ANDREAS KNAPP

TECHNOLOGY DEEP DIVE KUBERNETES

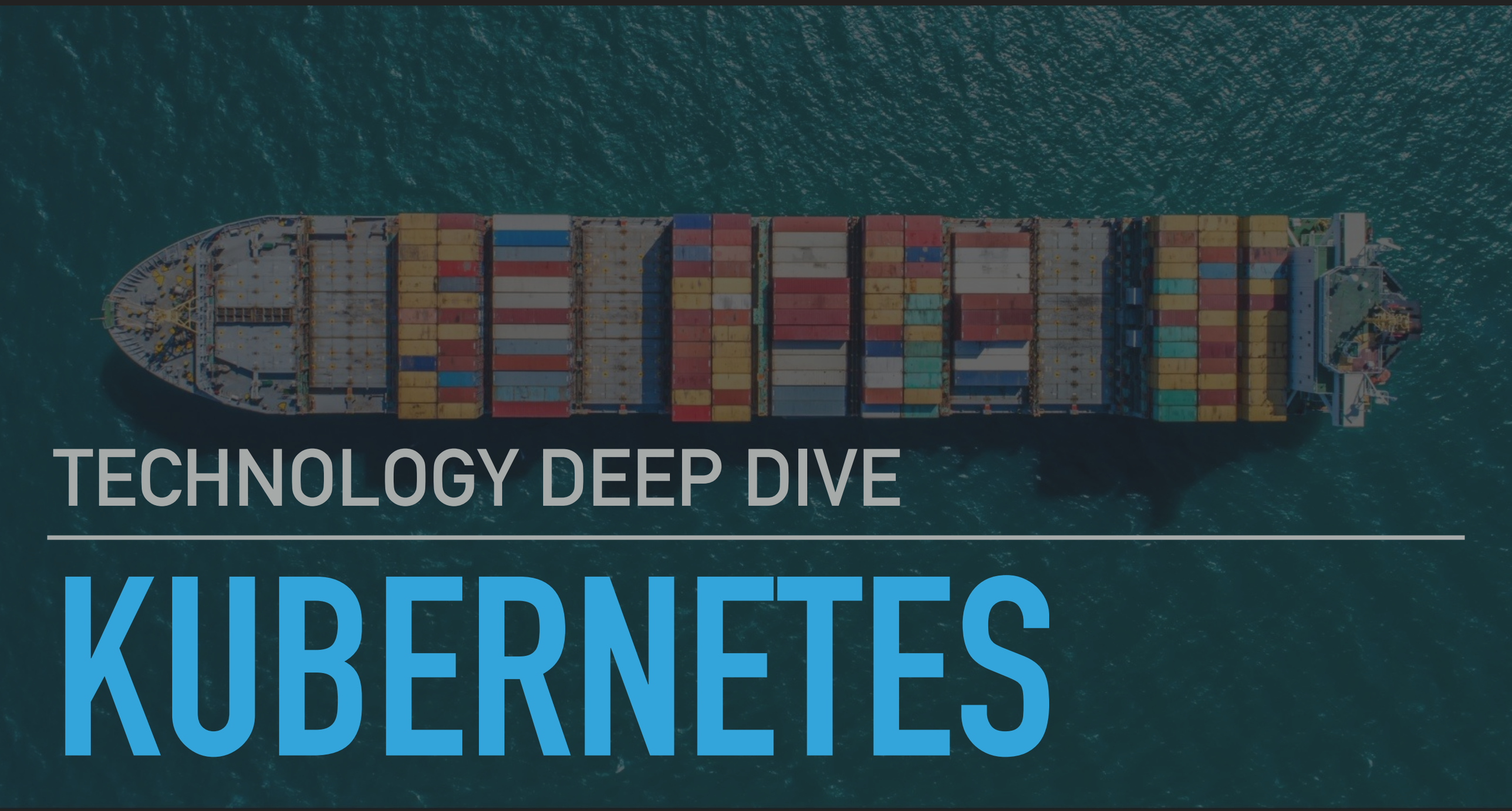
accenture

ANDREAS KNAPP

@_Knappek

- Technology Architect at Accenture Emerging Technology
- Work in Container Platform Team with a focus on Kubernetes
- Part of ASGR Cloud Native
- soccer, diving, festivals, travelling

accenture



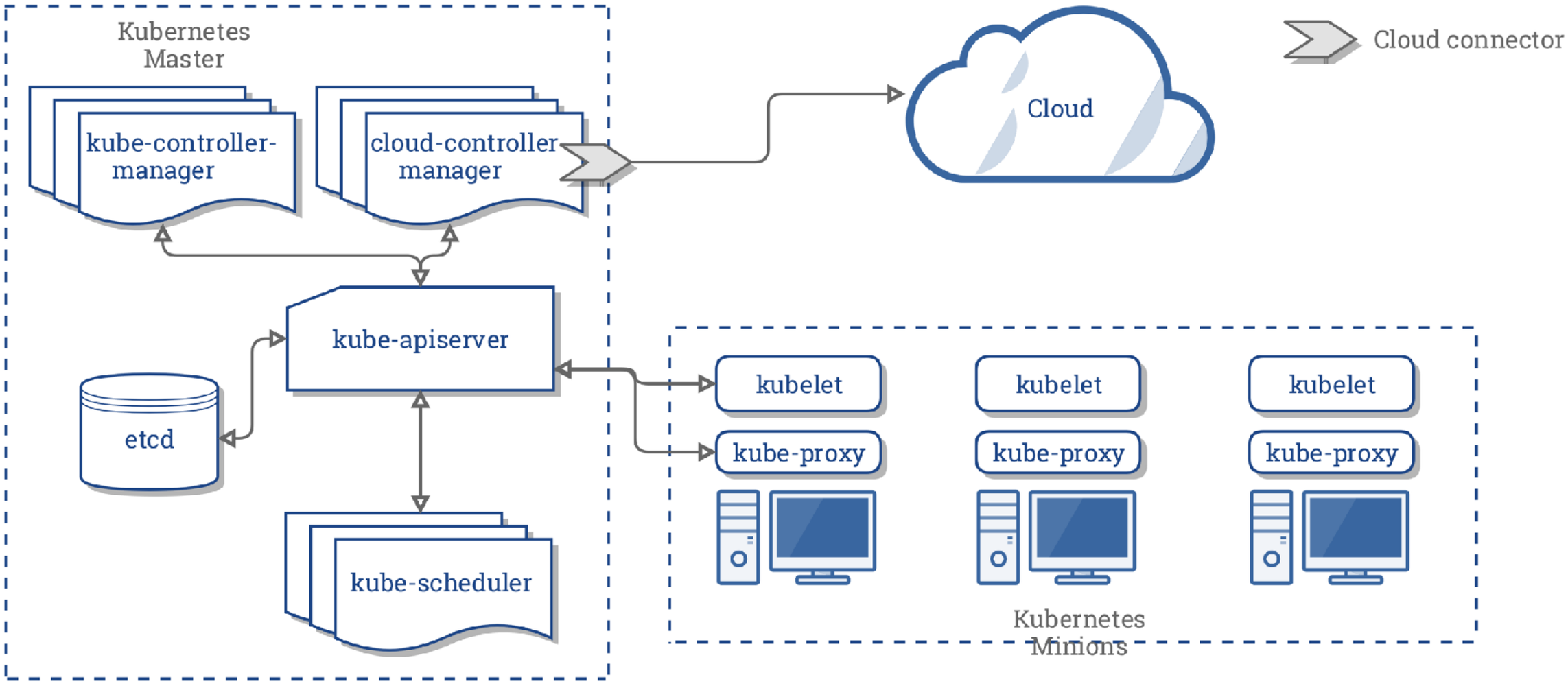
TECHNOLOGY DEEP DIVE

KUBERNETES

https://www.wired.com/

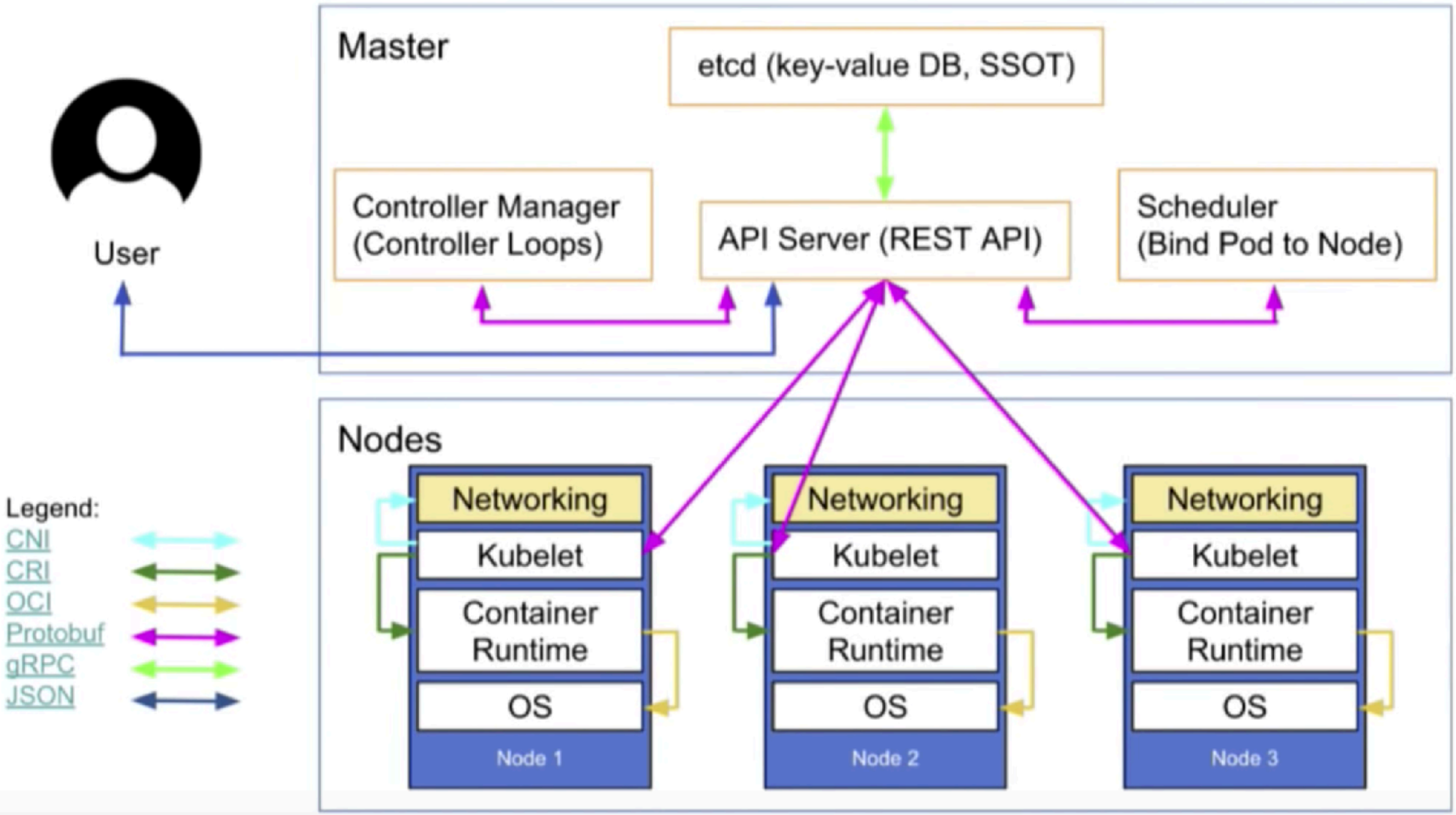
accenture

ARCHITECTURE



https://kubernetes.io/docs/concepts/architecture/cloud-controller/

Kubernetes' high-level component architecture



https://www.youtube.com/watch?v=EjSiZgGdRqk&feature=youtu.be

Lucas Käldström, What does "Production Ready" Really Mean for a Kubernetes Cluster?, Kubecon/CloudNativeCon 2018

accenture

SERVERLESS

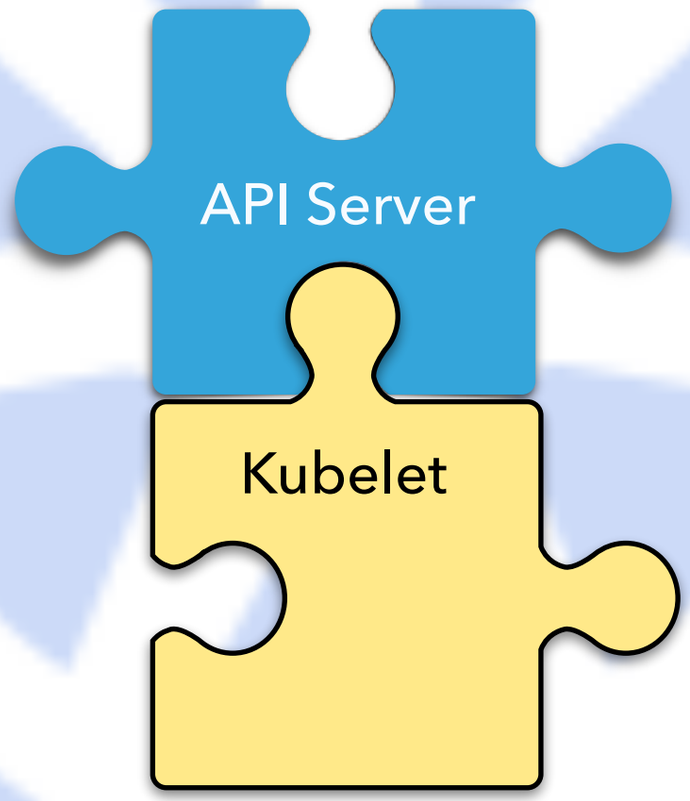
accenture

> [..]for the foreseeable future, I anticipate that most people's Kubernetes clusters will be a hybrid between dedicated machines and serverless container infrastructure. The dedicated machines will be used for steady-state services with relatively static usage, or specialized dedicated hardware like FPGAs or GPUs, while serverless containers will be used for bursty or transient workloads[..]
>
> Brendan Burns

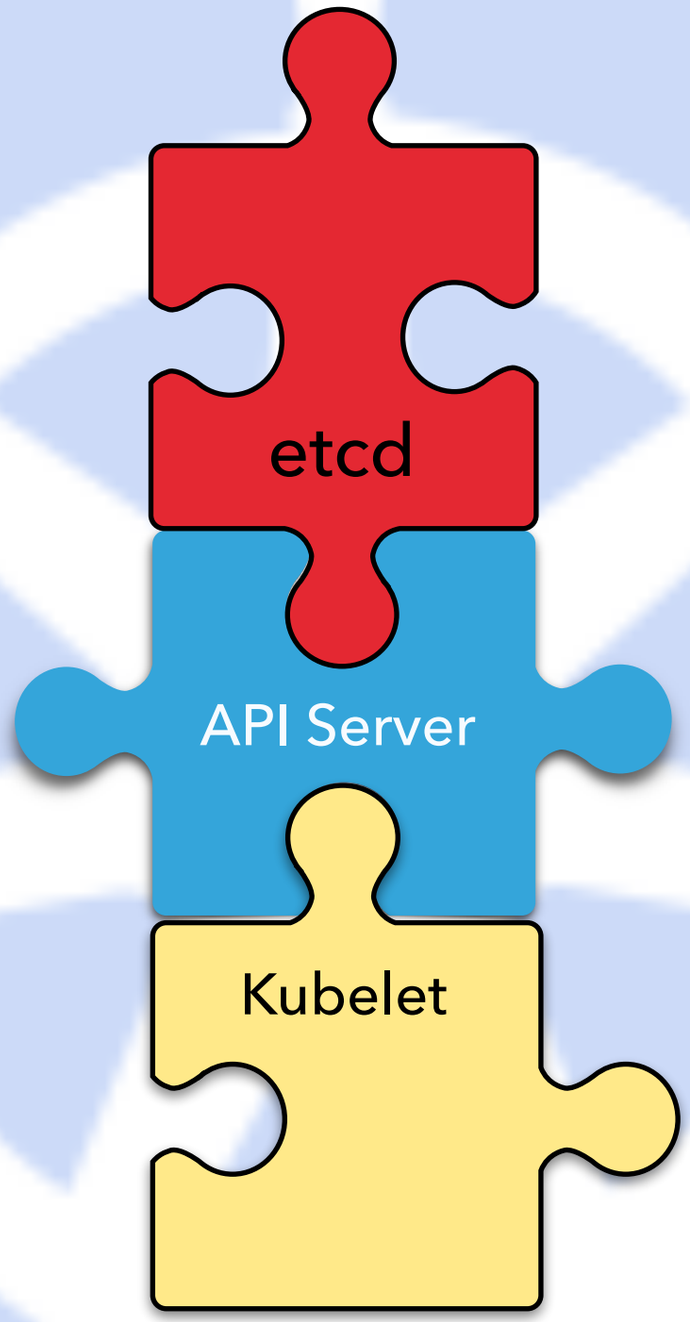
BACK TO THE ROOTS...

accenture

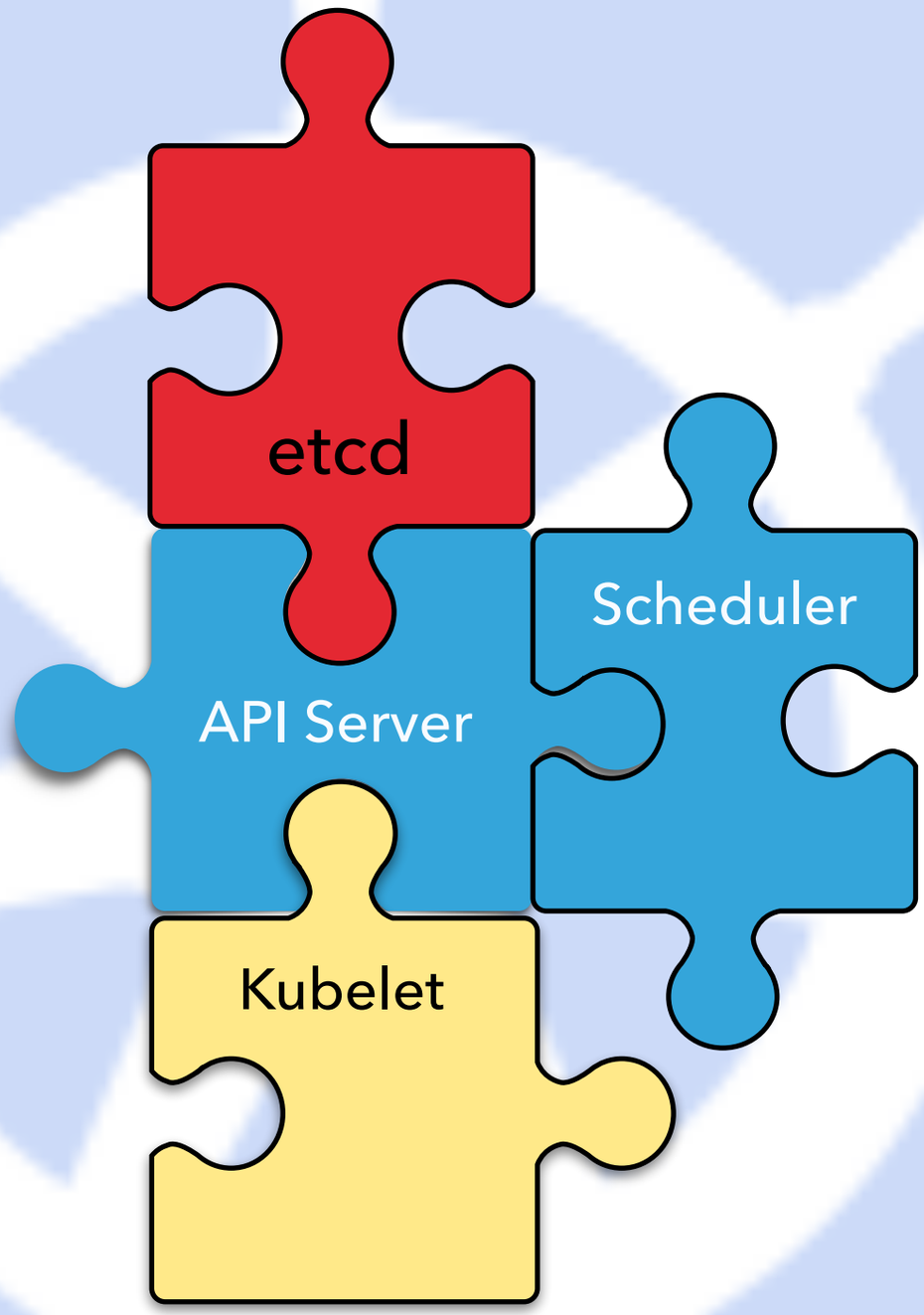
accenture



accenture



accenture

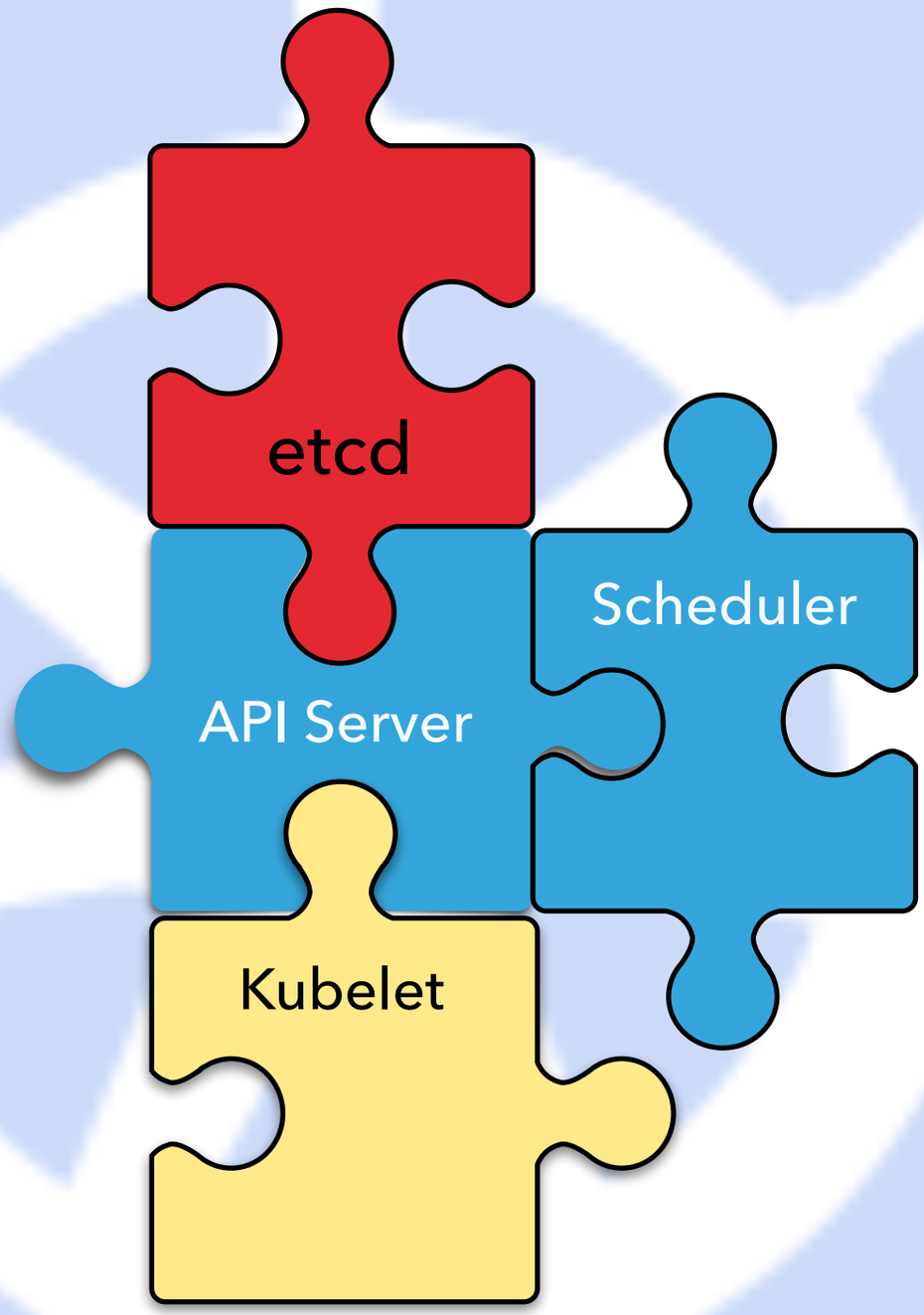


accenture

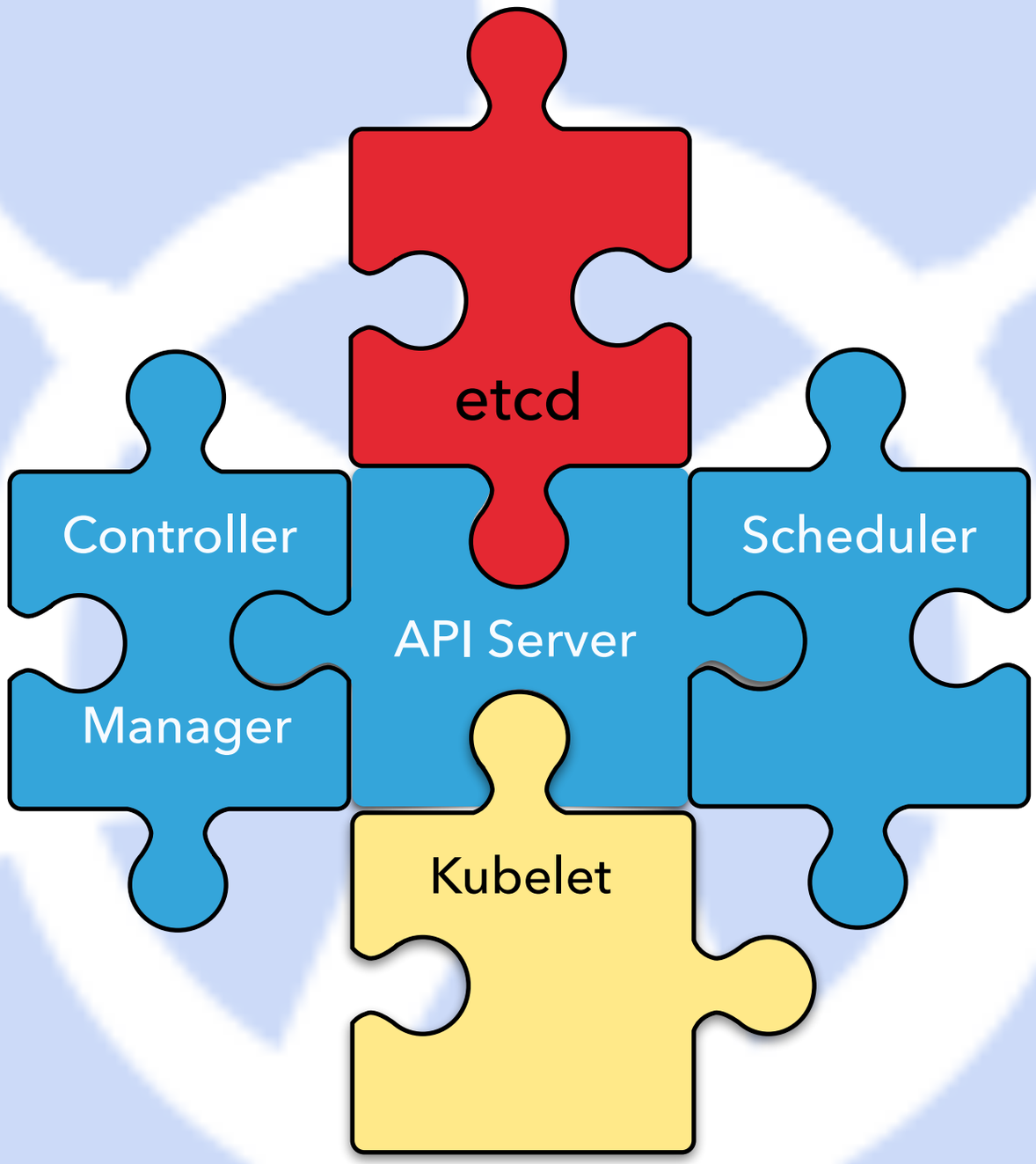
“

Wikipedia: The scheduler is the **PLUGGABLE** component that selects which node an unscheduled pod (the basic entity managed by the scheduler) runs on, based on resource availability.

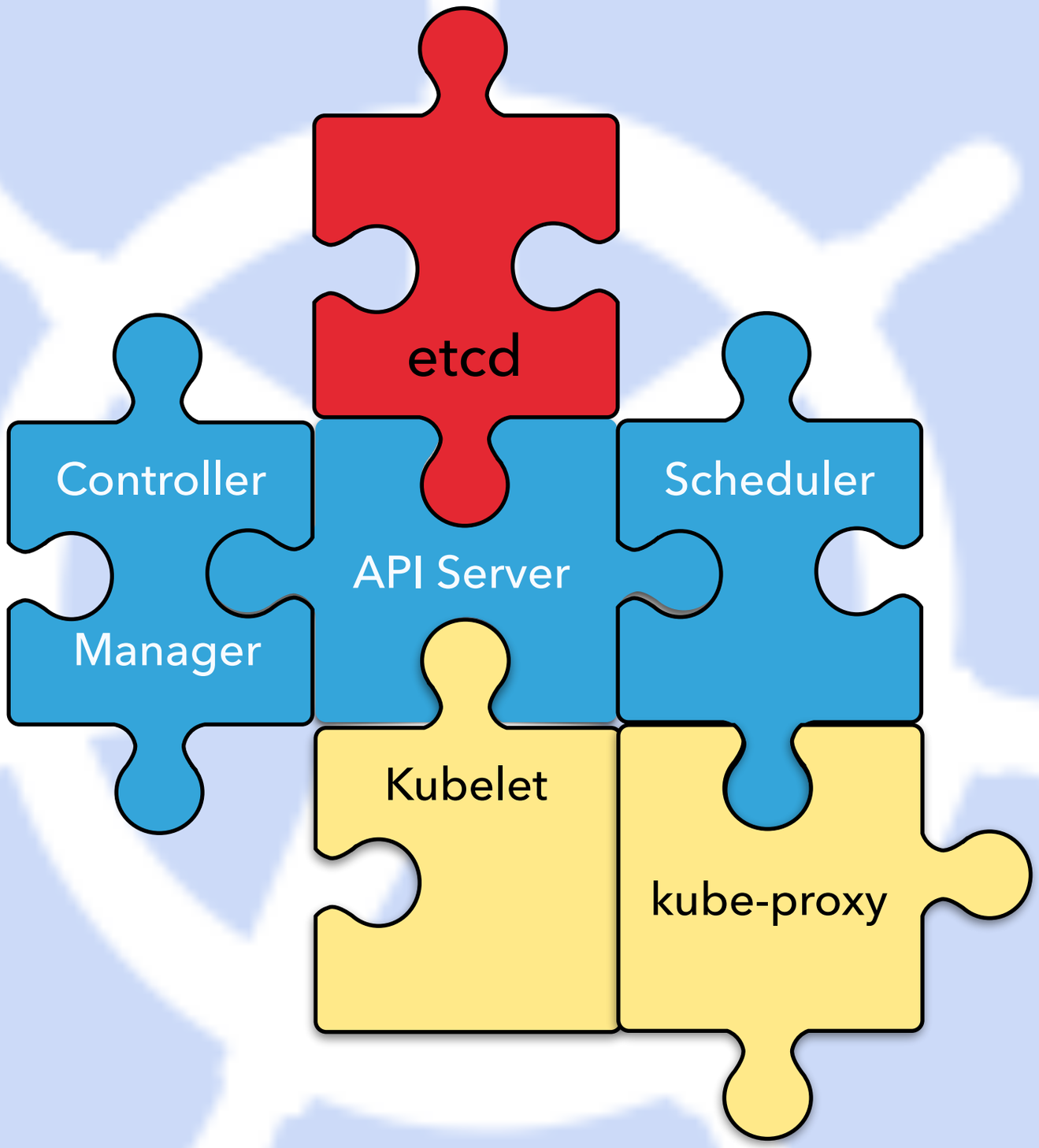
”



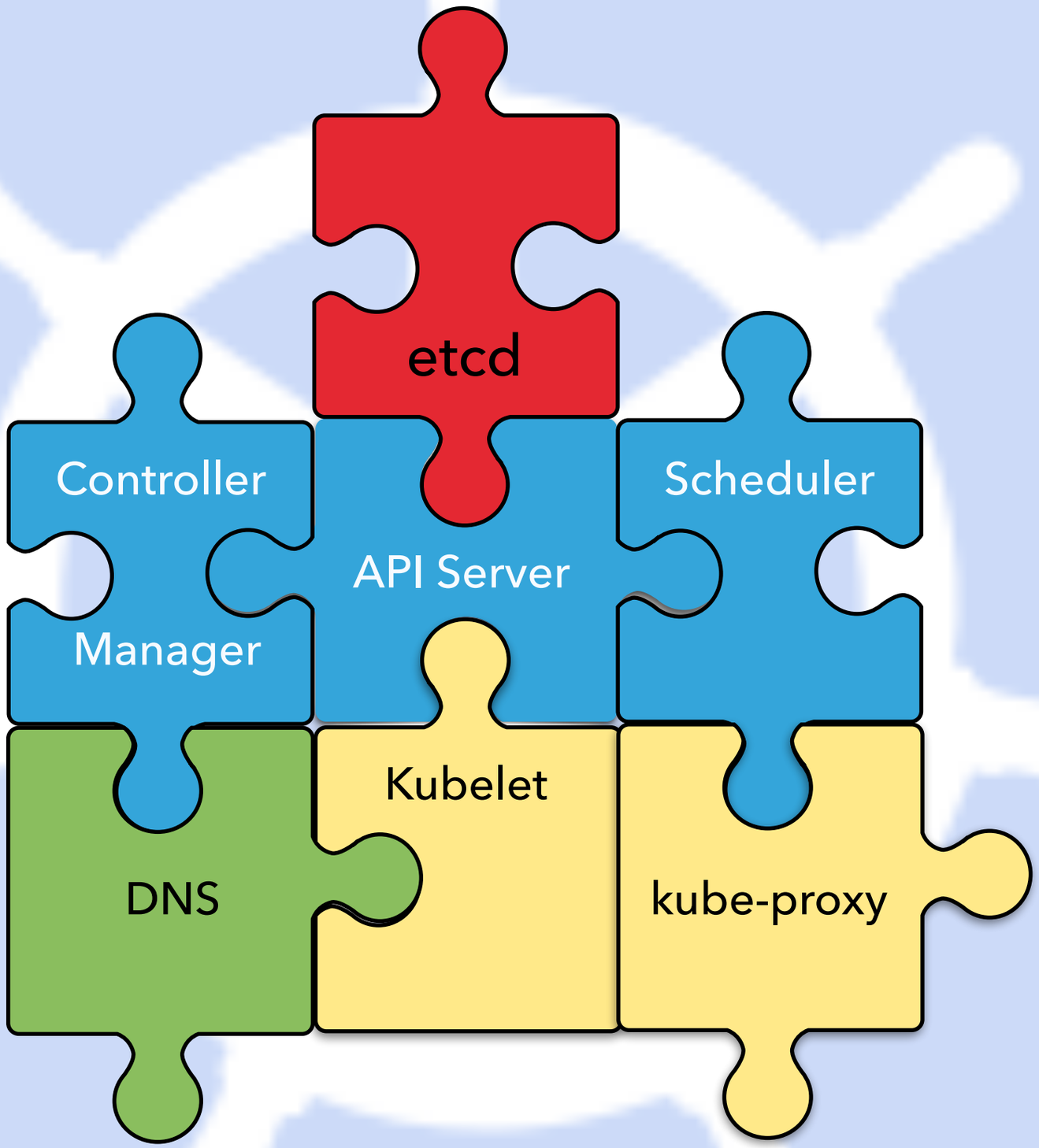
accenture



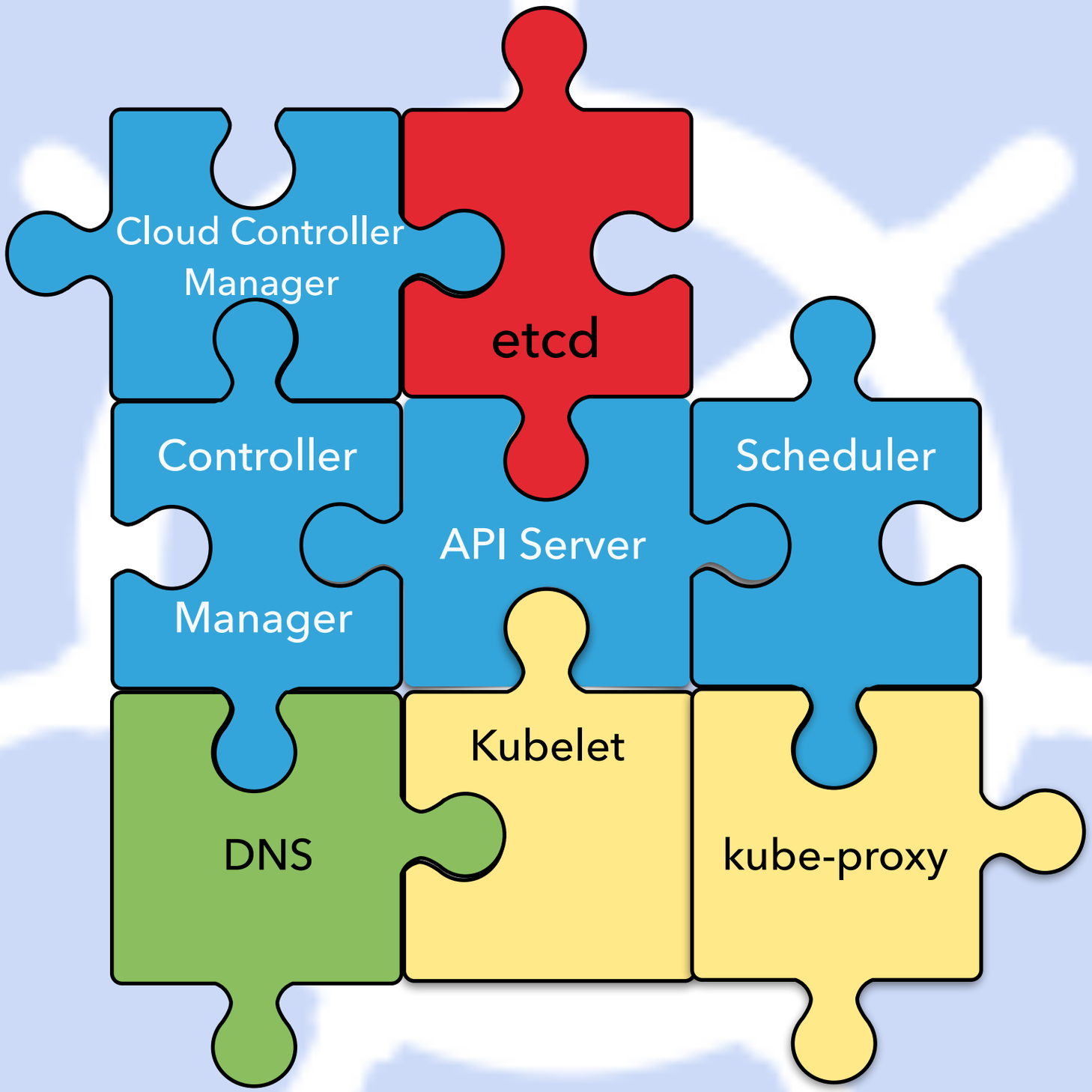
accenture


etcd
Controller
API Server
Scheduler
Manager
Kubelet
kube-proxy

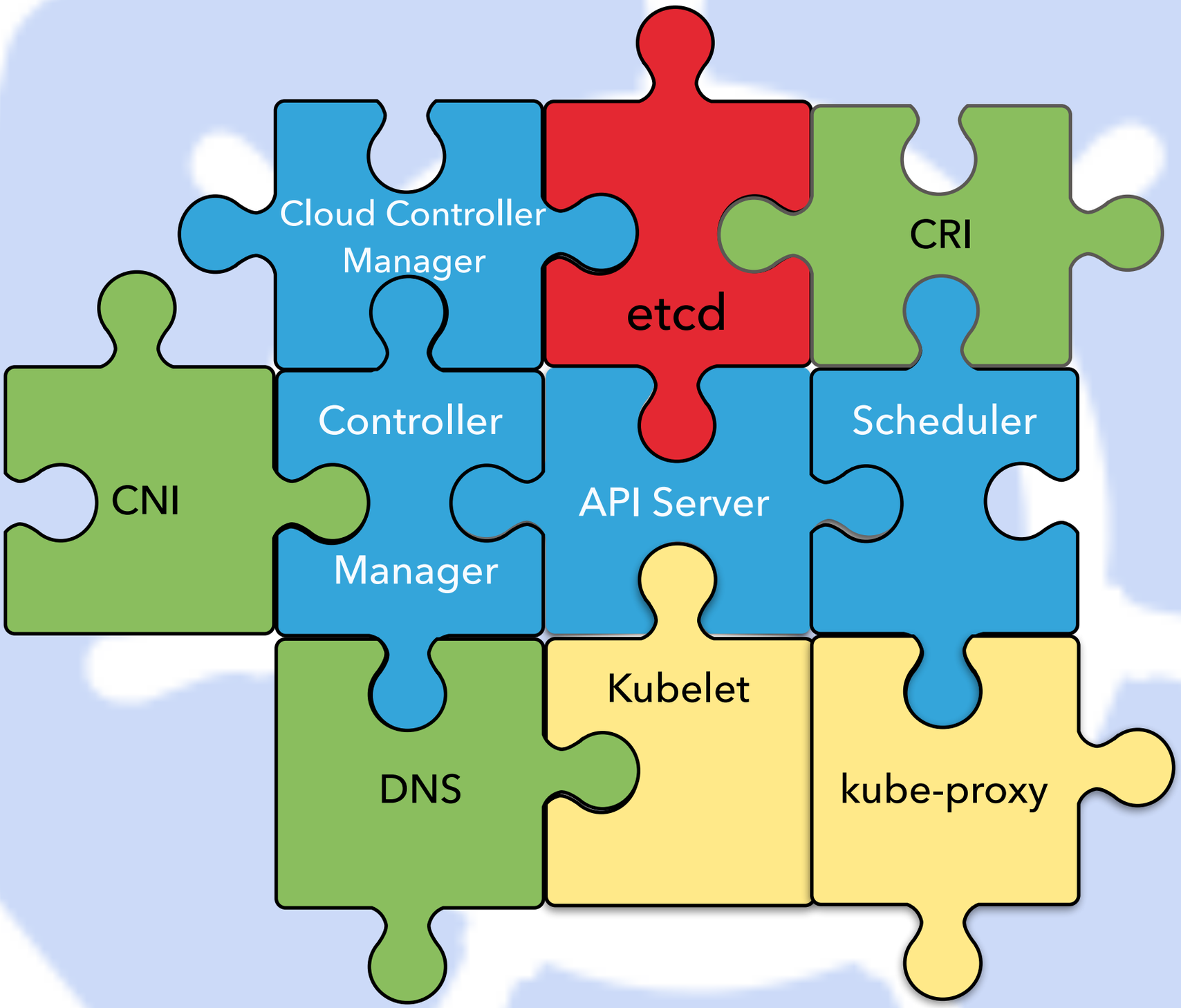
accenture


etcd
Controller
API Server
Scheduler
Manager
Kubelet
DNS
kube-proxy

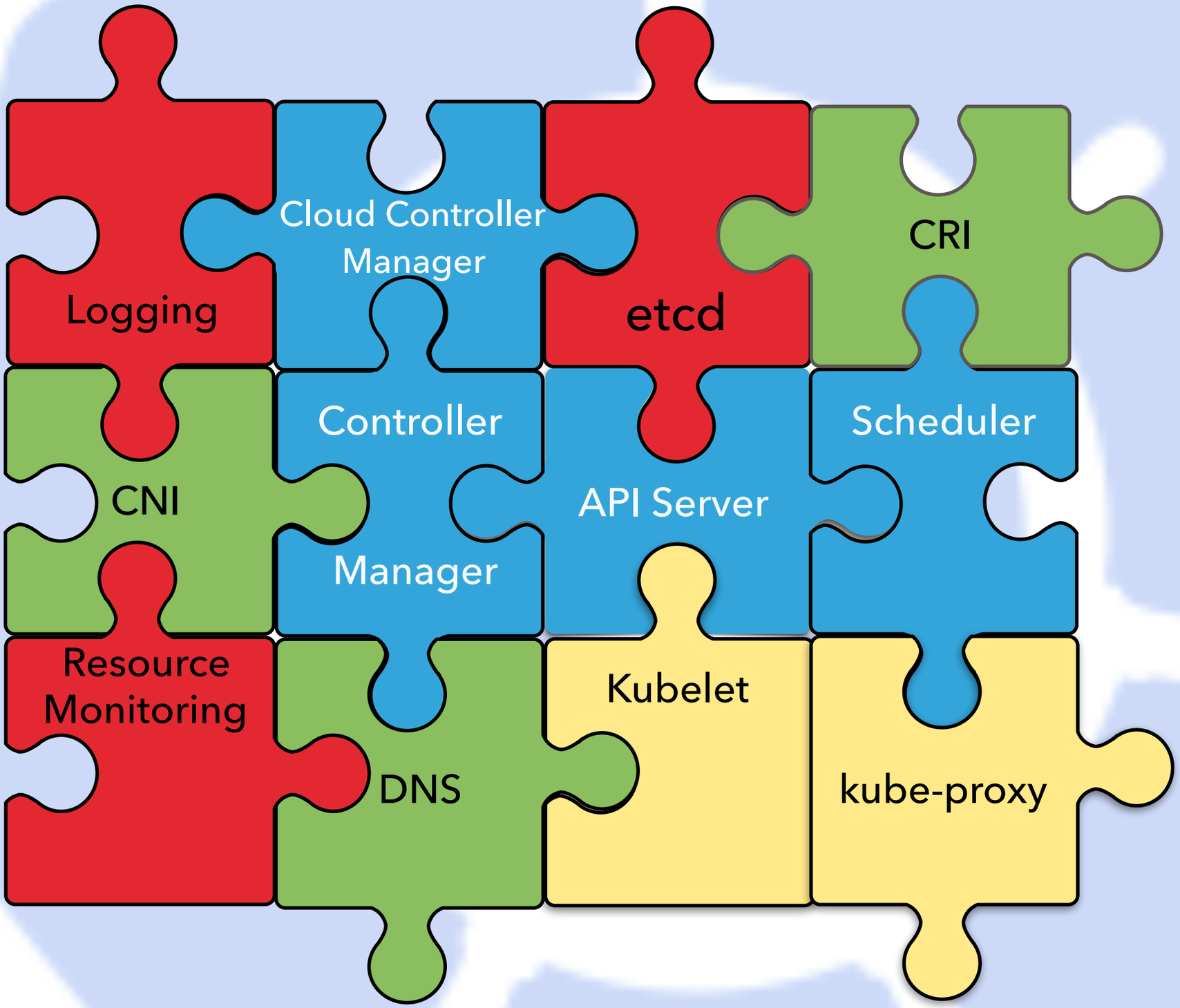
accenture


Cloud Controller Manager
etcd
Controller Manager
API Server
Scheduler
DNS
Kubelet
kube-proxy

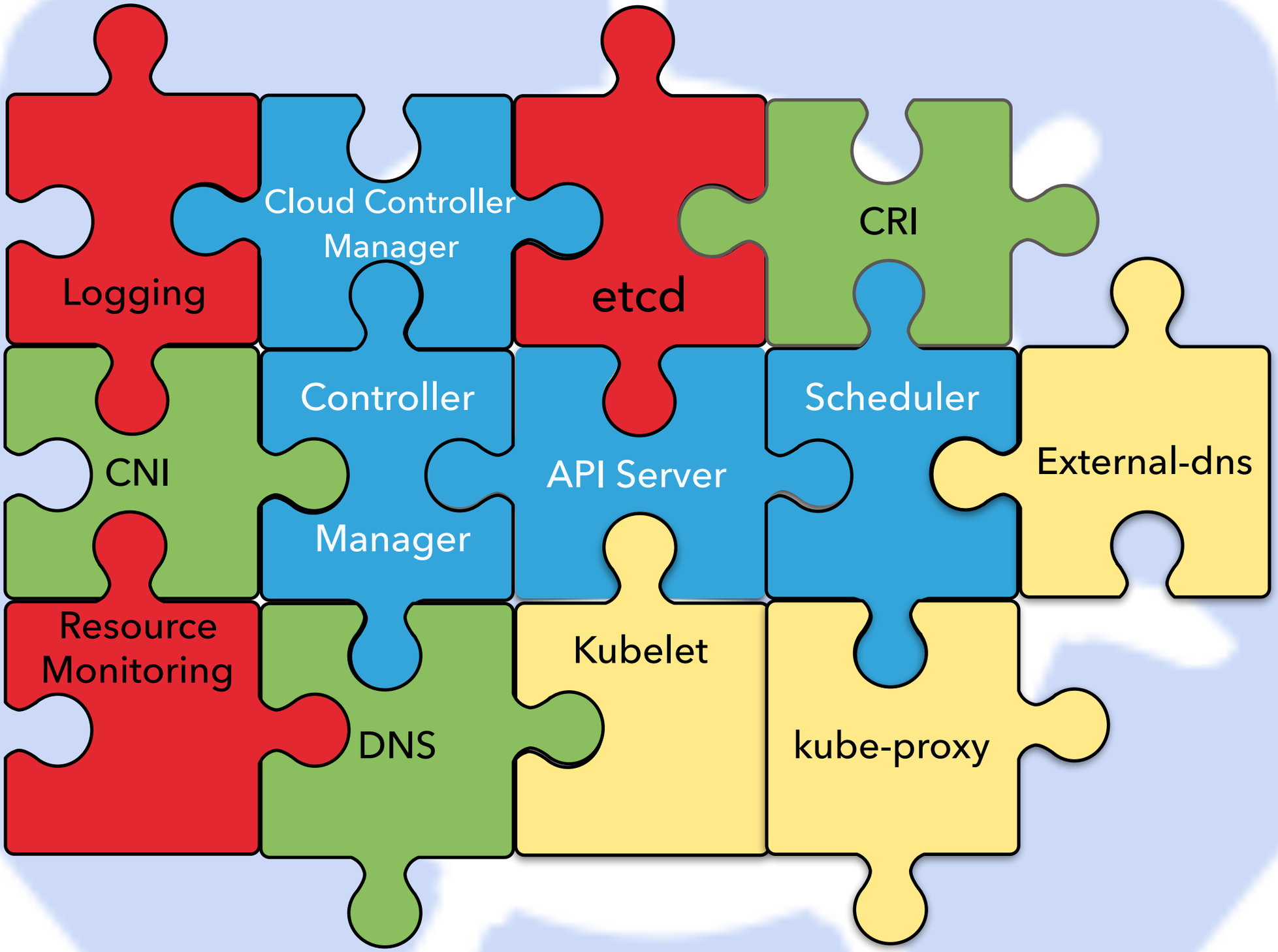
accenture


Cloud Controller Manager
etcd
CRI
CNI
Controller Manager
API Server
Scheduler
DNS
Kubelet
kube-proxy

accenture


Logging
Cloud Controller Manager
etcd
CRI
CNI
Controller Manager
API Server
Scheduler
Resource Monitoring
DNS
Kubelet
kube-proxy

accenture


Logging
Cloud Controller Manager
etcd
CRI
CNI
Controller Manager
API Server
Scheduler
External-dns
Resource Monitoring
DNS
Kubelet
kube-proxy

accenture

EXTERNAL-DNS

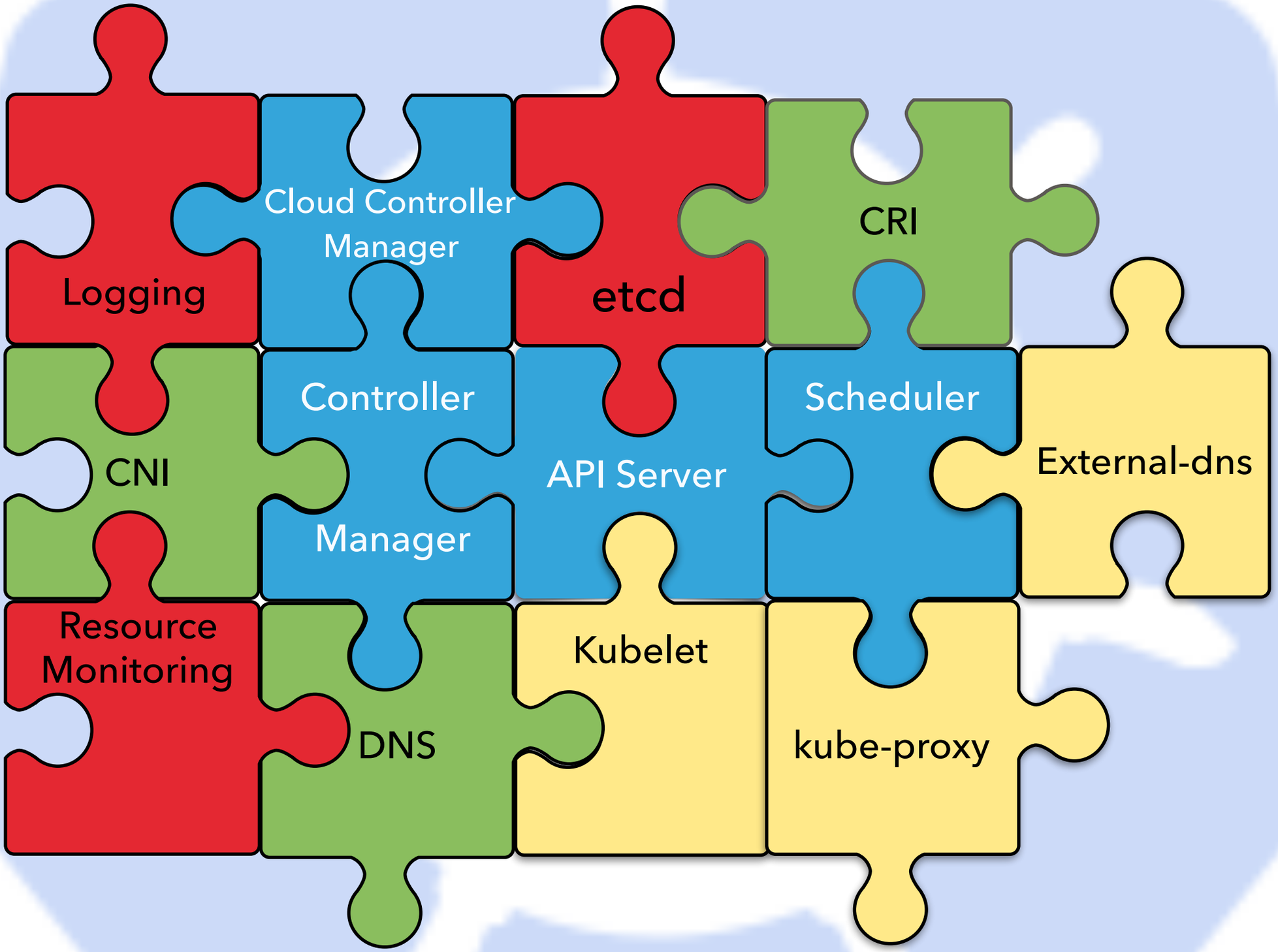
```
~/Documents/workspace/openshift-anwendertreffen    16s
 ↪ cat external-dns-svc.yaml
apiVersion: v1
kind: Service
metadata:
  annotations:
    external-dns.alpha.kubernetes.io/hostname: nginx.example.com
  name: nginx
spec:
  externalTrafficPolicy: Cluster
  ports:
  - name: http
    port: 80
    protocol: TCP
  selector:
    app: nginx
  sessionAffinity: None
  type: LoadBalancer
```

The Latest Release: v0.5

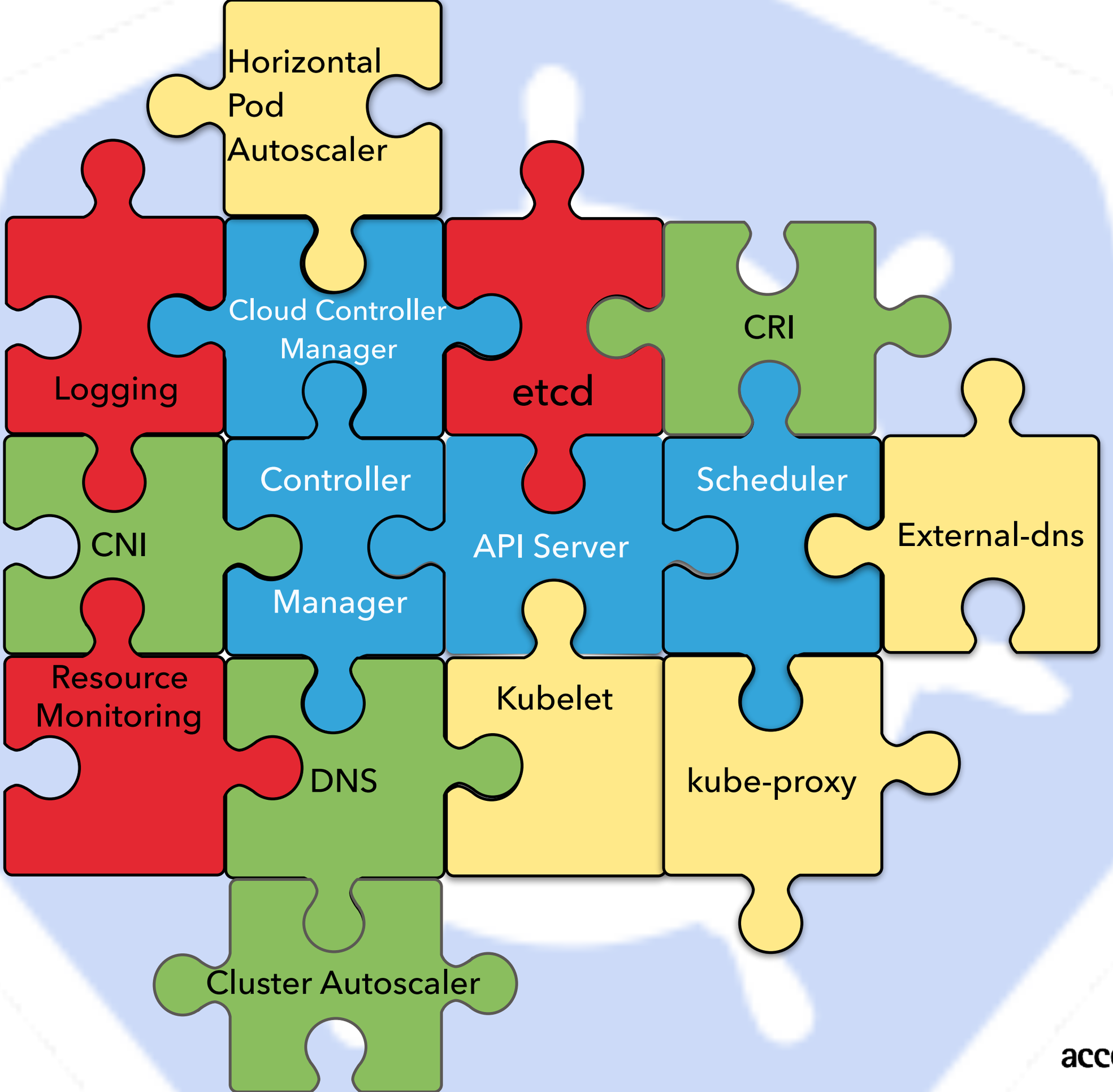
ExternalDNS' current release is `v0.5`. This version allows you to keep selected zones (via `--domain-filter`) synchronized with Ingresses and Services of `type=LoadBalancer` in various cloud providers:

- Google CloudDNS
- AWS Route 53
- AWS Service Discovery
- AzureDNS
- CloudFlare
- DigitalOcean
- DNSimple
- Infoblox
- Dyn
- OpenStack Designate
- PowerDNS
- CoreDNS
- Exoscale
- Oracle Cloud Infrastructure DNS
- Linode DNS

https://github.com/kubernetes-incubator/external-dns


Logging
Cloud Controller Manager
etcd
CRI
CNI
Controller Manager
API Server
Scheduler
External-dns
Resource Monitoring
DNS
Kubelet
kube-proxy

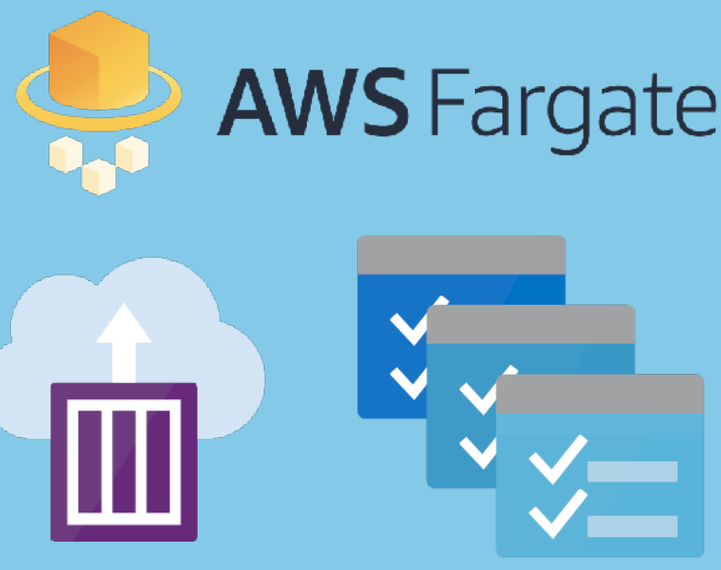
accenture


Horizontal
Pod
Autoscaler
Logging
Cloud Controller
Manager
etcd
CRI
CNI
Controller
Manager
API Server
Scheduler
External-dns
Resource
Monitoring
DNS
Kubelet
kube-proxy
Cluster Autoscaler

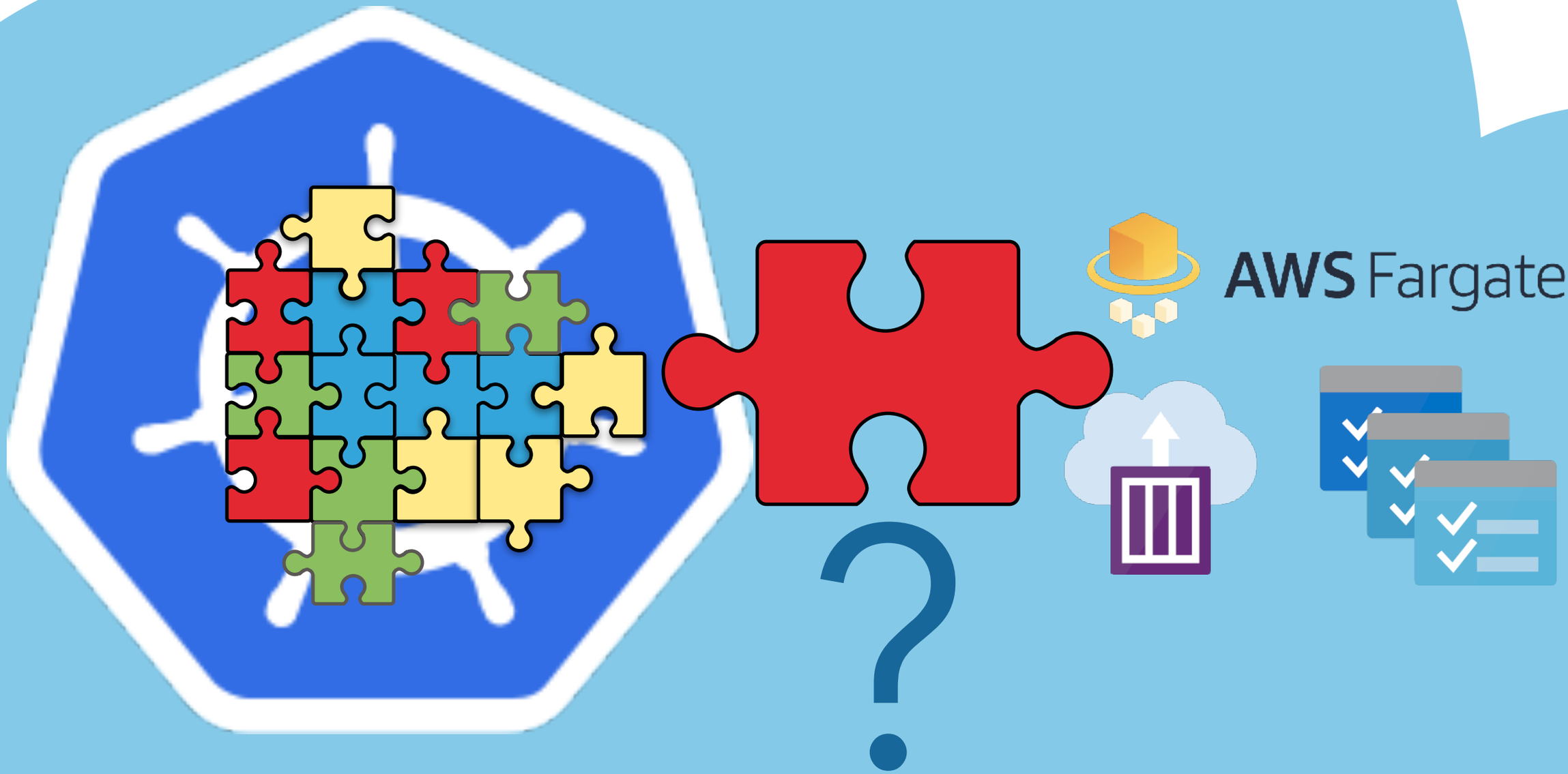
accenture

SERVERLESS

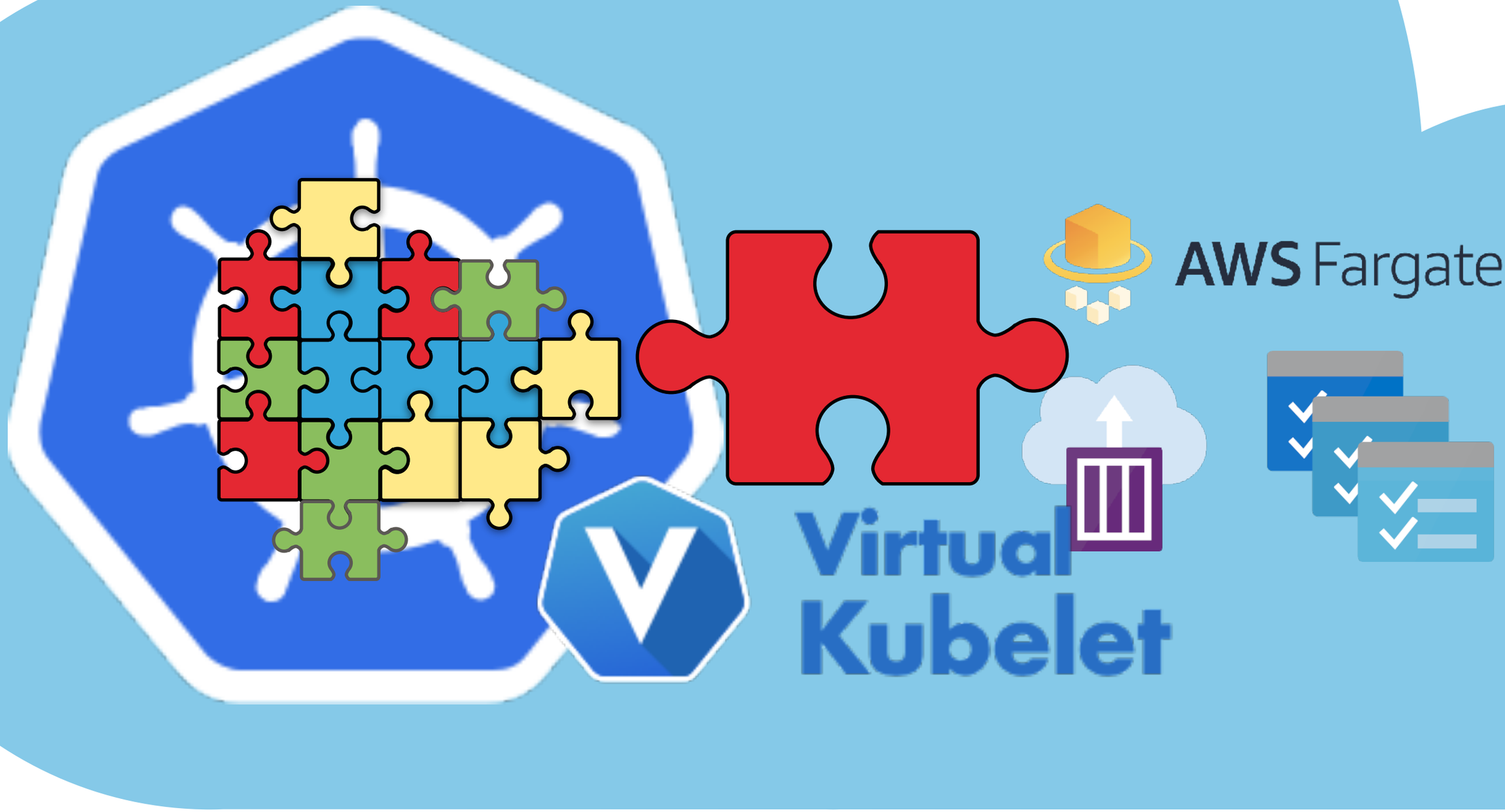
accenture



accenture

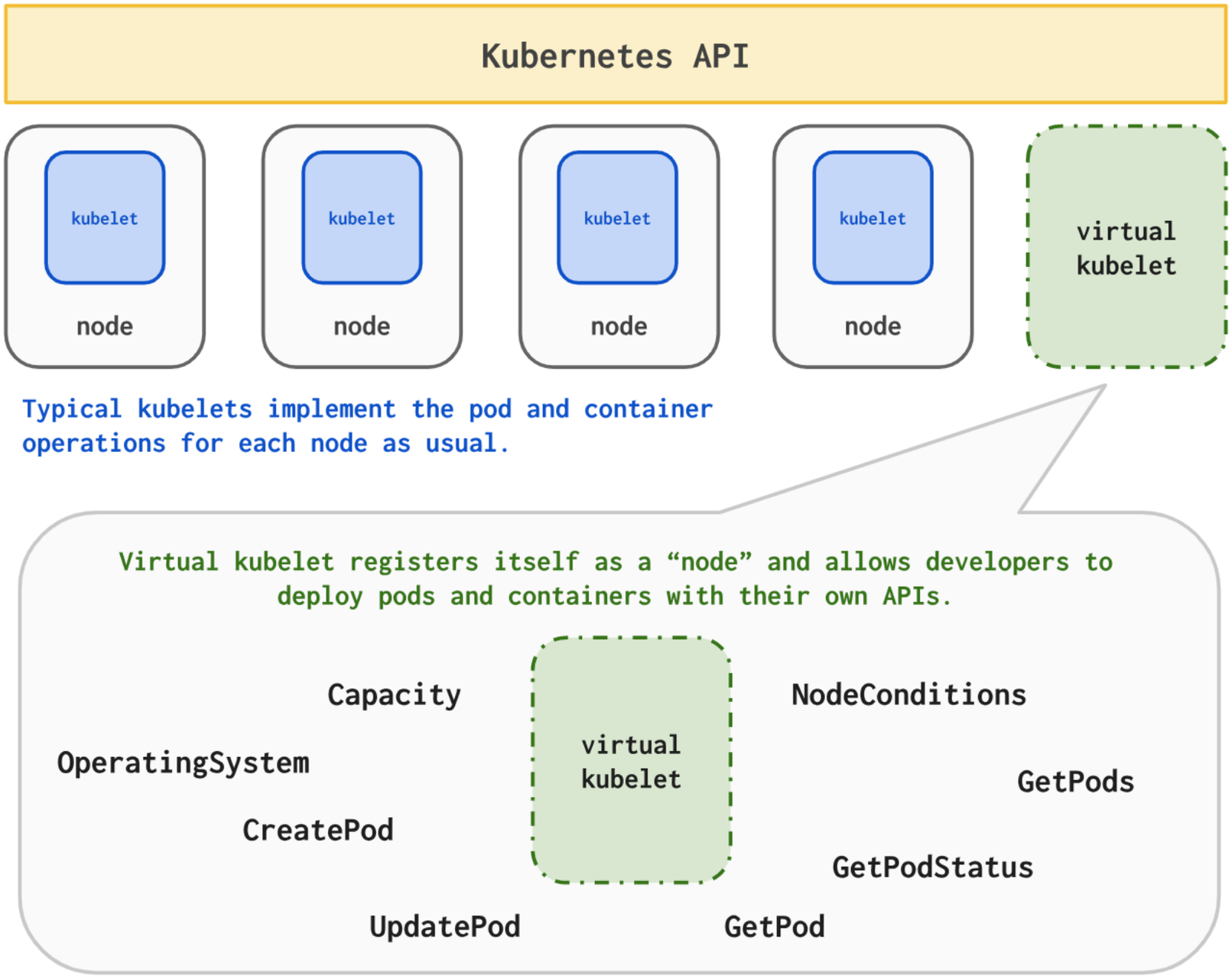


accenture



accenture

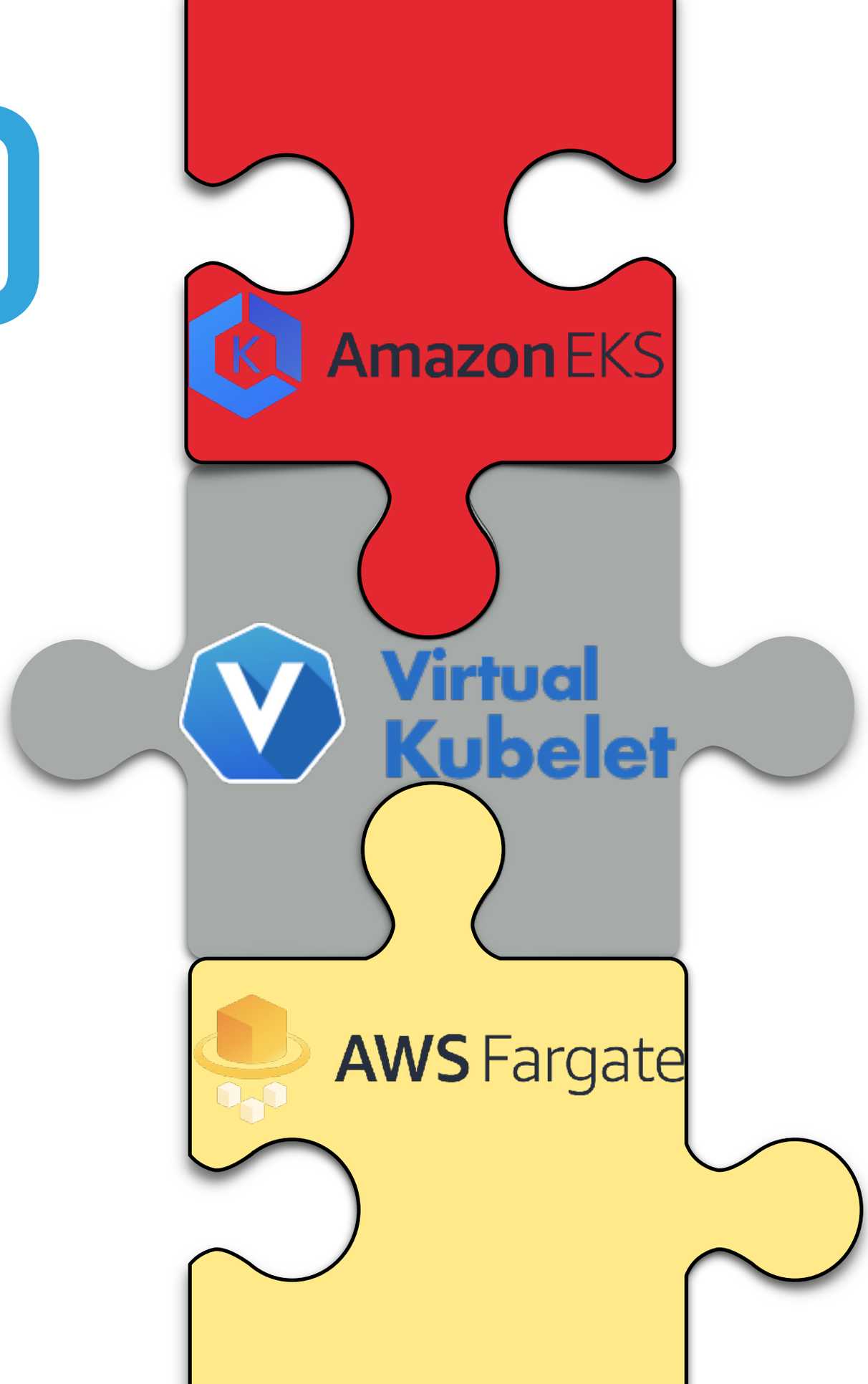
HOW DOES THE VIRTUAL KUBELET WORK?



https://github.com/virtual-kubelet/virtual-kubelet

accenture

DEMO TIME



brendandburns
@brendandburns

Orchestrate IoT edge deployments with @azure and the virtual kubelet!

08:55 am - 2 Oct 2018

https://twitter.com/brendandburns/status/1047153216809357312