

# Client

Program code

Graph builder & optimizer

*Submit/cancel job*

*Status updates & results*

# Job Manager

Dataflow graph

Scheduler

Checkpoint coordinator

# Task Manager 1

Memory manager

Network manager

**Task slot**

Task

*Data streams (shuffling)*

*Deploy/stop tasks  
Trigger checkpoints*

*Task status  
Heartbeats*

# Task Manager 2

Memory manager

Network manager

**Task slot**

Task