

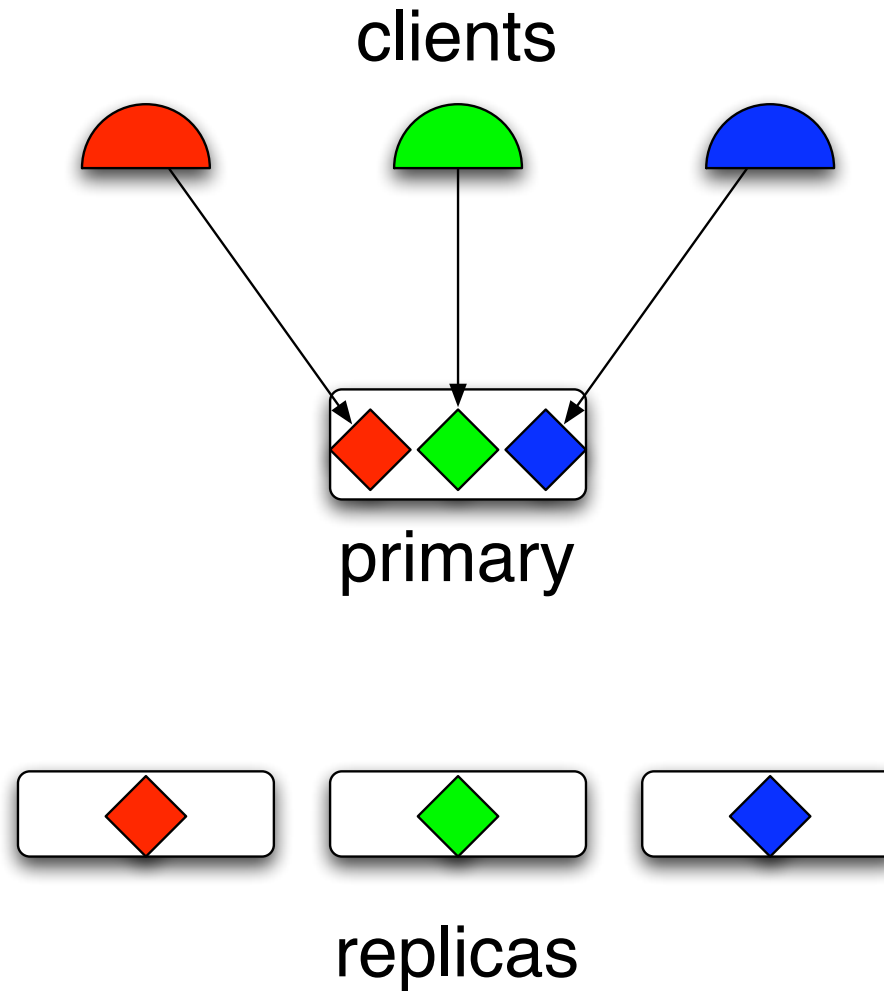
# Load Balancing in Ceph: Load Balancing With Pseudorandom Placement

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

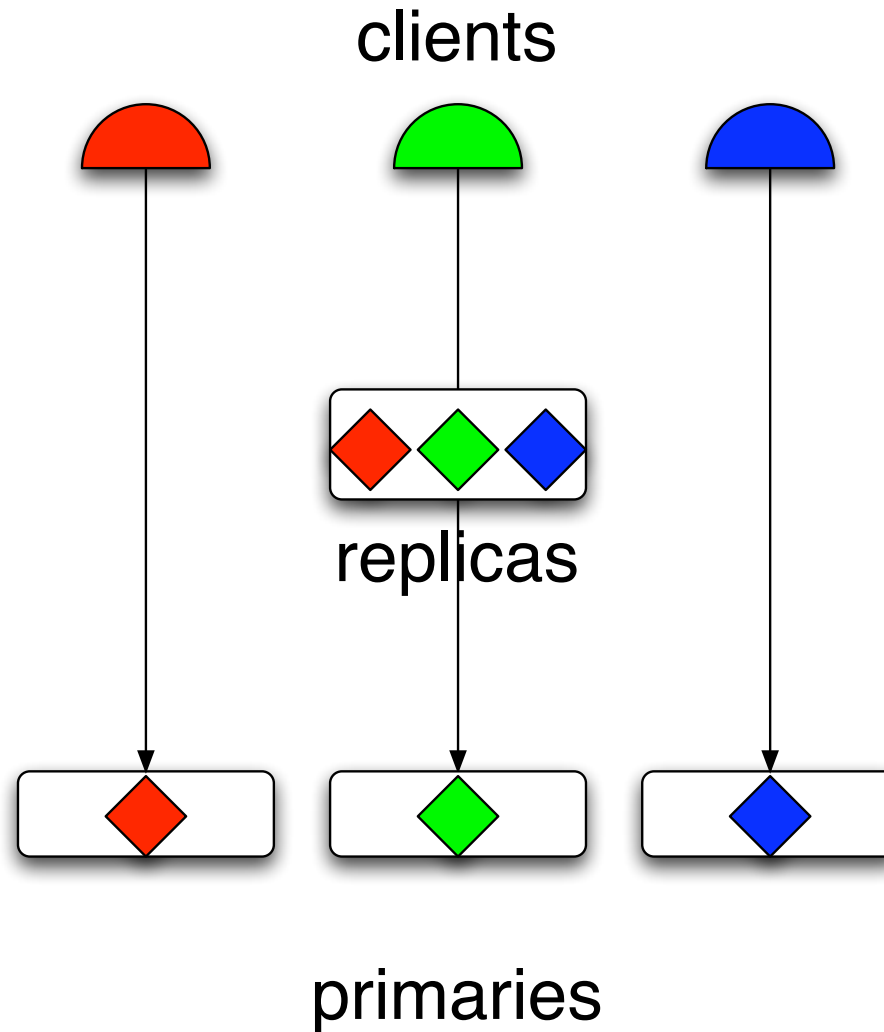
# The Load Balancing Problem

- 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

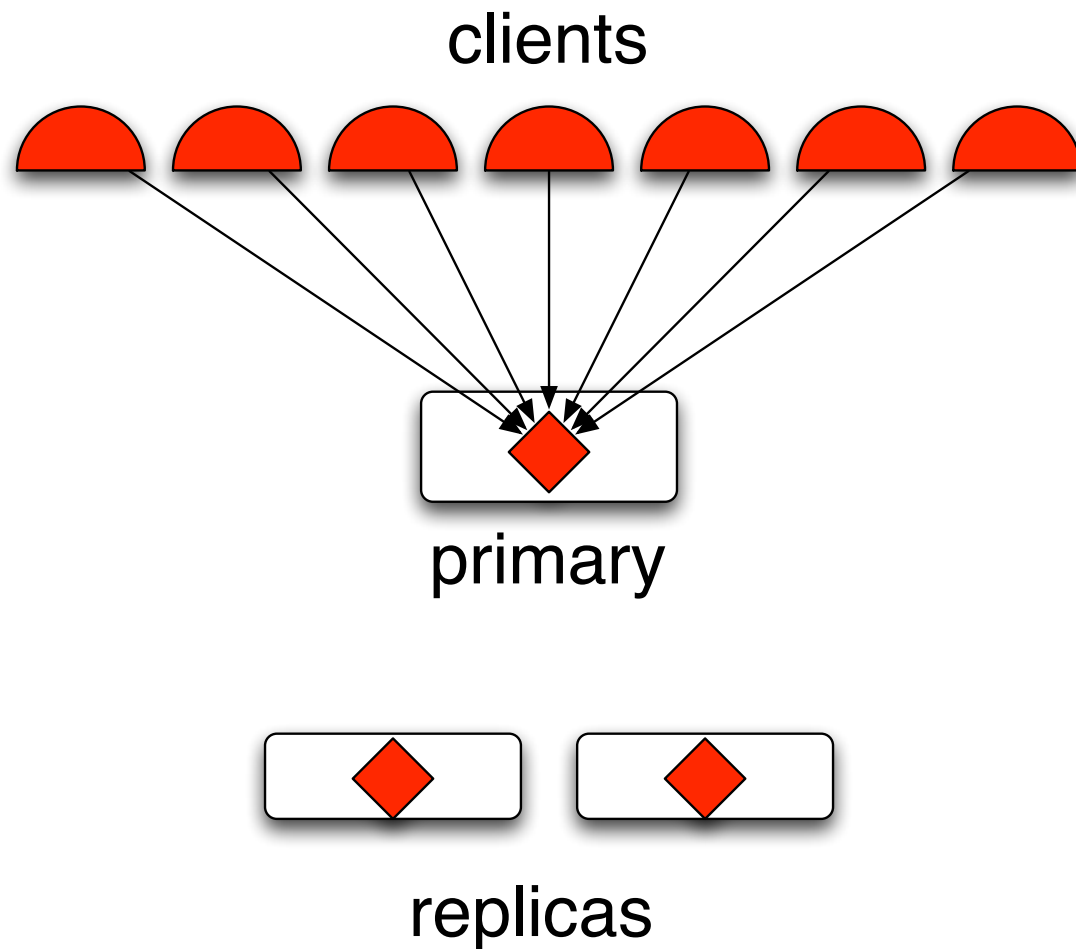
# Coincidental overload



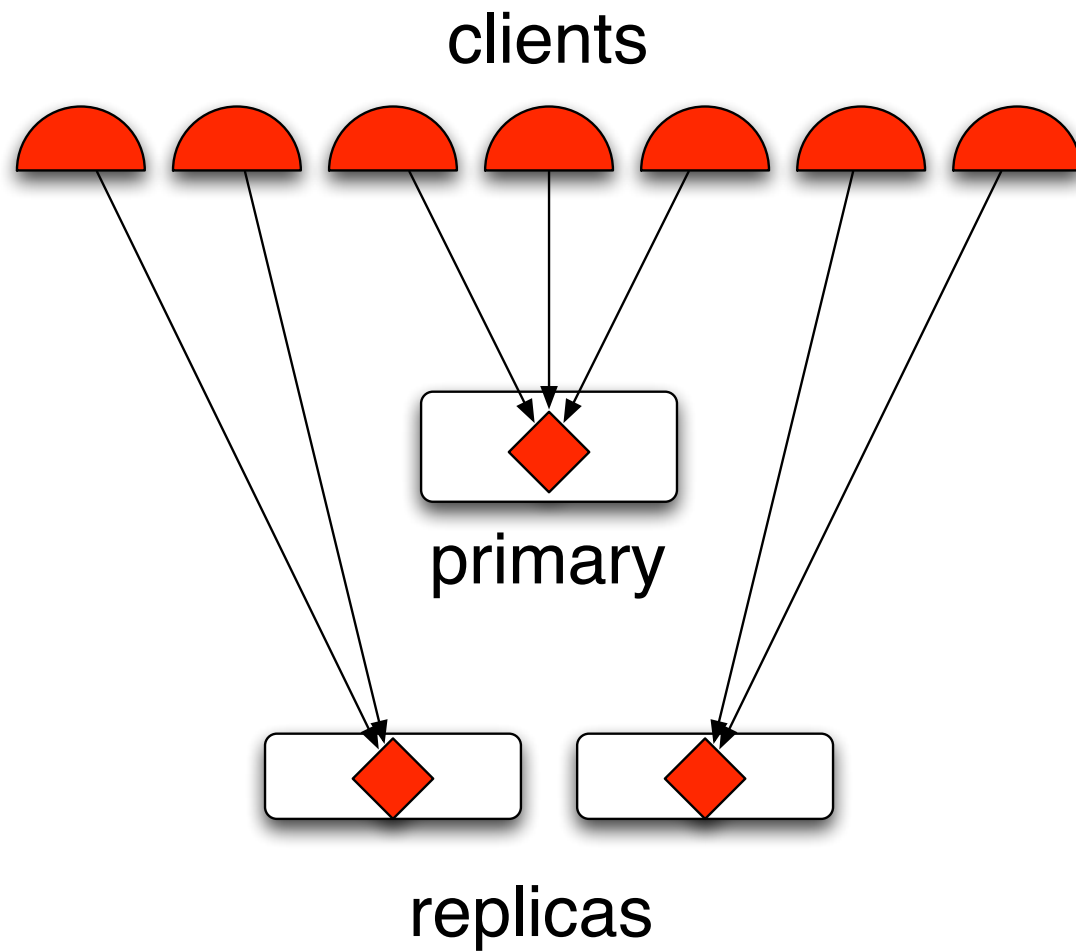
# Primary switching



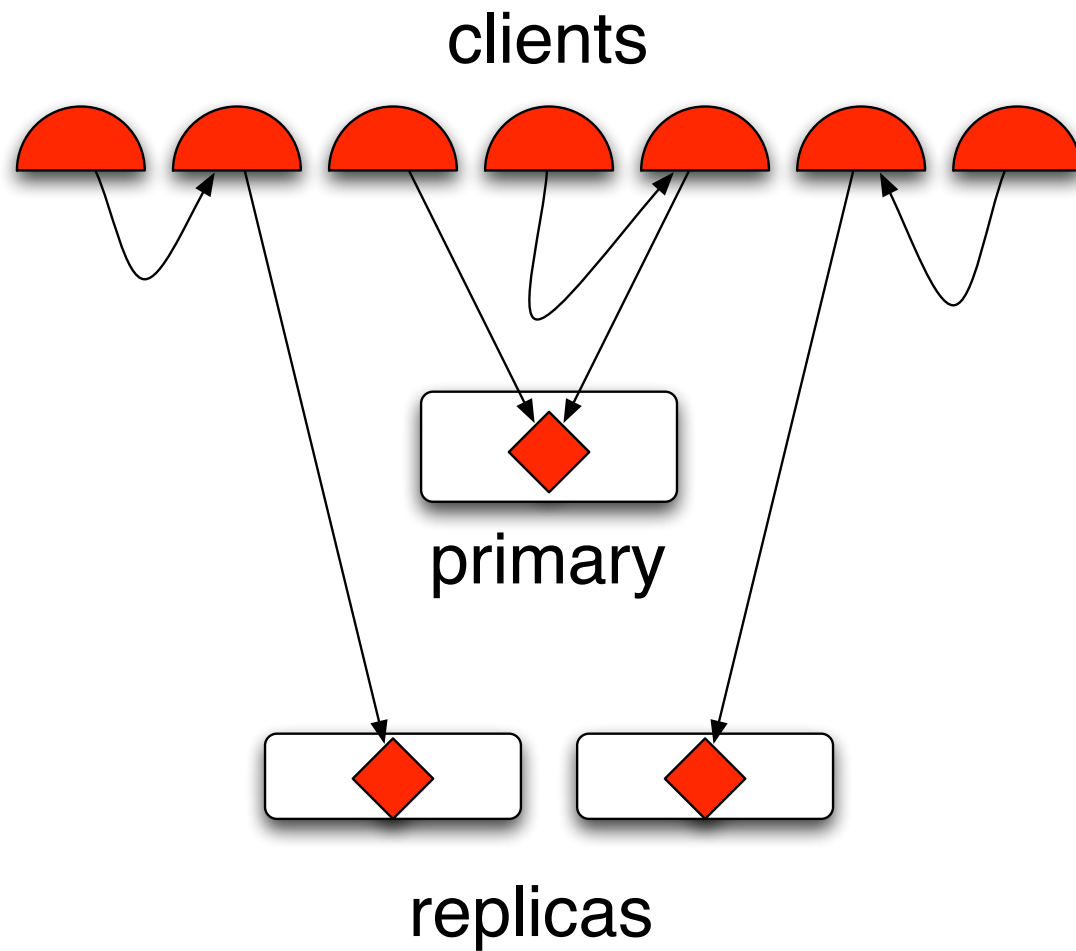
# Read flash crowd



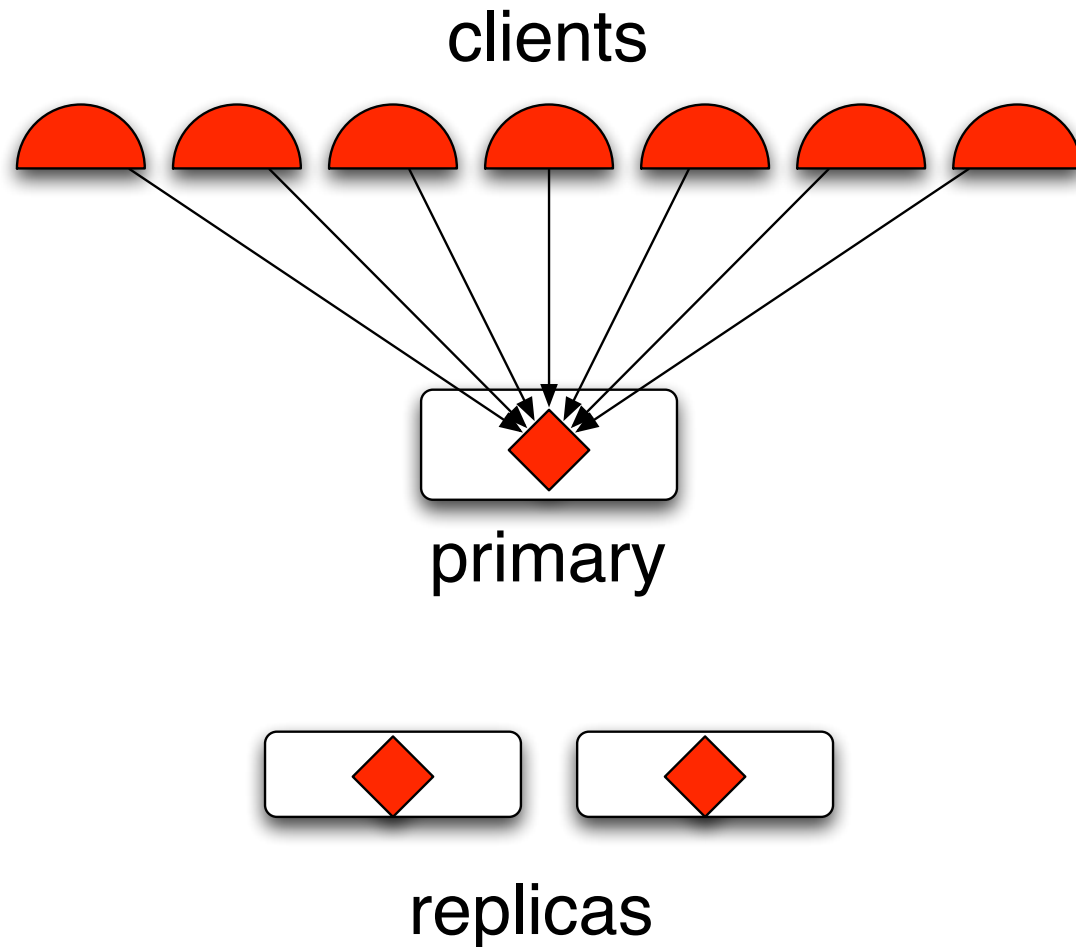
# Read shedding



# Read shedding

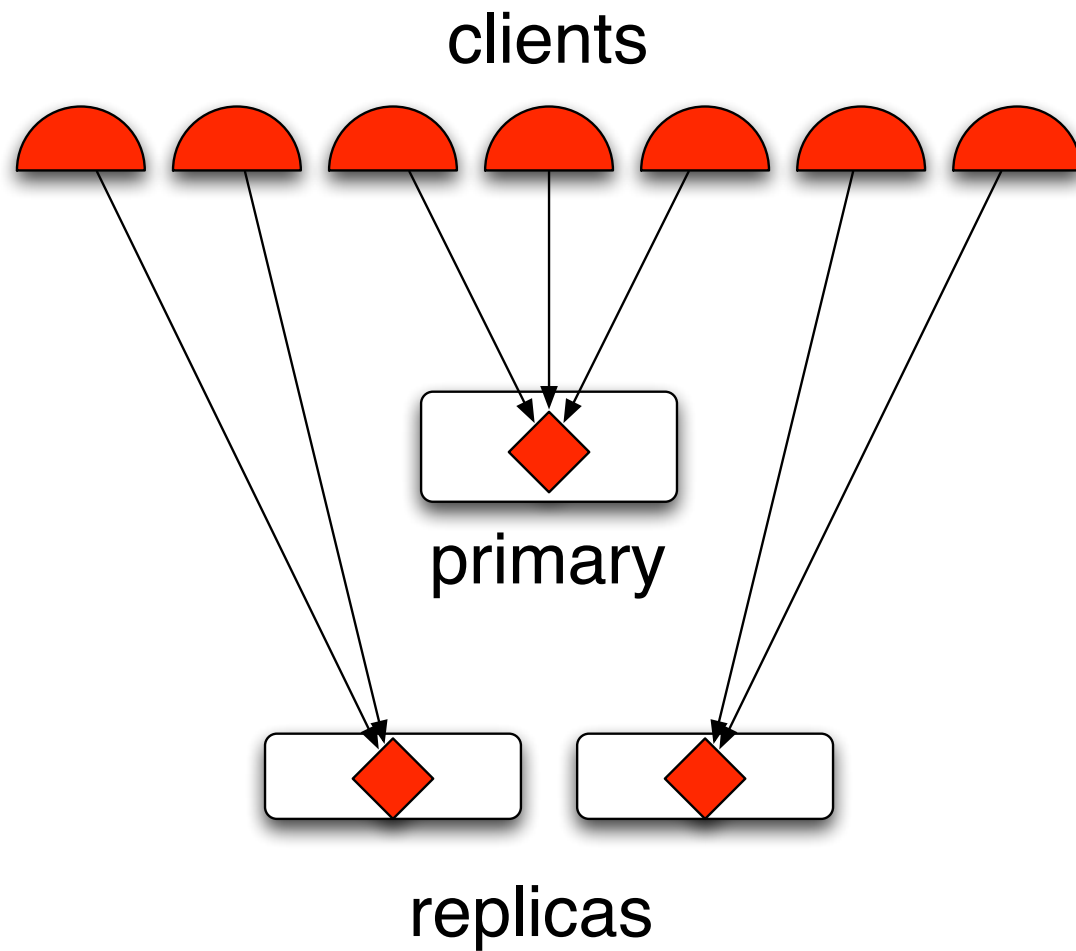


# Write flash crowd





# Write shedding



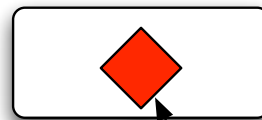
# Write shedding

clients

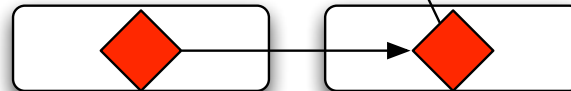


Serialization:

Easy with POSIX  
HPC I/O extensions,  
complicated otherwise



primary



replicas

# Preliminary Results

Throughput with overloaded OSD 0

