



ISTIO

Here's another fine
mesh you've got me
into!

Karthik Prabhakar



kubernetes

#SFK8s

Assumed: Kubernetes Connectivity Concepts



CNI &
Network
Plugins

Network
Policy

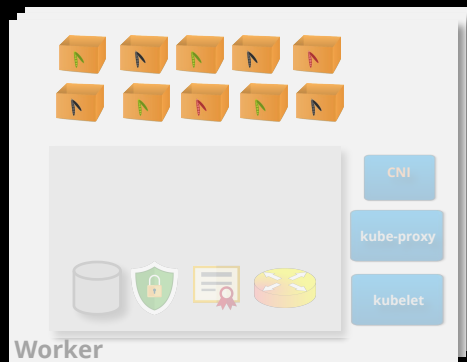
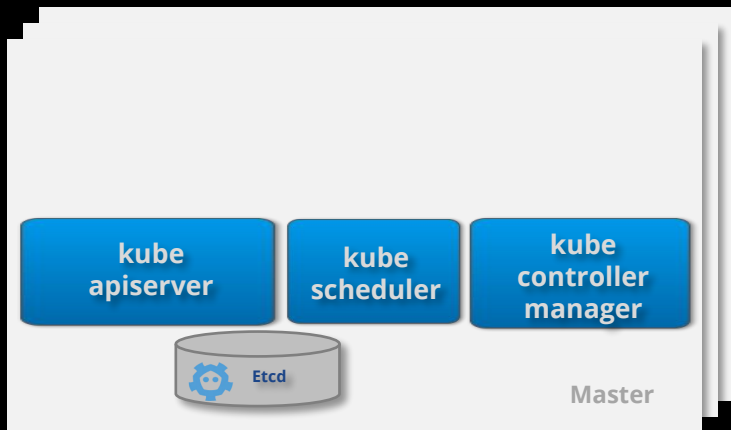
Services

Ingress

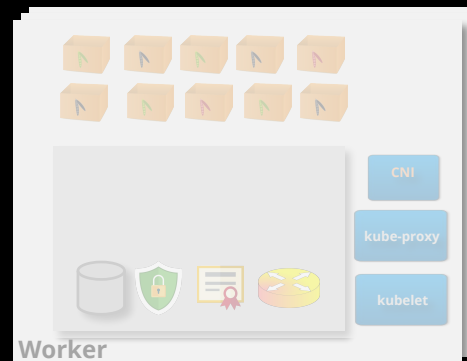
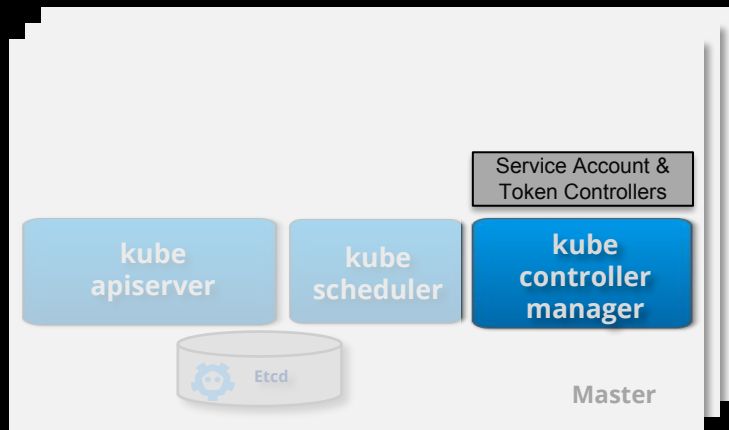
Kube-DNS



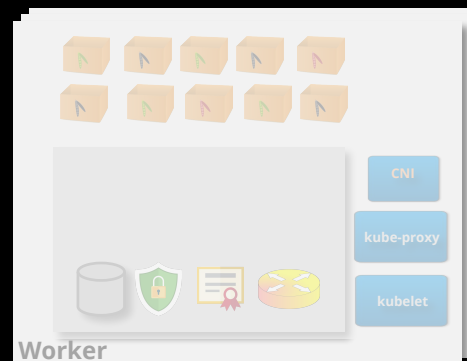
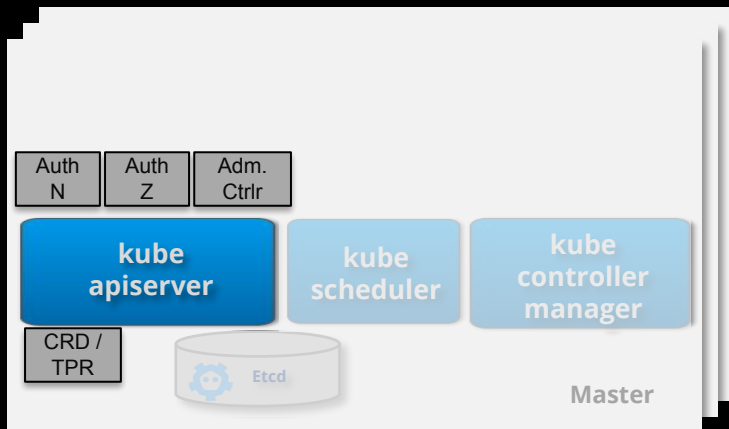
Assumed: Other Important Kubernetes Concepts



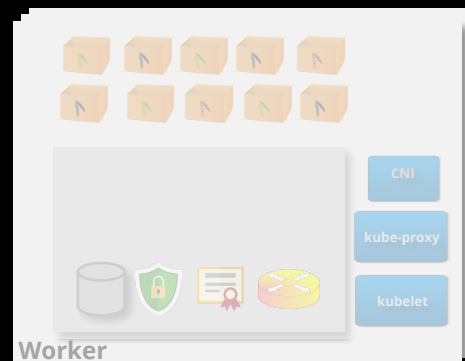
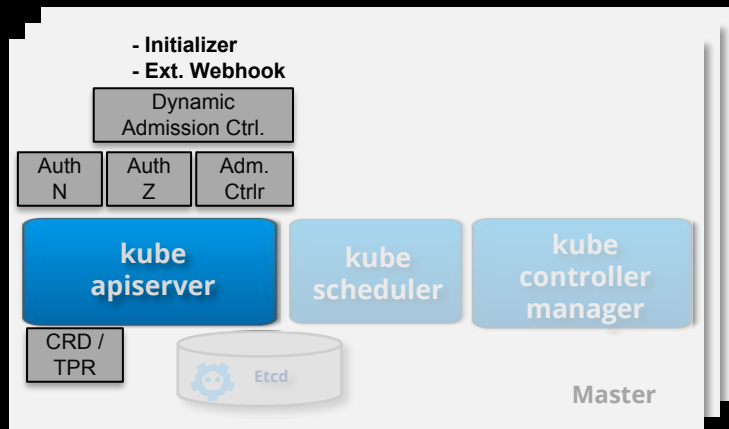
Other Important Kubernetes Concepts



Other Important Kubernetes Concepts

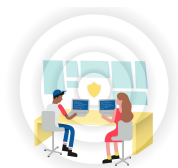


Other Important Kubernetes Concepts

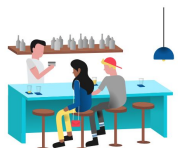




Traffic Management, Resilience and Load Balancing



Security, Identity, Identity-linked encryption



Fleet-wide Policy enforcement



Telemetry and Reporting



Benefits to Microservices Deployments

Traffic Management

Circuit
Breakers

Retries

Timeouts

Rate
Limits

Outlier
Detection

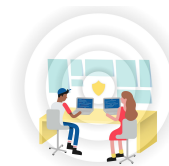


Observability

Stats

Tracing

Logging



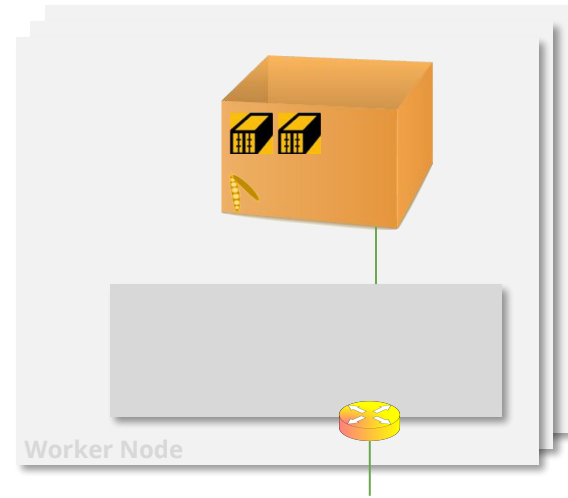
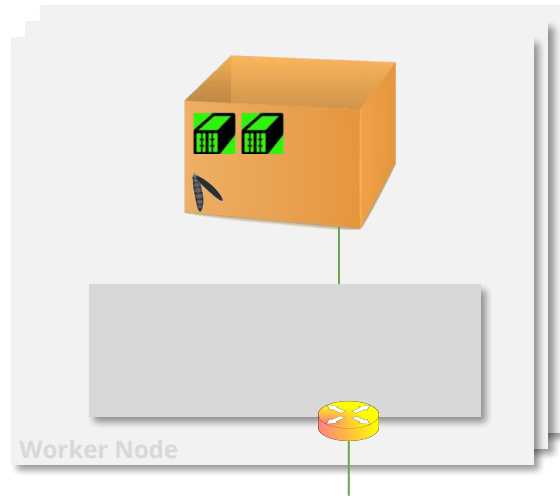
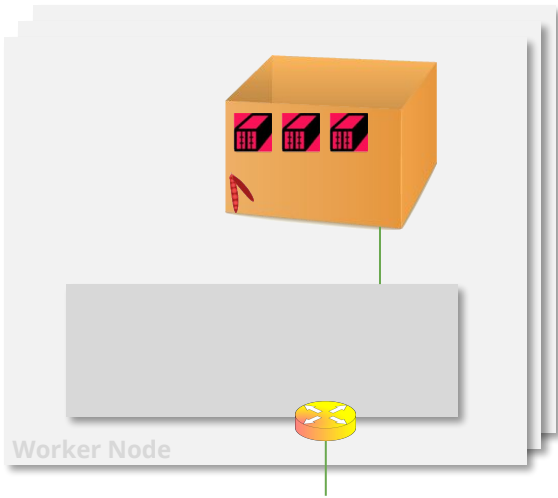
Security, Policy

TLS

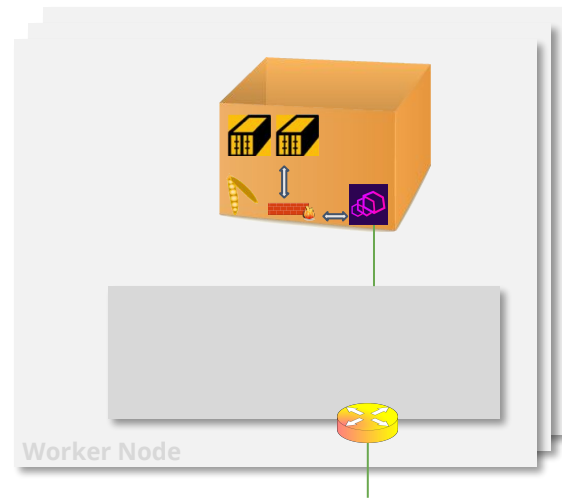
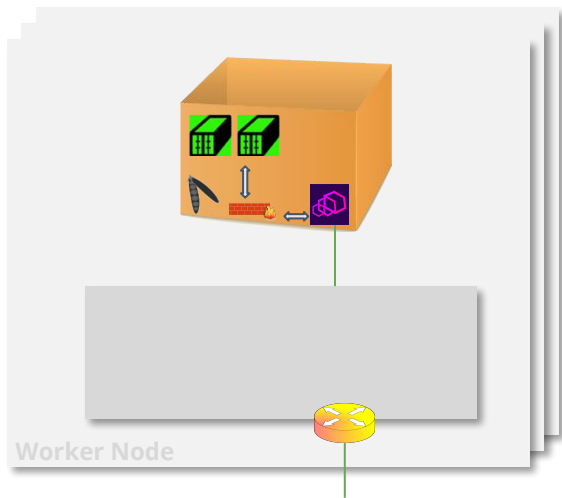
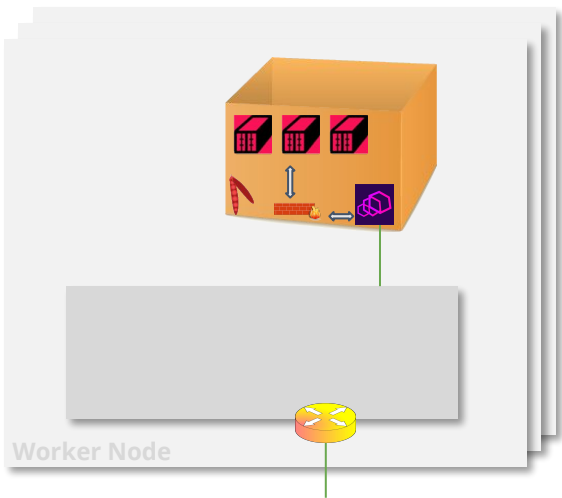
Routing



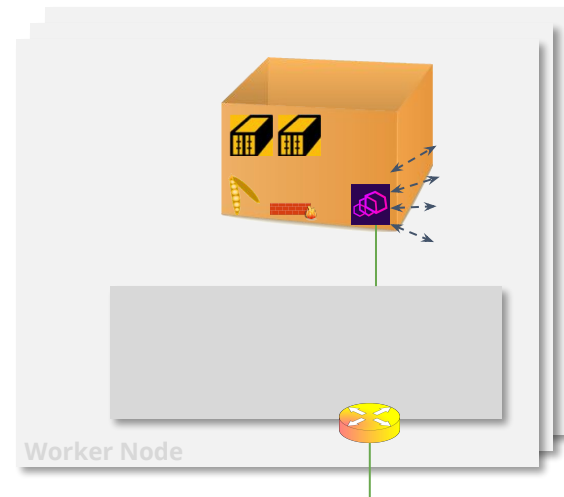
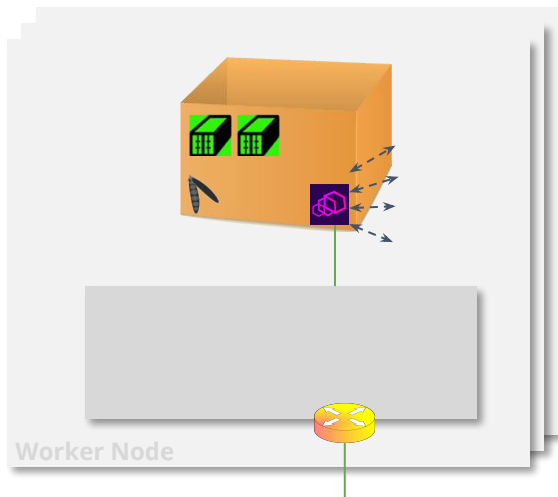
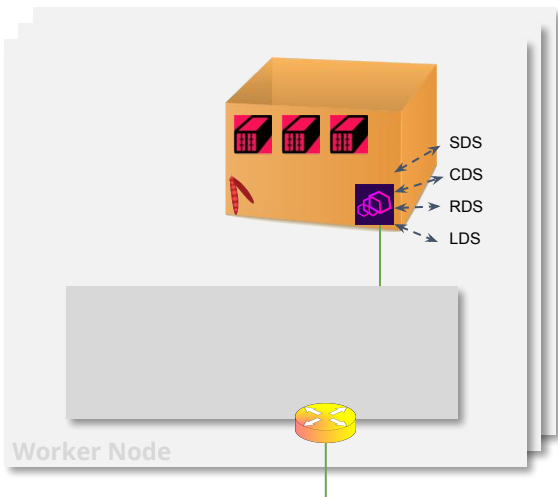
Data Plane: Istio-Proxy (Envoy)

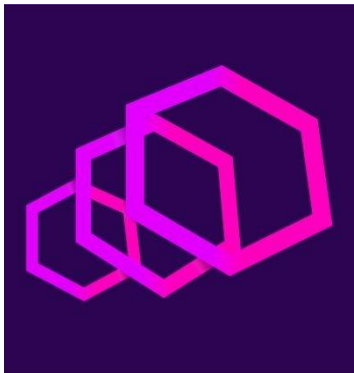


Data Plane: Istio-Proxy (Envoy)



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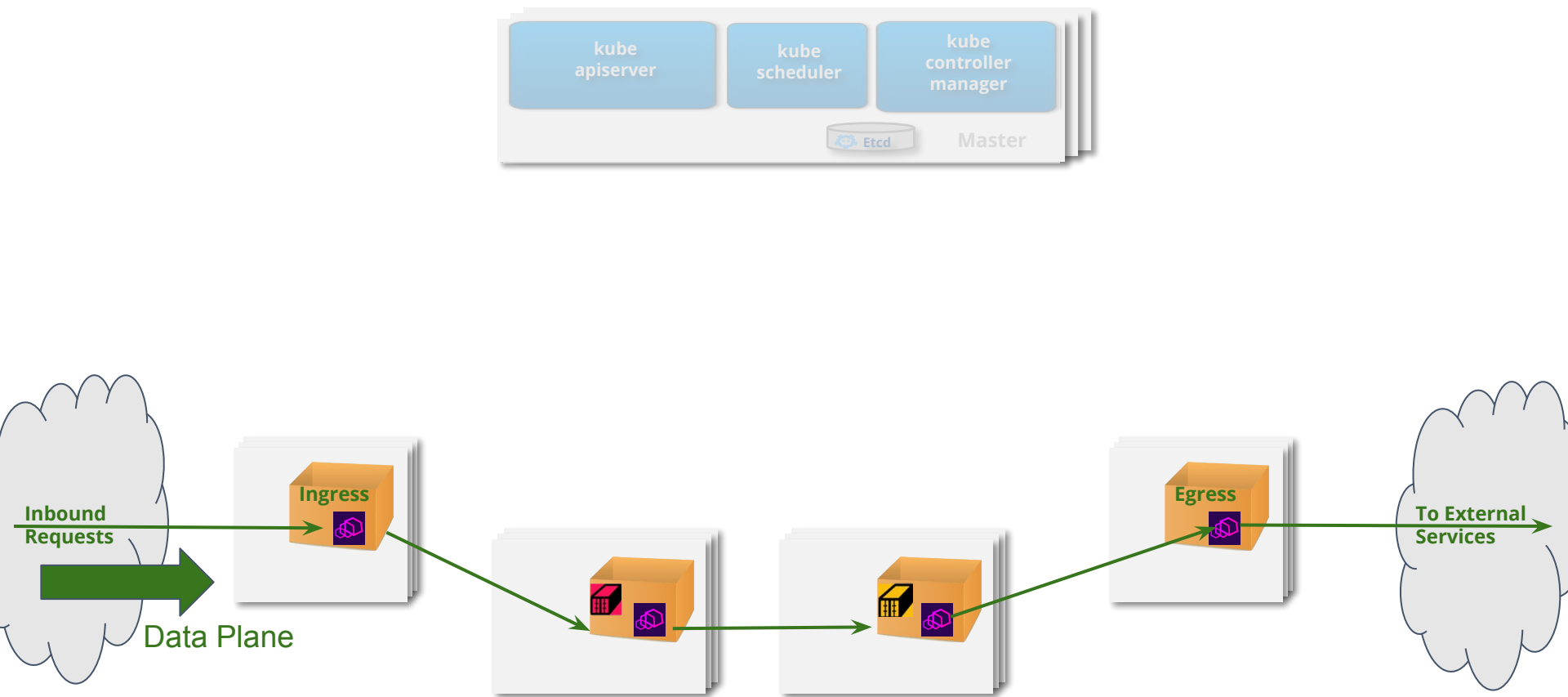


- Lightweight
- Fast
- Modular & Extensible
- Control Plane integration via JSON/REST API's
- Service Discovery + **Active**/Passive Health Checks
- HTTP/2 (+ gRPC), HTTP/1.1
- TCP, MongoDB, etc.
- Hot Restarts and/or Rolling Updates
- Hardened from deployments at scale
- CNCF (?)
- ... and fits Kubernetes architecture nicely!



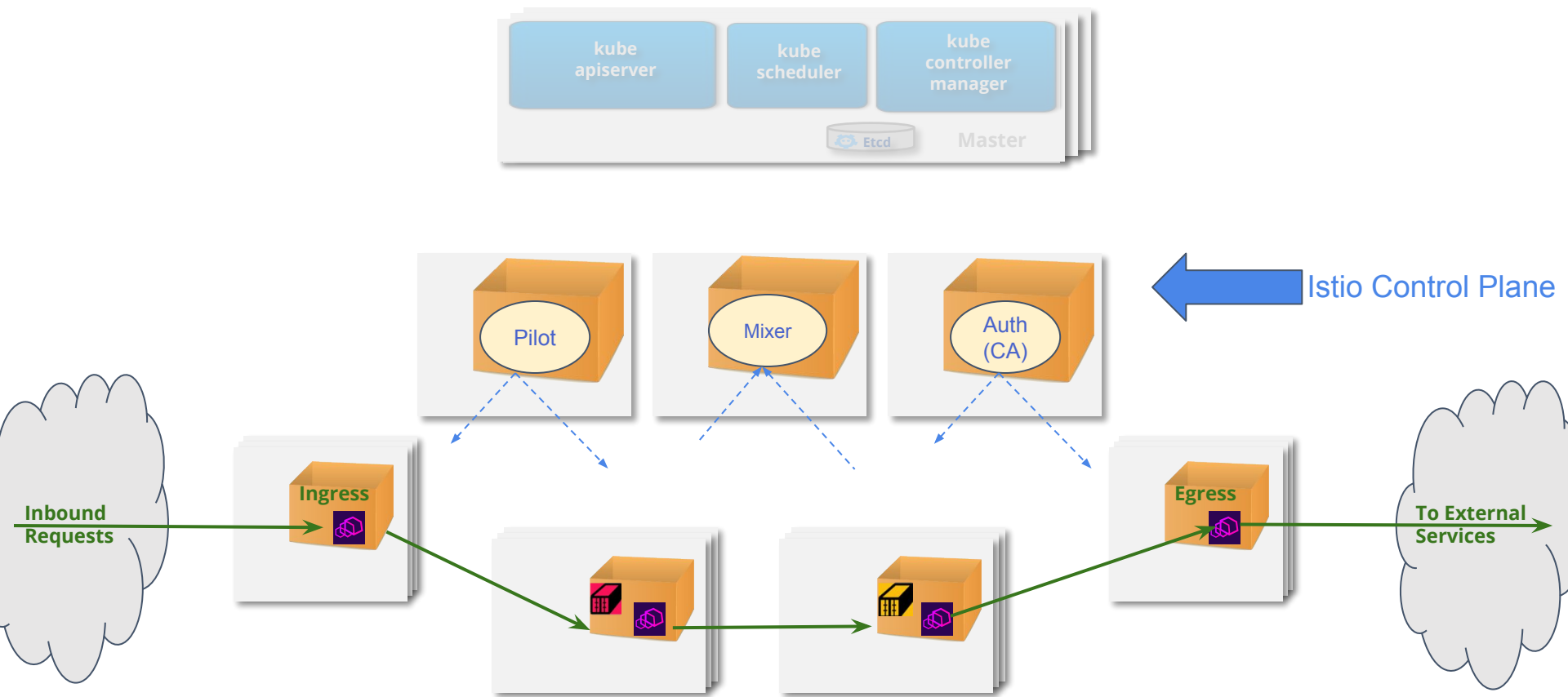


Istio Control Plane

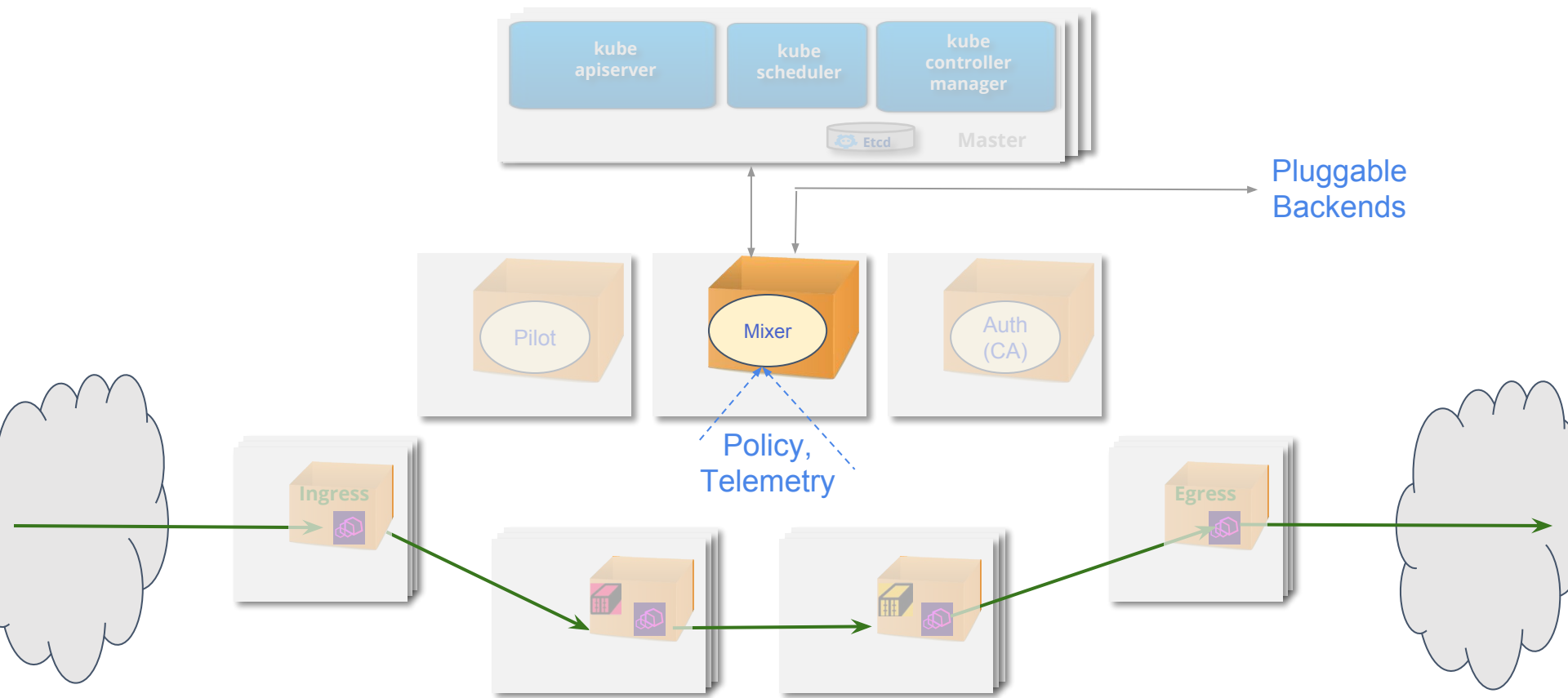


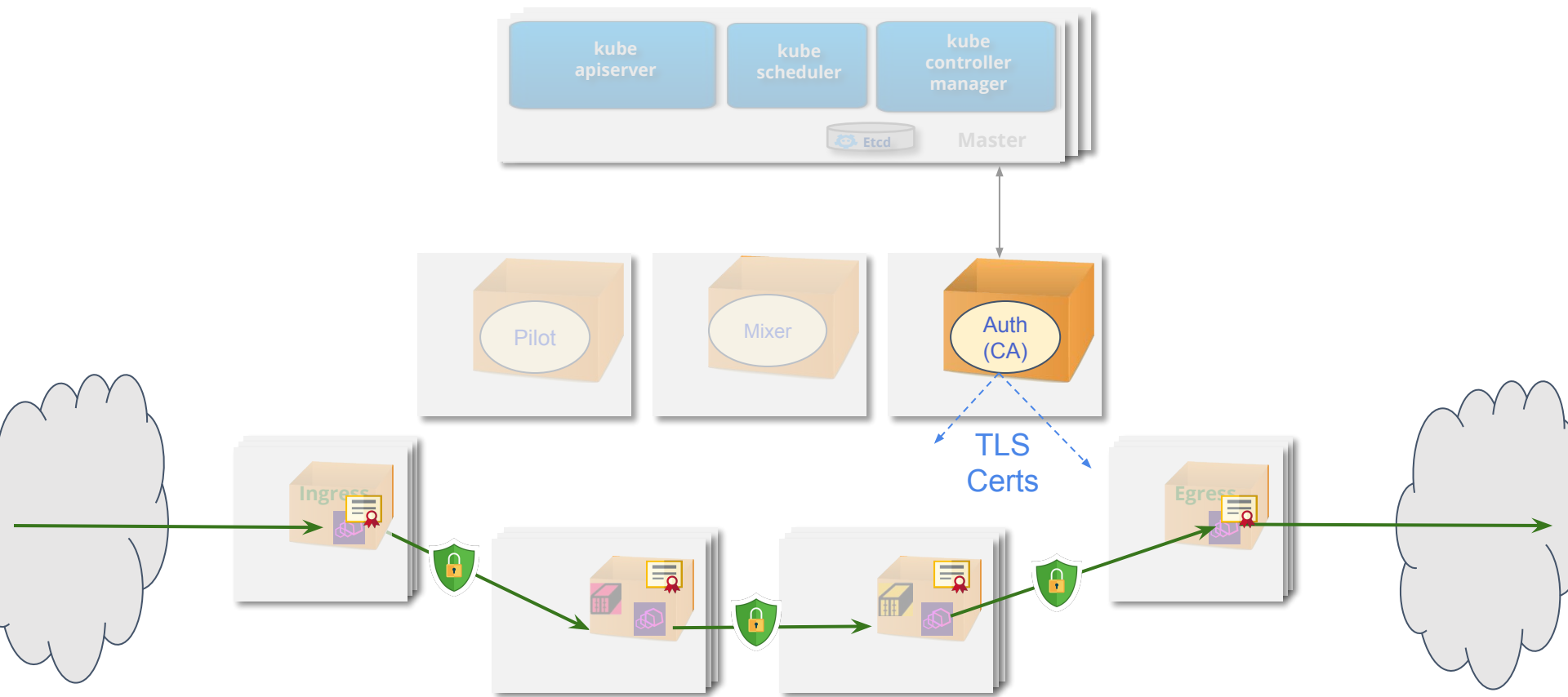


Istio Control Plane









Current Istio Development Themes



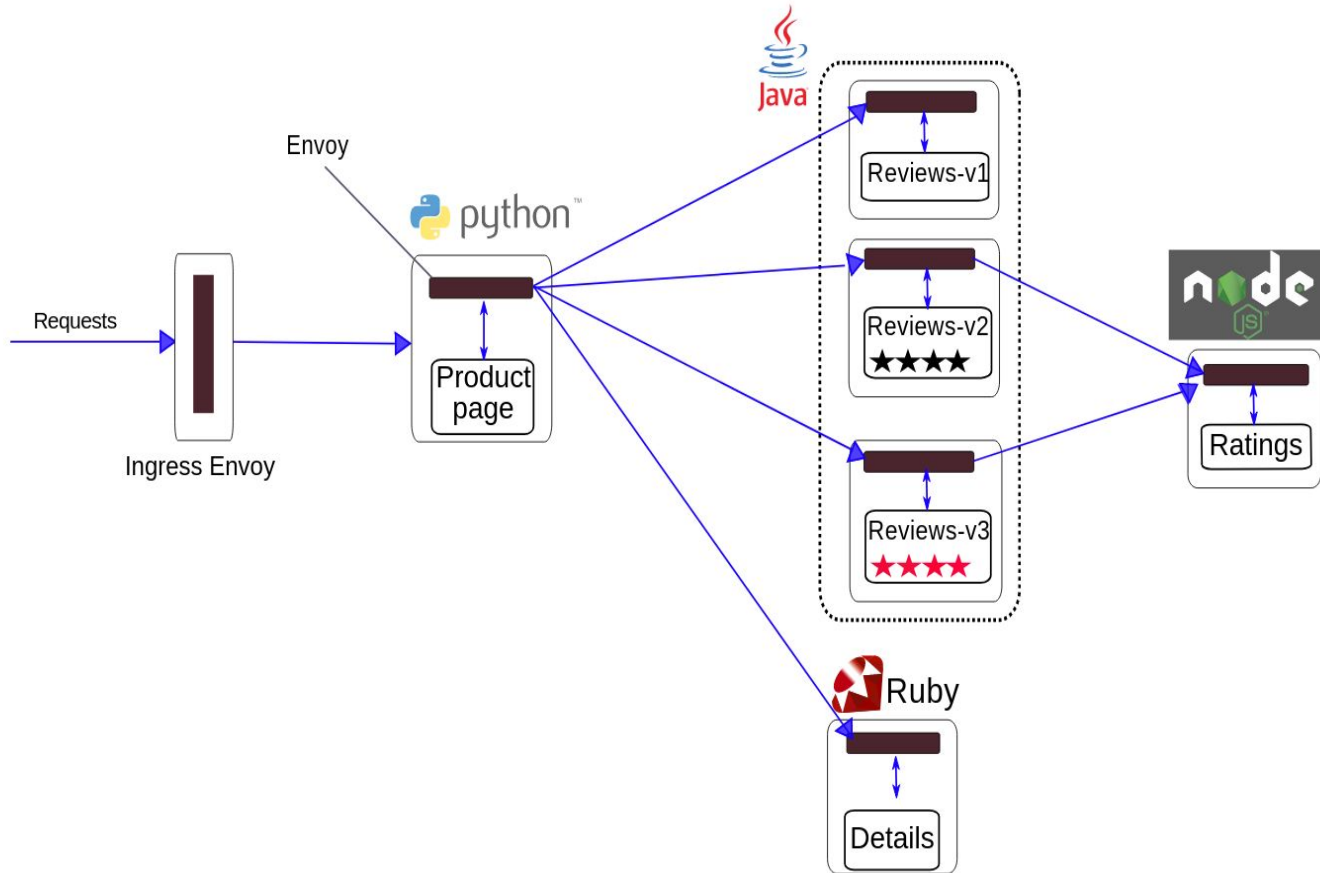
- Hybrid Istio (Multiple/Heterogenous Container|VM clusters)
- AuthN / AuthZ / Policy
- Performance, Scale
- Multi-Namespaces
- More Integrations
- Consistent Configuration
- Session Persistence, Caching
- Operational Patterns (Sharding, Anomaly Detection, etc.)
- Better Edge Integration
- Overall system robustness



Demo:

- 1. Deploy Kubernetes with Calico**
- 2. Deploy Istio**
- 3. Deploy microservice application**
- 4. Operate service mesh**
 - a. Observability example**
 - b. Traffic Management example**
 - c. Security (mTLS, AuthZ) example**

Microservices Example - Bookinfo application



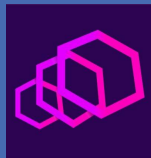


NEW! *(Announcing Next Week)*

Hands-on Class (1-day):

Intro to Service Mesh with Istio

<https://tigera.io/contact>





slack.projectcalico.org



istio.io