Collaborative OPen Omics (COPO) - Building, Testing and Deployment

COPO

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- COPO facilitates scientists to describe, store and access metadata using community standards and public repositories ensuring open data sharing.

- COPO employs modern technologies like Docker Swarm for orchestration, ensuring its availability, scalability, and security with separate networks and Docker secrets.

1 Building and testing
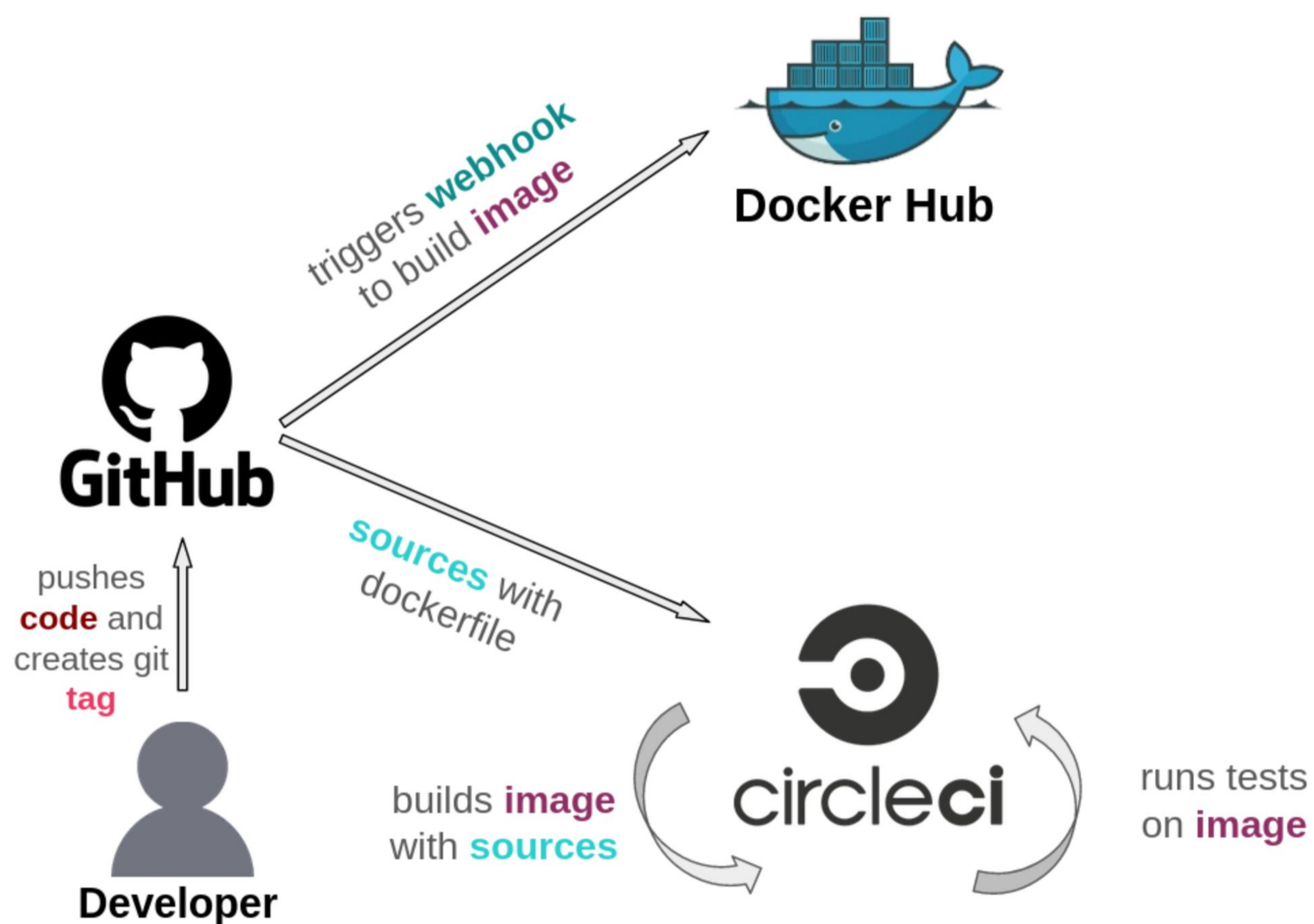
2 Deployment

Process (see figure below):
- A YAML file defines COPO services grouped in a Docker stack for easy management.

- Docker CLI inputs the YAML file to Docker swarm manager for deployment.

- Each COPO service is encapsulated in a Docker service.

- Docker services deployed to the swarm manager are scheduled as tasks on corresponding nodes (i.e. Node 1, Node 2 and Node 3), each invoking a container with a defined Docker image.

- Containers within the same network communicate via assigned IP addresses.

- COPO securely stores sensitive information as Docker secrets.

- COPO services attach to volumes to ensure data persistence during restarts.

- Some COPO services share storage by attaching to the same volume.

3 COPO services
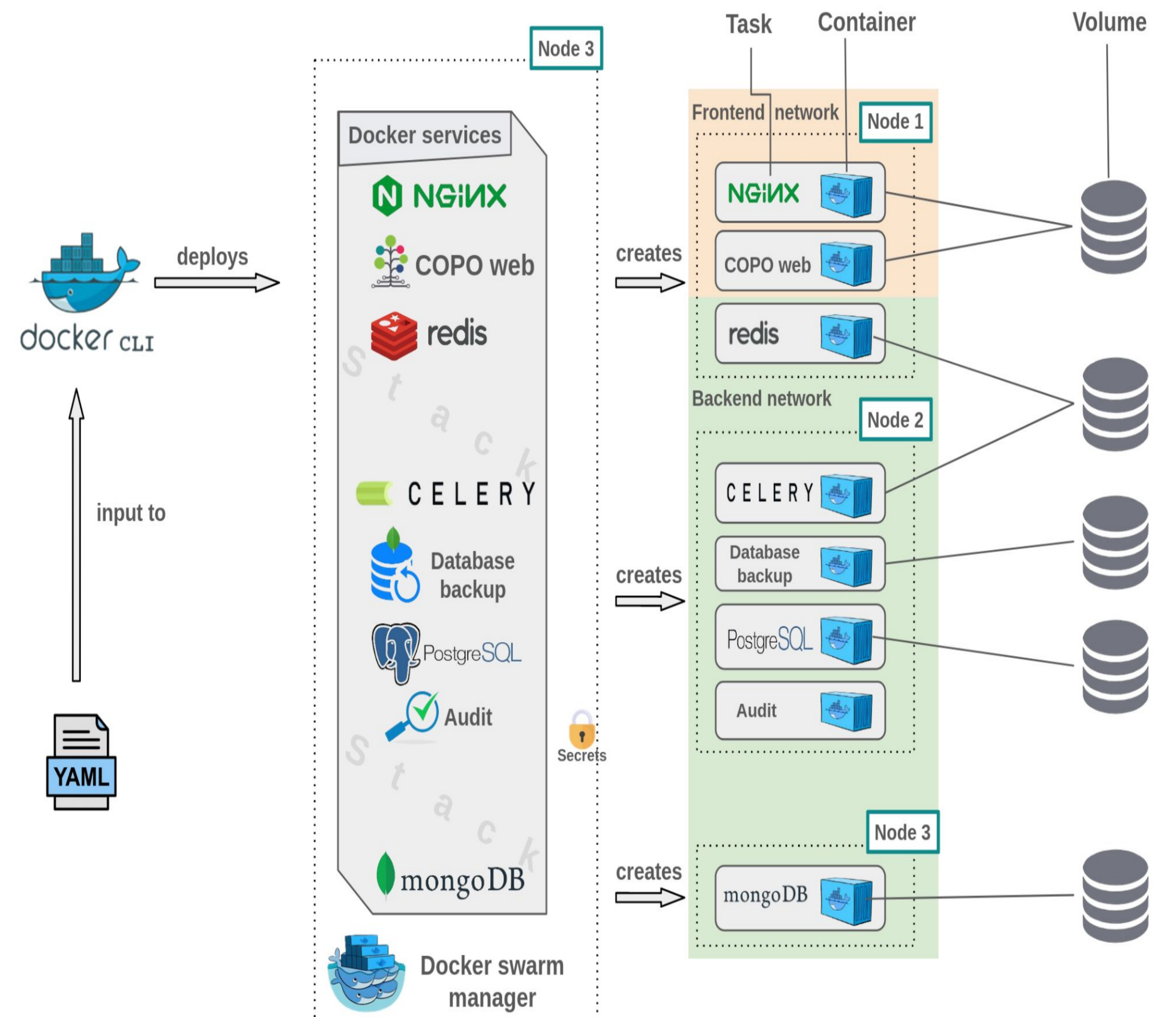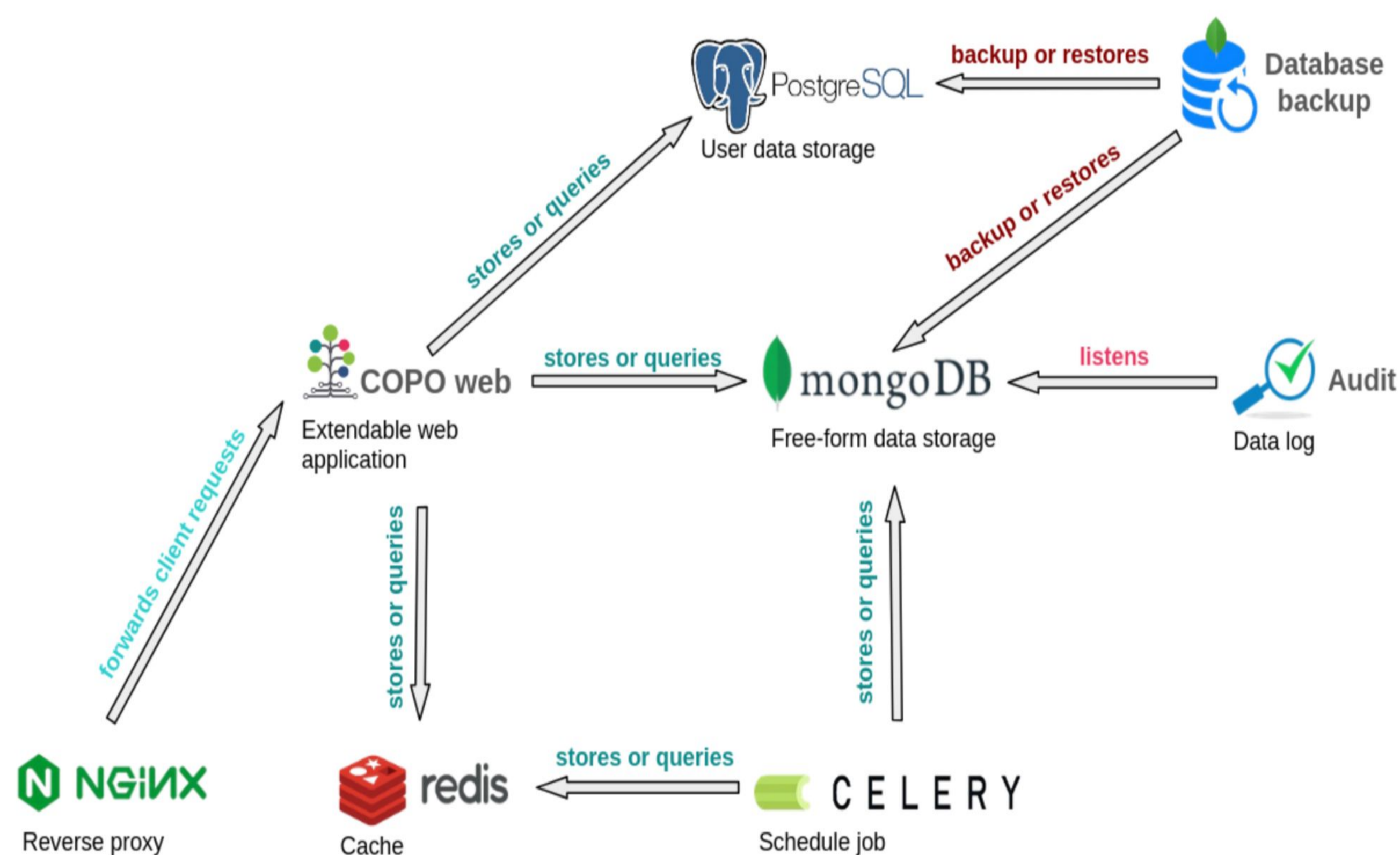
4 Summary

- COPO is a metadata brokering platform that utilises GitHub for code storage and versioning, Docker for its deployment and CircleCI for its testing.

- The COPO system consists of multiple services via Docker stack that is managed by a Docker swarm manager and grouped across several nodes.