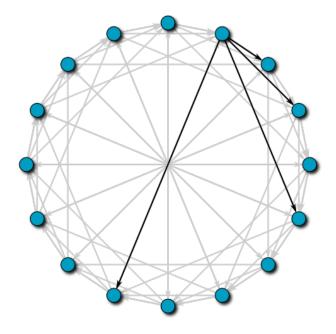
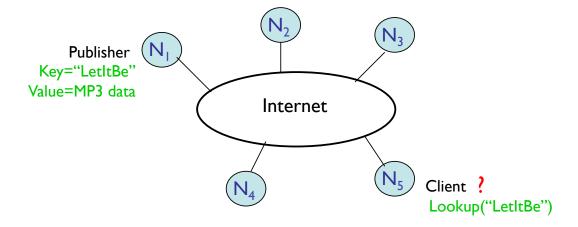
### **Distributed Hash Tables & Chord**

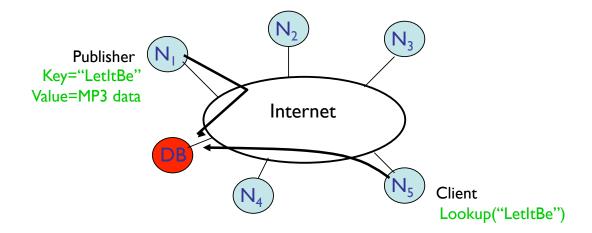


Bowdoin Sean Barker 1

# P2P Lookup

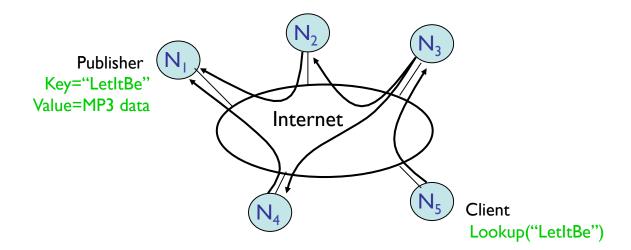


### **Centralized Database Lookup**

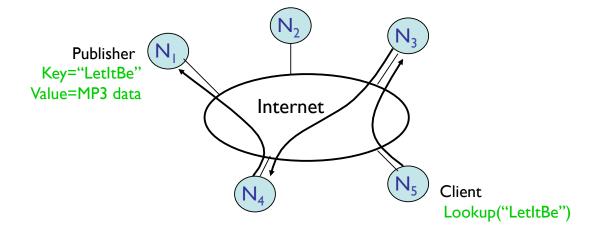


Bowdoin Sean Barker 3

# Flooding

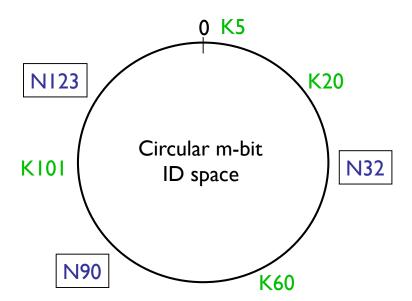


### **Routed Messages**

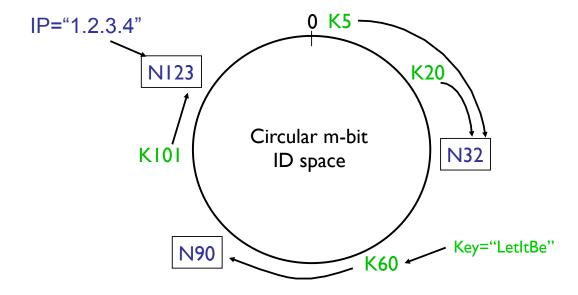


Bowdoin Sean Barker 5

### **Identifier Circle**

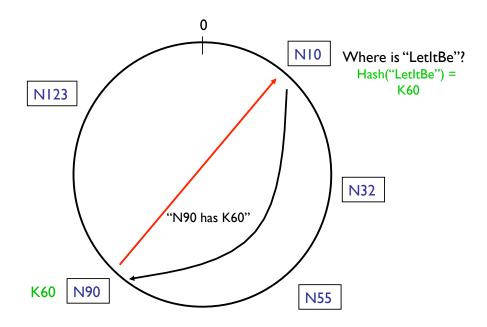


### **Identifier Successors**

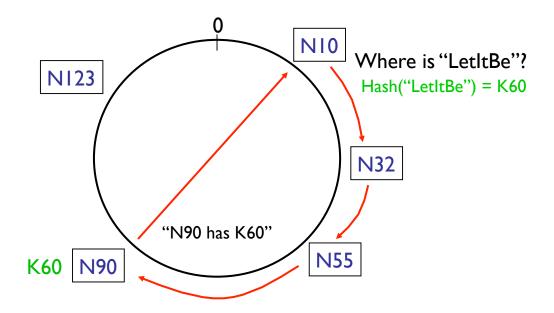


Bowdoin Sean Barker 7

# **Lookup Example**

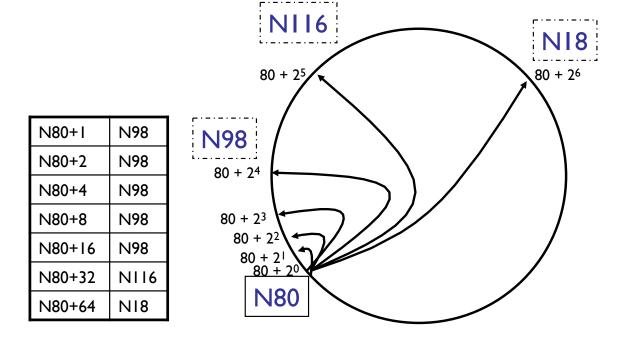


#### **Locating Keys: Simple Lookup**

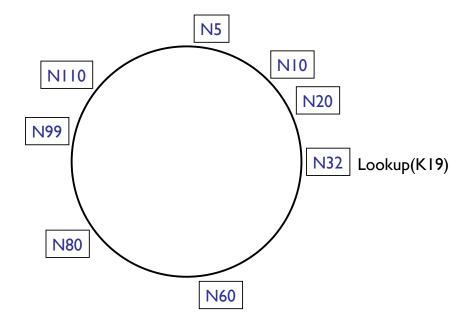


Bowdoin Sean Barker 9

#### **Locating Keys: Finger Tables**

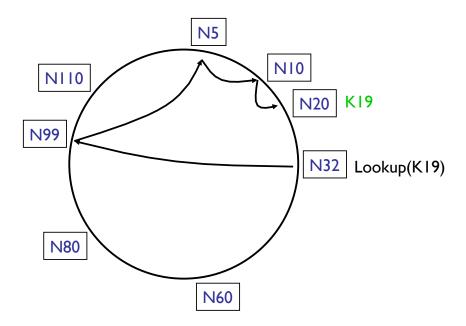


# **Chord Lookup**

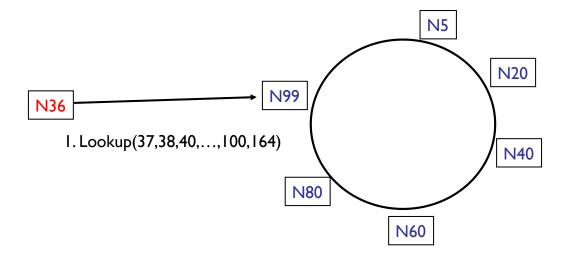


Bowdoin Sean Barker 11

# **Chord Lookup**

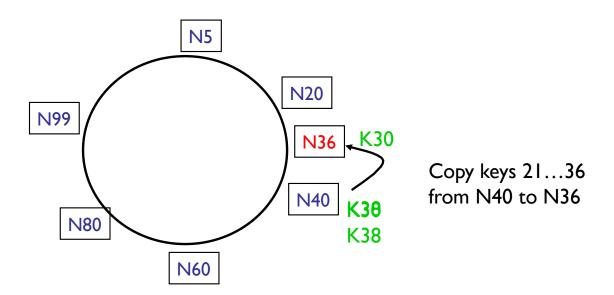


# Joining the Ring



Bowdoin Sean Barker 13

# **Joining the Ring**



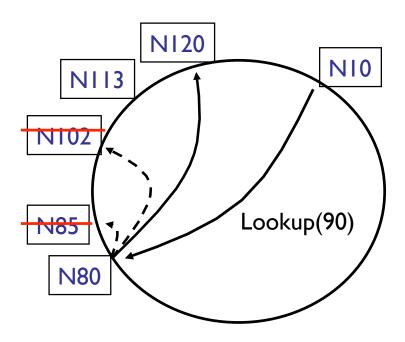
# **Consistent Hashing**

#### N nodes (buckets), K keys

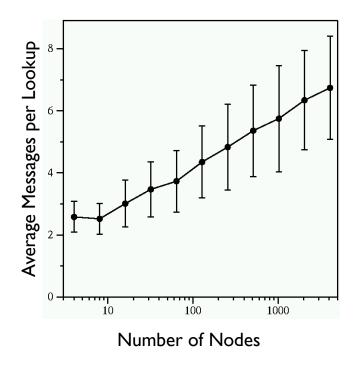
	Regular Hash Table	Consistent Hashing (DHT)
add/remove key (i.e., lookup)	O(1)	O(log N)
add/remove node (bucket)	O(K)	O(K/N + log N)

Bowdoin Sean Barker 15

### **Fault Tolerance**

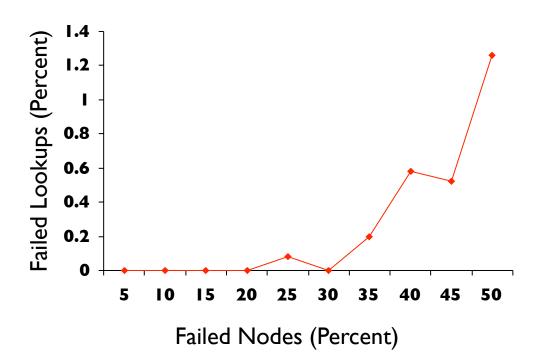


# **Evaluation: Lookup**



Bowdoin Sean Barker 17

### **Evaluation: Robustness**



Bowdoin Sean Barker 18