



Design issues

In

Group communication



Closed group vs. open group

- With **closed groups**, only the group members may send a message to the group. This is useful when multiple processes need to communicate with others in solving a problem, such as parallel processing applications.
- The alternative is **open groups**, where non-members can send a message to a group. An example use of this type of group is an implementation of a replicated server (such as a redundant file system).



Peer groups vs. hierarchical groups

- With **peer groups, every member communicates with each other.** The benefits are that this is a decentralized, symmetric system with no point of failure. However, decision making may be complex since all decisions must be made collectively .
- The alternative is **hierarchical groups, in which one member plays the** role of a group coordinator. The coordinator makes decisions on who carries out requests. Decision making is simplified since it is centralized.
- The downside is that this is a centralized, asymmetric system and therefore has a single point of failure.

Centralized group membership vs. Distributed membership

- If control of group membership is **centralized**, we will have **one group server that is responsible for getting all membership requests**. It maintains a database of group members.
- This is easy to implement but suffers from the problem that centralized systems share – a single point of failure.
- The alternative mechanism is to manage group membership in a distributed way where all group members receive messages announcing new members.