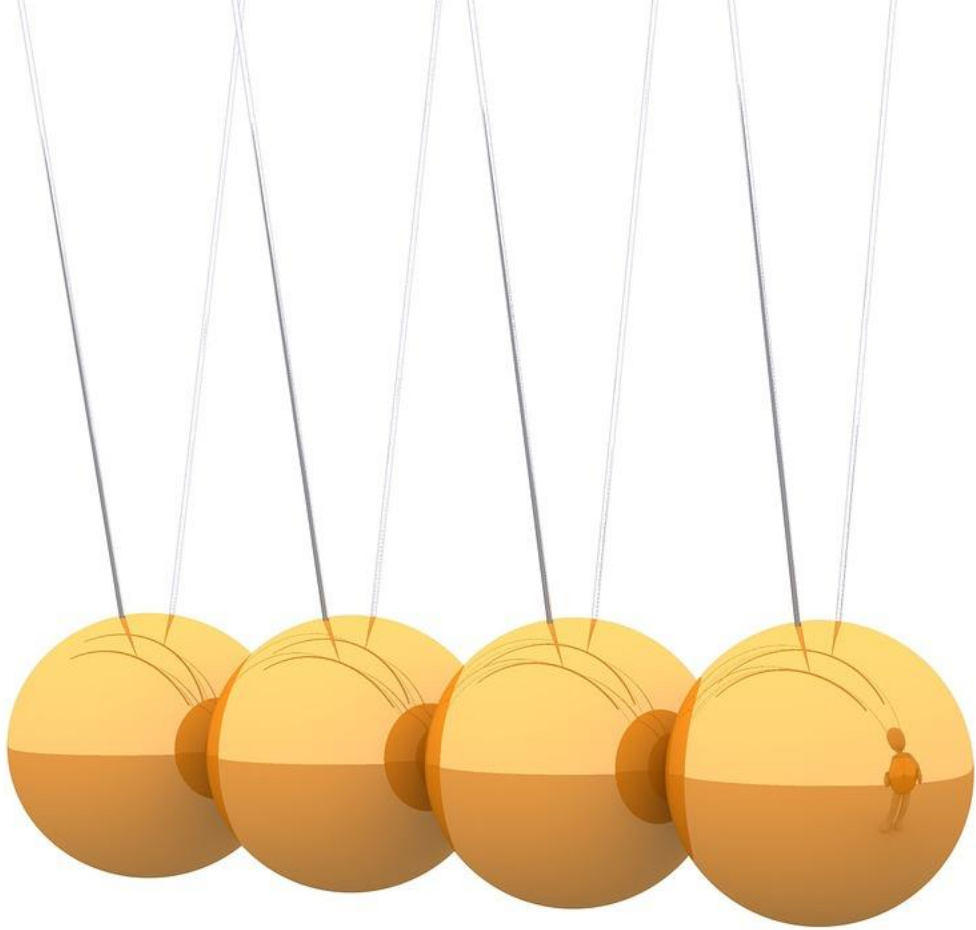
Recommendations

> If Image tag has changed but your deployment uses the old tag

```
kubectl set image deployment/<deployment_name> \
  image=image:new_tag --record
```

Recommendations

If Image tag has not changed

Add your own label and patch the deployment.

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Is a perfect Job ?!

Recommendations

How to stop a cronjob and preserve history?

Suspend the job

Set a **backofflimit** to 0 in combination with **restartPolicy**: Never and **concurrencyPolicy**: Forbid

A positive attitude can change anything!

Samples location :
https://github.com/ammbra/troubleshooting

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