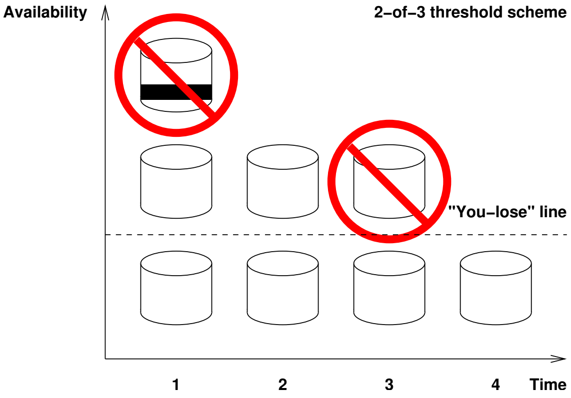
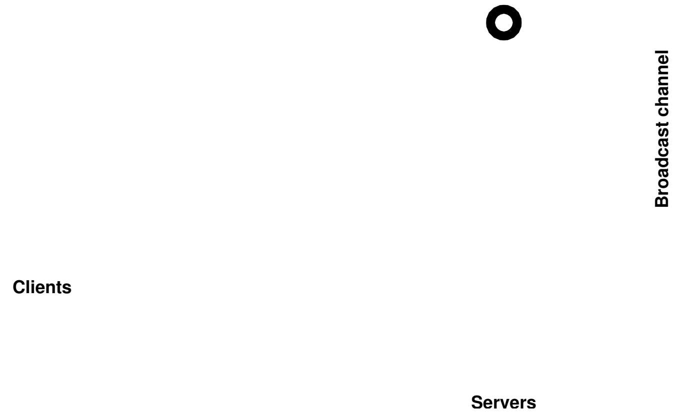
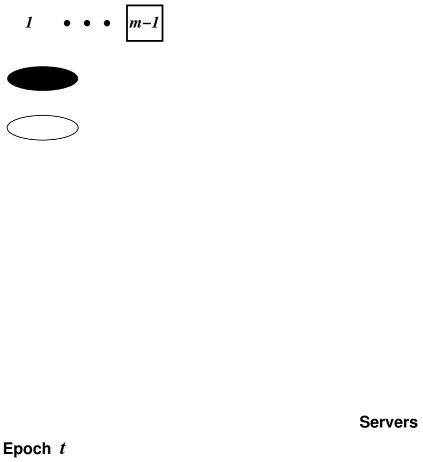

Availability
2–of–3 threshold scheme
"You–lose" line
1
2
3
4
Time


Broadcast channel
Clients
Servers



1
m−1
Servers
Epoch t

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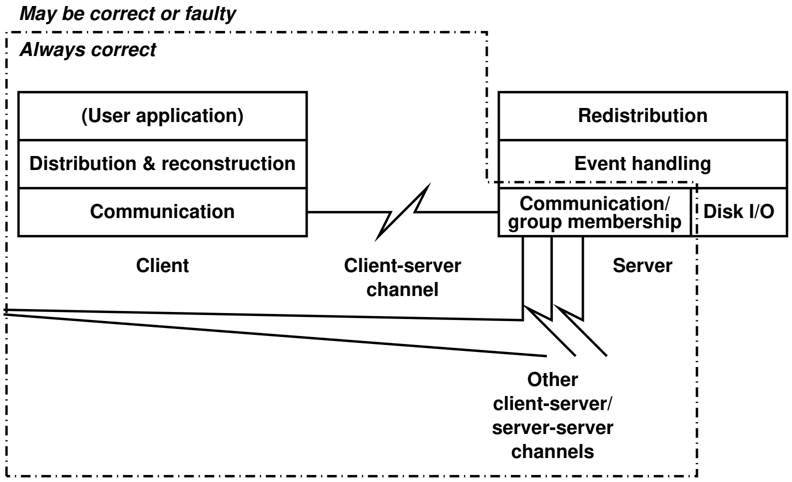
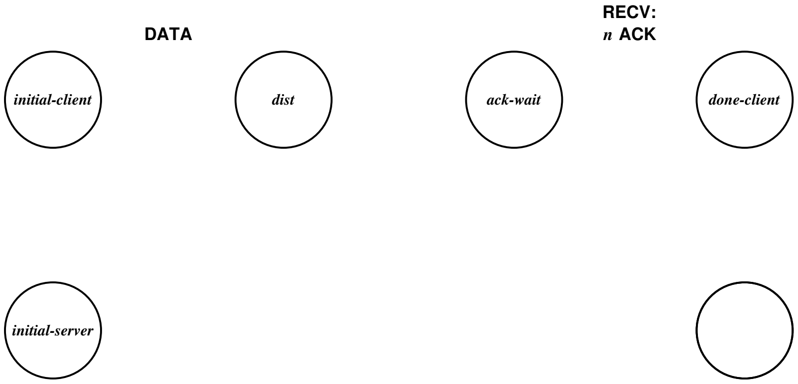
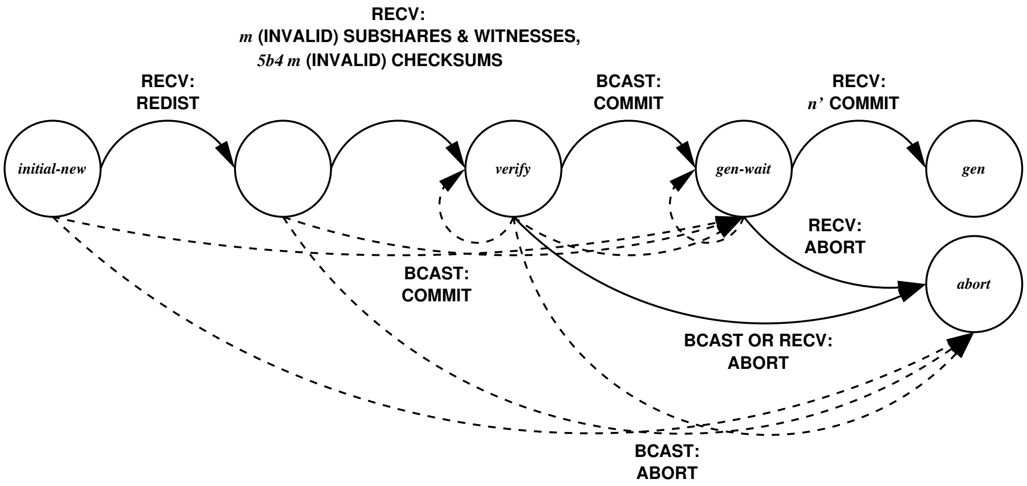
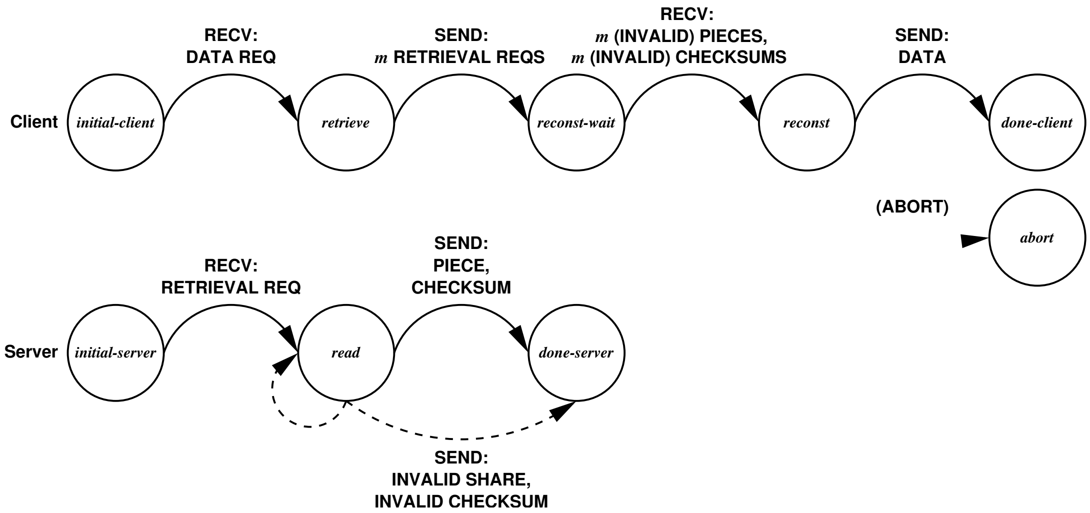
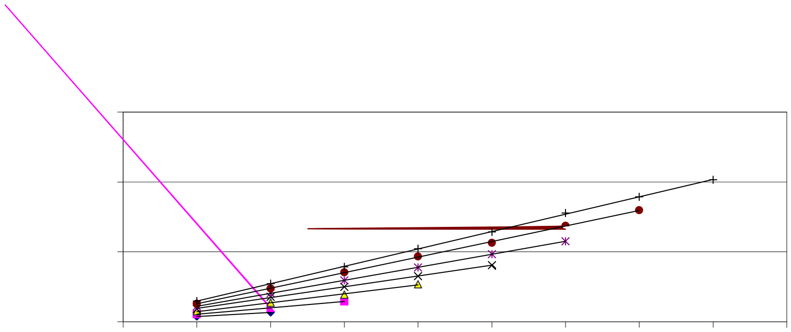
[redacted]

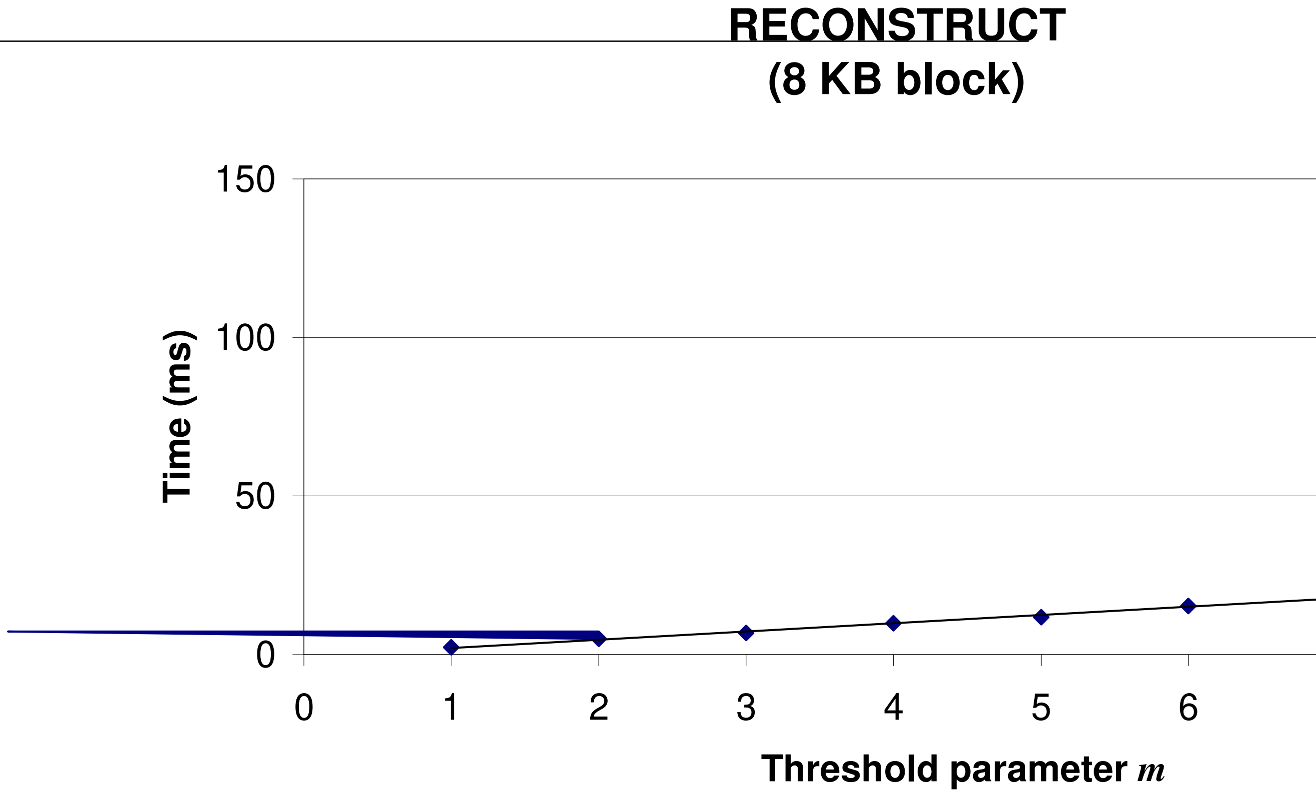

May be correct or faulty
Always correct
(User application)
Distribution & reconstruction
Communication
Client
Client-server channel
Redistribution
Event handling
Communication/ group membership
Disk I/O
Server
Other client-server/ server-server channels

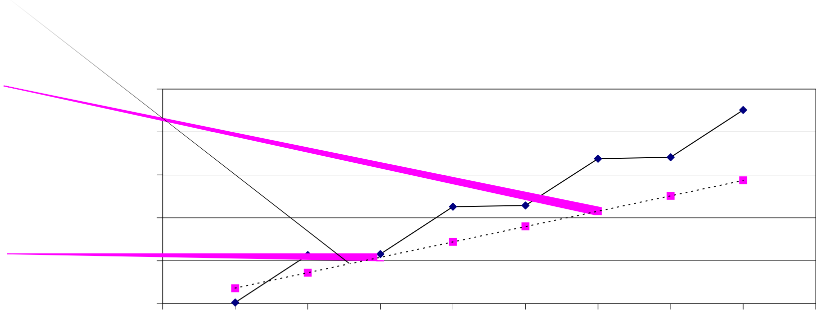

DATA
RECV:
n ACK
initial-client
dist
ack-wait
done-client
initial-server

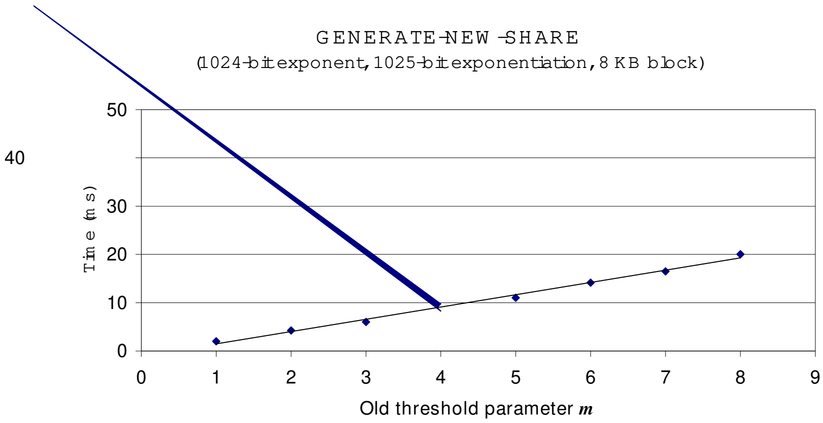

RECV:
m (INVALID) SUBSHARES & WITNESSES,
5b4 m (INVALID) CHECKSUMS
RECV:
REDIST
BCAST:
COMMIT
RECV:
n' COMMIT
initial-new
verify
gen-wait
gen
RECV:
ABORT
abort
BCAST:
COMMIT
BCAST OR RECV:
ABORT
BCAST:
ABORT

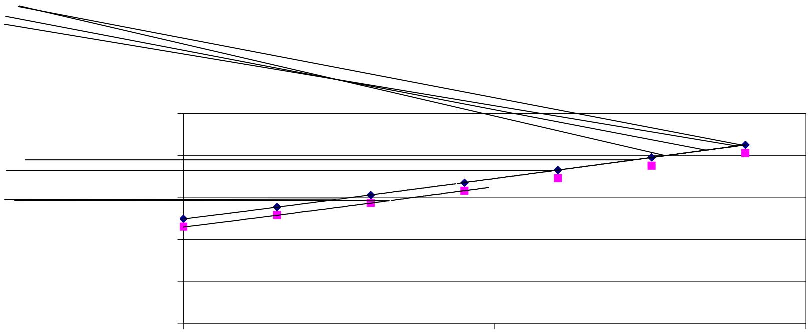

Client
initial-client
RECV:
DATA REQ
retrieve
SEND:
m RETRIEVAL REQS
reconst-wait
RECV:
m (INVALID) PIECES,
m (INVALID) CHECKSUMS
reconst
SEND:
DATA
done-client
(ABORT)
abort
Server
initial-server
RECV:
RETRIEVAL REQ
read
SEND:
PIECE,
CHECKSUM
done-server
SEND:
INVALID SHARE,
INVALID CHECKSUM

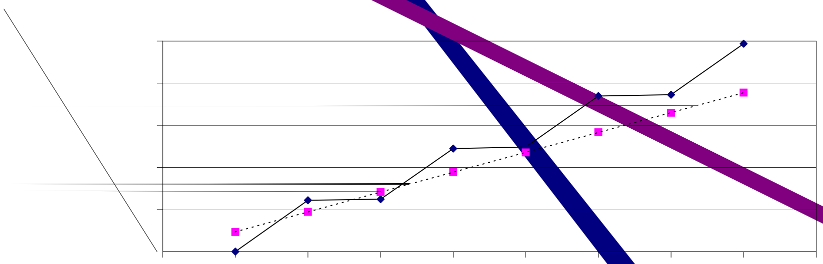


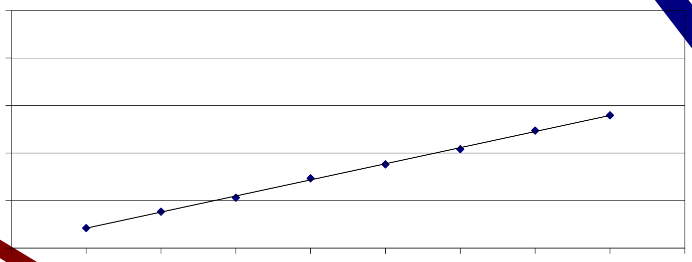

RECONSTRUCT
(8 KB block)
Time (ms)
150
100
50
0
0
1
2
3
4
5
6
Threshold parameter *m*

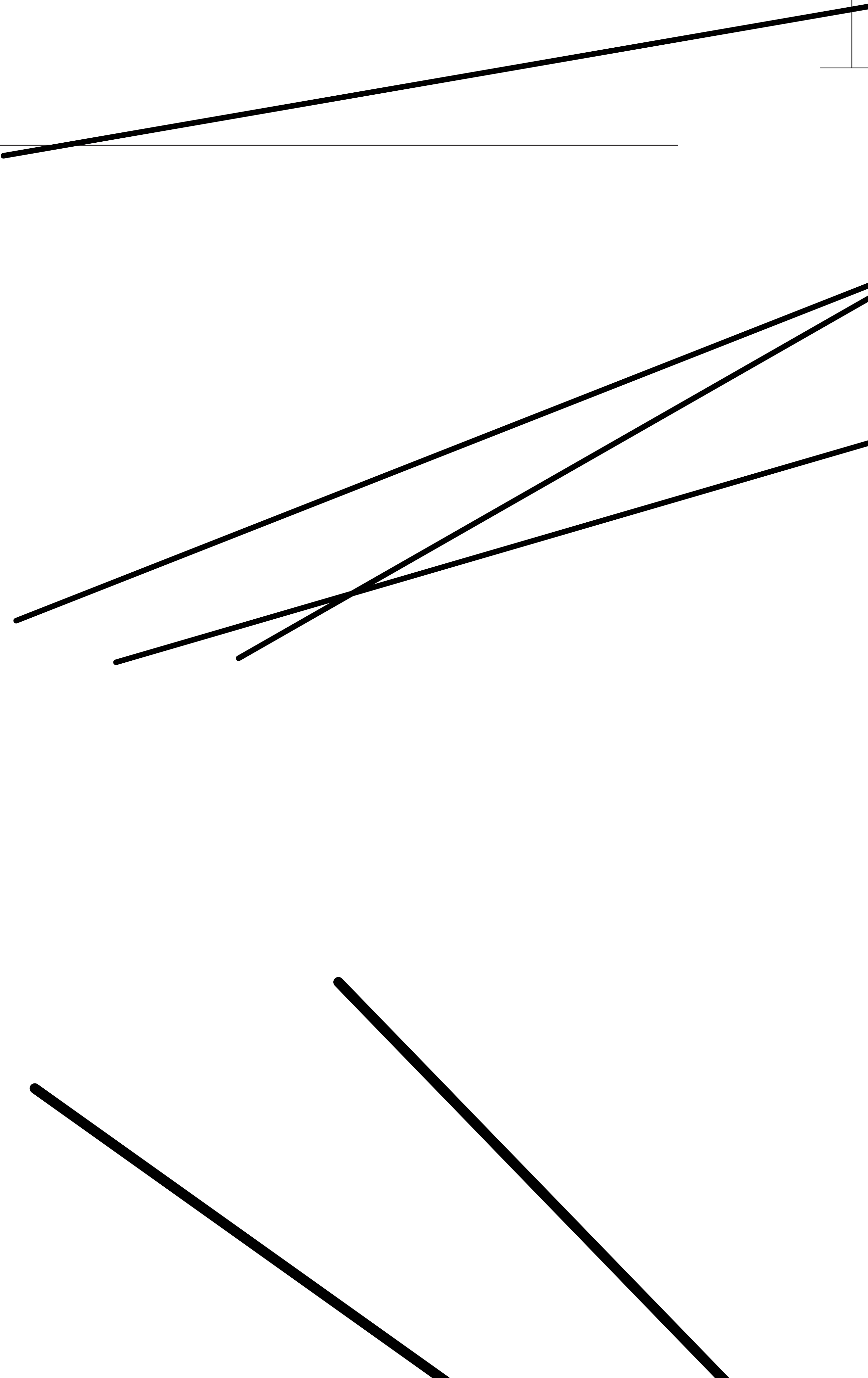


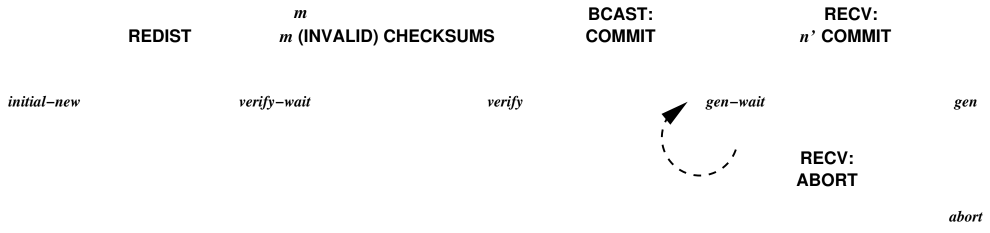

GENERATE-NEW-SHARE
(1024-bit exponent, 1025-bit exponentiation, 8 KB block)
50
40
30
20
10
0
Time (ms)
0
1
2
3
4
5
6
7
8
9
Old threshold parameter *m*

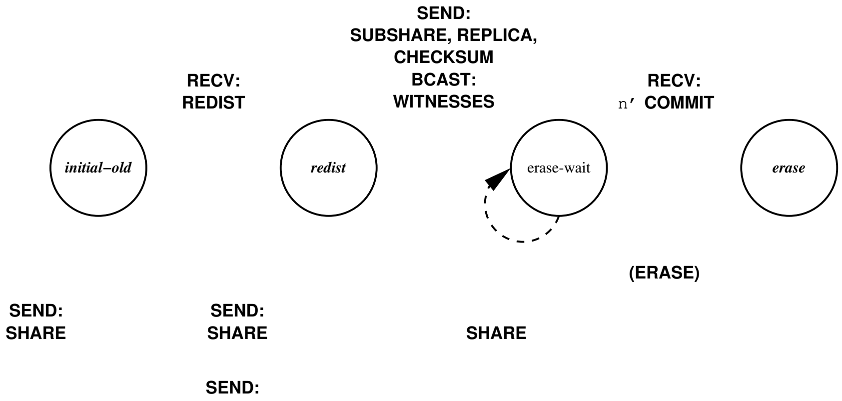









m
REDIST
m (INVALID) CHECKSUMS
BCAST:
COMMIT
RECV:
n' COMMIT
initial−new
verify−wait
verify
gen−wait
gen
RECV:
ABORT
abort


SEND:
SUBSHARE, REPLICA,
CHECKSUM
BCAST:
WITNESSES
RECV:
REDIST
RECV:
n′ COMMIT
initial−old
redist
erase-wait
erase
(ERASE)
SEND:
SHARE
SEND:
SHARE
SHARE
SEND: