Turbine: Facebook's Service Management Platform for Stream Processing

Yuan Mei Luwei Cheng Vanish Talwar Michael Y. Levin
Gabriela Jacques-Silva Nikhil Simha Anirban Banerjee
Brian Smith Tim Williamson Serhat Yilmaz Weitao
Chen Guoqiang Jerry Chen

Juan Ignacio Díaz, Francisco Pereira

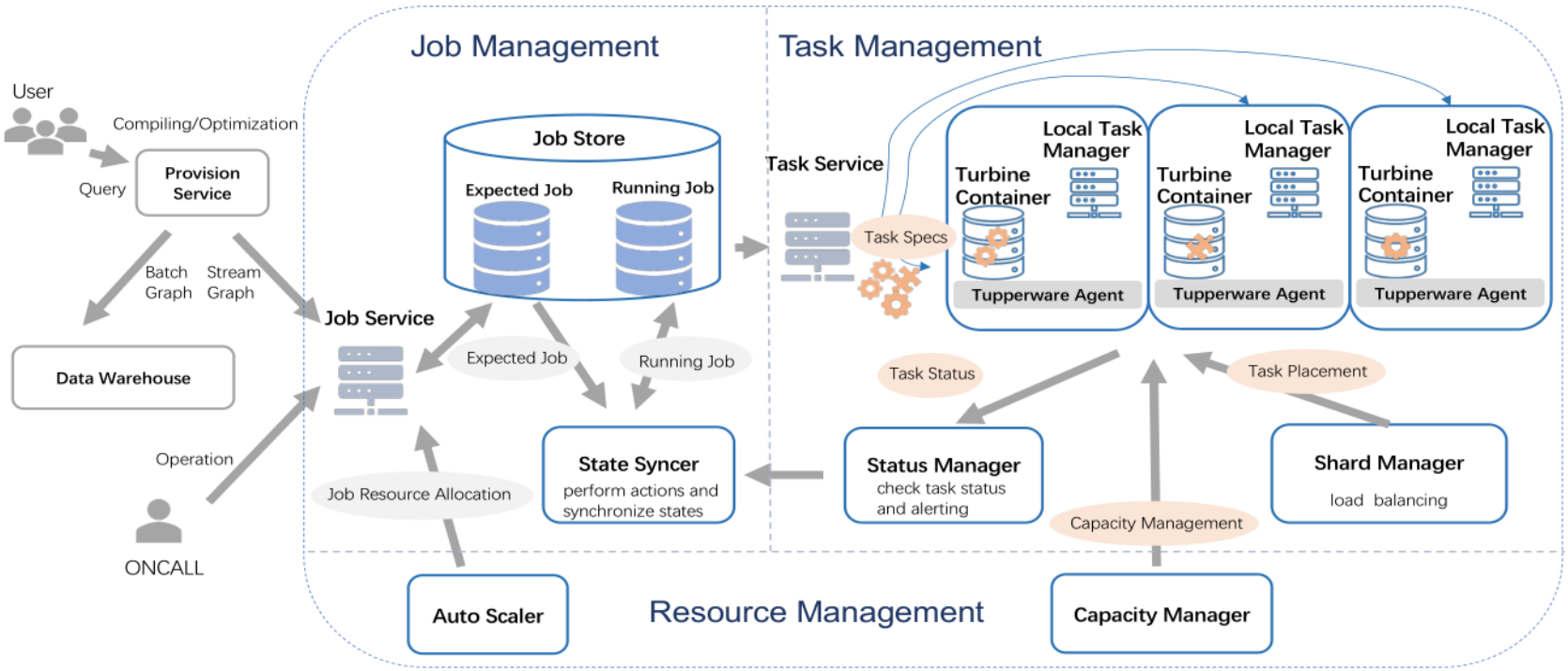
Turbine

- Fast and scalable task scheduler.
- Efficient predictive auto scaler.
- ACID, fault-tolerant (ACIDF) application update mechanism.
- Service management platform on top of cluster management systems [1].
- Currently integrates with Tupperware[2], a low level host manager.

[1] Aurora, Mesos, Borg, Tupperware, Kubernetes, etc.

System Overview

- Job Management layer: What to run?
- Task Management layer: Where to run?
- Resource Management layer: How to run?



[1]

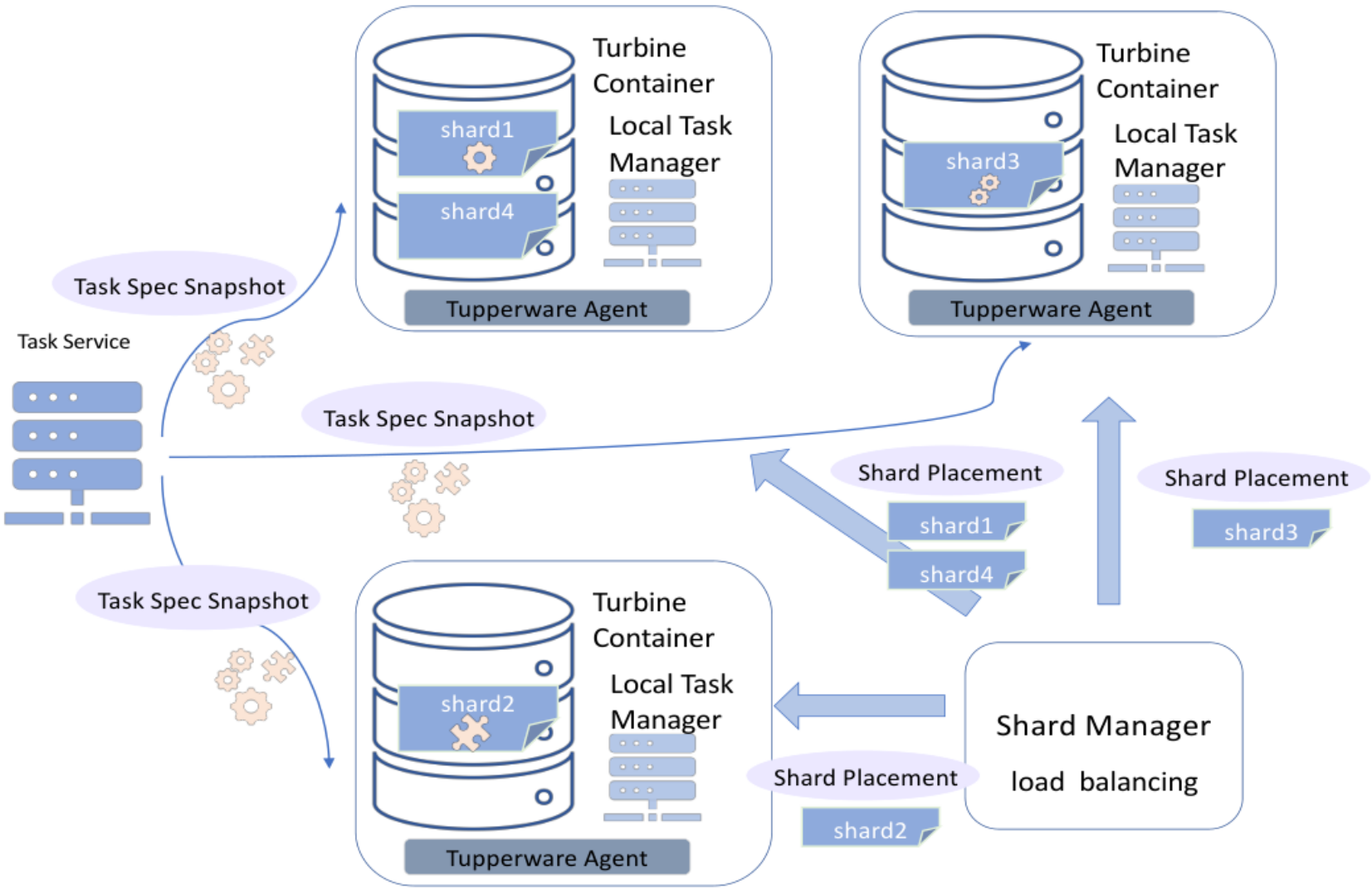
Job Management

- Job Service
- State Syncer
- Job Store

Cuadro 1: **Job Store Schema.** [1]

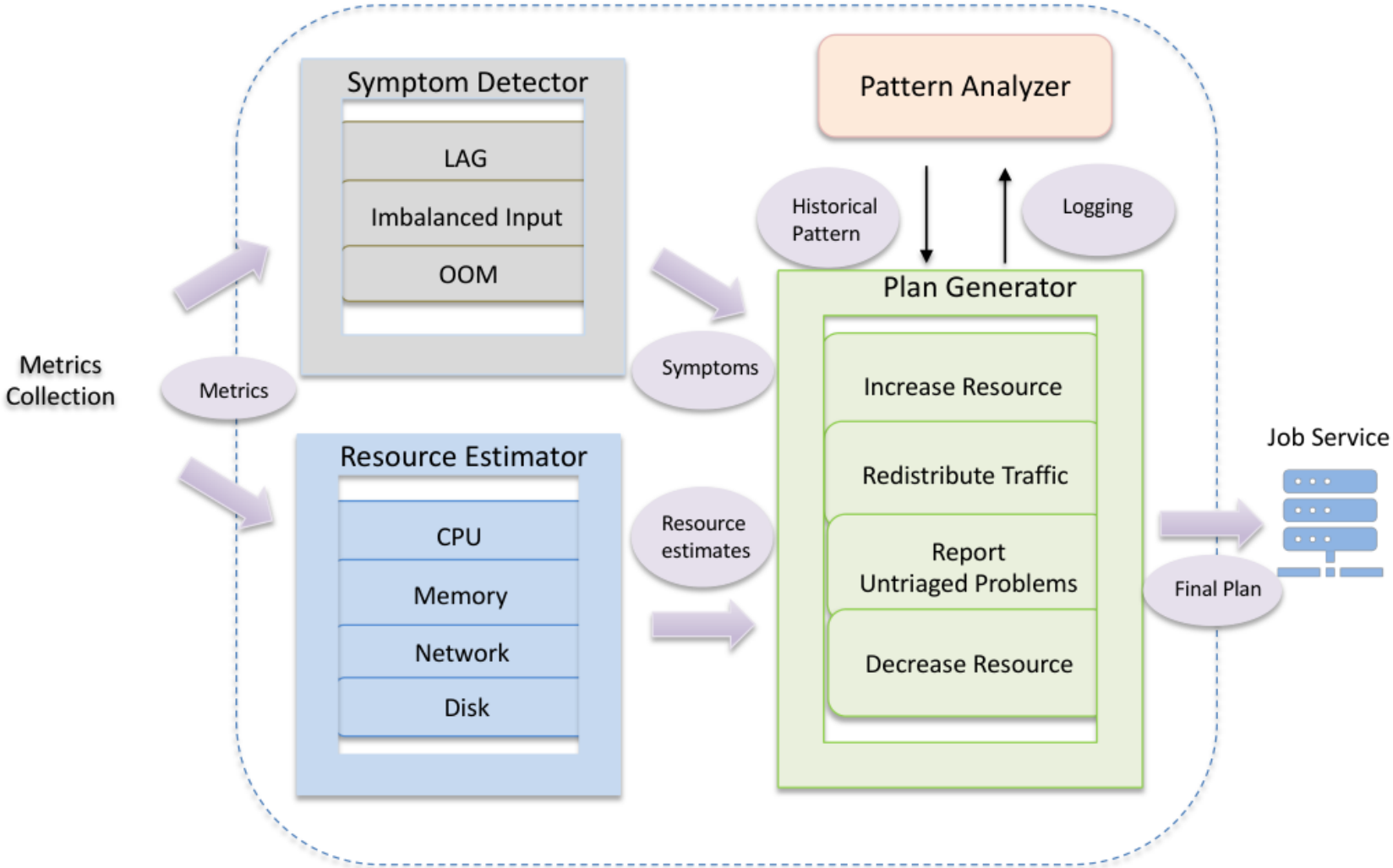
Expected Job Table
Base Configuration
Provisioner Configuration
Scaler Configuration
Oncall Configuration

Task Management



[1]

Resource Management



[1]

Resource Management

Capacity Management:

- Monitor resource usage of jobs in a cluster
- Manage resource allocations
- Disaster recovery

Bibliografía I

[1] Yuan Mei y col. "Turbine: Facebook's service management platform for stream processing". En: *2020 IEEE 36th International Conference on Data Engineering (ICDE)*. IEEE. 2020, págs. 1591-1602.

[2] Aravind Narayanan. *Tupperware: containerized deployment at Facebook*. 2014.