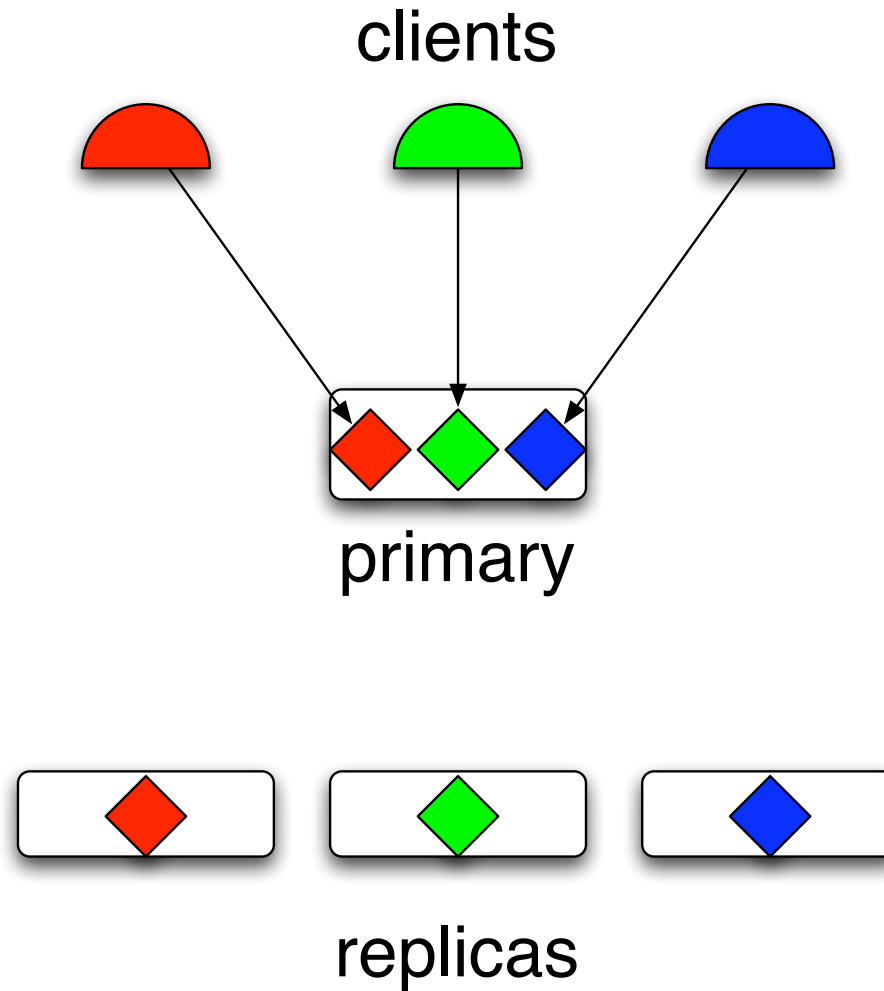# Load Balancing in Ceph:
Load Balancing With Pseudorandom Placement

Esteban Molina-Estolano, Carlos Maltzahn, Scott Brandt
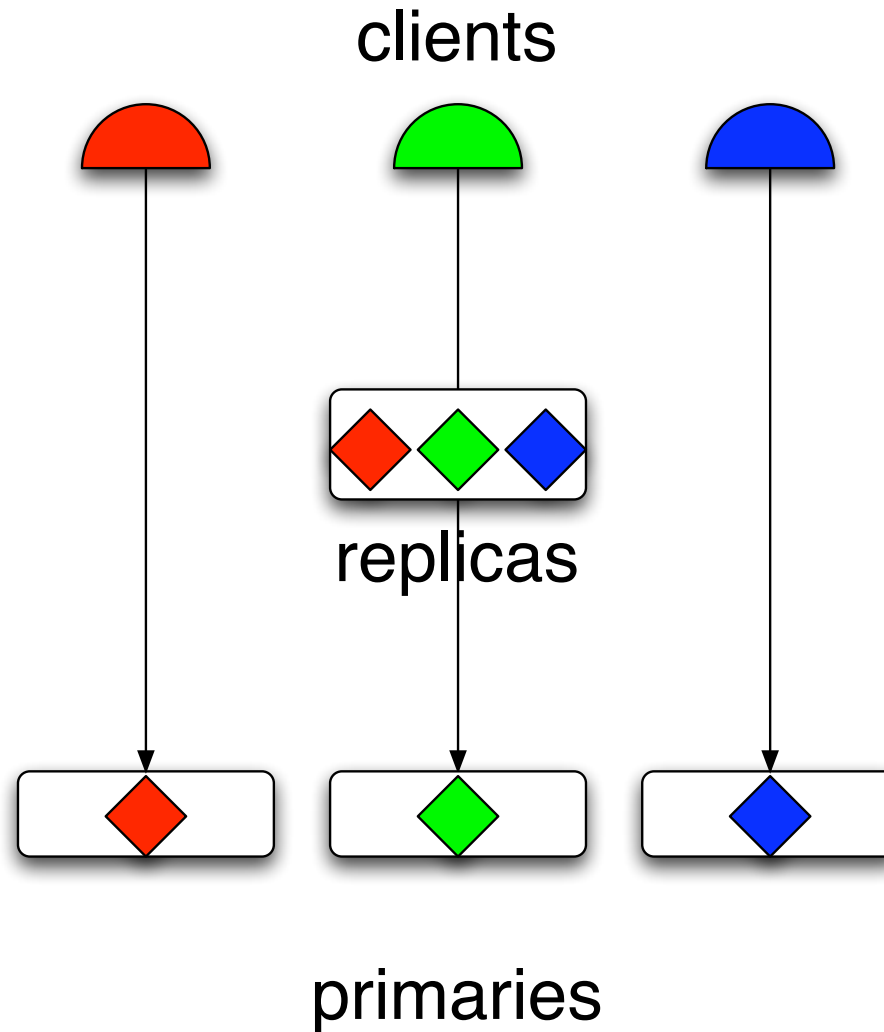*University of California, Santa Cruz*

The Load Balancing Problem

- Pseudorandom placement for distributed storage systems has several advantages

- Problem: pseudorandom placement makes load balancing harder

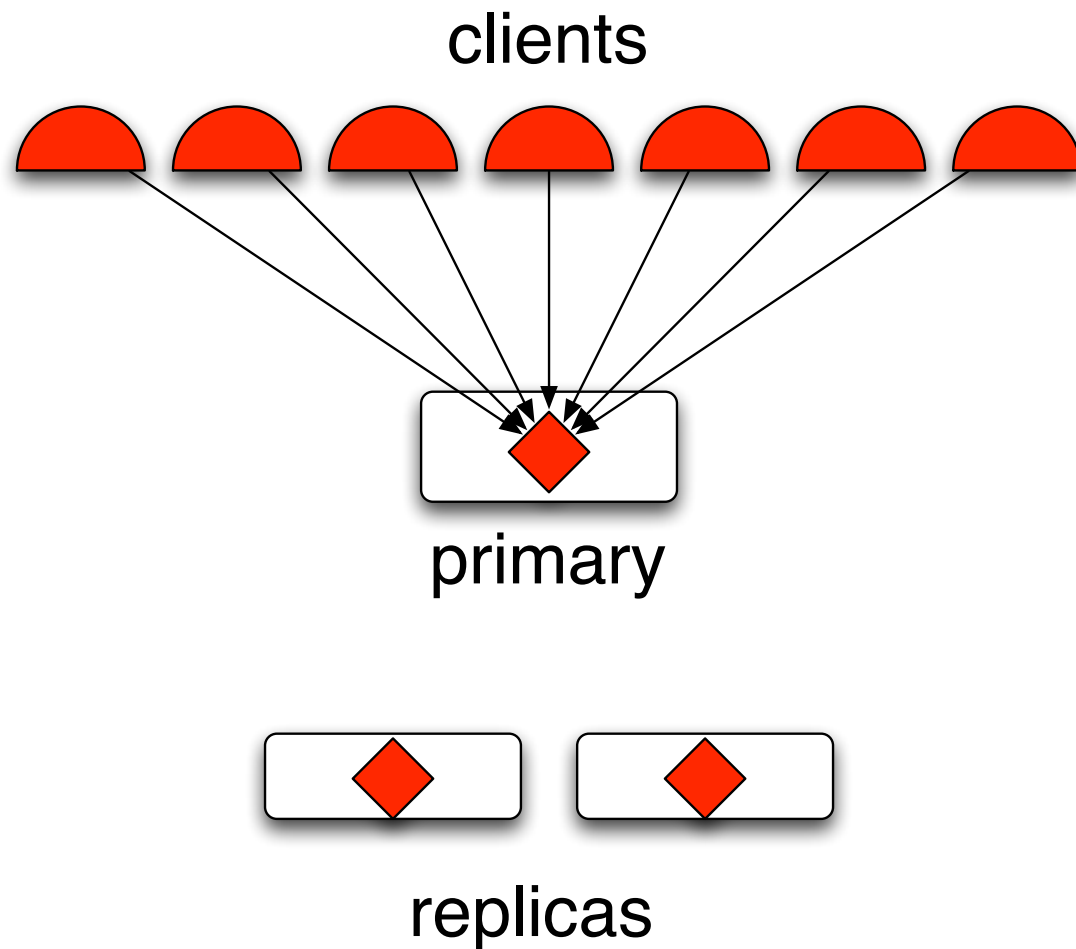- Research platform: Ceph, object-based storage system developed at UCSC
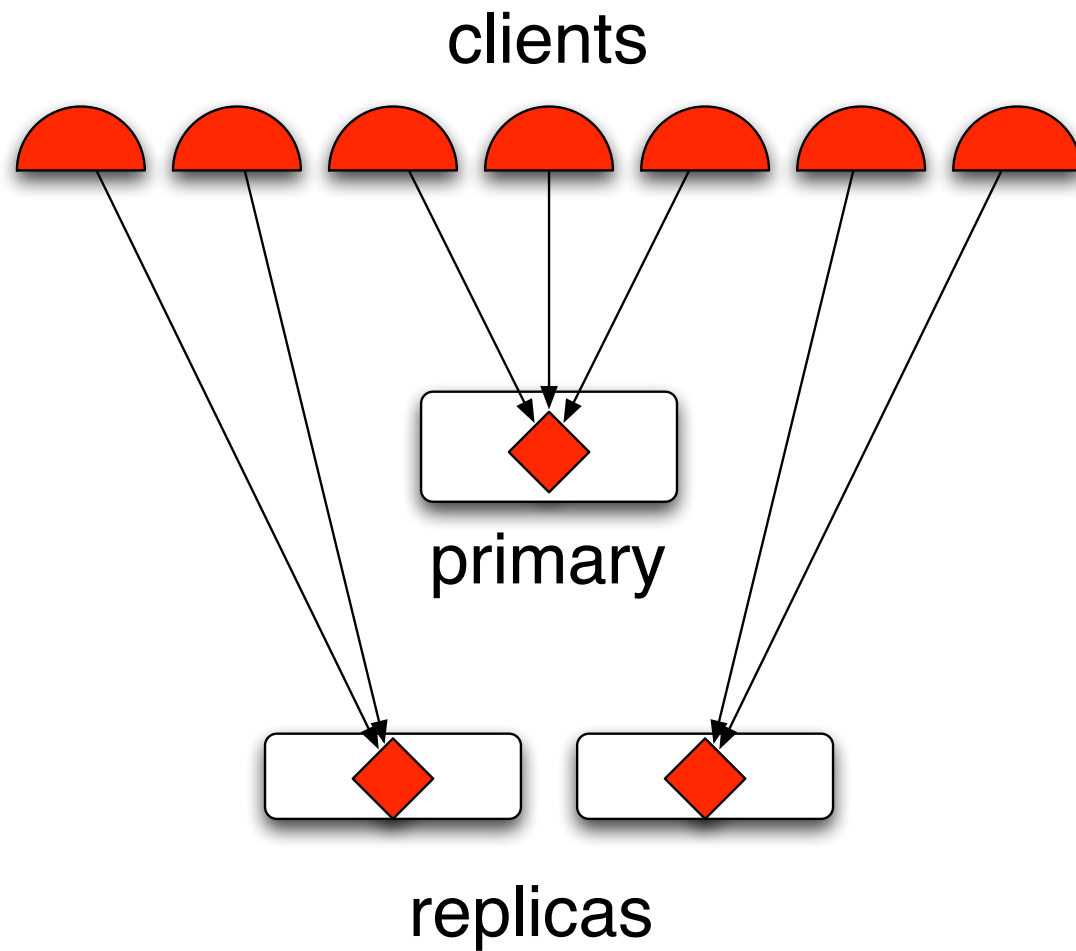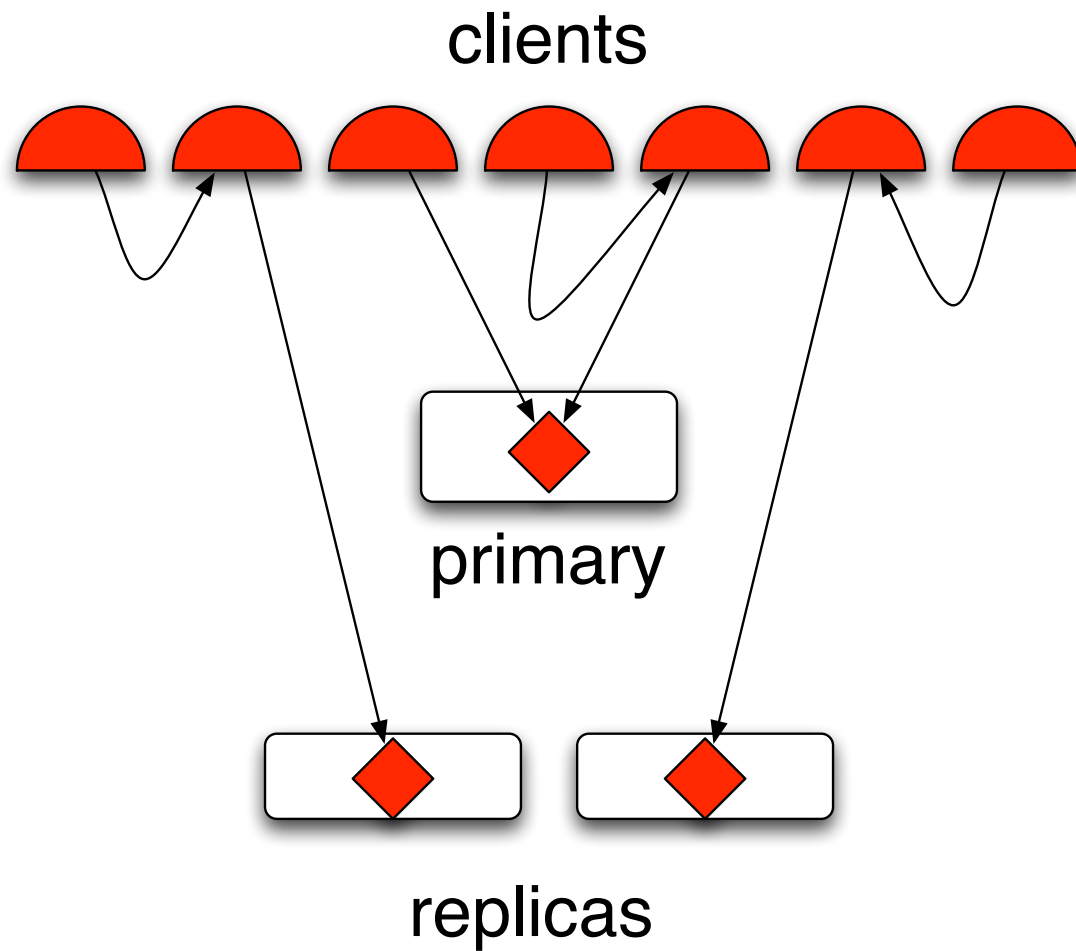
Coincidental overload

clients

primary

replicas

3

Primary switching

clients

replicas

primaries

4

Read flash crowd

clients

primary

replicas

Read shedding

clients

primary

replicas

Read shedding

clients

primary

replicas

Write flash crowd

clients

primary

replicas

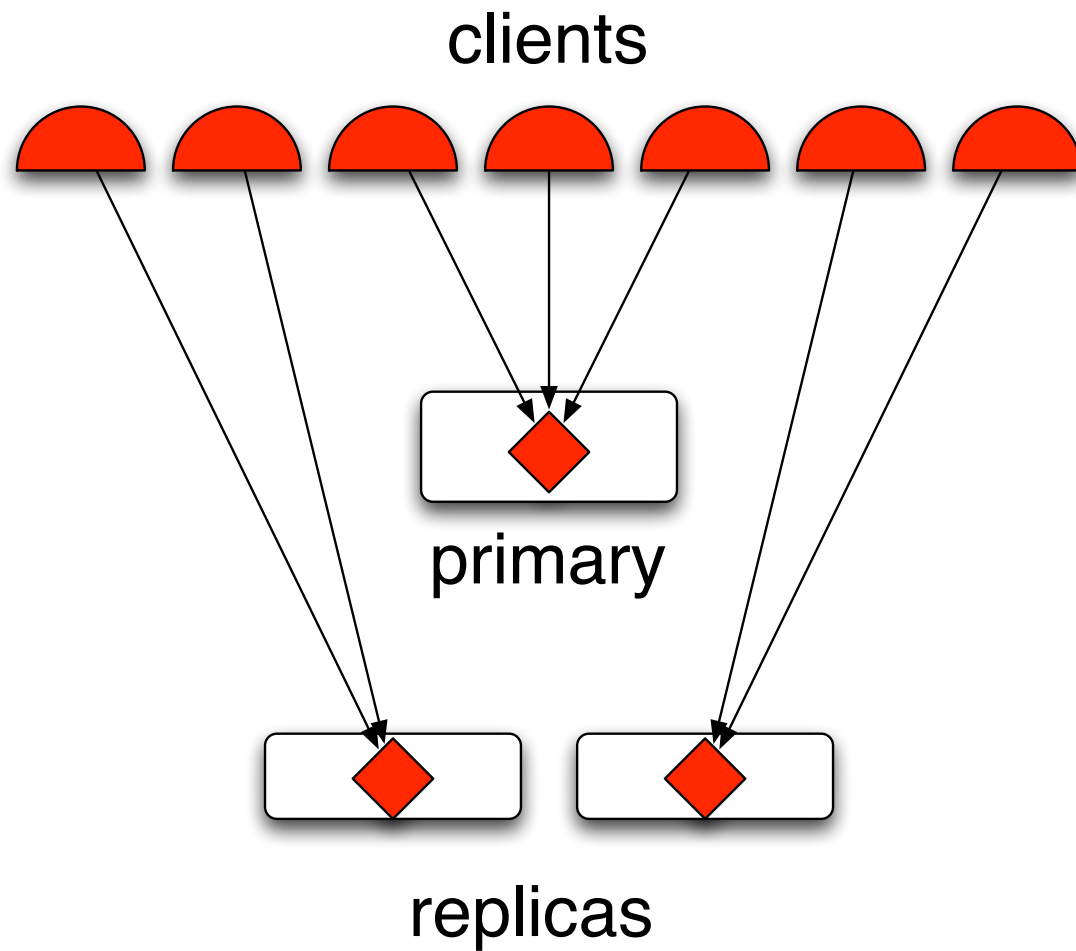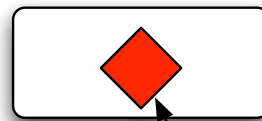# Write shedding
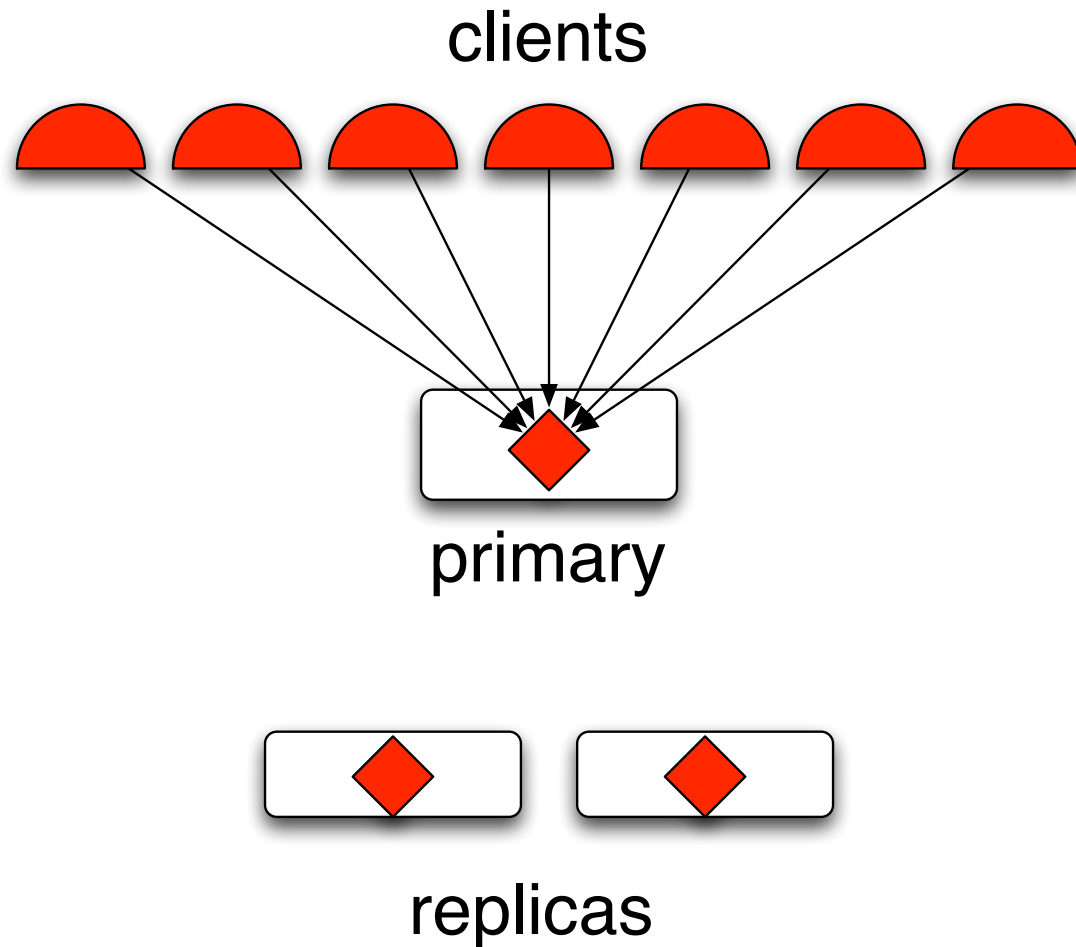
clients

primary

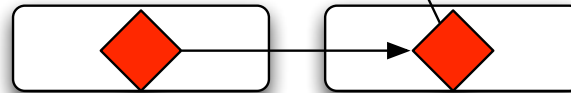replicas

Write shedding

clients

Serialization:
Easy with POSIX
HPC I/O extensions,
complicated otherwise

primary

replicas

Preliminary Results

Throughput with overloaded OSD 0

Preliminary Results

Throughput with OSD 0 relieved by primary shifting