

Proposal

Andrew Rosen

September 19, 2014

Contents

1	Hypotheses	3
1.1	DHTs are better for distributed computing under many circumstances . .	3
	Robustness and Fault-Tolerance	3
	Load Balancing	3
	Scalability	3
	Heterogeneity	3
	Ease of Adding, Removing, Maintaining, and money related factors	3
1.1.1	Different or subproblem: Certain DHTs are better at one applica- tion than another due to differences	3
	Design Differences Impacts	3
	Geometries	3
	Implementation Differences Impacts	3
	Recursive or iterative seek	3
2	Justification and Why I Think It's Cool	4
2.0.2	DHTs well understood	4
2.0.3	DHTs are Highly used for their intended purposed	4
	Bittorrent, WoW	4
2.0.4	DHTs are being effectively leveraged for other things besides file sharing already	4
	PaaS	4
	Load Balancing in the cloud	4
	Computing is a natural extension	4
3	Possible Experiments and Applications	5
3.0.5	Map Reduce	5
	ChordReduce	5
	Comparison of MapReduce paradigm on different DHTs	5
3.0.6	High End Computing	5
	Metadata Management	5
	Robustness	5
3.0.7	Graph Processing on a DHT	5
	Embedding	5
	Distribute the work for solving a graph on a DHT	5

	Comparison to well established or state of the art methods . . .	5
3.0.8	Machine Learning Problems on A DHT	5
	Bayesian Learning	5
3.0.9	DHTs as a volunteer Platform	5
4	DHT Background	6

Chapter 1

Hypotheses

1.1 DHTs are better for distributed computing under many circumstances

Distributed Hash Tables (DHTs) are traditionally used as the backbone of P2P file-sharing applications and thus

Robustness and Fault-Tolerance

Load Balancing

Scalability

Heterogeneity

Ease of Adding, Removing, Maintaining, and money related factors

1.1.1 Different or subproblem: Certain DHTs are better at one application than another due to differences

Design Differences Impacts

Geometries

Implementation Differences Impacts

Recursive or iterative seek

Chapter 2

Justification and Why I Think It's Cool

2.0.2 DHTs well understood

2.0.3 DHTs are Highly used for their intended purposed

Bittorrent, WoW

**2.0.4 DHTs are being effectively leveraged for other things besides
file sharing already**

PaaS

Load Balancing in the cloud

Computing is a natural extension

Chapter 3

Possible Experiments and Applications

3.0.5 Map Reduce

ChordReduce

Comparison of MapReduce paradigm on different DHTs

3.0.6 High End Computing

Metadata Management

Robustness

3.0.7 Graph Processing on a DHT

Embedding

Distribute the work for solving a graph on a DHT

Comparison to well established or state of the art methods

3.0.8 Machine Learning Problems on A DHT

Bayesian Learning

3.0.9 DHTs as a volunteer Platform

Chapter 4

DHT Background