EWC K8s

8th EWC User Workshop (hybrid), 18th September 2025

EUROPEAN WEATHER CLOUD

Agenda

- State of Managed Kubernetes Service
- Challenges of Developing New Services
- How platform engineering concepts help EWC
- *Demo*
- What next?
- Questions & Feedback

State of Managed Kubernetes Service

EUMETSAT

- Development Completed
- Opened to test users
- Default added functionality ready
  - Ingress
  - Certificates
  - GPU support
  - Logging and Monitoring

ECMWF

- Service available as part of the infrastructure services
  - Via OpenStack API access
- Default added functionality ready
  - Ingress
  - Logging and Monitoring

Next Focus

- Add applications valuable for users
  - Fully integrated Secrets Manager
  - Integration between Certificates and DNS
  - …
- Add integrations with more EWC services
- Add more security built-in the Kubernetes platform
- Define how the Kubernetes Service is exposed to the users in harmonized way

Challenges of Developing New Services

Complexity

- Kubernetes and surrounding ecosystem evolve rapidly
- Interoperability with existing and future EUMETSAT and ECMWF infrastructure

Diverged Stack

- EUMETSAT and ECMWF have different technological stacks suited for their overall needs

User Experience

- Harmonize across orgs
- Not everyone is a cloud-native expert
- Steep Kubernetes learning curve

How Platform Engineering Concepts Help EWC

📐 Standardization

- Enable interoperability without forcing stack convergence
- Enables joint development & collaboration on future services
- Abstract complexity with software templates and golden paths
- Provide operational ready services to EWC users

🎯 User Experience

- Harmonized experience across EUMETSAT & ECMWF
- Reduce steep learning curve → focus on meteorology, not infrastructure.
- Simple portals, CLIs or APIs, not raw kubernetes or cloud APIs

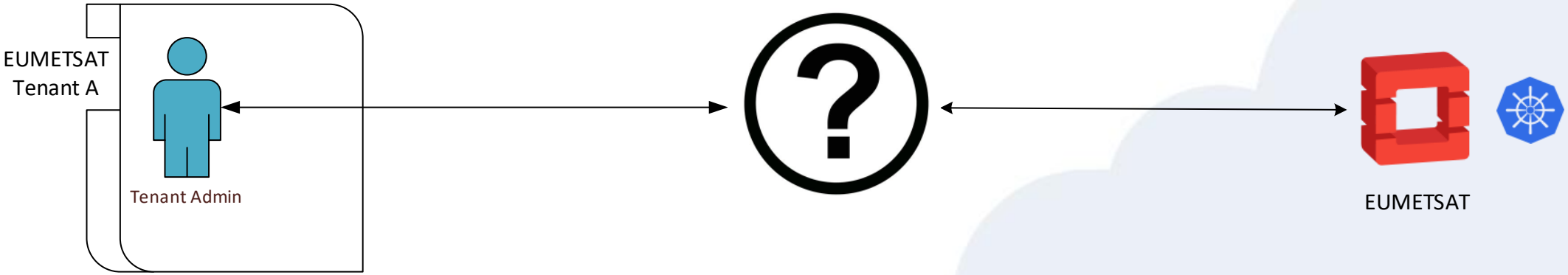
⚡ Faster Delivery

- Reusable building blocks
- Automates repetitive tasks for innovation
- Faster prototyping and rollout of new services

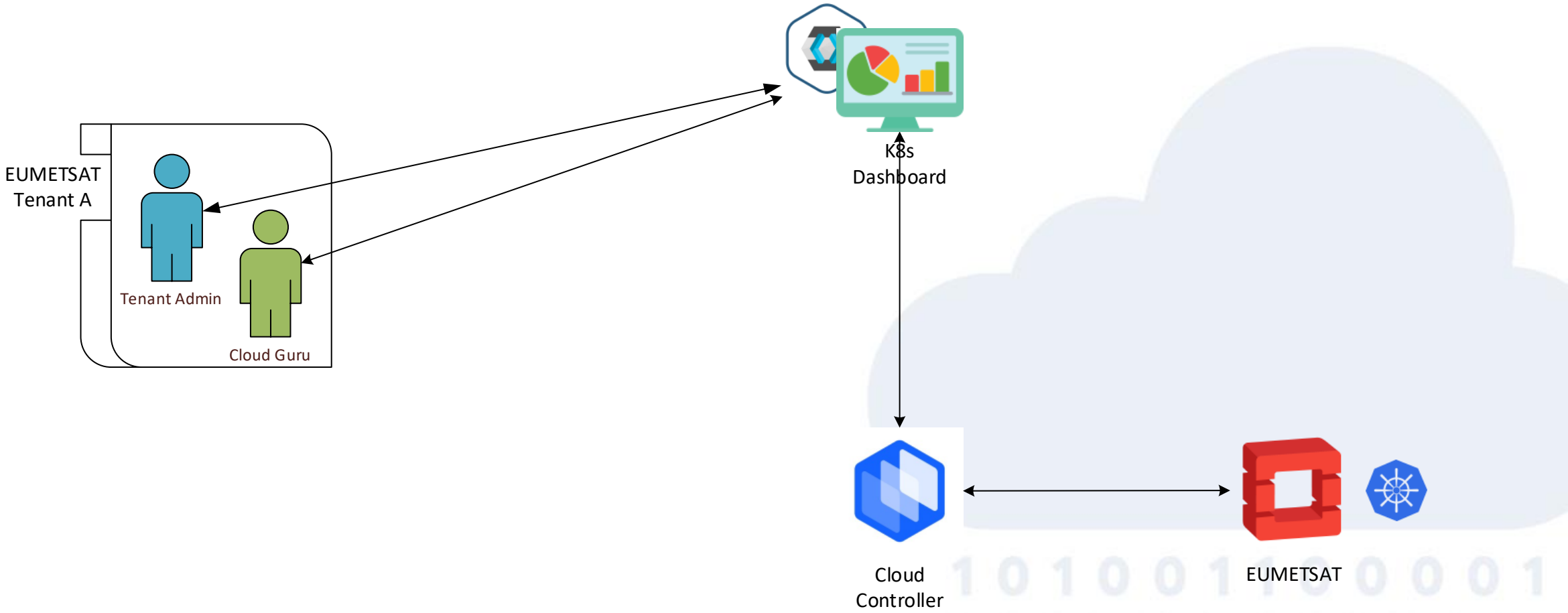
🔒 Governance & Security

- Security & compliance built-in by default
- Production ready software templates and golden paths
- Central monitoring reduces operational overhead

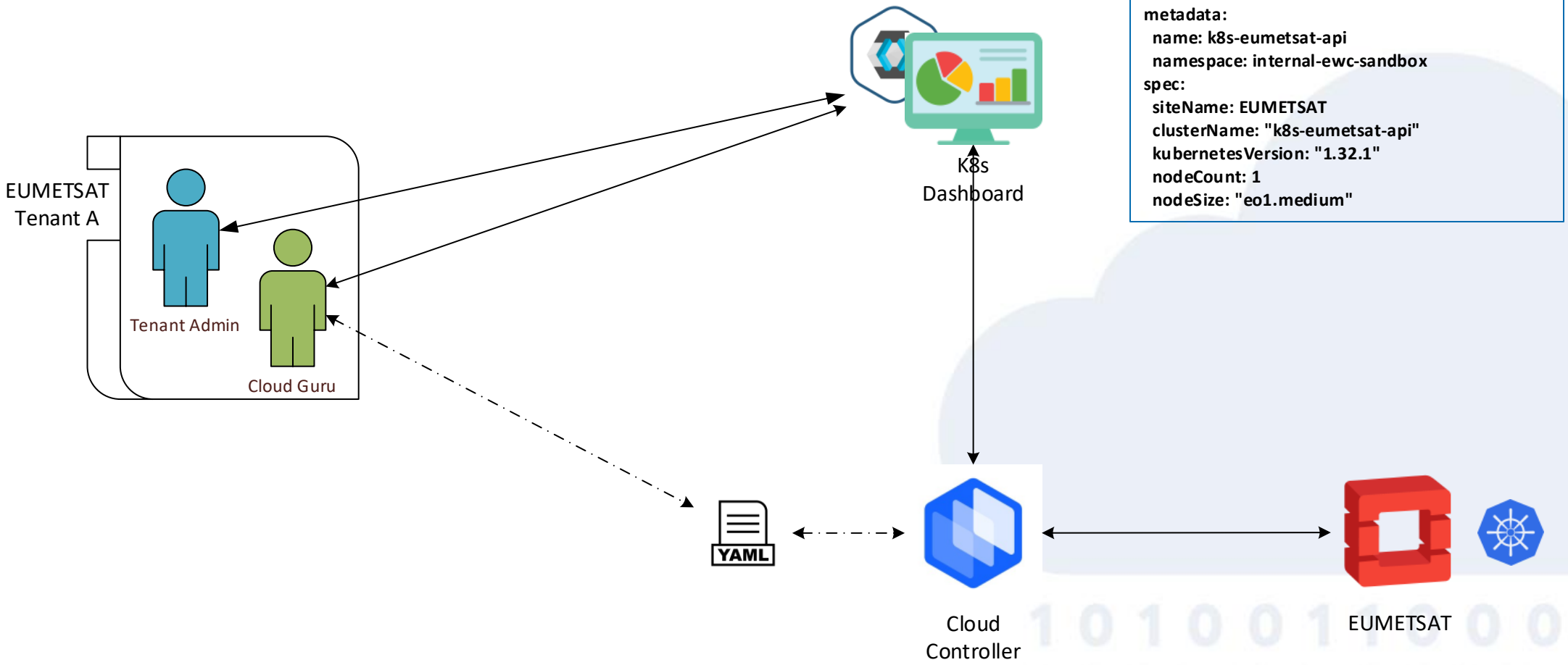
Demo



Demo

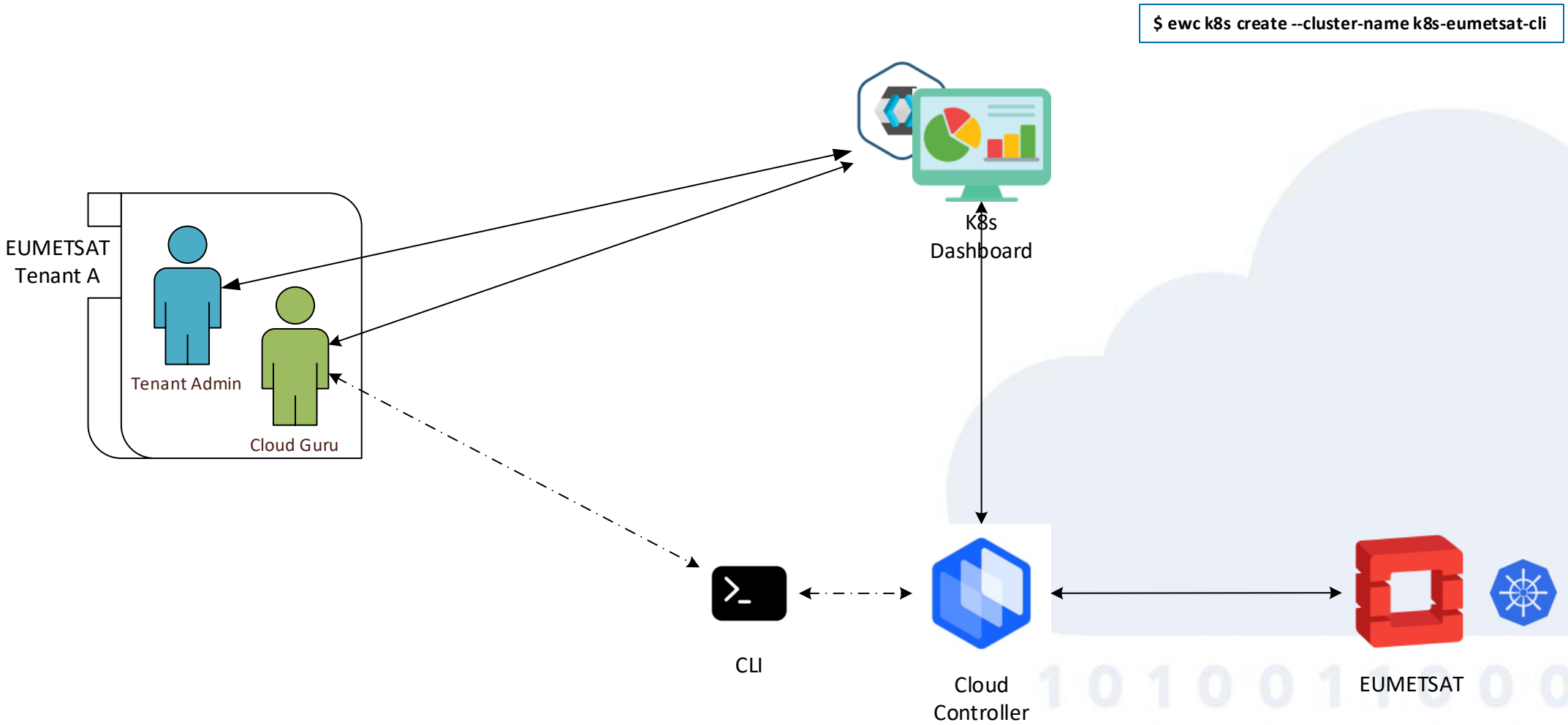

EUMETSAT
Tenant A
Tenant Admin
Cloud Guru
K8s
Dashboard
Cloud
Controller
EUMETSAT

Demo




```
apiVersion: k8s.europeanweather.cloud/v1alpha1
kind: ewcCluster
metadata:
  name: k8s-eumetsat-api
  namespace: internal-ewc-sandbox
spec:
  siteName: EUMETSAT
  clusterName: "k8s-eumetsat-api"
  kubernetesVersion: "1.32.1"
  nodeCount: 1
  nodeSize: "eo1.medium"
```

Demo


$ ewc k8s create --cluster-name k8s-eumetsat-cli
EUMETSAT
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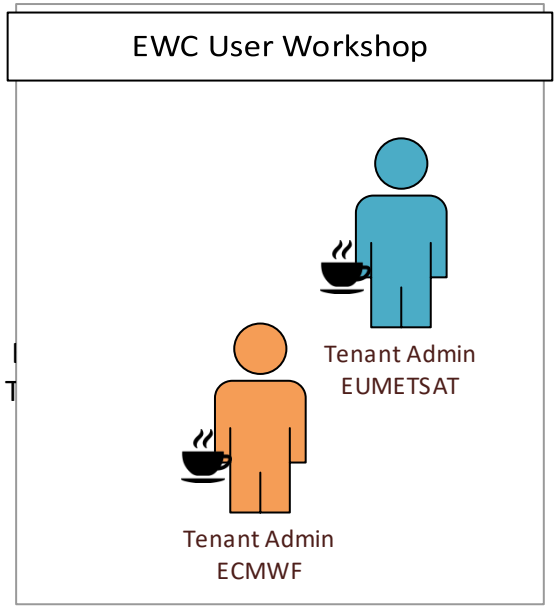
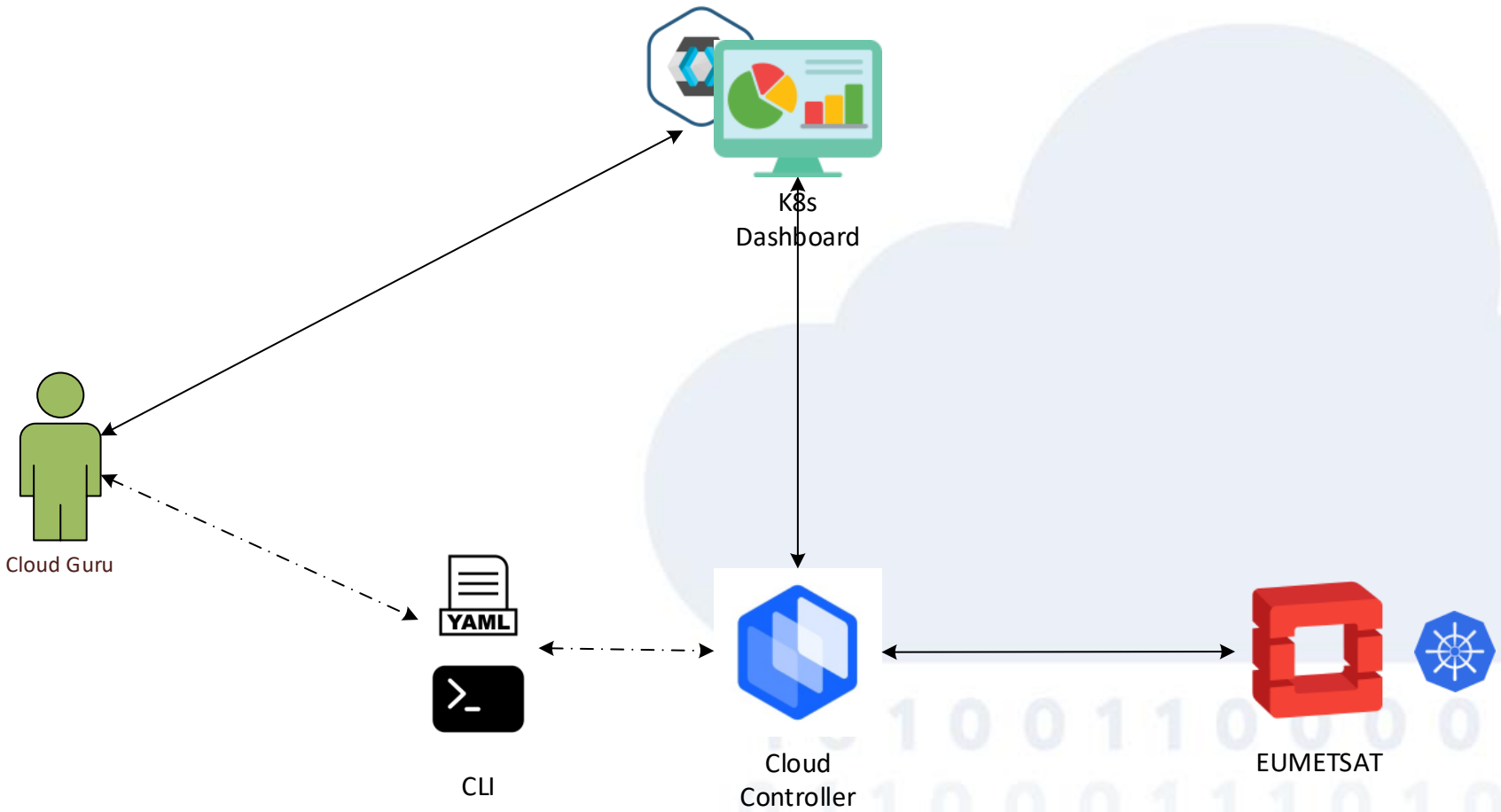
Cloud
Controller
EUMETSAT

Demo


EWC User Workshop
Tenant Admin
EUMETSAT
Tenant Admin
ECMWF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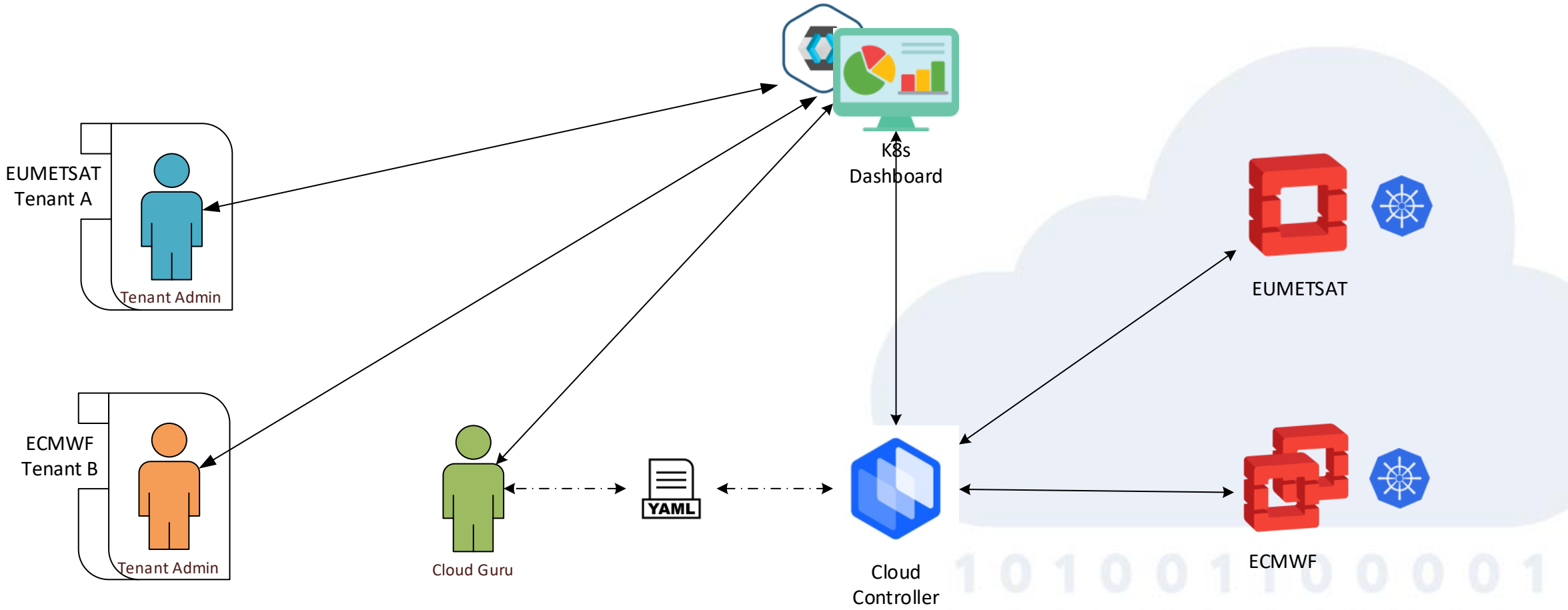
Demo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Demo

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  clusterName: "k8s-eumetsat-api"
  kubernetesVersion: "1.32.1"
  nodeCount: 1
  nodeSize: "eo1.medium"
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```
apiVersion:
k8s.europeanweather.cloud/v1alpha1
kind: ewcCluster
metadata:
  name: k8s-ecmwf-api
  namespace: ecmwf-pet-k8s
spec:
  siteName: ECMWF
  clusterName: "k8s-ecmwf-api"
  kubernetesVersion: "1.32.1"
  nodeCount: 1
  nodeSize: "eo1.medium"
```

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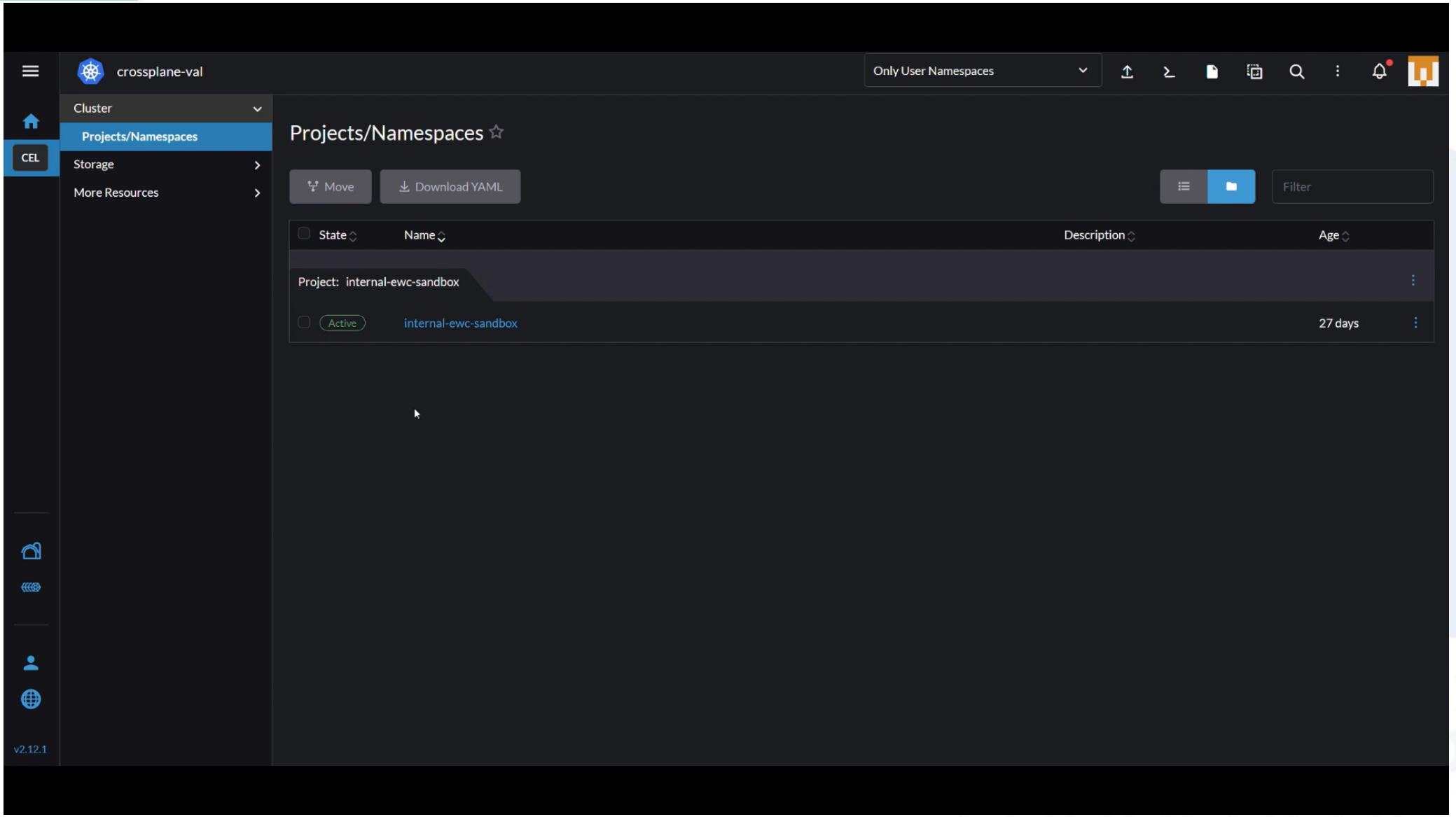
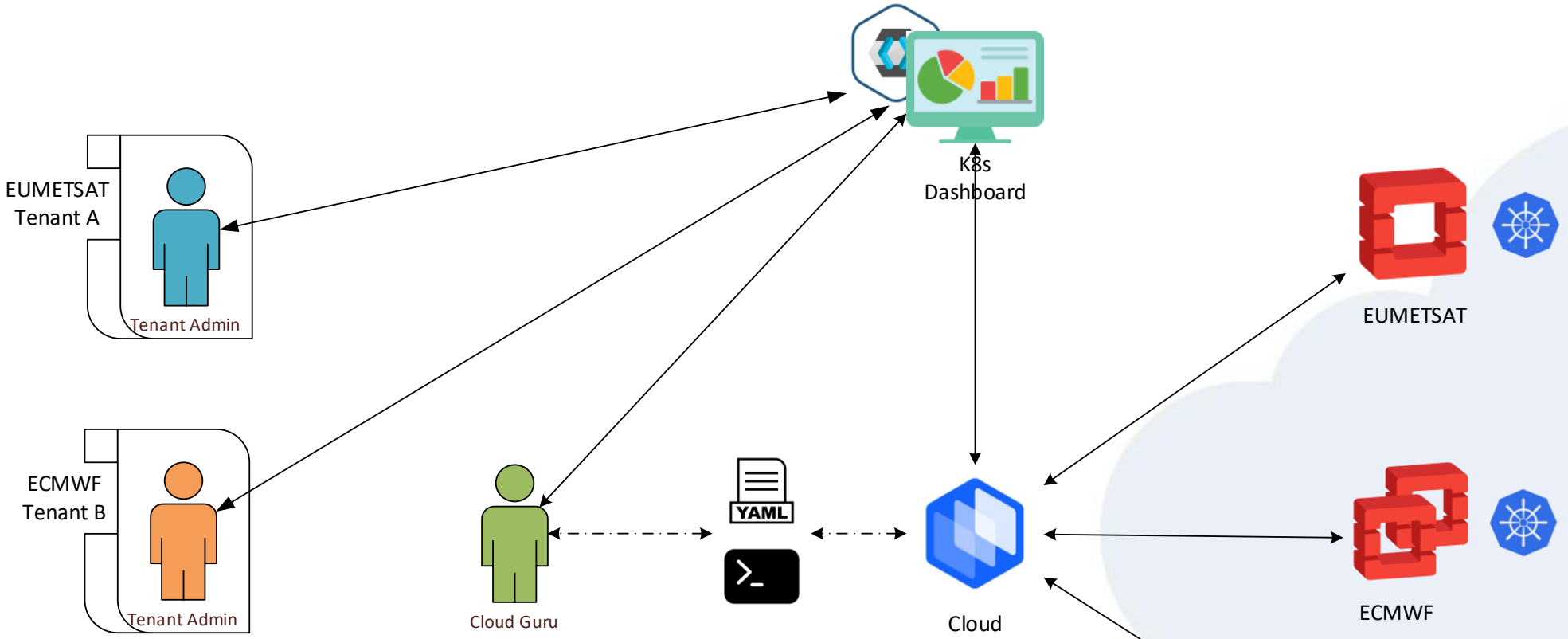
K8s Creation and Collaboration



Demo Recap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EUMETSAT
ECMWF
* Cloud
* Service

What next?

🚀 Operationalize PoC

- Transition the cloud controller from PoC to parity with the Kubernetes services (eventually in production)
- Ensure robustness, monitoring & support readiness

Deep Integration

- Fully Integrate the cloud controller with central EWC services (like IaM)
- Integrate with EUMETSAT & ECMWF services

Expand Capabilities

- APIs for S3 bucket creation & credentials
- DNS self-service
- ***Whatever you want and need***

Evolve Ecosystem

- Develop Community Hub items using the cloud controller
- Grow CLI in sync with cloud controller
- Add UI capabilities to complement the CLI

Questions & Feedback

We’d love to hear your thoughts and questions.

Feedback on the Kubernetes Managed Service
Suggestions for future services or APIs
Ideas for improving user experience

EUROPEAN WEATHER CLOUD

EWC Time Critical Applications

8th EWC User Workshop (hybrid), 18th September 2025

Ismael Cuadrado Cordero (EUMETSAT)

EUROPEAN WEATHER CLOUD

Agenda

- Introduction
- Actions
- Load Balancing: MeteoGate use case
- Lessons learnt and proposal
- Demo
- User feedback

Introduction

- The European Weather Cloud has started operations with the capability to support operational applications within the limits of currently procured service availability of the underlying infrastructure.
- Driven by the expressed interest of Member States using the EWC for operational and potentially time-critical applications, EUMETSAT and ECMWF conducted a study, including a workshop with Member States, on enabling time-critical applications in the EWC.
- The key results are
    1. The study confirmed the interest of member states in operating time-critical applications and services on the EWC
    2. Most Member States plan to use their own 24/7 operational support processes for the EWC time-critical applications
    3. Initial infrastructure availability objective was deemed too low

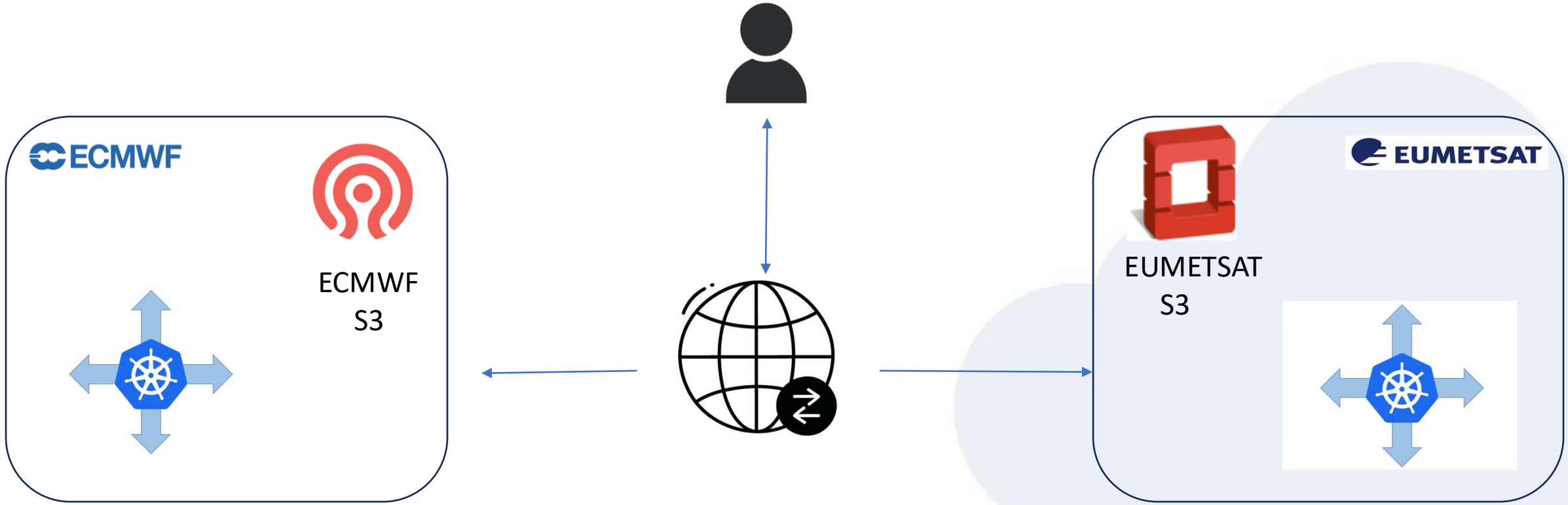
Actions

To better support Member States running time-critical applications in the EWC, the following actions were followed

1. Creation of a joint EWC status dashboard: https://europeanweather.cloud/status
2. Increased infrastructure availability objectives to 99.5% to better describe the current availability
3. Doing a feasibility study for redundant setup for applications needing availability beyond current availability SLO
   - As part of this study, it was discussed the possibility of deploying applications on both sides of EWC, if the user has resources associated to deploy those

Load Balancing

Use Case: Meteogate



MeteoGate API (as part of RODEO project) redundant pilot-case deployment.

Lessons learnt

- Applications need High availability, but can tolerate a downtime of <5 minutes
- Traffic load is very high / data intensive
- At least part of the data needs to be available in both regions

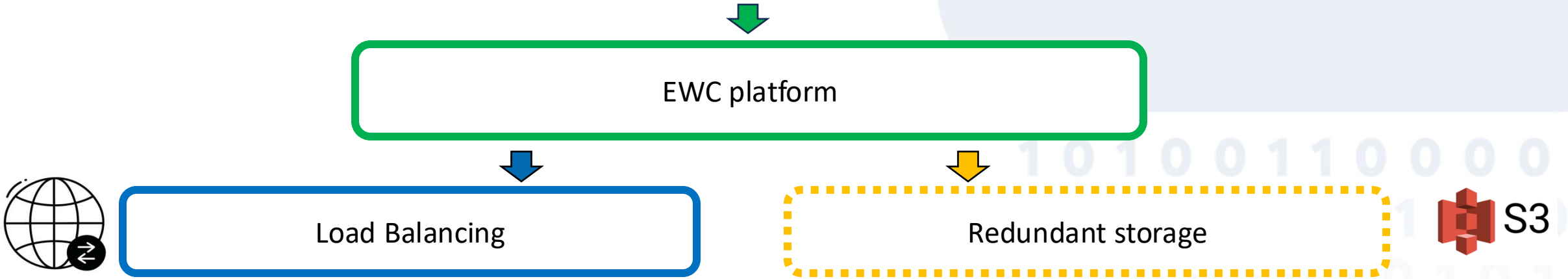
- **The process needs to be simplified for users to benefit from the solution**

Lessons learnt

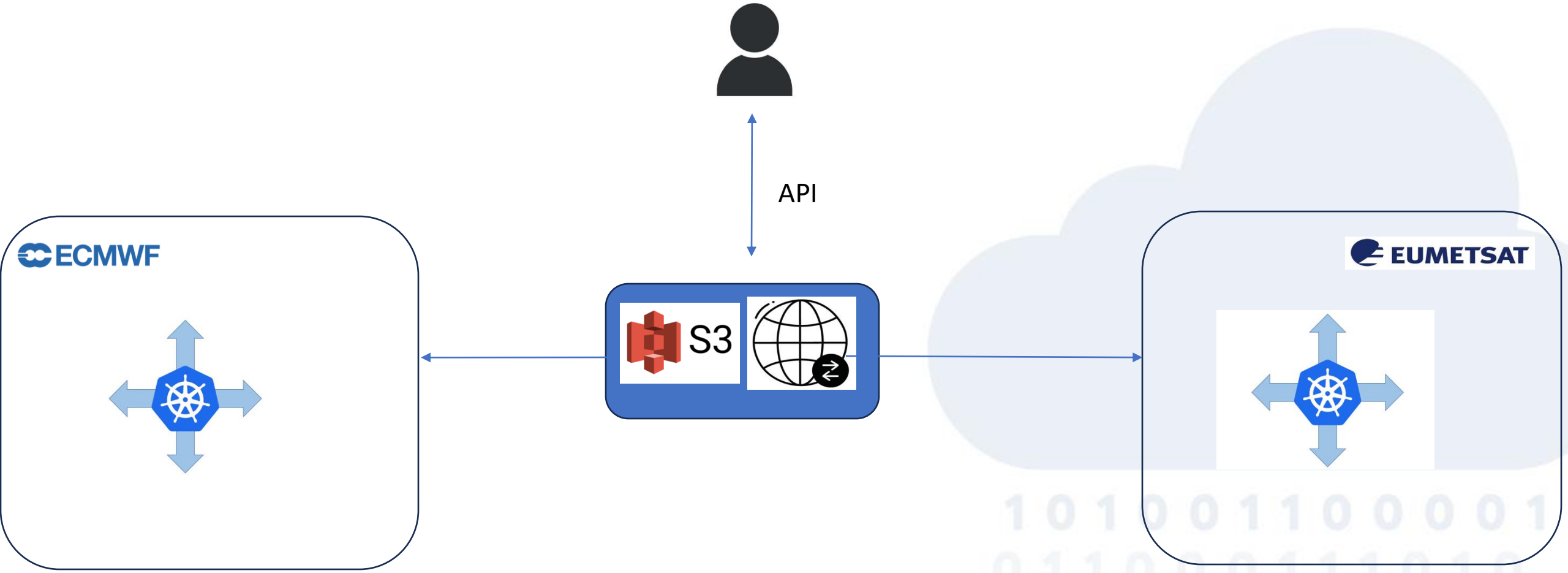
Action for Time Critical Applications

To better support Member States running time-critical applications in the EWC, the following actions have been identified

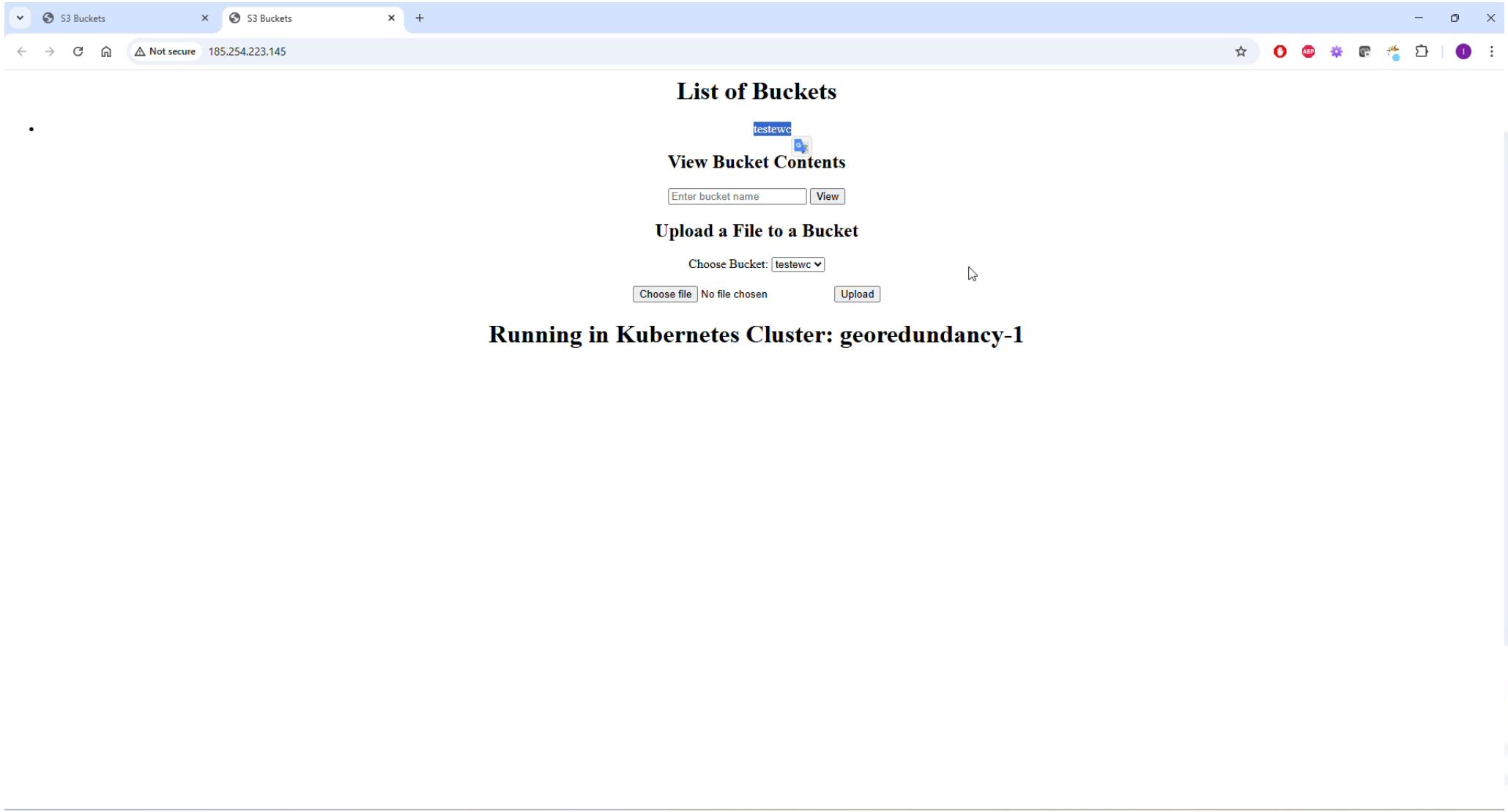
1. Creation of a joint EWC status dashboard: https://europeanweather.cloud/status
2. Increased infrastructure availability objectives to 99.5% to better describe the current availability
3. Doing a feasibility study for redundant setup for applications needing availability beyond current availability SLO
   - As part of this study, it was discussed the possibility of deploying applications on both sides of EWC, if the user has resources associated to deploy those



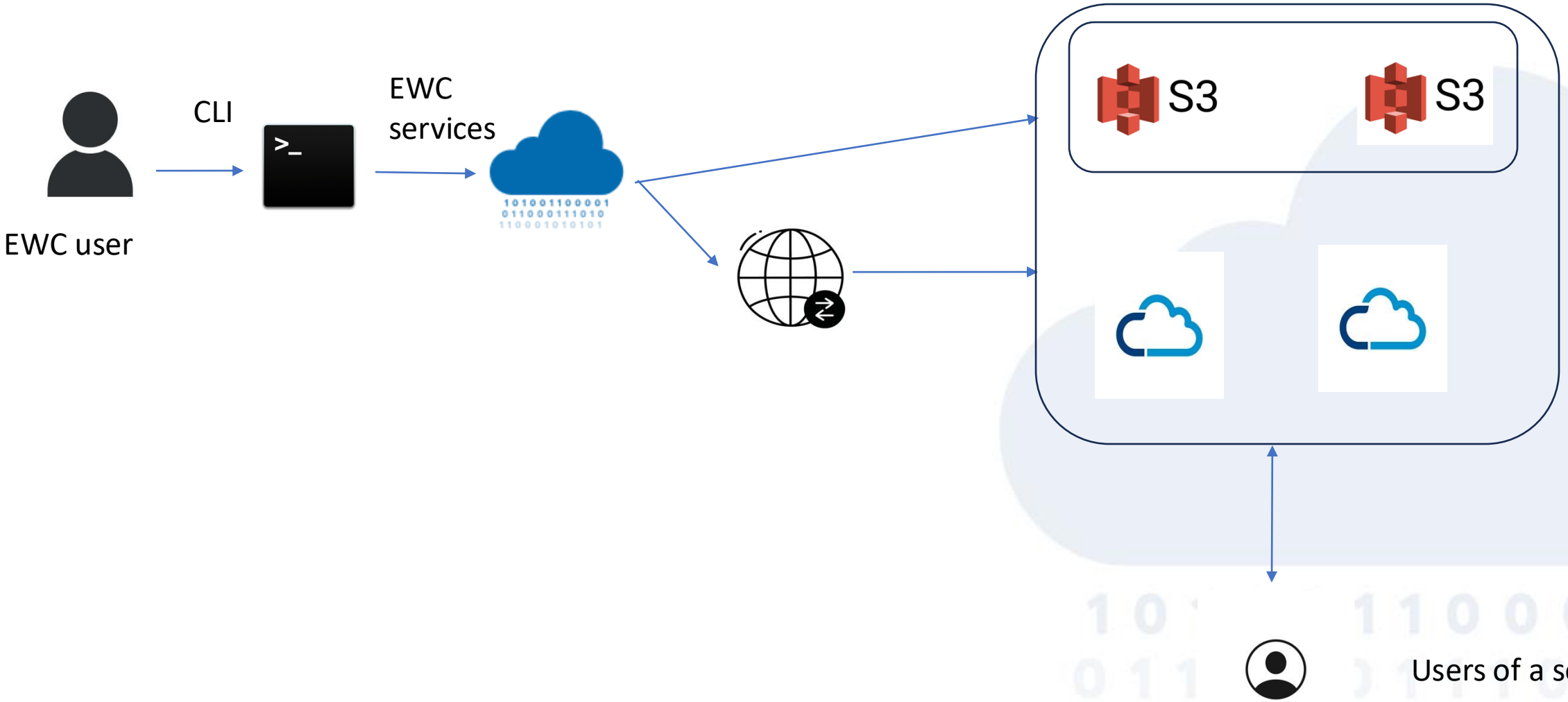
Proposal



Demo


S3 Buckets
S3 Buckets
Not secure
185.254.223.145
List of Buckets
testewc
View Bucket Contents
Enter bucket name
View
Upload a File to a Bucket
Choose Bucket:
testewc
Choose file
No file chosen
Upload
Running in Kubernetes Cluster: georedundancy-1

Demo recap



Questions & Feedback

We’d love to hear your thoughts and questions.

What kind of services do your mission critical applications need

Ideas for improving user experience