STREAMS Tests at CERN

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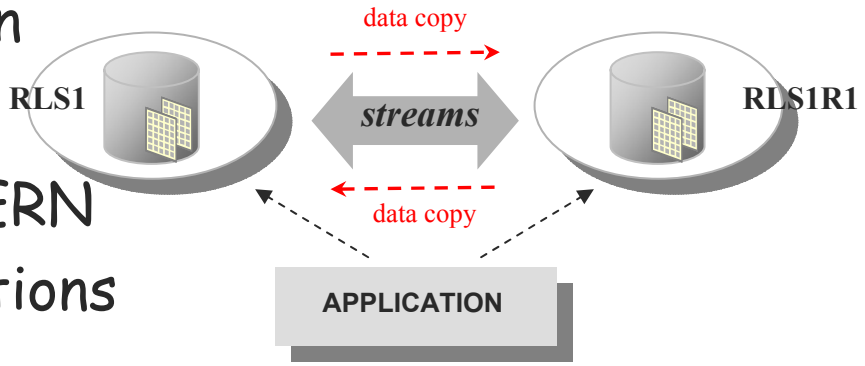
Agenda

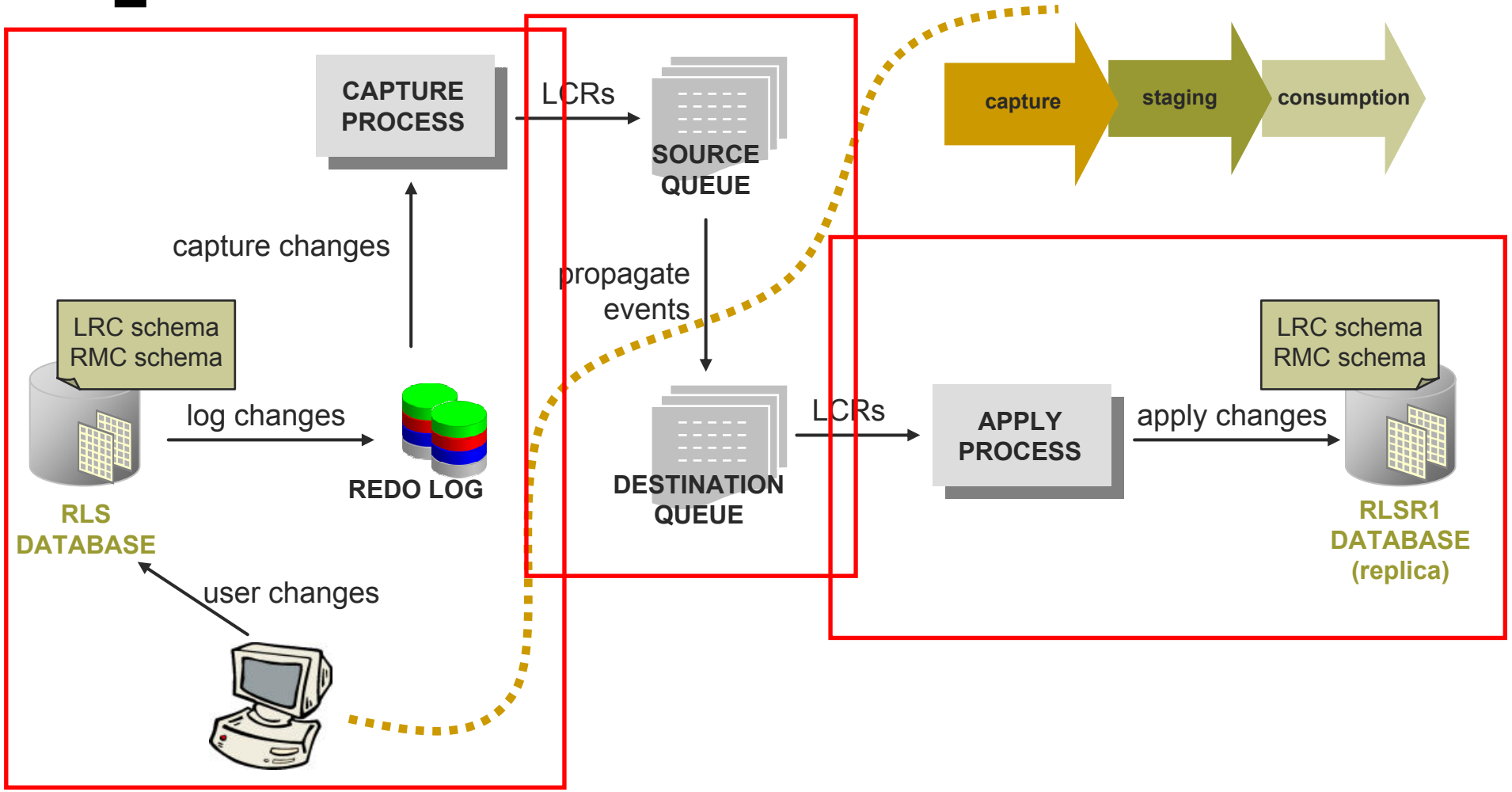
- Replication using STREAMS
- STREAMS Architecture
- STREAMS & RLS Stress Test
- STREAMS issues
- Next Steps

Replication using STREAMS (I)

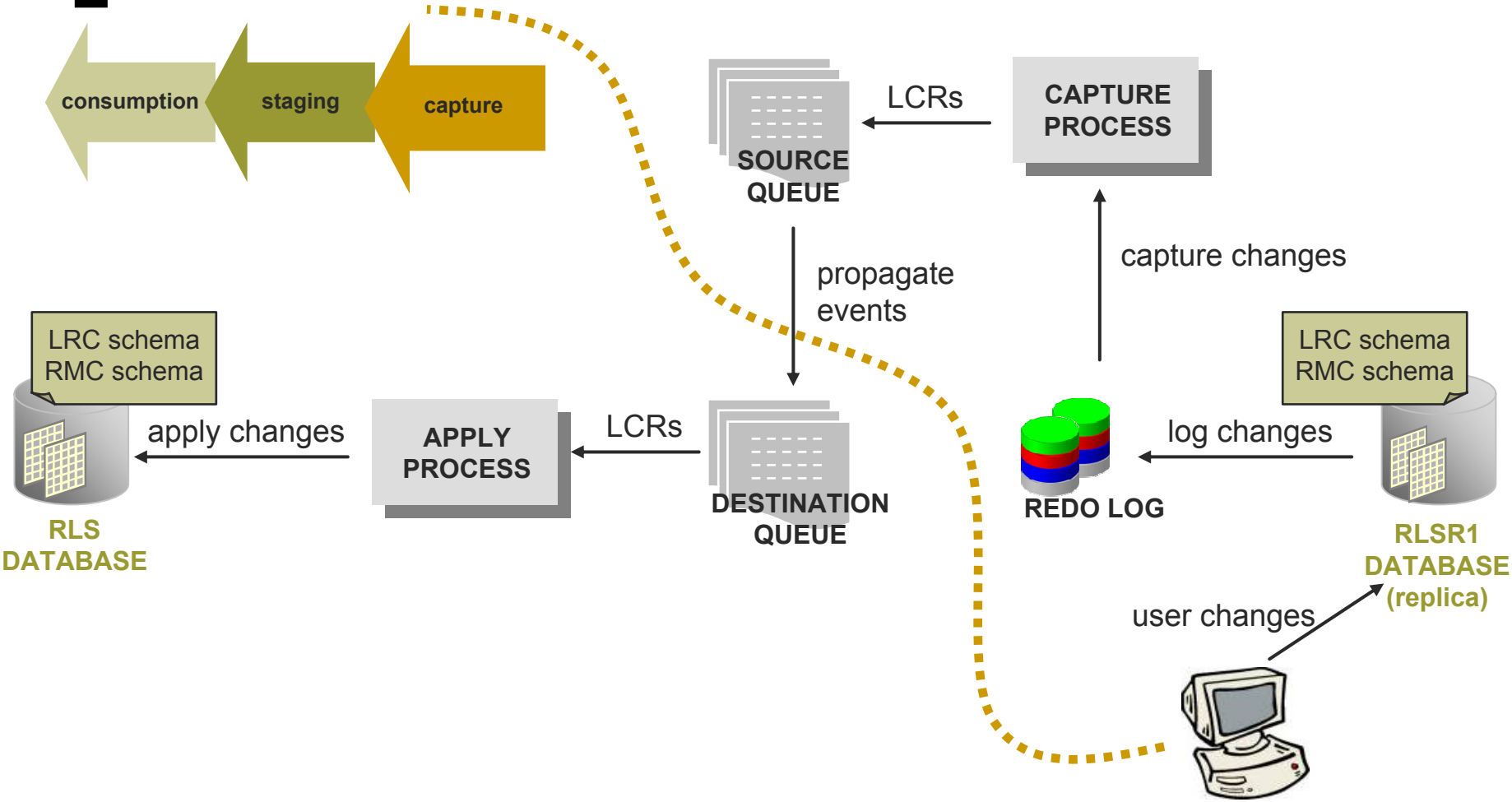
- First Stage to test replication using Streams
- RLS database
  - O.S. Linux
  - initial DB version 9.2.0.5
  - 2 schemas for replication
- Streams configuration
  - 2 machines located at CERN
  - replication in both directions
  - schema level replication
  - DML and DDL changes



STREAMS Architecture (I)



STREAMS Architecture (I)

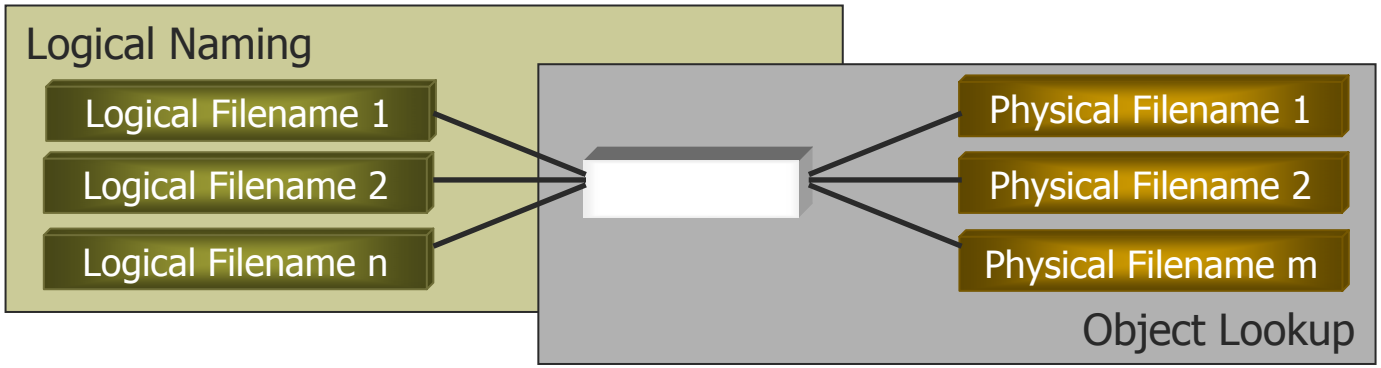


STREAMS & RLS Stress Test

- written in Python; multi-thread application; producer-consumer pattern
- uses full **RLS application** stack of POOL **FileCatalog**

maintains consistent lists of accessible files (physical and logical names) together with their unique identifier (FileID)

resolves a logical file reference (FileID) to a physical file



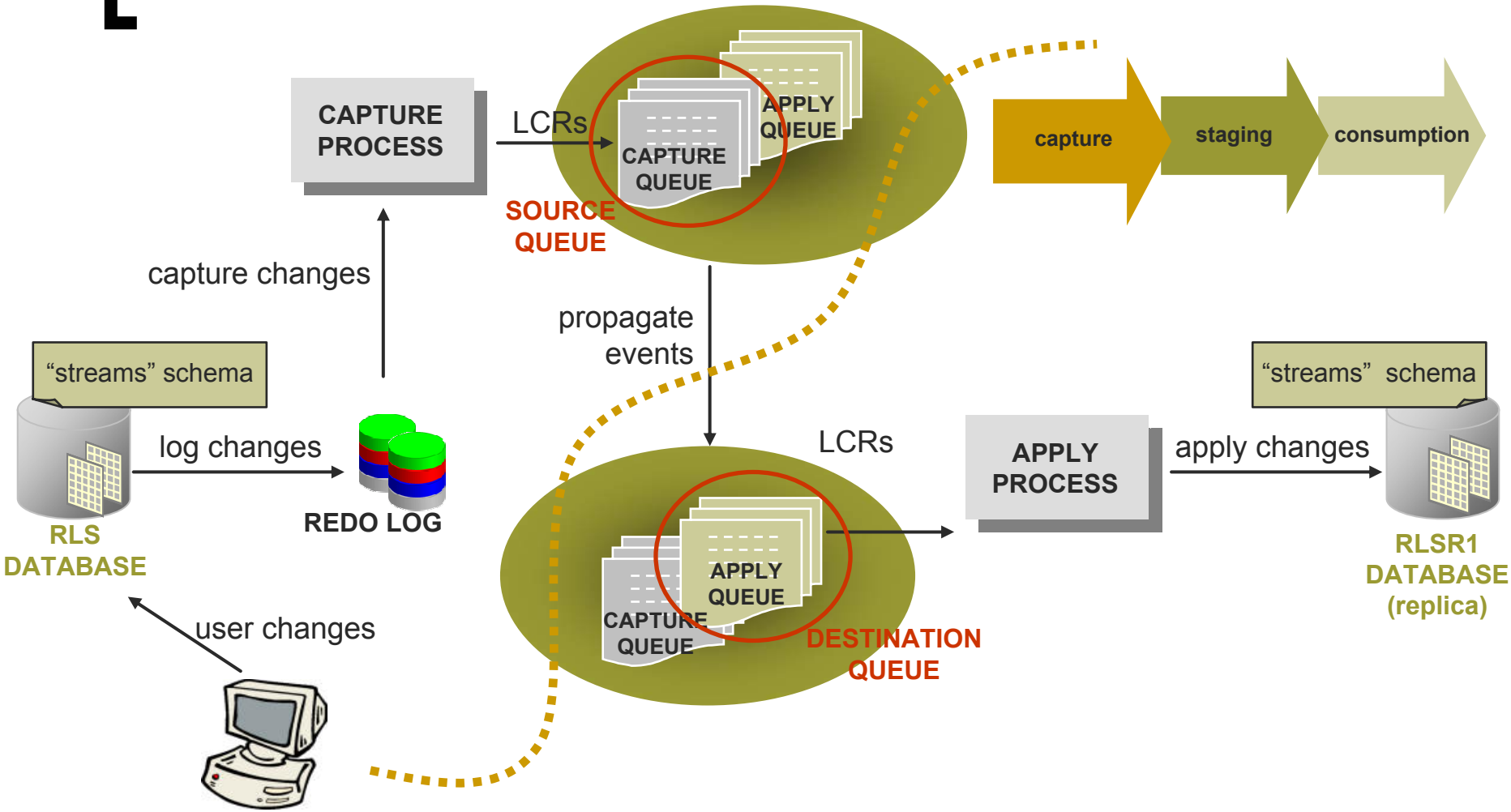
STREAMS & RLS Stress Test

- stress test run configurations
  - 2 end-points
    - primary RLS end-point writer
    - replicated RLS end-point writer
    - primary RLS end-point writer+ replicated RLS end-point reader
    - primary RLS end-point writer&reader + replicated RLS end-point writer&reader
  - during 3 weeks
  - up to 500.000 entries
  - successful results
  - rate of data insertion customizable

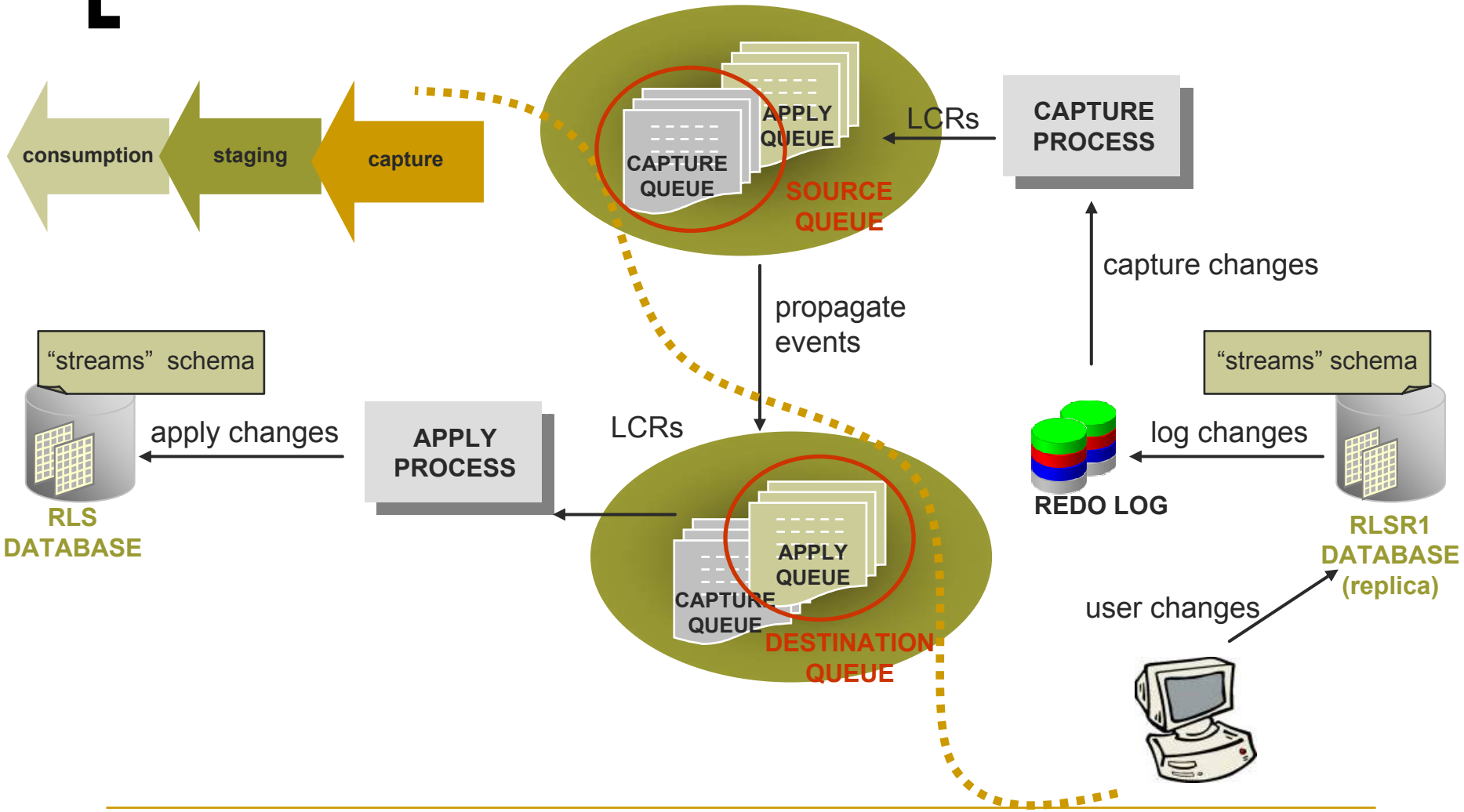
Replication using STREAMS (II)

- Second Stage to test replication using Streams
- RLS database upgraded to 10g
  - 1 schema (any) for replication (empty)
  - 1st execution of test scripts → tables are created
- Streams setup bi-directionally
  - 2 queues at each site
    - one for capturing changes
    - second to hold the changes from other sites

STREAMS Architecture (II)



STREAMS Architecture (II)



STREAMS & RLS Stress Test

- stress test run configurations
  - 2 end-points
    - during 2 weeks
    - up to 1.500.000 entries

ORA – 23603
STREAMS enqueue
aborted due to low SGA

ORA – 04031
Unable to allocate %s
bytes of shared memory

increase shared pool size

buffer queue memory limited to 10%

9.2.0.5 _first_spare_parameter

10g streams_pool_size

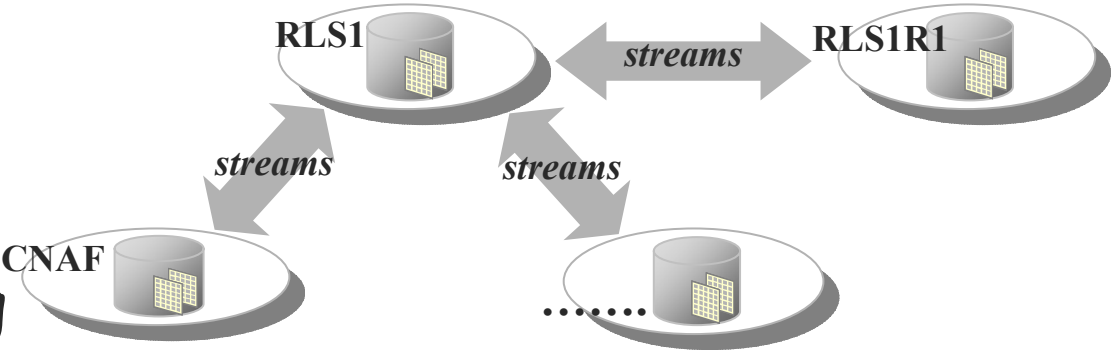
script which would prevent excessive spill of messages

STREAMS Issues

- Tests focus on stability and robustness
- Large space area for archiving
  - archived redo log files must be available until no capture process will ever need it
- Streams increases the amount of CPU used
- Low performance if one site is down
  - automatic start of streams processes
  - lag on propagation 

Next Steps

- Streams scalability → add external replica sites
  - document and script to guide the process prepared



- Monitoring
  - some scripts written
    - streams processes status
    - buffered queues status
- Conflict handling

Questions & Answers

STREAMS Issues