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KubeHub

Multi-K8s Cluster Management and Cloud-Edge Collaboration Service

Flexible, Lightweight, Easy-to-Maintain, and Highly Available

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01 Cloud-Edge Collaboration Open-Source Services

KubeEdge, OpenYurt, SuperEdge

Cloud-Edge Collaboration Open-Source Services

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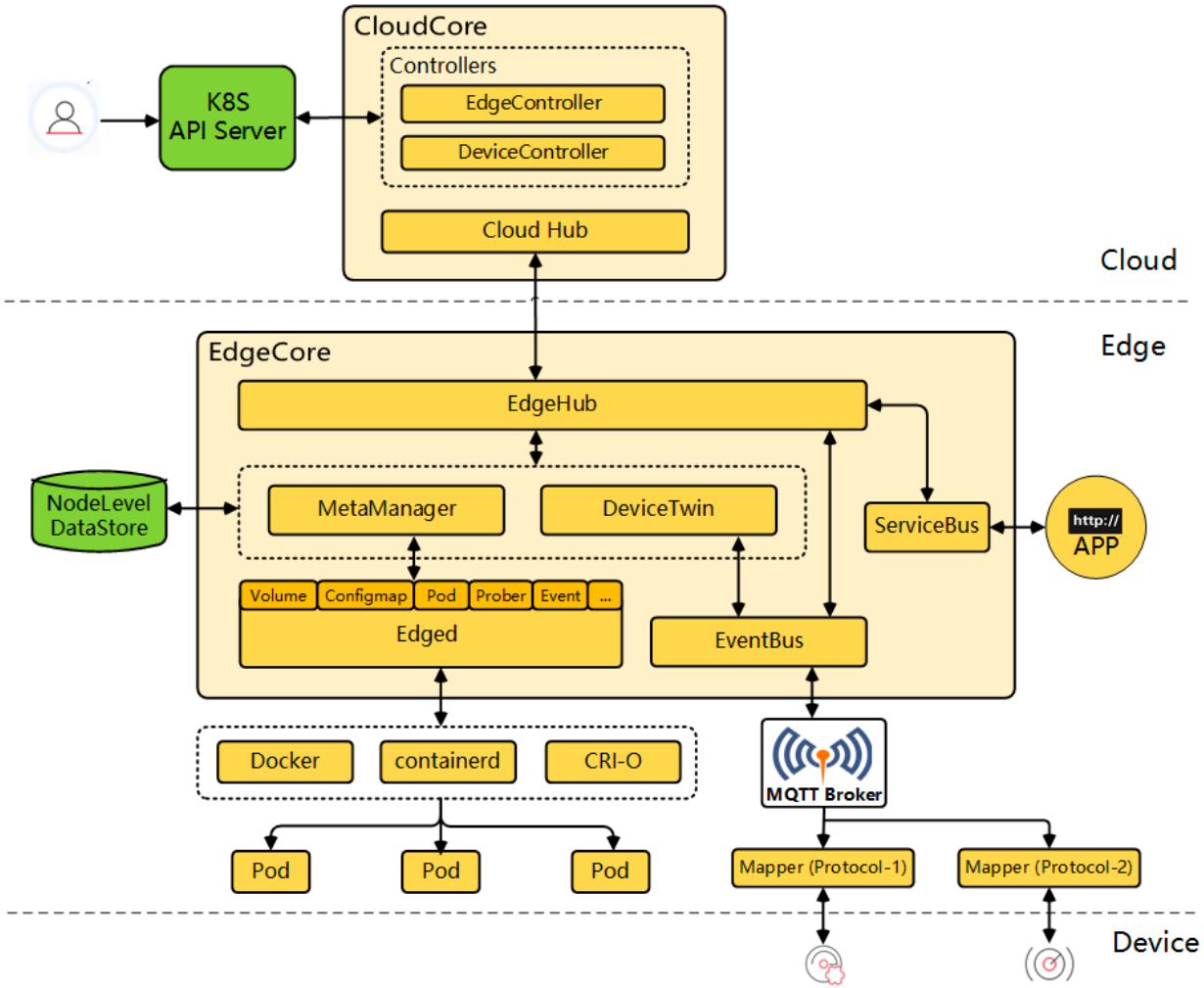
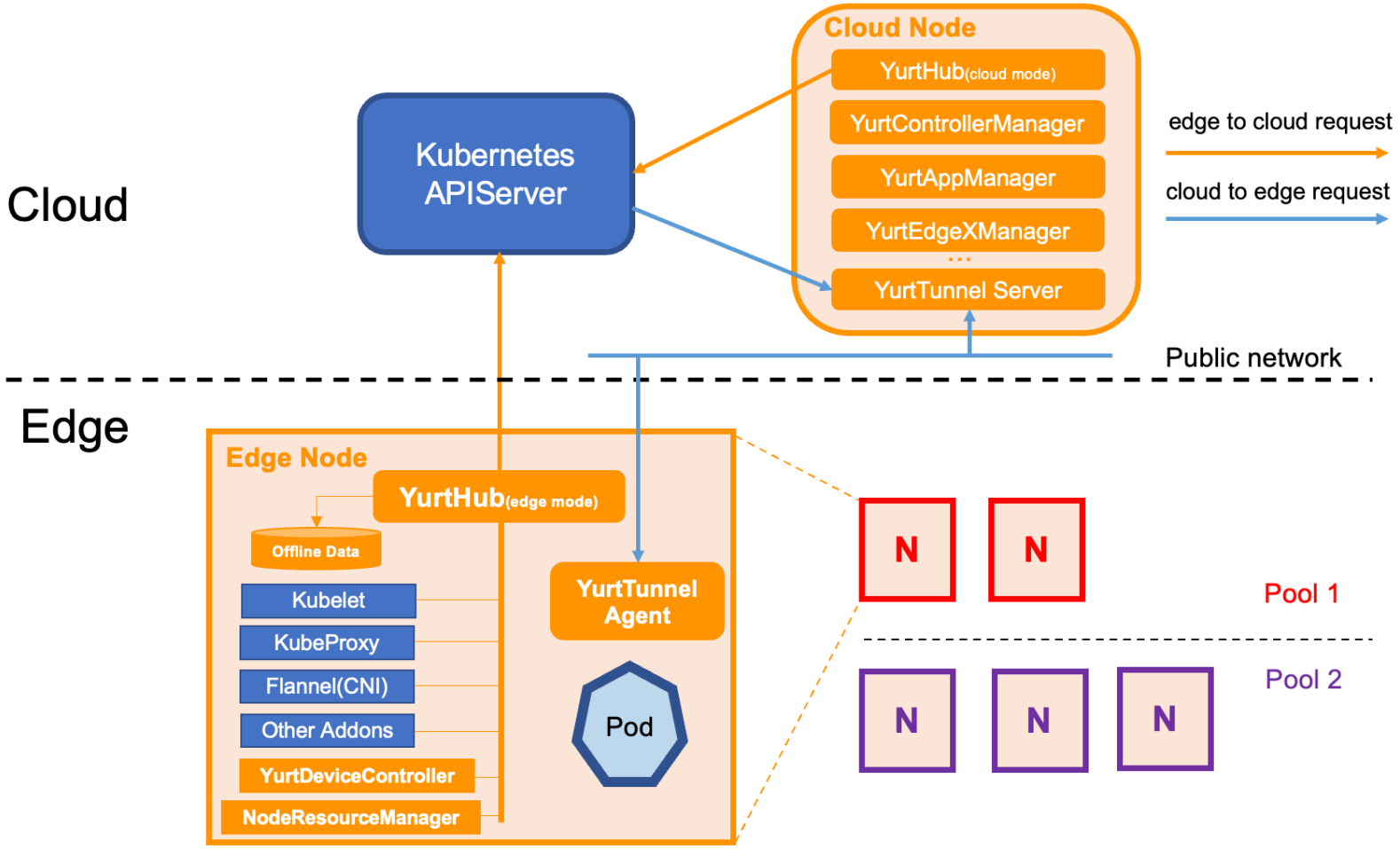
Why Is Cloud-Edge Collaboration Required?

- How can we manage and use a large number of edge K8s clusters and resources in an efficient and unified manner?
- How can the central control plane quickly and timely perceive the status and resource changes of edge K8s clusters?
- How can we process various requests from the cloud to edge clusters efficiently?

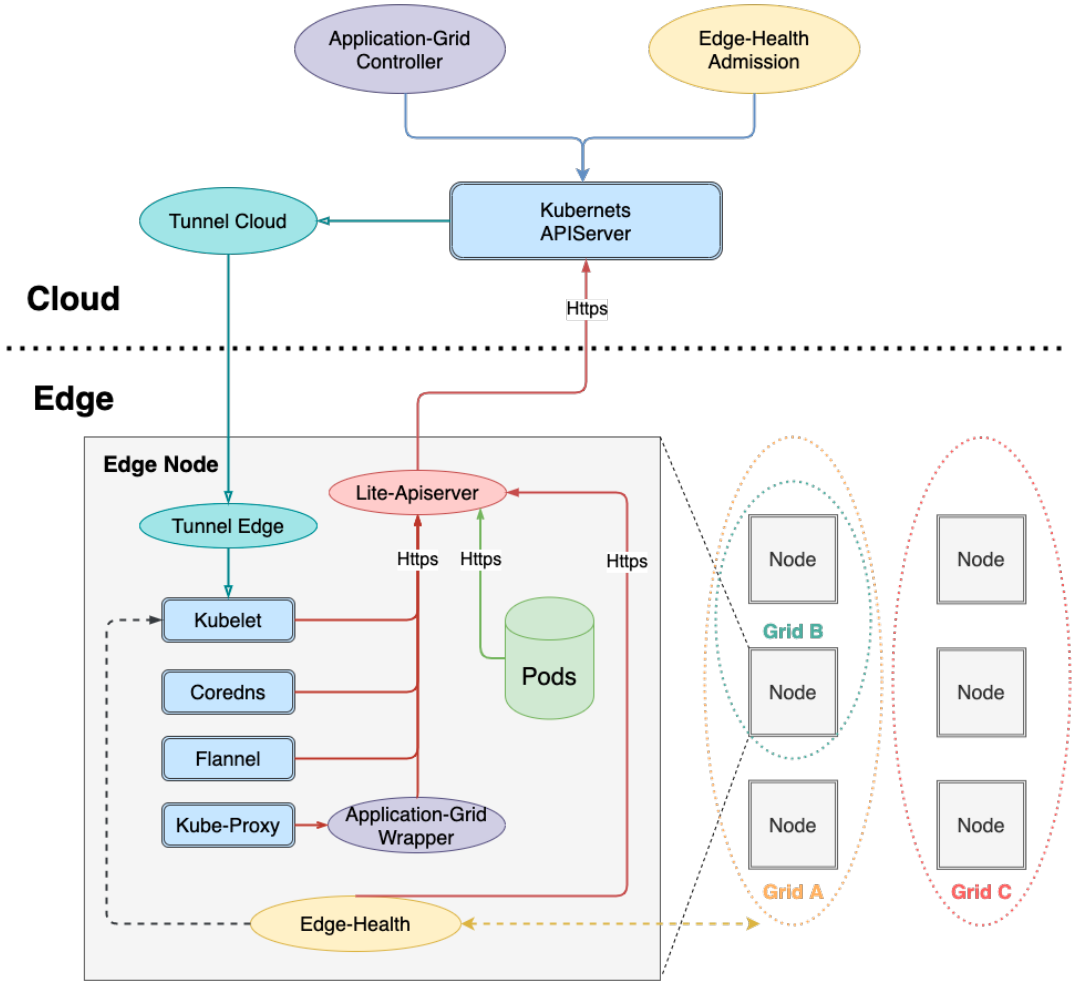
Cloud-Edge Collaboration Open-Source Services - KubeEdge



Cloud-Edge Collaboration Open-Source Services - OpenYurt



Cloud-Edge Collaboration Open-Source Services - SuperEdge



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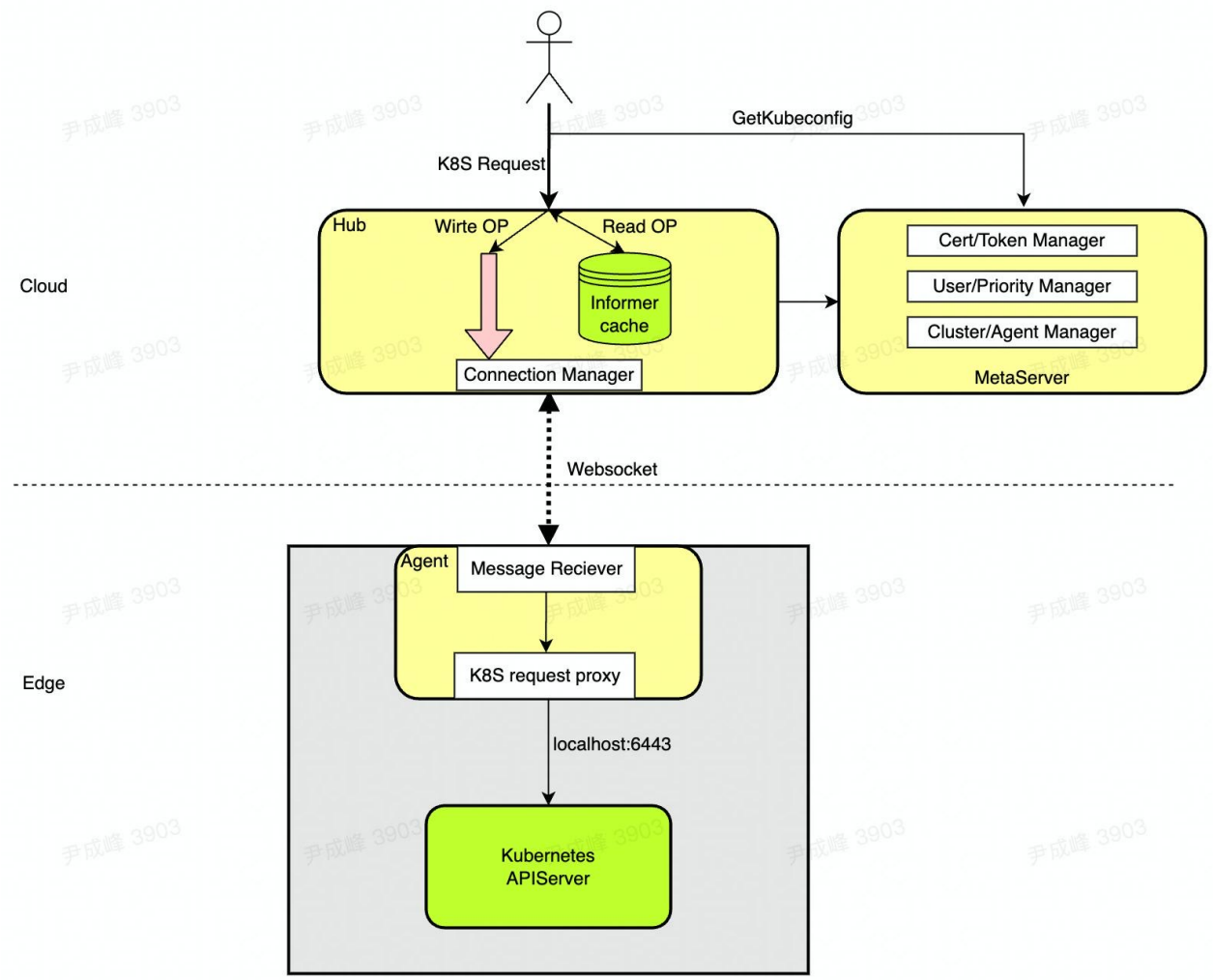
02 Introduction to KubeHub

Overall Architecture, Cluster Connection Mode, and Main Features of KubeHub

Introduction to KubeHub – Overall Architecture



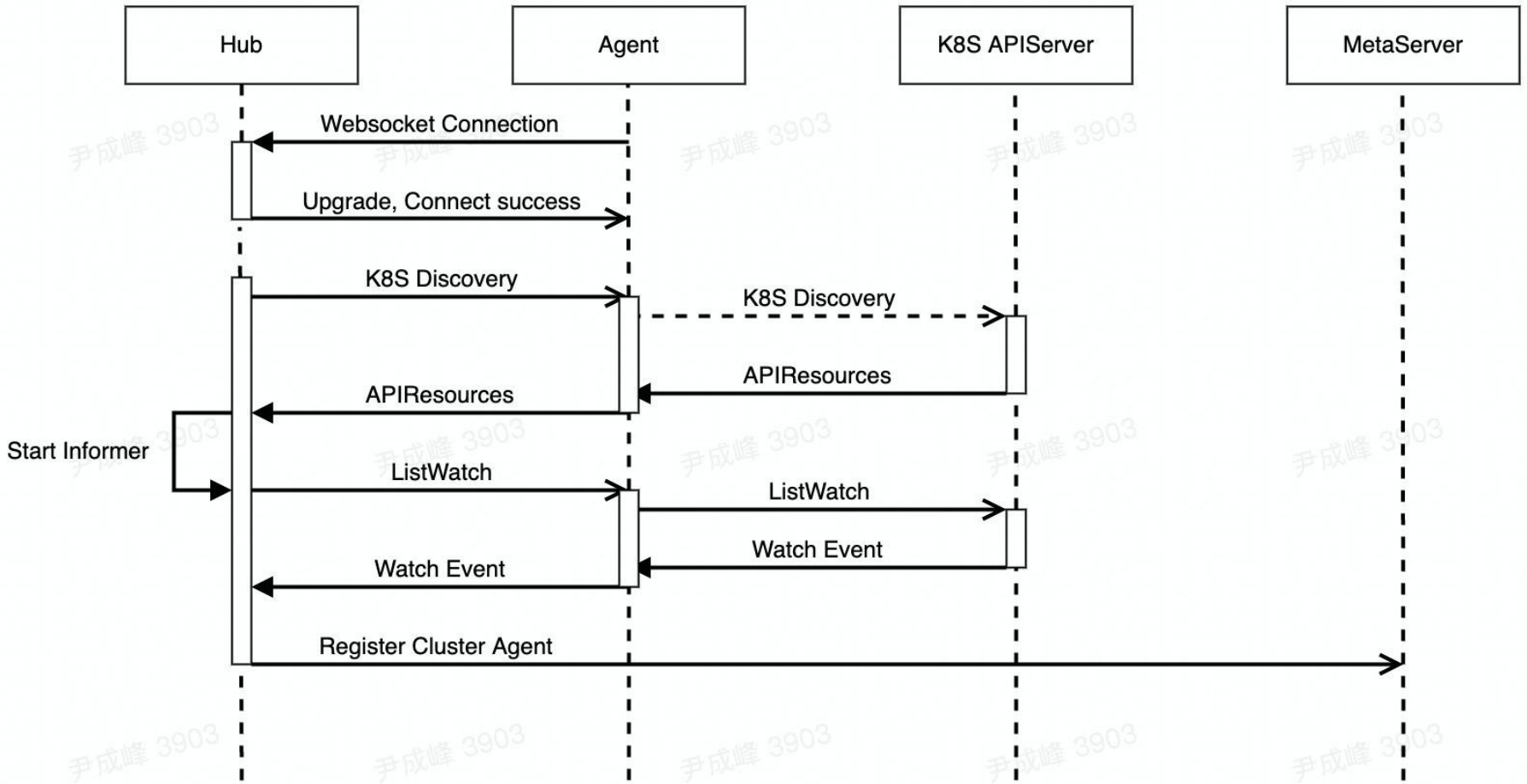
Cloud components

- **Hub:** Connects edge components to the cloud, manages and maintains the cache of edge clusters, and processes and forwards users' requests to clusters.
- **MetaServer:** Manages all metadata of KubeHub, such as users, permissions, certificates, and cluster components.

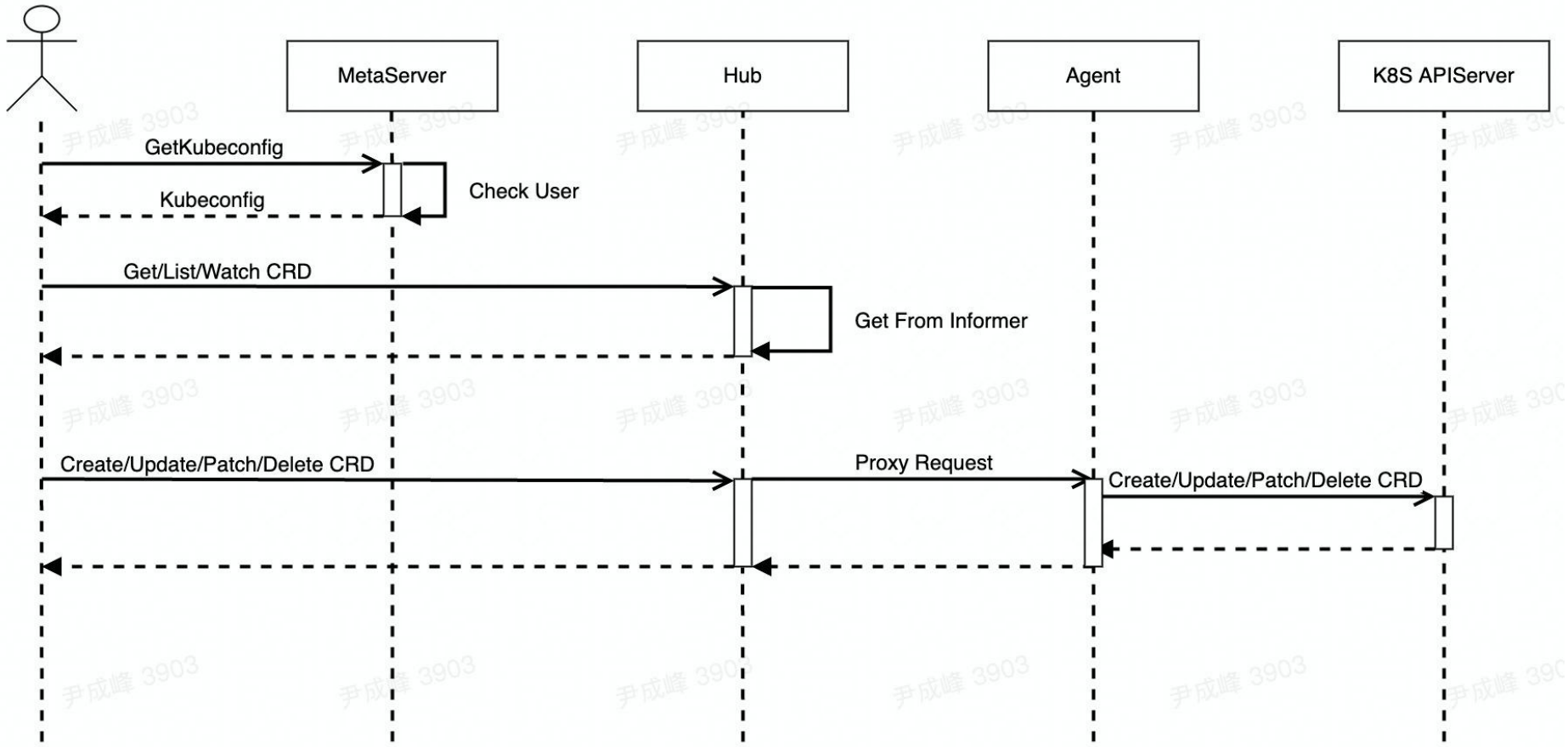
Edge component

- **Agent:** Connects to the Hub component and receives and forwards K8s requests sent by the cloud.

Introduction to KubeHub - Cluster Connection



Introduction to KubeHub – Request Proxying



Introduction to KubeHub – User Permission

CRD	Priority
namespaces.v1.	Read
pods.v1.	Read Write

```
{
  "cluster": "test-cluster",
  "exp": 1669125440,
  "gvr|read":
  "gvr|write":
  "ist":
  "user":
}
```

User resource permission management in MetaServer

Kubeconfig BearerToken

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03 Main KubeHub Features

Lightweight, Efficient, and Easy-to-Maintain

Main KubeHub Features

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Lightweight

KubeHub consists of only Hub, MetaServer, and Agent, which have simplified functions and are highly maintainable.

Simple connection

To connect new clusters to KubeHub, you only need to deploy and enable Agent without intrusion into the edge K8s cluster.

Highly reliable

The components are independent of each other and can be scaled out, ensuring distributed high availability in a simple way.

Efficient access

Cloud caches hotspot CRD on the edge to accelerate cluster operations and reduce the load of edge clusters.

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04 Future Outlook of KubeHub

More Universal Cloud-Edge Collaboration Service

Future Outlook of KubeHub

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- No impact on requests during KubeHub update and release
- Asynchronous processing of write requests
- Developing capabilities of managing non-K8s objects, supporting physical machine management, and building universal edge cluster management capabilities

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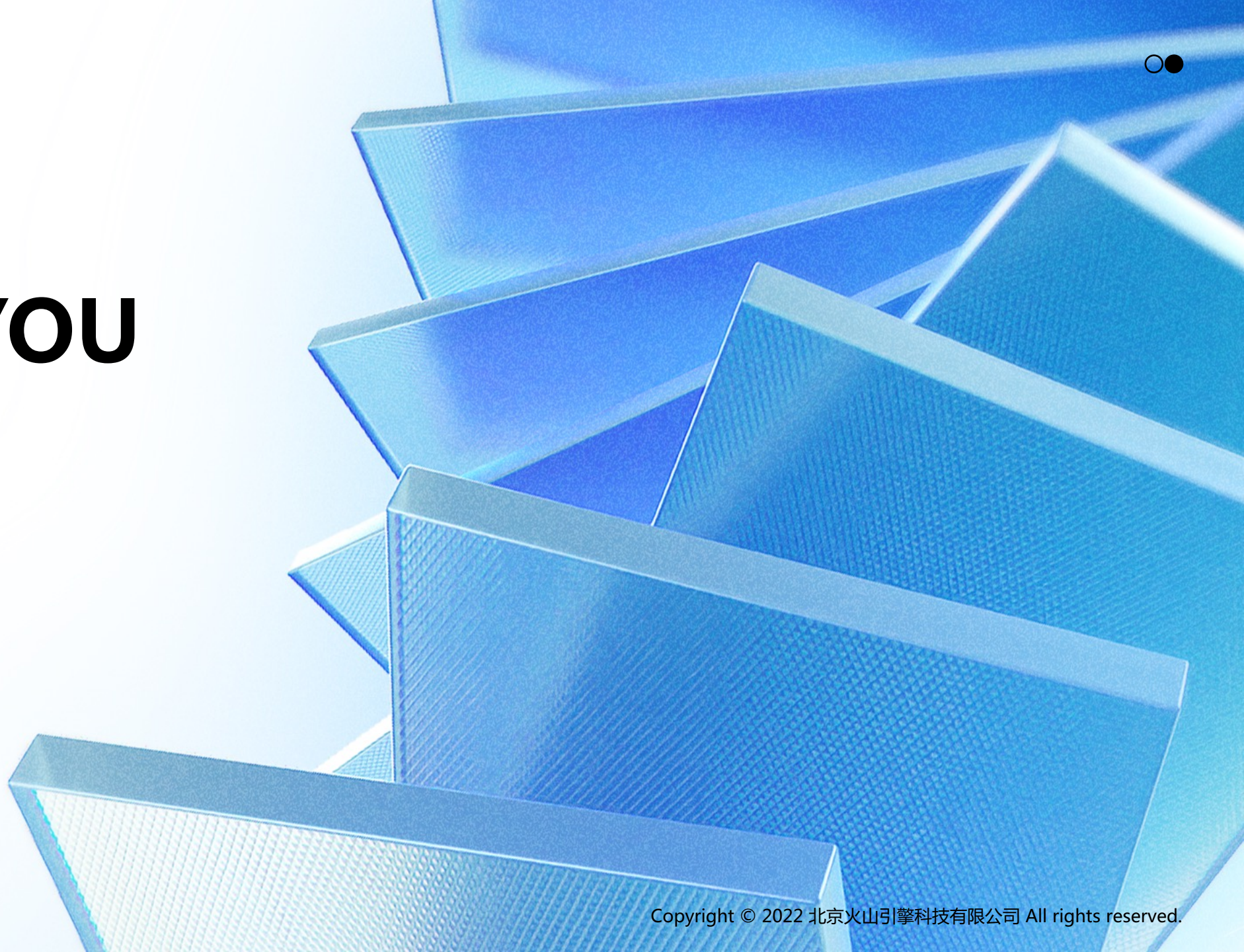
THANK YOU



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