



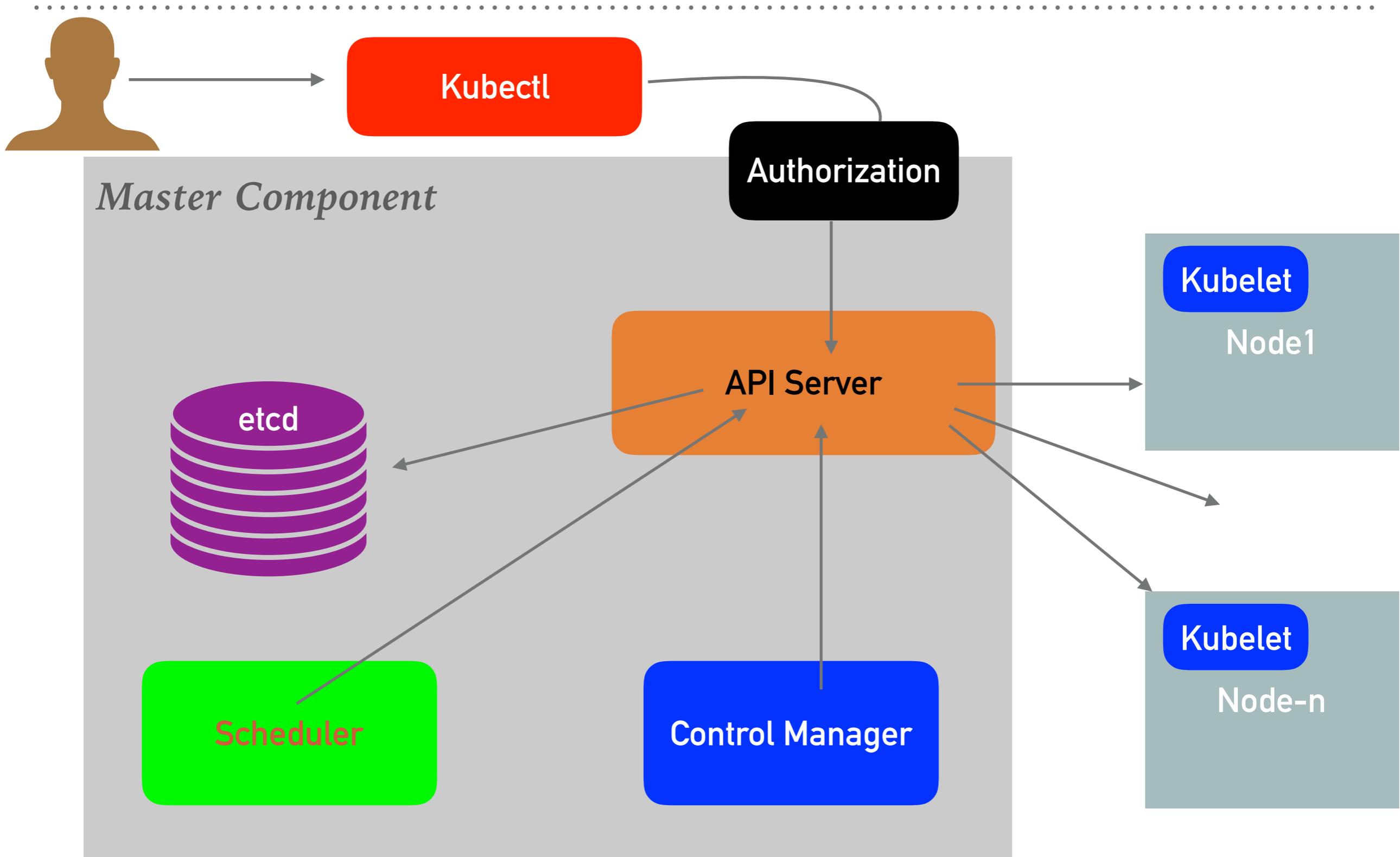
kubernetes

Kubernetes: Master Component

KUBERNETES : Administration

- To understand the **Kubernetes Administration**, First discuss the **Architecture of Master Component**.
- **Workflow of Master Component**.
- **Kubernetes master** runs the Scheduler, Controller Manager, API Server and etcd components and is responsible for managing the Kubernetes cluster.
- You can say **Master Component** is the brain of Kubernetes Cluster.

KUBERNETES : Administration



KUBERNETES : Administration

- **Etcd** : Etcd is a distributed, consistent key-value store used for configuration management, service discovery, and coordinating distributed work.
- Etcd reliably stores the **configuration data** of the Kubernetes cluster.
- Etcd representing the state of the cluster:
 - what nodes exist in the cluster.
 - what pods should be running.
 - which nodes they are running on and many more.
- I must recommend to keep the **backup plan for Etcd**.
- **Etcdctl** is the command-line interface tool used to play with Etcd and can perform some task like:
 - Set, update and remove keys, Verify the cluster health, Add or remove etcd nodes, Generating database snapshots.

KUBERNETES : Administration

- **API Server** : The API Server is the main management point of the entire cluster.
- API Server processes **REST operations**, validates them, and updates the corresponding **objects in etcd**.
- The API Server is the **only Kubernetes component** that connects to etcd; all the other components must go through the API Server to work with the cluster state.
- The API Server is also responsible for the authentication and authorization mechanism.

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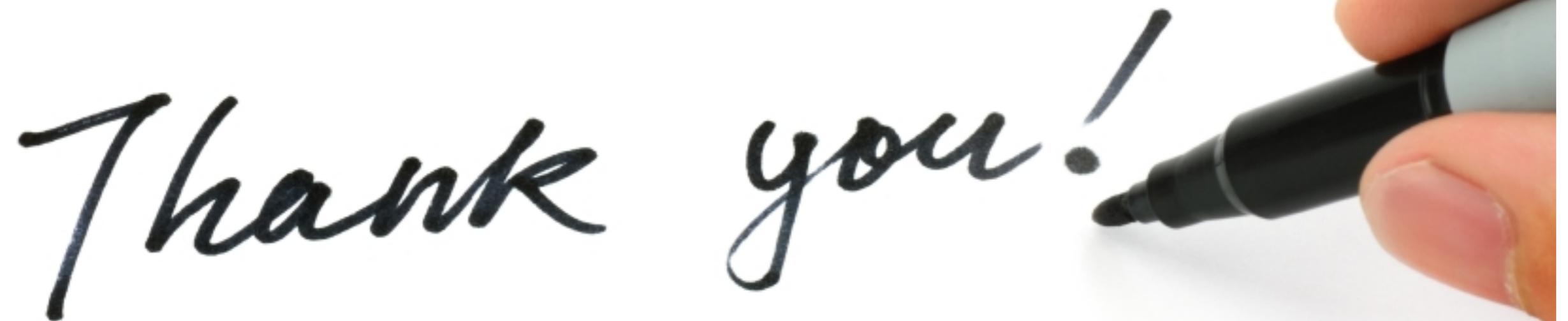
- **Controller Manager** : Controller Manager performs lifecycle functions such as:
 - Namespace creation
 - Event garbage collection
 - Terminated-pod garbage collection
 - Cascading-deletion garbage collection
 - Node garbage collection, etc.
- It watches the state of the cluster through the API Server watch feature and, when it gets notified, it makes the necessary changes attempting to move the current state towards the desired state.
- Some examples of controllers that ship with Kubernetes include the Replication Controller, Endpoints Controller, and Namespace Controller.

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- **Scheduler** : Scheduler watches for unscheduled pods and binds them to nodes. During the Binding of Pods Scheduler will take care of below:
 - Availability of the requested resources.
 - Quality of service requirements.
 - Affinity and anti-affinity specifications.
 - Other Constraints.
- Once the pod has a node assigned, the regular behavior of the Kubelet is triggered and the pod and its containers are created.

Will see you in Next Lecture...

Thank you!

A close-up photograph of a hand holding a black marker, writing the words 'Thank you!' in a cursive script on a white surface. The hand is positioned on the right side of the frame, with the fingers gripping the marker. The text is written in a fluid, handwritten style.

See you in next lecture ...