Open Horizon project Management Hub Working Group Meeting

August 13, 2020

THE LINUX FOUNDATION

LF EDGE

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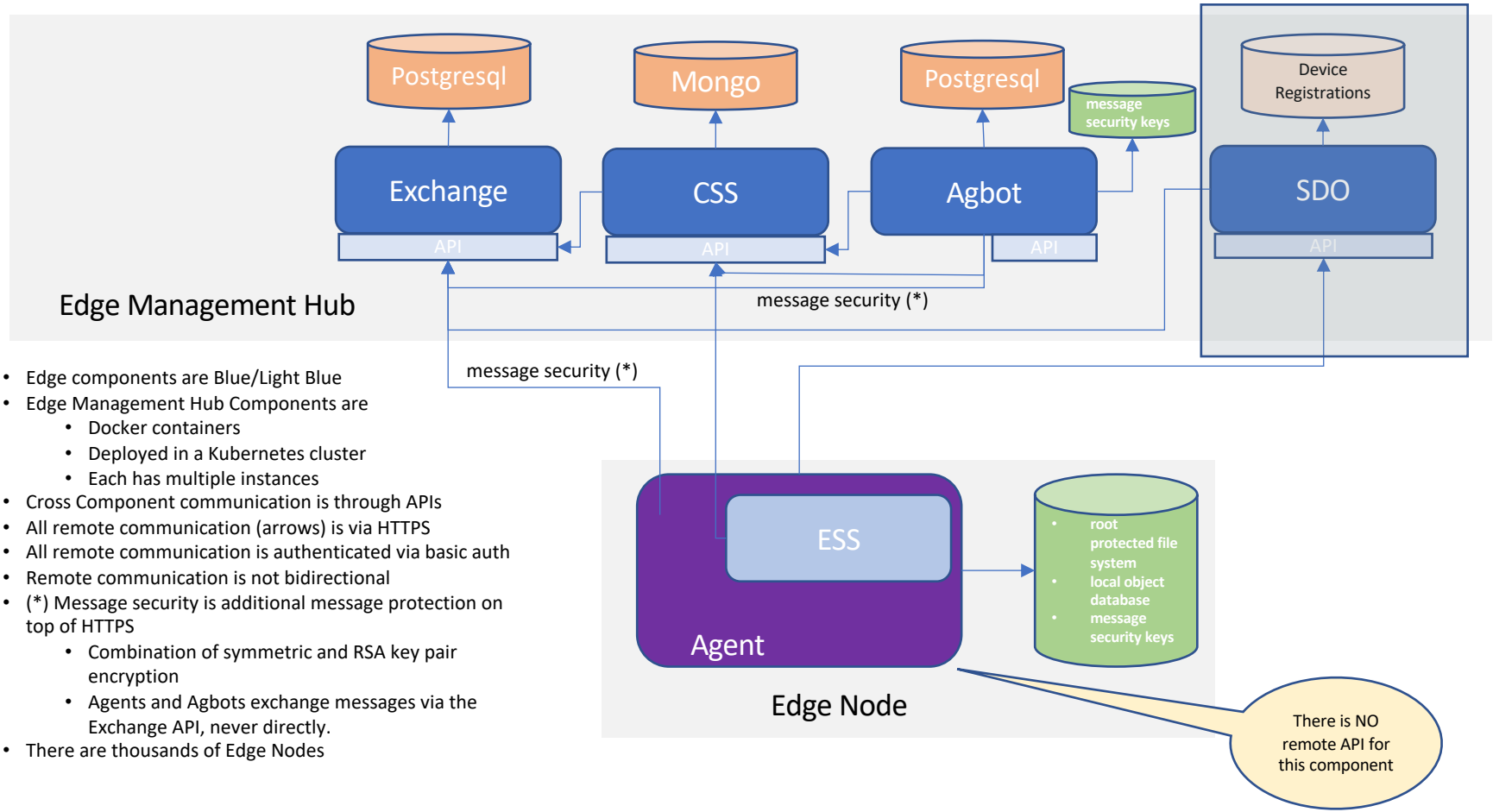
Topics

- Welcome and Introductions
  - Meeting every other Thursday @ 6:30am PT / 9:30am ET / 1:30pm UTC
    - Meeting details
  - Participation
    - Roles and responsibilities
    - How to get started
- Communication
  - Slack channel: lfedge.slack.com #open-horizon-mgmt-hub (join)
  - Mailing list: open-horizon-mgmt-hub@lists.lfedge.org (join)
- Tools and Processes
  - Code repositories
  - ZenHub for project board and swim lanes
- Horizon Management Hub Overview
- Next Meeting

Technical Architecture Overview



- Edge components are Blue/Light Blue
- Edge Management Hub Components are
  - Docker containers
  - Deployed in a Kubernetes cluster
  - Each has multiple instances
- Cross Component communication is through APIs
- All remote communication (arrows) is via HTTPS
- All remote communication is authenticated via basic auth
- Remote communication is not bidirectional
- (*) Message security is additional message protection on top of HTTPS
  - Combination of symmetric and RSA key pair encryption
  - Agents and Agbots exchange messages via the Exchange API, never directly.
- There are thousands of Edge Nodes

Open Horizon Management Hub Components

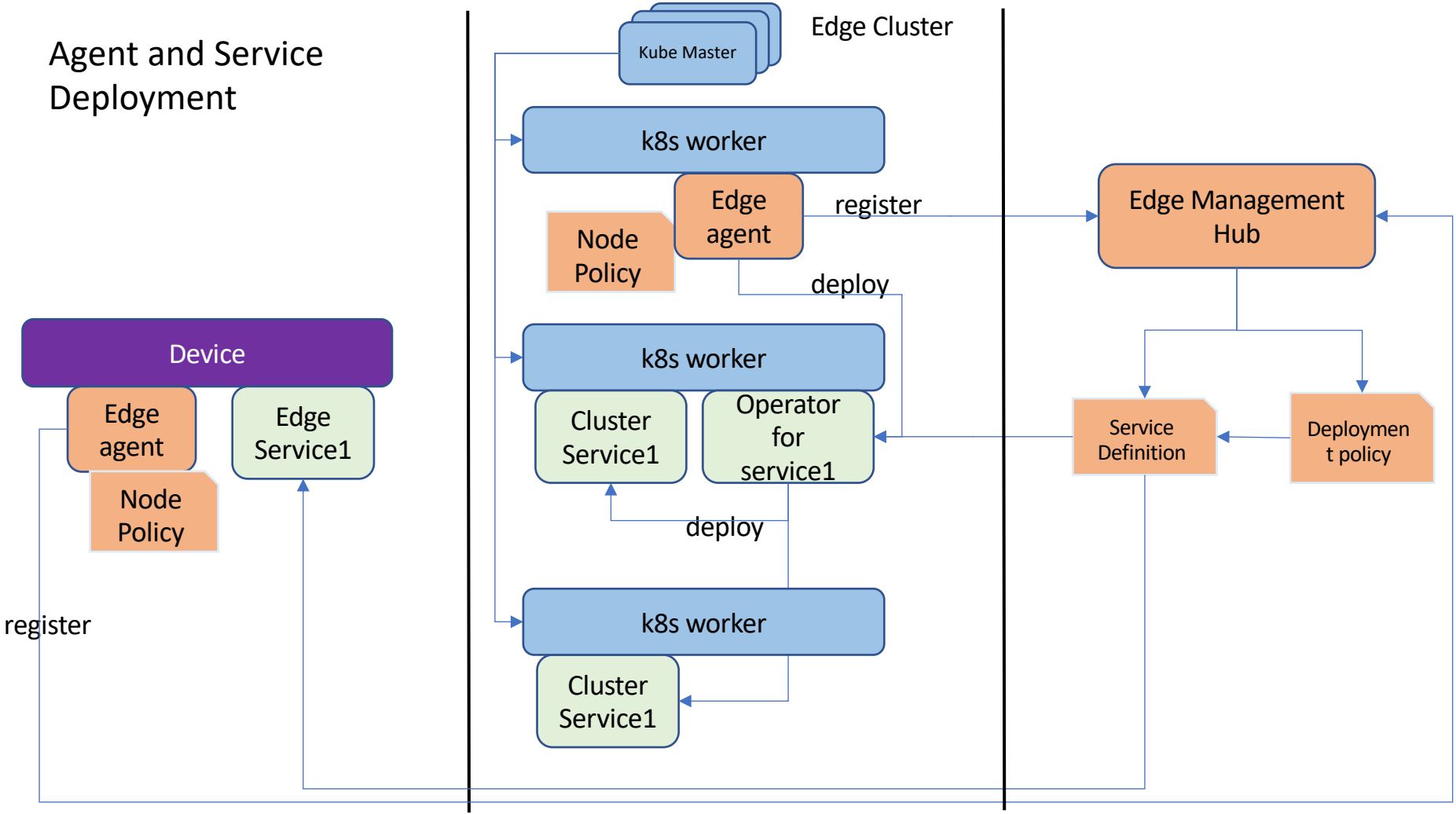
- Exchange
  - Central data repository through which all other components find and coordinate with each other
  - Provides an extensive REST API (soon to be published on https://open-horizon.github.io/)
  - Multiple instances that synchronize via the postgresql DB
  - Implemented in Scala and built on Akka HTTP
  - https://github.com/open-horizon/exchange-api
- Agbot (Agreement Bot)
  - Makes agreements with edge nodes to run edge services to fulfill what has been specified in the patterns and deployment policies
  - REST API
  - Multiple instances that run largely independently
  - https://github.com/open-horizon/anax

Open Horizon Management Hub Components (continued)

- CSS (Cloud Sync Service)
  - The management hub side of MMS (Model Management System). The edge node side of MMS is called ESS (Edge Sync Service)
  - Deploys AI models and other files that edge services need to the correct edge nodes
  - File placement determined by edge service placement and additional (optional) MMS policy
  - REST API
  - https://github.com/open-horizon/edge-sync-service
- SDO (Secure Device Onboard)
  - Enables zero-touch secure connecting of SDO-enabled edge devices to a Horizon management hub instance
  - After import the device ownership voucher, simply powering on an SDO device will:
    - Find the correct Horizon management hub
    - Install the Horizon agent and prerequisites
    - Register the edge device with Horizon and deploy edge services to it according to the desired deployment policy
  - Uses Intel's SDO open source
  - https://github.com/open-horizon/SDO-support

Open Horizon Management Hub Components (continued)

- Devops
  - Provides a script to automatically deploy all of the Horizon components on a single host
  - Follow the README.md
  - Only intended for development and test
    - No replicas, no HTTPS
  - https://github.com/open-horizon/devops
  - This is a new repo, enhancements are needed


Agent and Service Deployment
Edge Cluster
Kube Master
k8s worker
Edge agent
register
Edge Management Hub
Node Policy
deploy
Device
k8s worker
Edge agent
Edge Service1
Cluster Service1
Operator for service1
Service Definition
Deployment policy
Node Policy
deploy
register
k8s worker
Cluster Service1

Next Steps

- Visit the Quick Start and start contributing!
- Next Meeting: Thursday, Aug 27 @ 6:30am PT / 9:30am ET / 1:30pm UTC

Thank You

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