Separating Agreement from Execution for Byzantine Fault Tolerant Services

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ABSTRACT

Categories and Subject Descriptors

General Terms

Keywords

1. INTRODUCTION

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SOSP'03, October 19–22, 2003, Bolton Landing, New York, USA.
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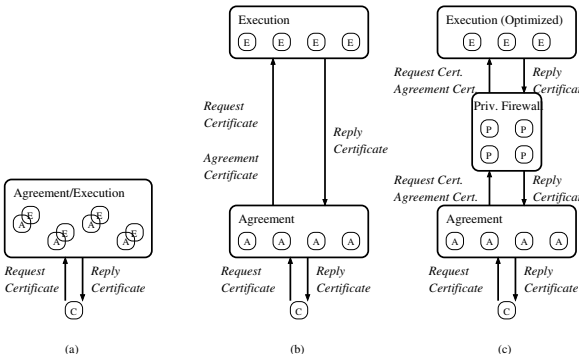
2. SYSTEM MODEL AND ASSUMPTIONS



3. SEPARATING AGREEMENT FROM EXECUTION

3.1.2 Agreement cluster behavior

3.1 Inter-cluster protocol

3.1.1 Client behavior

3.1.4 Non-determinism

3.1.3 Execution cluster behavior

3.2 Internal agreement cluster protocol

3.3 Internal execution cluster protocol

3.2.1 Message queue design

3.3.1 Liveness and retransmission

3.3.2 Checkpoints and garbage collection

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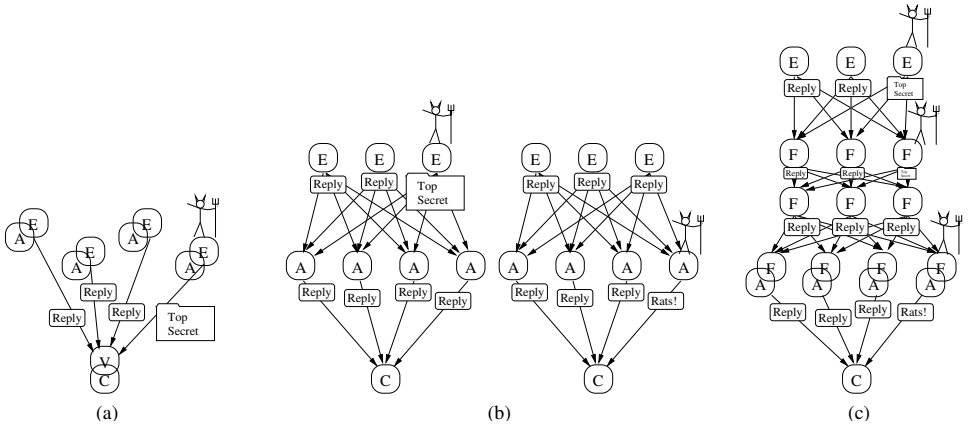
3.4 Correctness

4. PRIVACY FIREWALL



(a) (b) (c)

4.1 Protocol definition

4.2.2 Eliminating non-determinism

4.2.3 Restricting communication

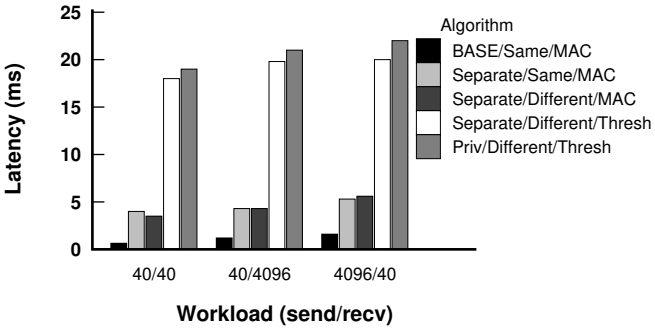
4.2 Design rationale

4.2.1 Redundant filters

4.3 Filter properties and limitations

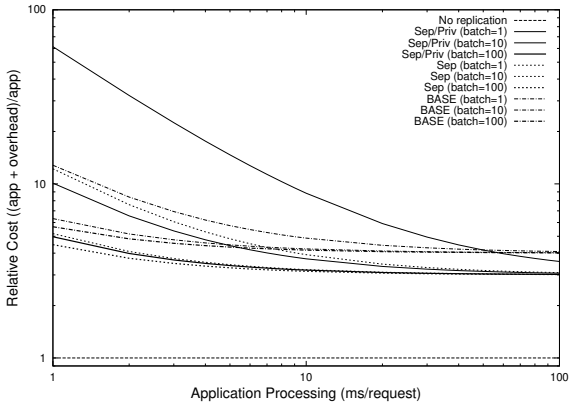
5. EVALUATION

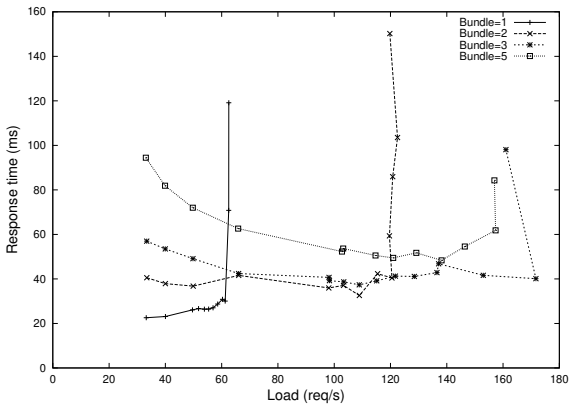
5.1 Prototype implementation



5.2 Latency

5.3 Throughput and cost


100
10
1
1
10
100
Relative Cost ((app + overhead)/app)
Application Processing (ms/request)
No replication
Sep/Priv (batch=1)
Sep/Priv (batch=10)
Sep/Priv (batch=100)
Sep (batch=1)
Sep (batch=10)
Sep (batch=100)
BASE (batch=1)
BASE (batch=10)
BASE (batch=100)



6. RELATED WORK

5.4 Network file system

8. ACKNOWLEDGMENTS

9. REFERENCES

7. CONCLUSION