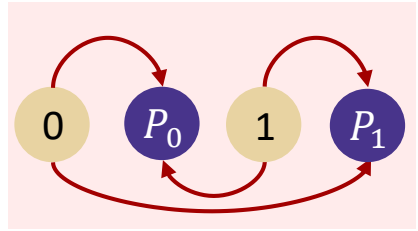
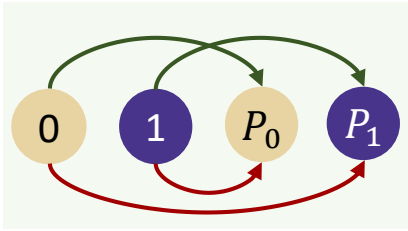
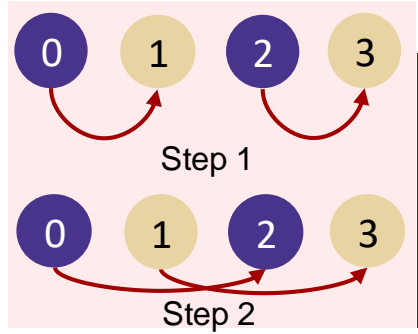
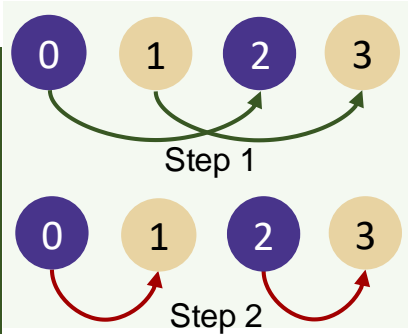


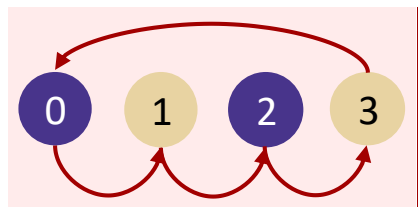
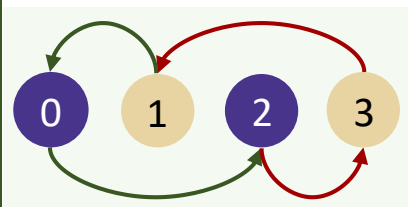
(a) Parameter Server



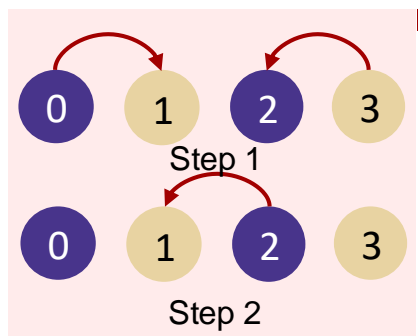
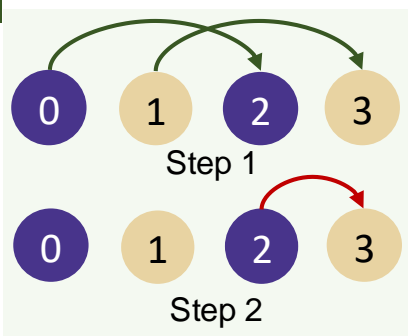
(b) Recursive Halving and Doubling



(c) Ring



(d) Tree



→ Intra rack traffic

→ Cross rack traffic

Clusters are color-coded. P_i : parameter server i . j : node j .

Left: Schedules with good locality

Right: Schedules with poor locality