

Small-Proof Big-Data Benchmark Result

4/30/2013

Benchmark Result

- Parameters
 - Security Parameter k : 32
 - Max size of the stream n : 128
- Summary: Prover Update() rate
 - Native Linux
 - w/ MySQL: 1.6 sec/update
 - w/o MySQL: 0.8 ms/update
 - VM Linux
 - w/ MySQL: 70 ms/update
 - w/o MySQL: 1 ms/update

Benchmark Result

- Full Implementation (w/ MySQL)
 - Native Linux (Mint Linux 13)

#Update / #Query		100 / 20	100 / 40	200 / 40
Prover	Update	157.846	166.264	337.752
	Query	0.132	0.328	0.342
Verifier	Update	0.071	0.072	0.143
	Verify	0.032	0.065	0.069

- VM Linux (Mint Linux 13)

#Update / #Query		100 / 20	100 / 40	200 / 40	2000 / 40
Prover	Update	6.796	6.975	13.847	249.878
	Query	0.137	0.396	0.305	2.482
Verifier	Update	0.102	0.095	0.19	1.525
	Verify	0.044	0.084	0.076	0.171

Benchmark Result

- Minimal Implementation (w/o MySQL)
 - Native Linux (Mint Linux 13)

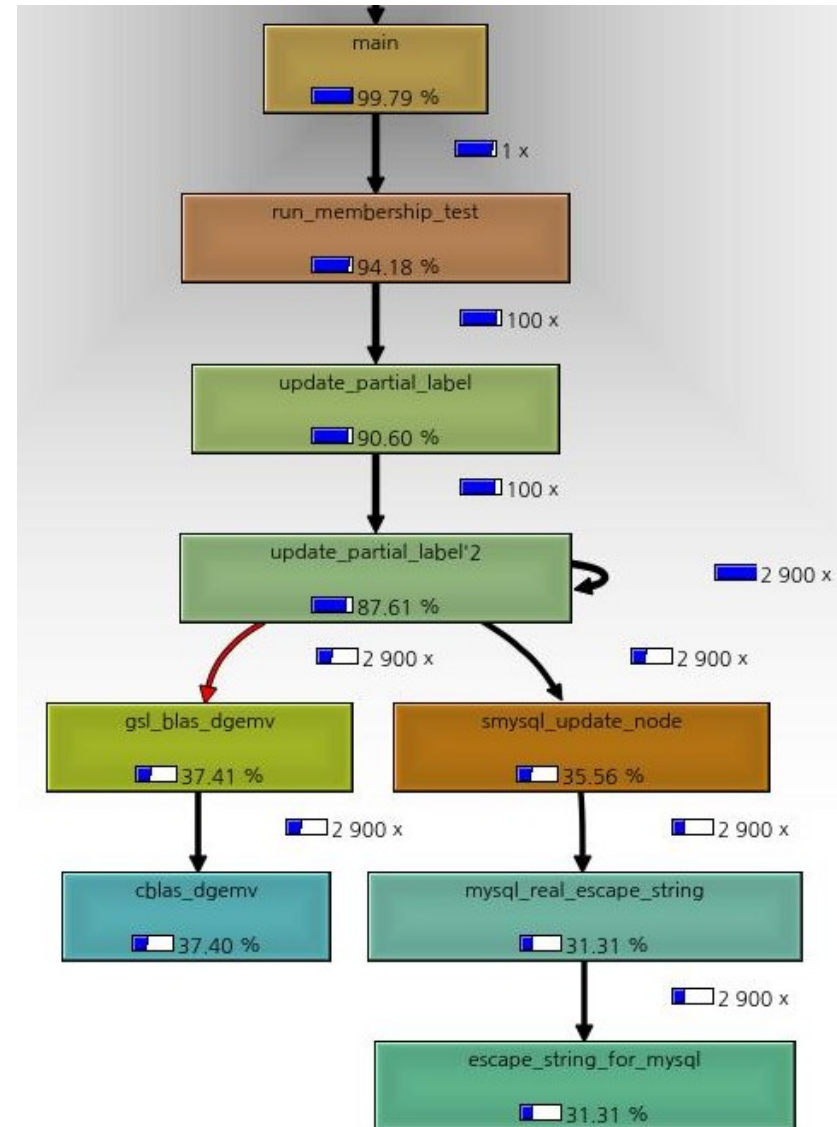
#Update / #Query		100 / 20	100 / 40	200 / 40	2000 / 40
Prover	Update	0.081	0.079	0.161	1.644
	Query	0.009	0.018	0.019	0.019
Verifier	Update	0.069	0.069	0.139	1.387
	Verify	0.031	0.062	0.062	0.062

- VM Linux (Mint Linux 13)

#Update / #Query		100 / 20	100 / 40	200 / 40	2000 / 40
Prover	Update	0.113	0.104	0.203	2.049
	Query	0.022	0.04	0.041	0.035
Verifier	Update	0.103	0.09	0.182	1.684
	Verify	0.041	0.078	0.082	0.1

Prover Analysis

- Native Linux, w/ MySQL
 - Matrix-Vector product for label update (37.41%)
 - Vector operation: Binary representation for label-to-digest conversion (4.48%)
 - Data conversion for MySQL (31.31%)



Prover Analysis

- VM Linux, w/ MySQL
 - Matrix-Vector product for label update (38.75%)
 - Vector operation: Binary representation for label-to-digest conversion (4.67%)
 - Data conversion for MySQL (33.60%)

Prover Analysis

- VM Linux, w/o MySQL
 - Matrix-Vector product for label update (72.40%)
 - Vector operation: Binary representation for label-to-digest conversion (8.67%)
 - Vector operation: modulus (6.43%)