Chord: A Scalable Peer-to-peer Lookup Protocol for Internet Applications

Alessandro Cacco
mat. 203345
alessandro.cacco@studenti.unitn.it

Andrea Ferigo
mat. 207486
andrea.ferigo@studenti.unitn.it

Enrico Zardini
mat. 207465
enrico.zardini@studenti.unitn.it

1 Introduction

This work aims at illustrating an implementation of *Chord*, a scalable distributed lookup protocol described in [1]. Basically, *Chord* provides a primitive, i.e. *lookup*, that allows to determine the responsible of a key in an efficient way. Hence, it represents a great solution to the data location problem: each data item needs just to be associated to a key and stored in the node the key maps to.

Moreover, *Chord* exploits consistent hashing to assign keys to nodes - in order to keep the load balanced - and requires that each node maintains information about only a few other nodes. Therefore, it scales well to large numbers of nodes without affecting performance. Actually, *Chord* adapts effectively also in dynamic environments with frequent joins and leaves thanks to a simple stabilization algorithm.

Starting from this, Section 2 will describe in detail the implementation, Section 3 will present the graphical simulator that has been developed to show the protocol's functioning and Section 4 will describe the simulations that have been performed and the results obtained.

2 Implementation

3 Simulator

4 Analyses and Results

References

[1] I. Stoica, R. Morris, D. Liben-Nowell, D. Karger, F. Kaashoek, F. Dabek and H. Balakrishnan, "Chord: A scalable peer-to-peer lookup protocol for internet applications", *IEEE Transactions on Networking*, vol. 11, Feb. 2003. DOI: 10.1109/TNET.2002.808407.