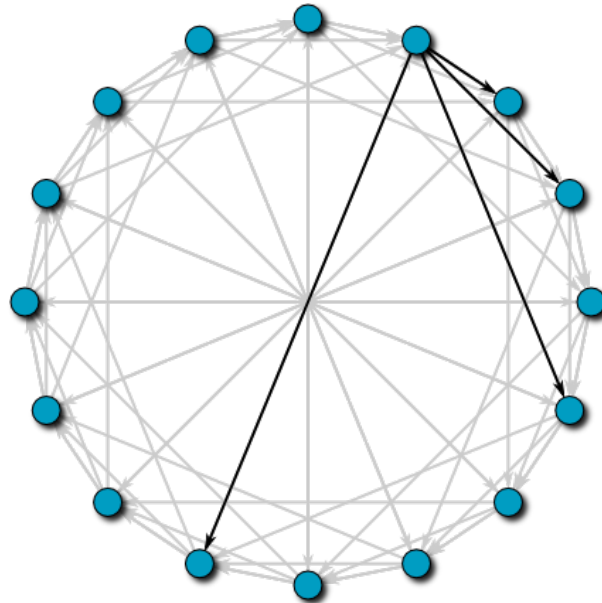
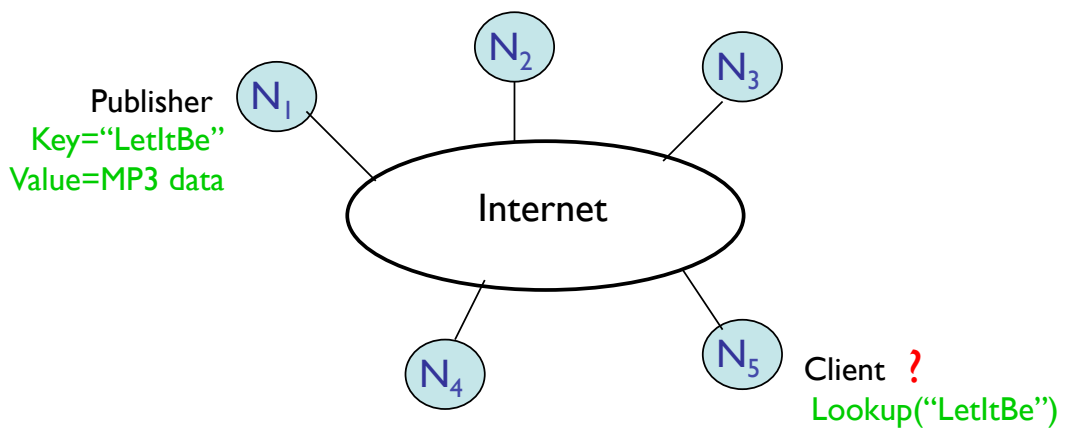


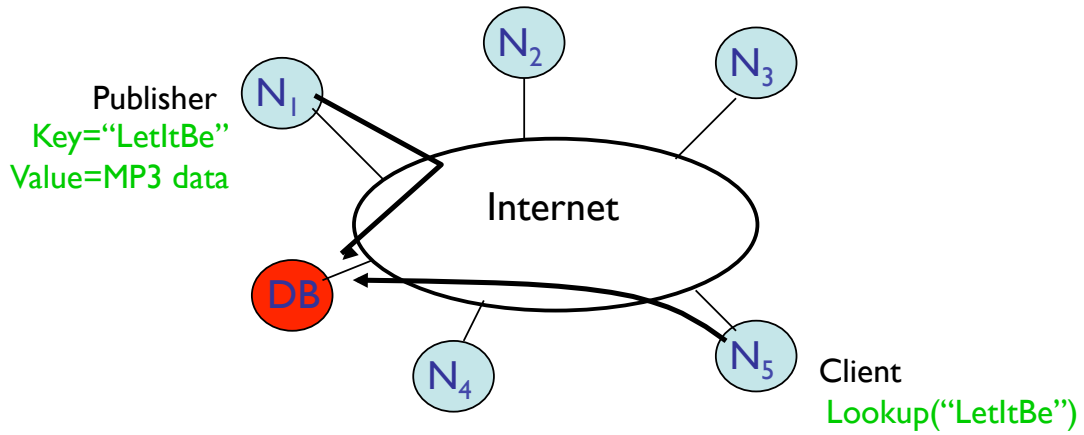
Distributed Hash Tables & Chord



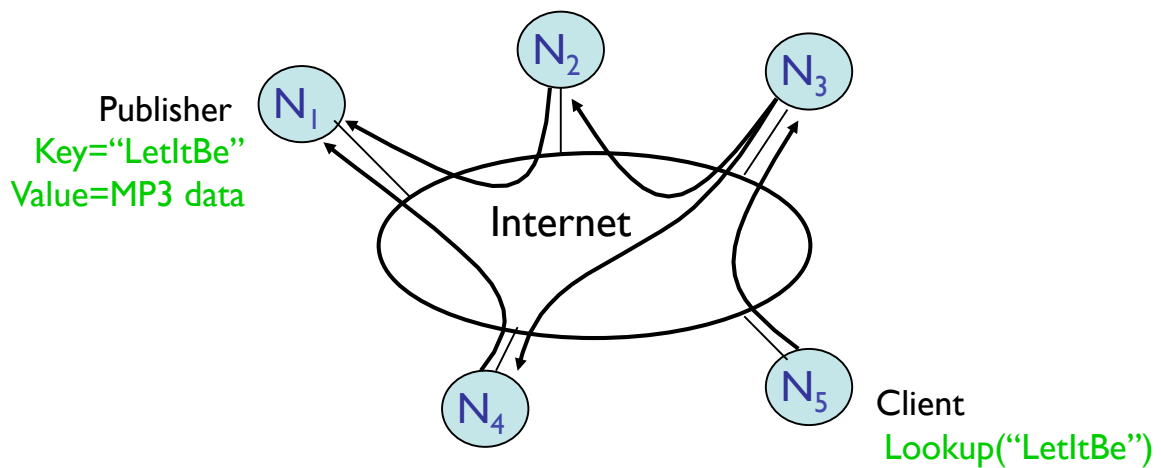
P2P Lookup



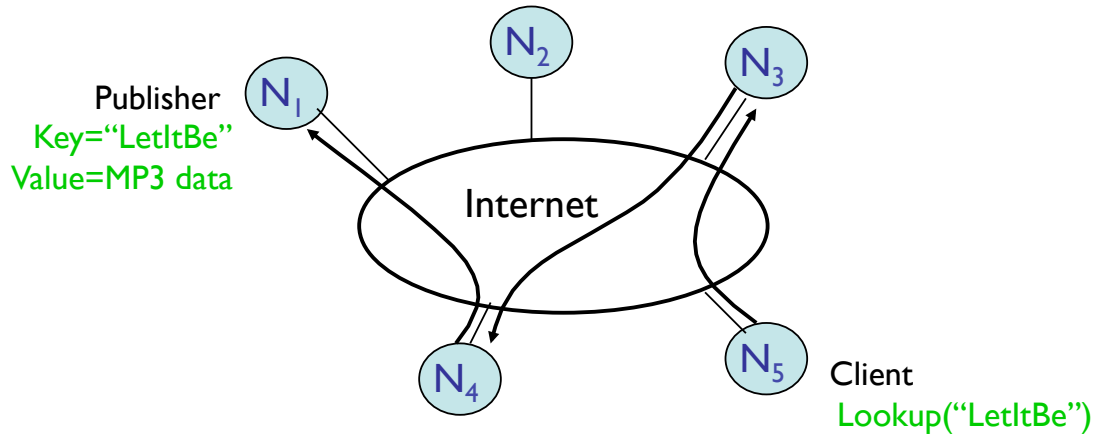
Centralized Lookup



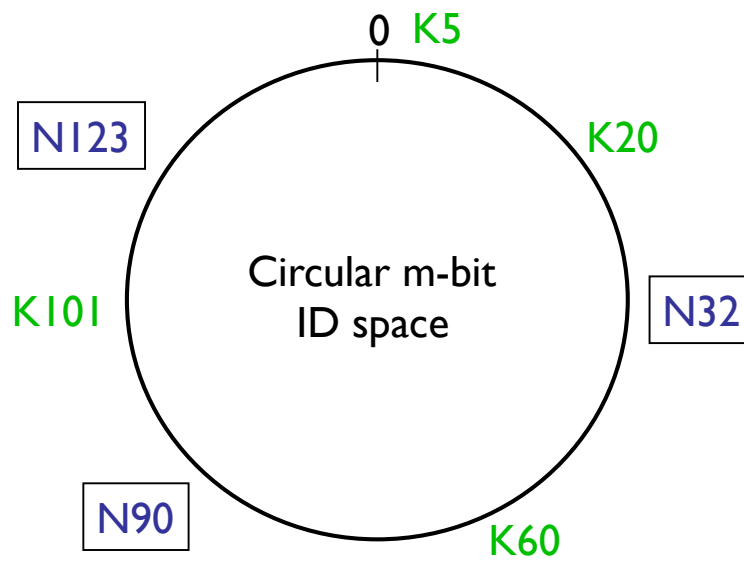
Flooding



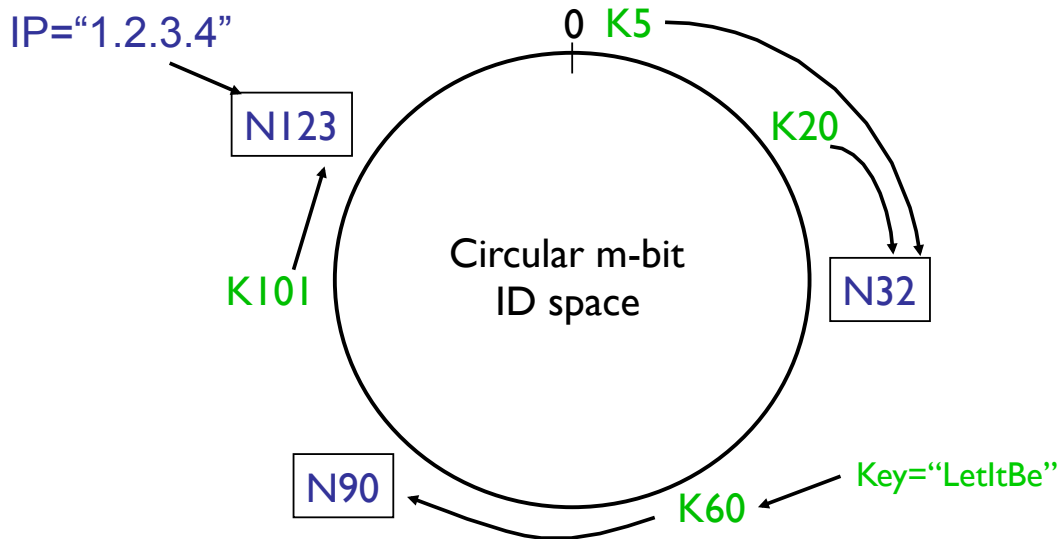
Routed Messages



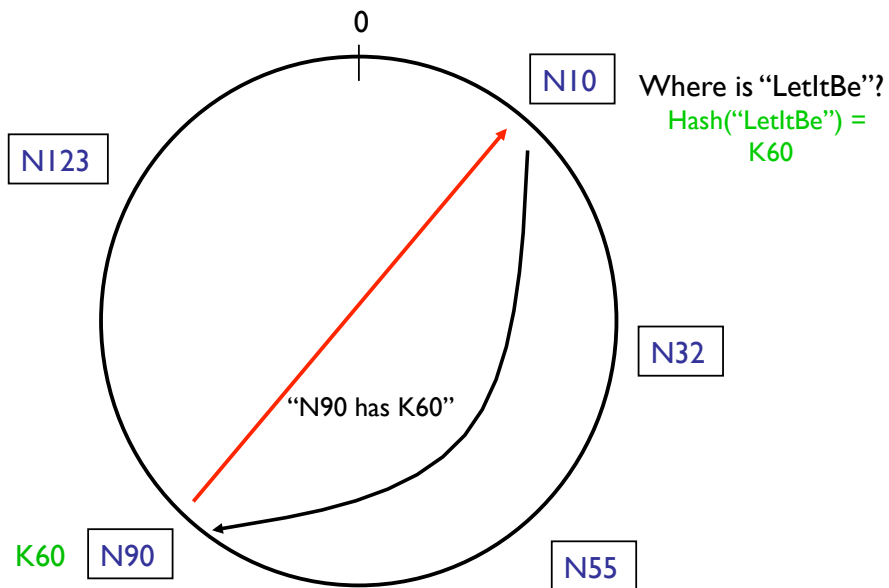
Identifier Circle



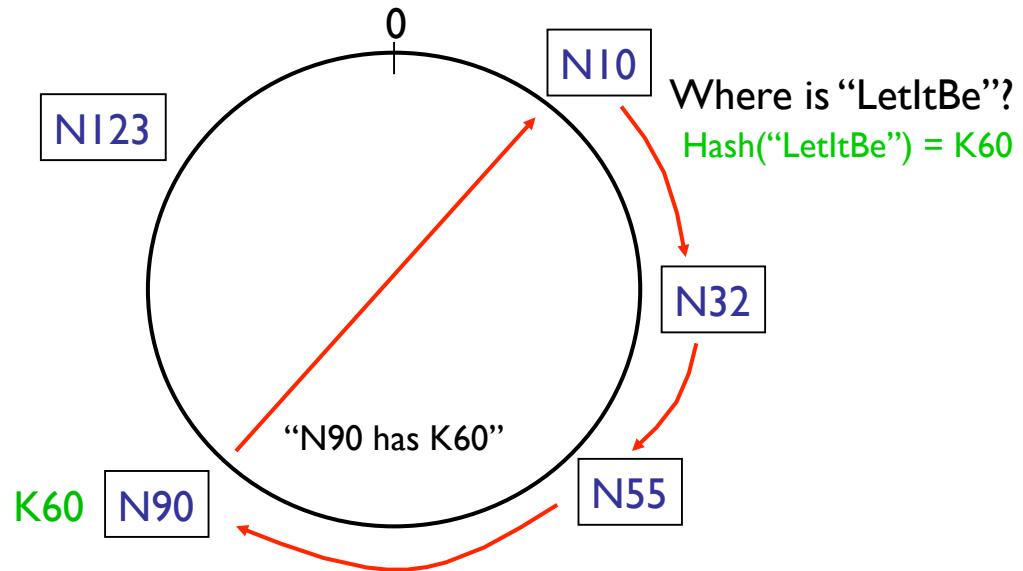
Identifier Successors



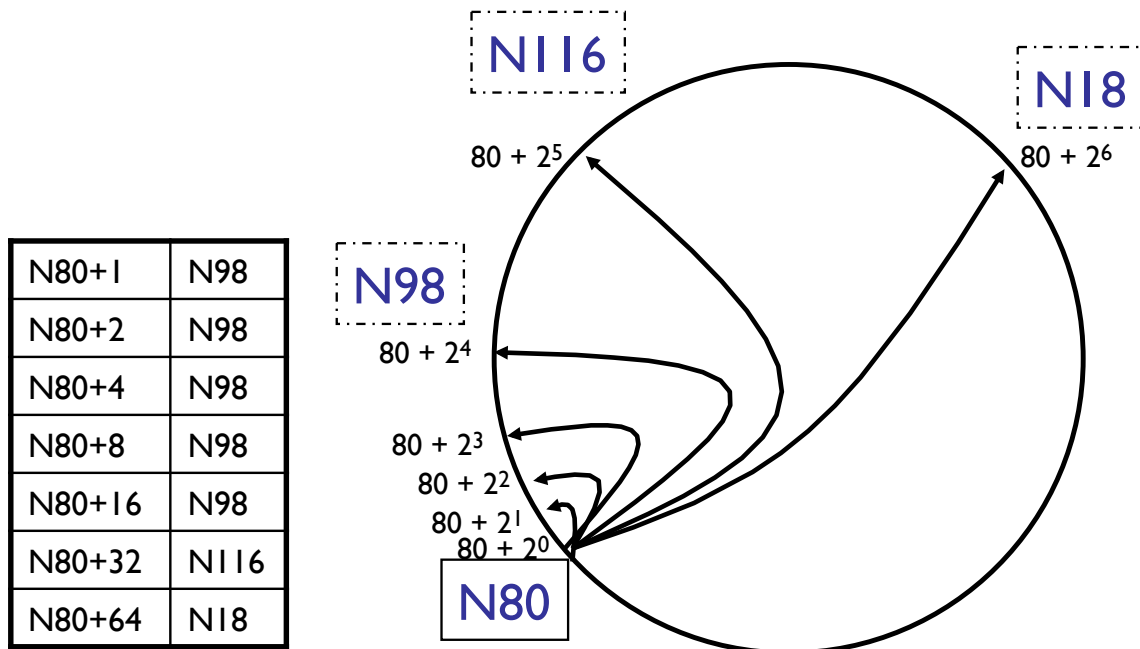
Lookup Example



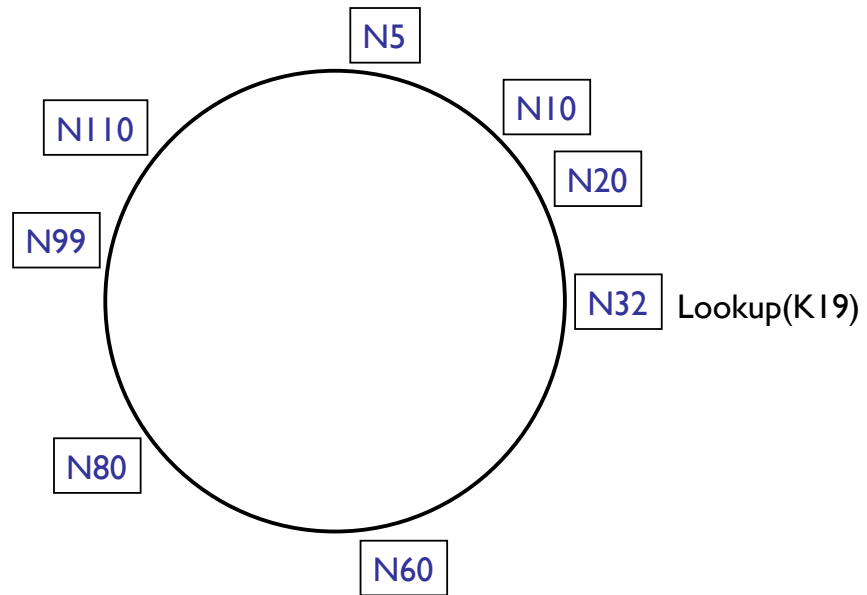
Locating Keys: Simple Lookup



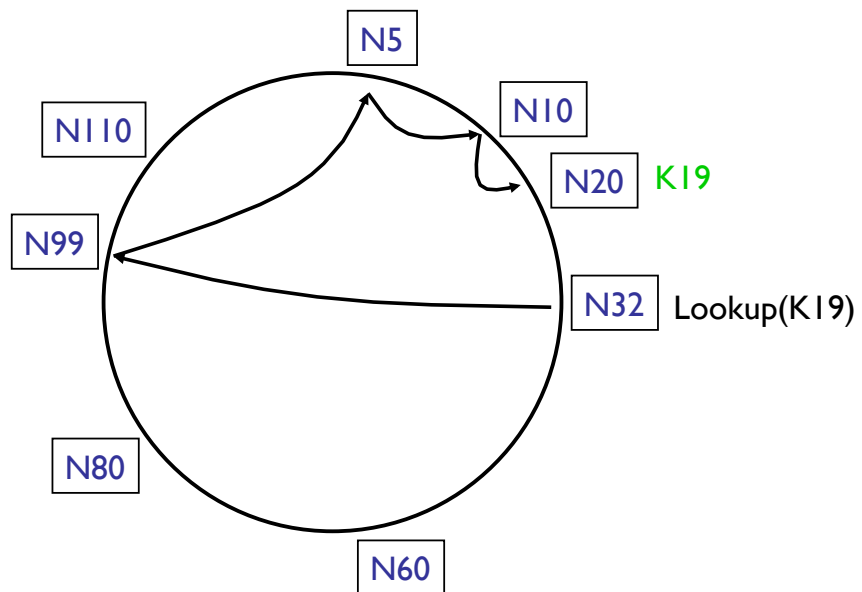
Locating Keys: Finger Tables



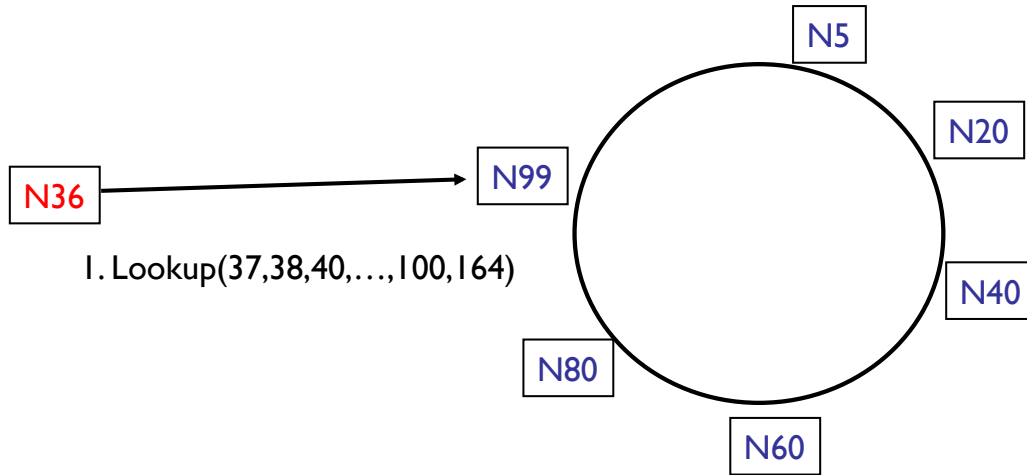
Chord Lookup



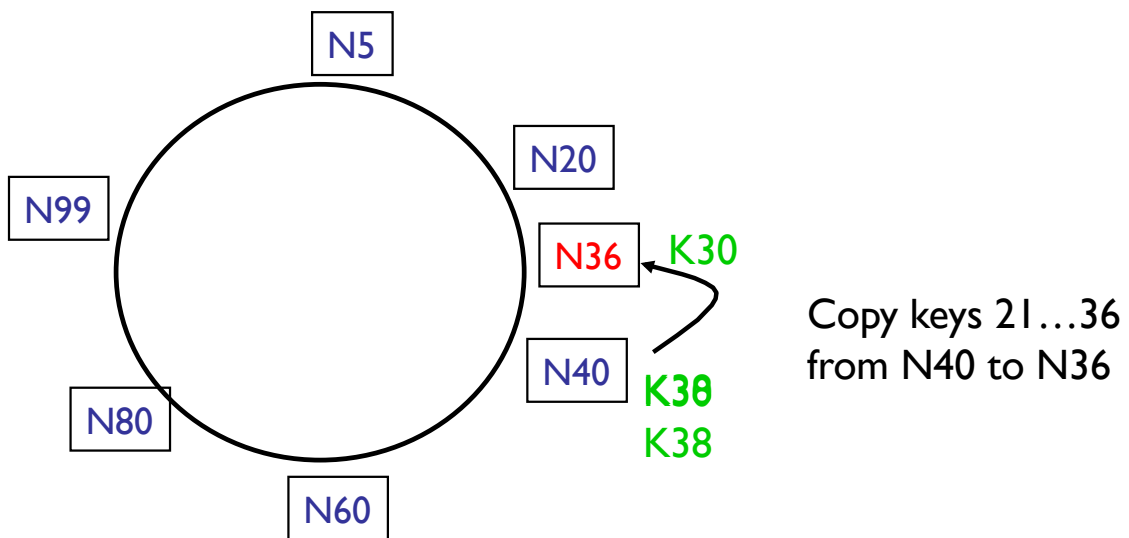
Chord Lookup



Joining the Ring



Joining the Ring

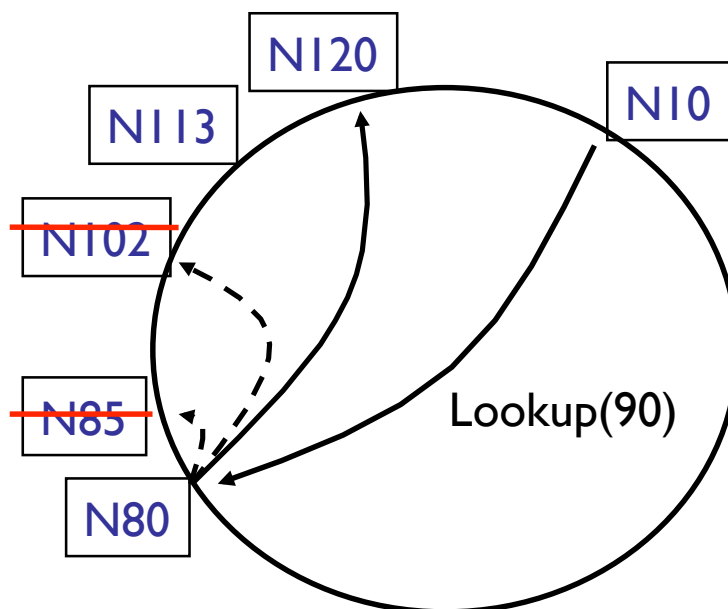


Consistent Hashing

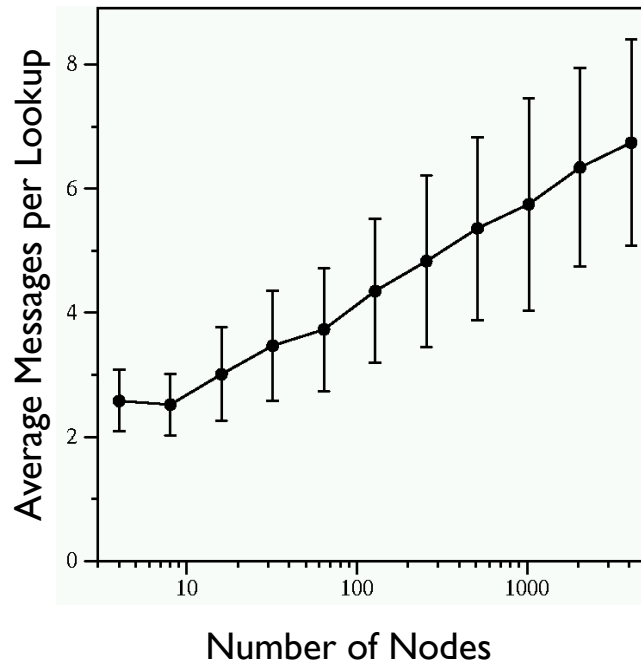
N nodes (buckets), K keys

	Regular Hash Table	Consistent Hashing (DHT)
add/remove key (i.e., lookup)	$O(1)$	$O(\log N)$
add/remove node (bucket)	$O(K)$	$O(K/N + \log N)$

Fault Tolerance



Evaluation: Lookup



Evaluation: Robustness

