Self-Aggregation Techniques for Load Balancing in Distributed Systems

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Motivation

Is it possible to balance the workload in a network of interconnected heterogeneous nodes?

• Yes, but what about efficiency?

• Assumptions:
  – Nodes and jobs belong to a type;
  – Nodes can only process and receive jobs of their own type;
  – Jobs may arrive from other nodes or from the environment.

• Goals:
  – Balancing jobs of a given type among nodes of the same type;
  – No centralization / No global information is available;
  – Nodes may appear and disappear unpredictably (churn).
Our Approach

1. Aggregate nodes of the same type into homogeneous domains.
2. Balance the workload in every domain.

Self-Aggregation

Load Balancing