



中山大學
SUN YAT-SEN UNIVERSITY



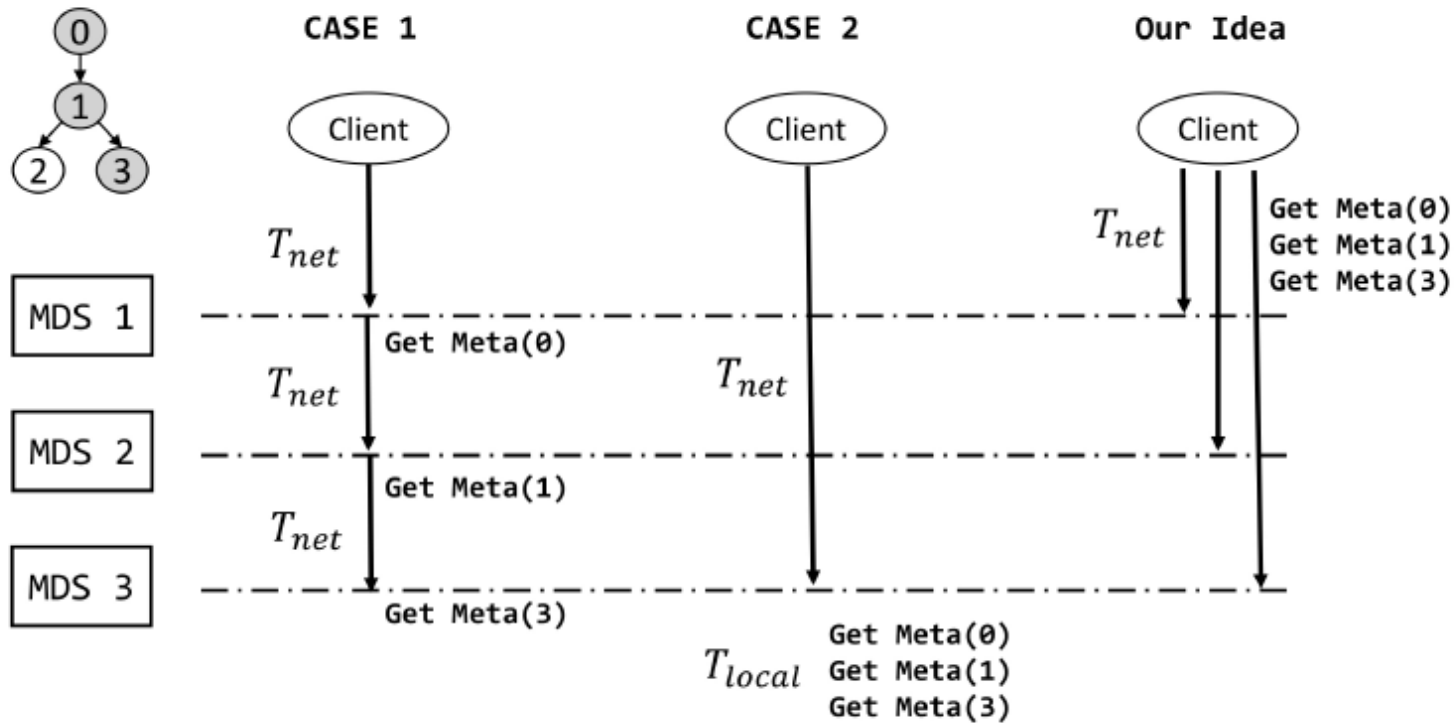
国家超级计算广州中心
NATIONAL SUPERCOMPUTER CENTER IN GUANGZHOU

GramFS: The Graph Model-based Namespace Management of Large-scale Distributed File Systems

Hongbo Li, Yubo Liu, Zhiguang Chen, Nong Xiao

Sun Yat-Sen University

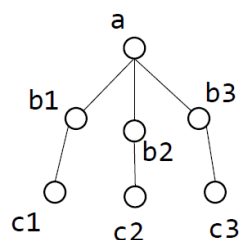
- Background and Motivation
- GramFS Design
- Preliminary Evaluation



CASE1	CASE2
IndexFS, CephFS, Lustre,...	LocoFS, ShardFS

Client Active & Metadata Server (MDS) Active

Tree-Based

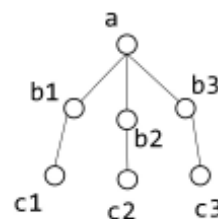


a	Meta(a)
b1	Meta(b1)
b2	Meta(b2)
b3	Meta(b3)
c1	Meta(c1)
...	...

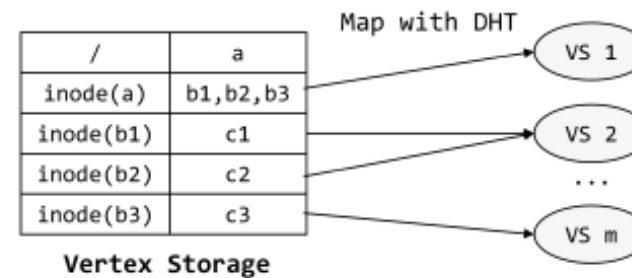
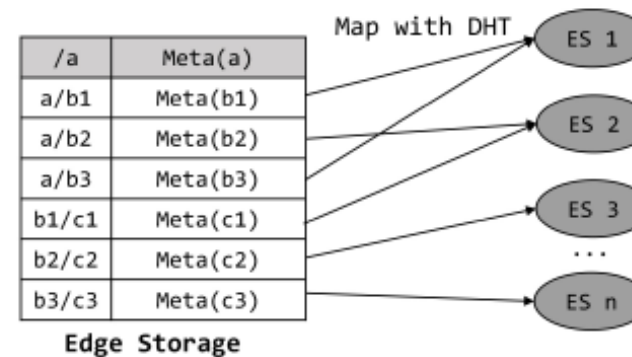
(a)

a	Meta(a)
a/b1	Meta(b1)
a/b1/c1	Meta(c1)
a/b2	Meta(b2)
a/b2/c2	Meta(c2)
...	...

(b)



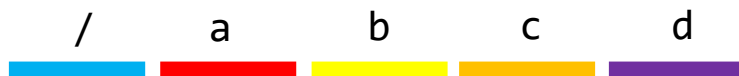
Graph-Based



Lookup /a/b/c/d

time

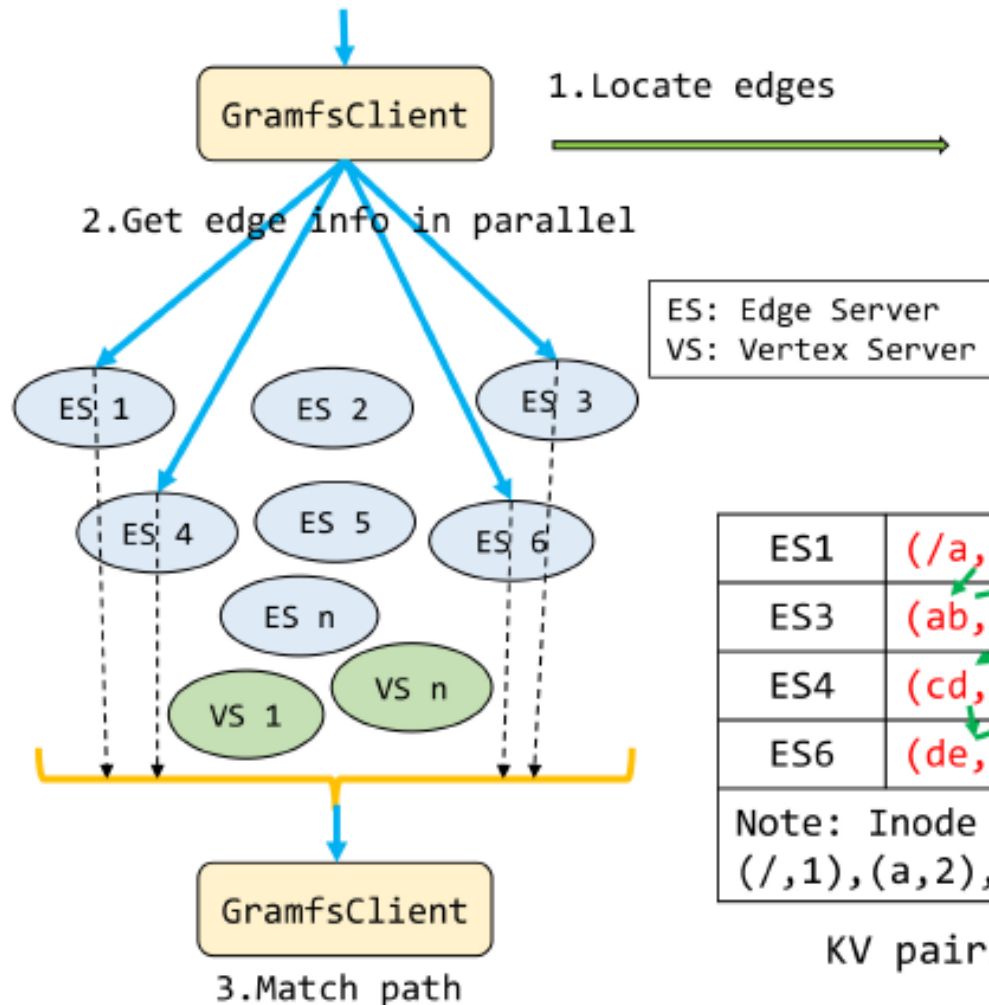
Tree-Based



Graph-Based



lookup : /a/b/c/d/e/f

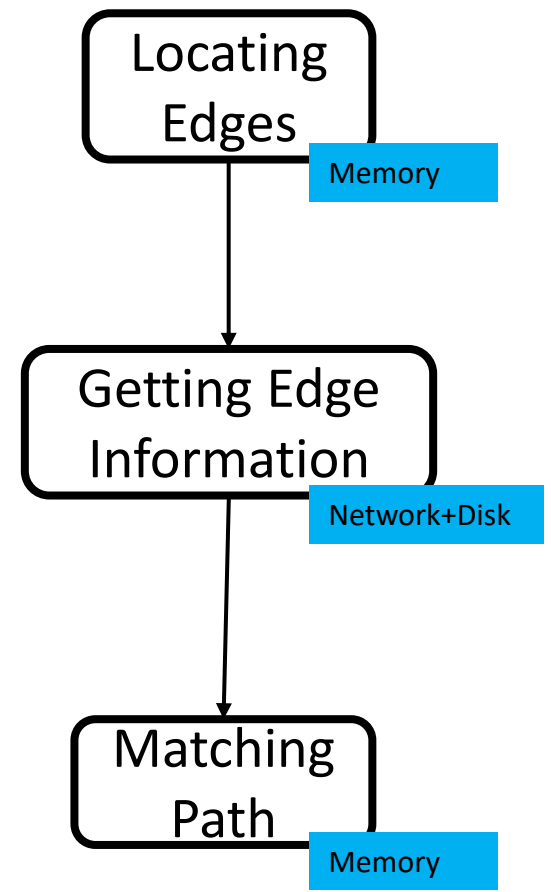


ES1:/a, bc
ES3:ab, ef
ES4:cd
ES6:de

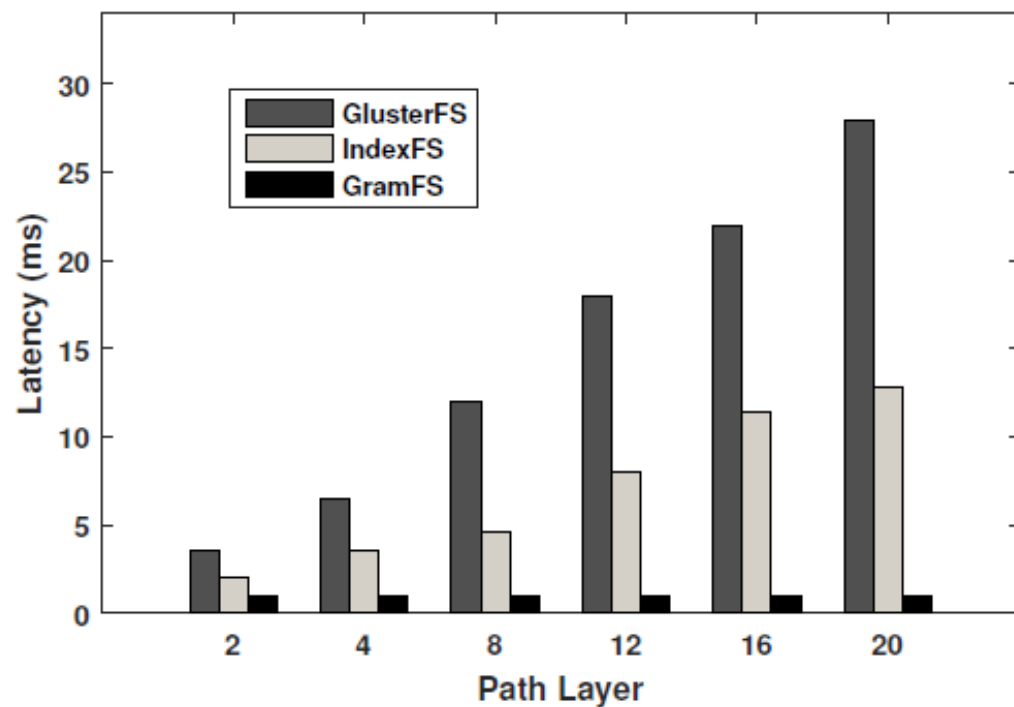
ES1	(/a,1), (bc,3), (bc,11)
ES3	(ab,2), (ab,12), (ef,6), (ef,17)
ES4	(cd,4), (cd,21), (cd,25)
ES6	(de,5)

Note: Inode is numbered as :
(/,1), (a,2), (b,3), (c,4), (d,5), (e,6), (f,7)

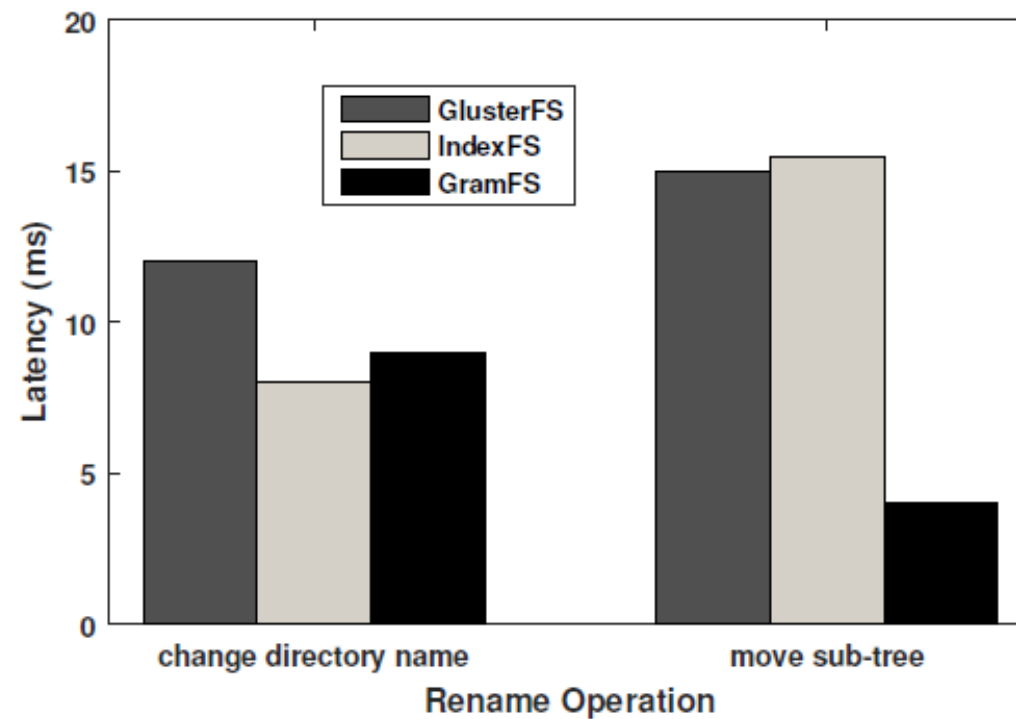
KV pairs return from Edge Servers



Access



Rename



12.8 times



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Thanks!

國立廣東大學成立訓詞
博審慎明篤
學問思辨行
孫文
中華民國十三年十一月

Email: lihb23@mail2.sysu.edu.cn

