



# STREAMS Tests at CERN

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IT - DB

# [ Agenda ]

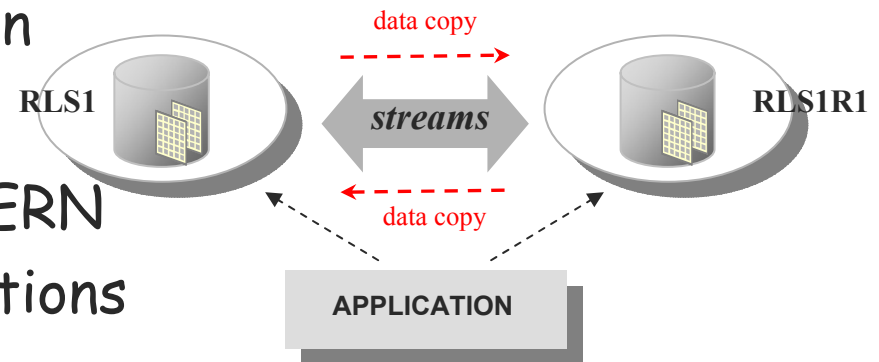
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- Replication using STREAMS
- STREAMS Architecture
- STREAMS & RLS Stress Test
- STREAMS issues
- Next Steps

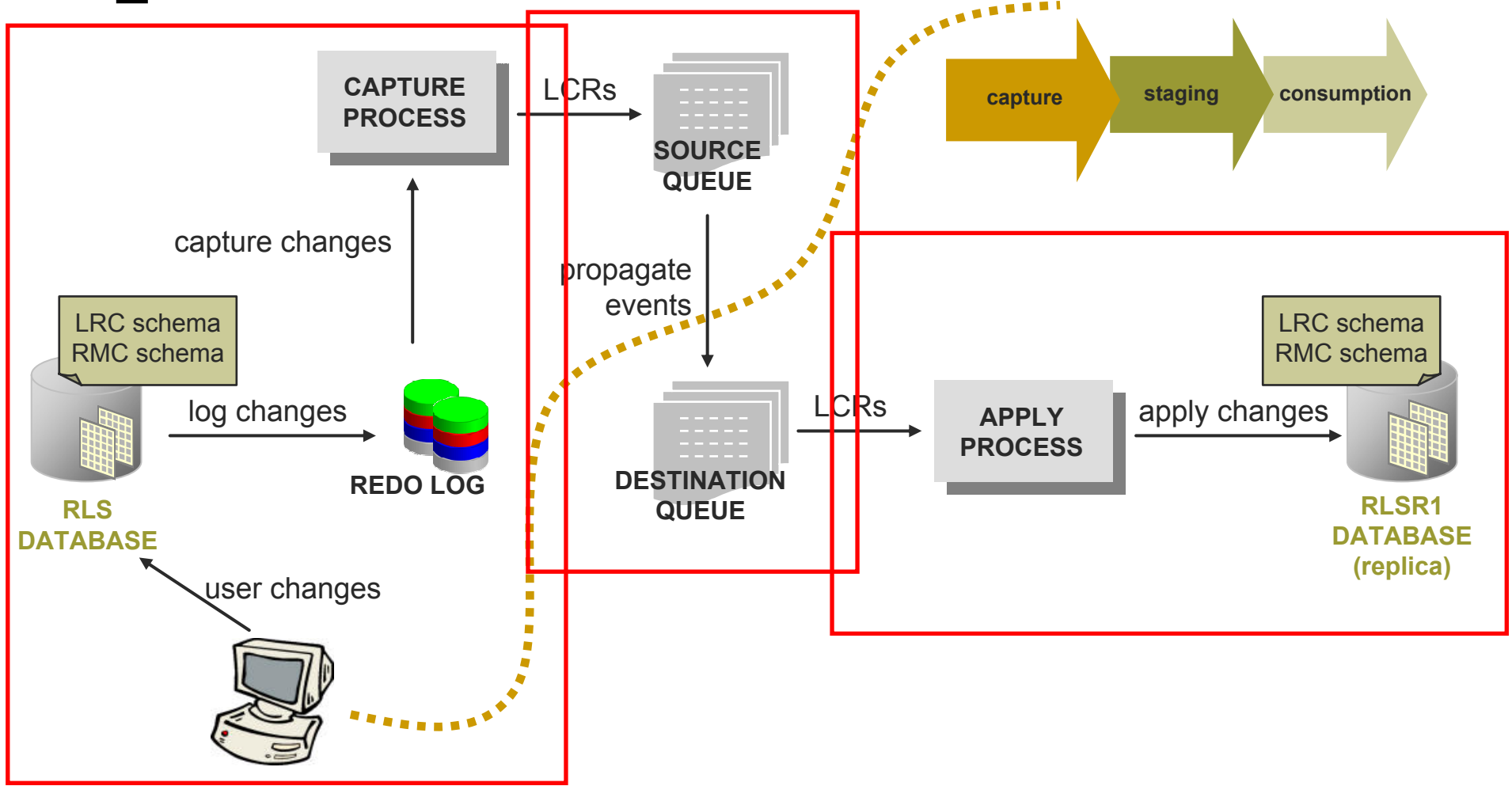


# [ Replication using STREAMS (I) ]

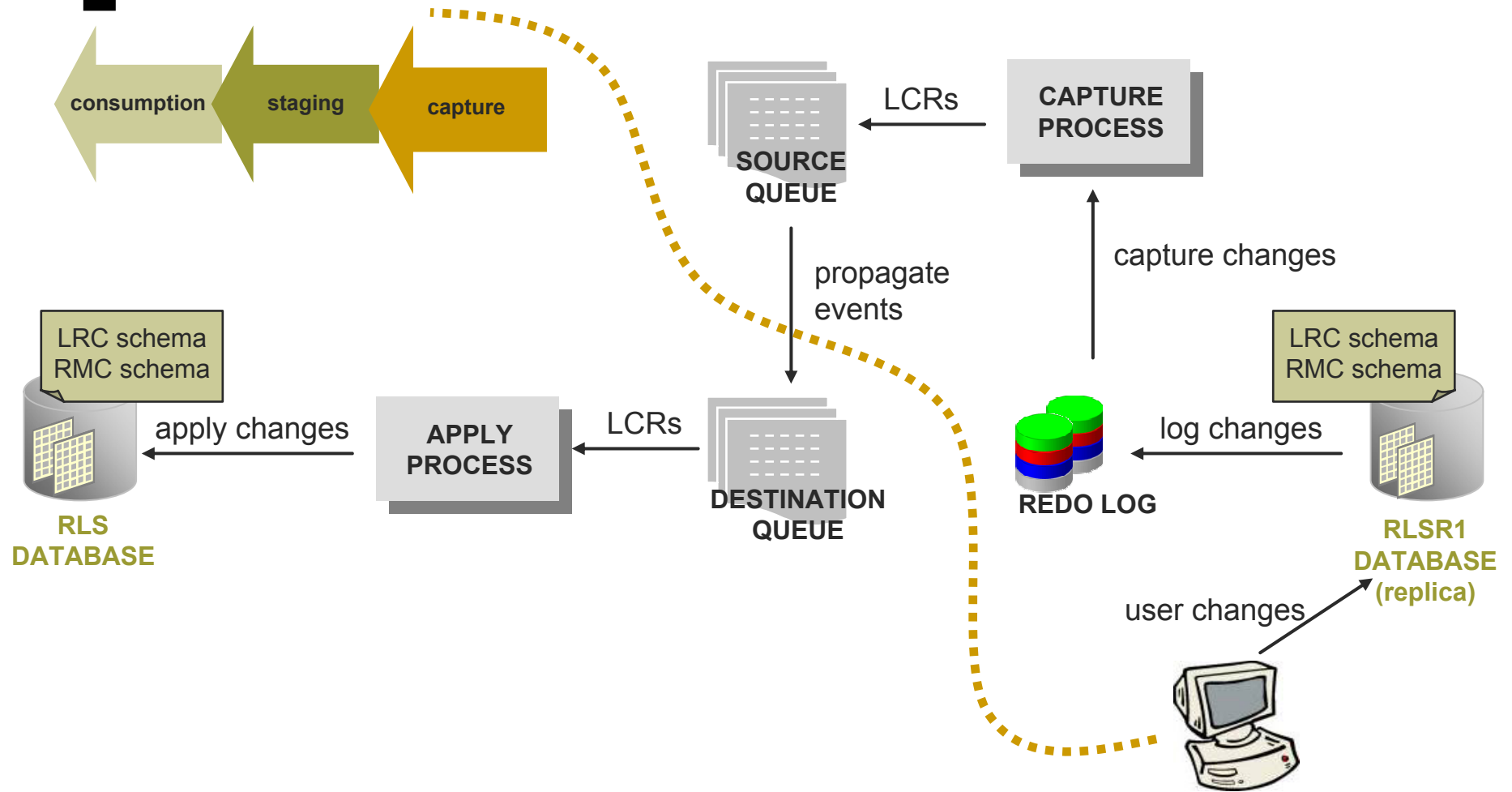
- First Stage to test replication using Streams
- RLS database
  - O.S. Linux
  - initial DB version 9.2.0.5
  - 2 schemas for replication
- Streams configuration
  - 2 machines located at CERN
  - replication in both directions
  - schema level replication
  - DML and DDL changes



# [ STREAMS Architecture (I) ]



# STREAMS Architecture (I)

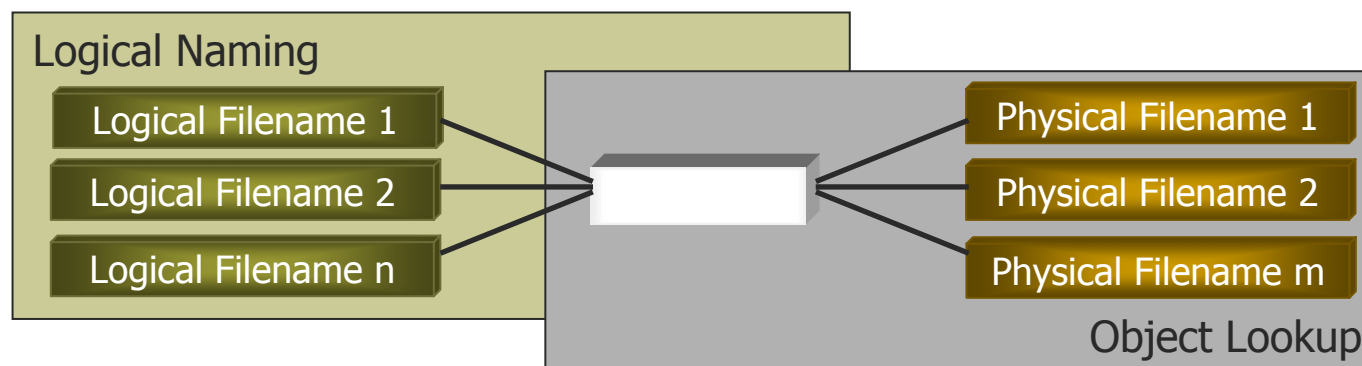


# [ STREAMS & RLS Stress Test ]

- 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 ]

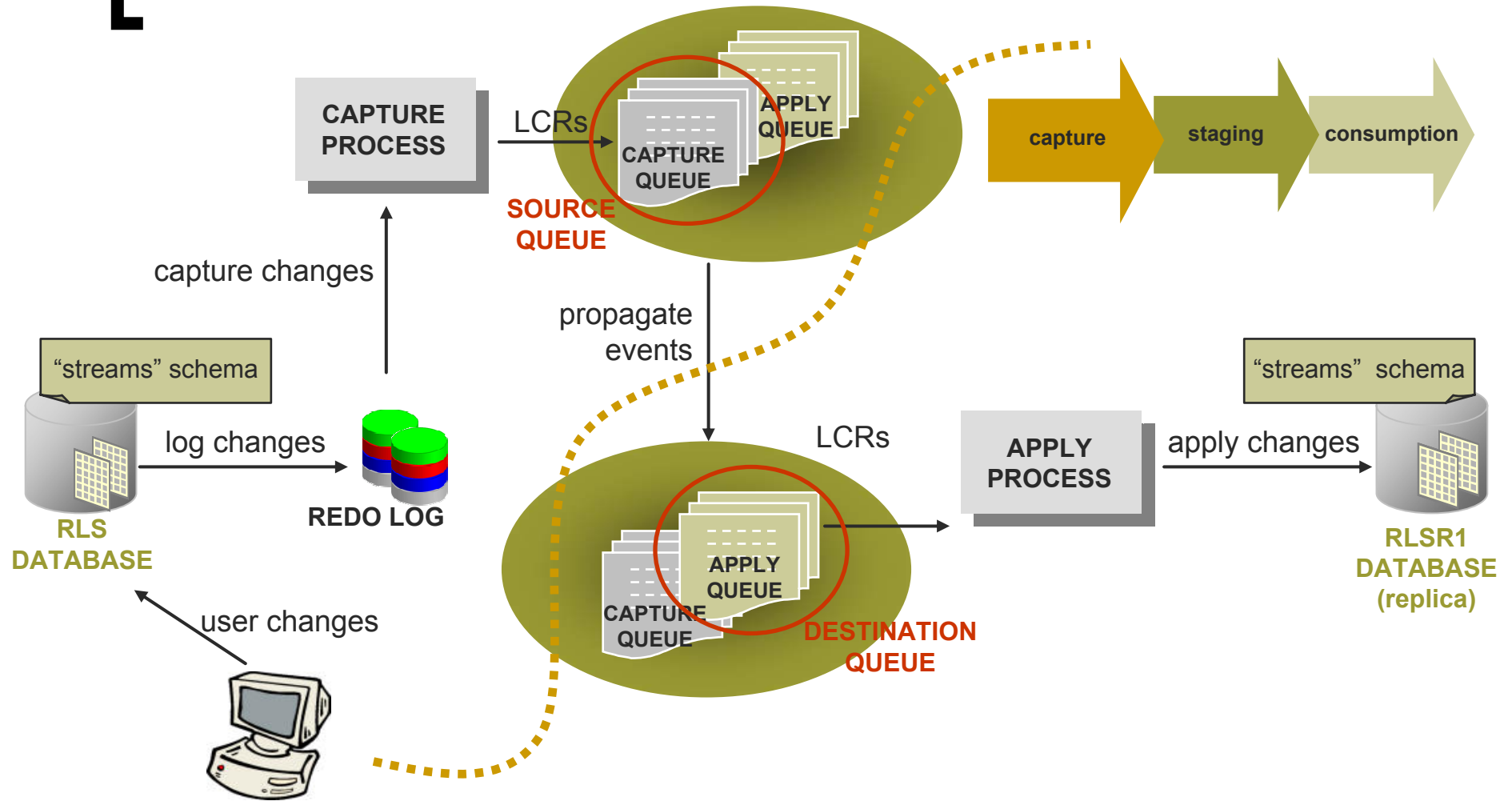
- stress test run configurations
  - 2 end-points
    - primary RLS end-point writer
    - replicated RLS end-point writer
    - primary RLS end-point writer+ replicated RLS end-point reader
    - primary RLS end-point writer&reader + replicated RLS end-point writer&reader
  - during 3 weeks
  - up to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

# [ Replication using STREAMS (II) ]

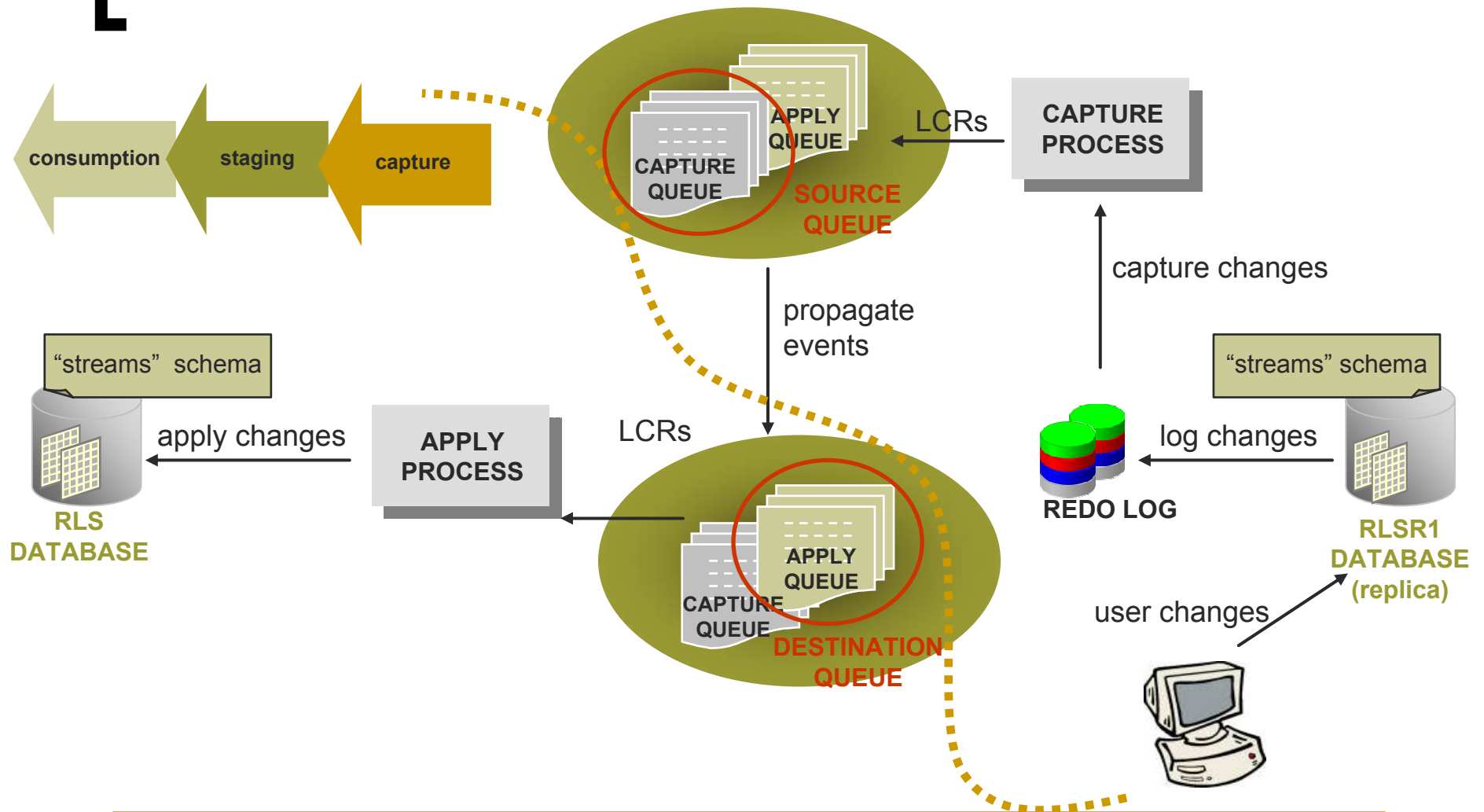
- Second Stage to test replication using Streams
- RLS database upgraded to 10g
  - 1 schema (any) for replication (empty)
  - 1<sup>st</sup> execution of test scripts → tables are created
- Streams setup bi-directionally
  - 2 queues at each site
    - one for capturing changes
    - second to hold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

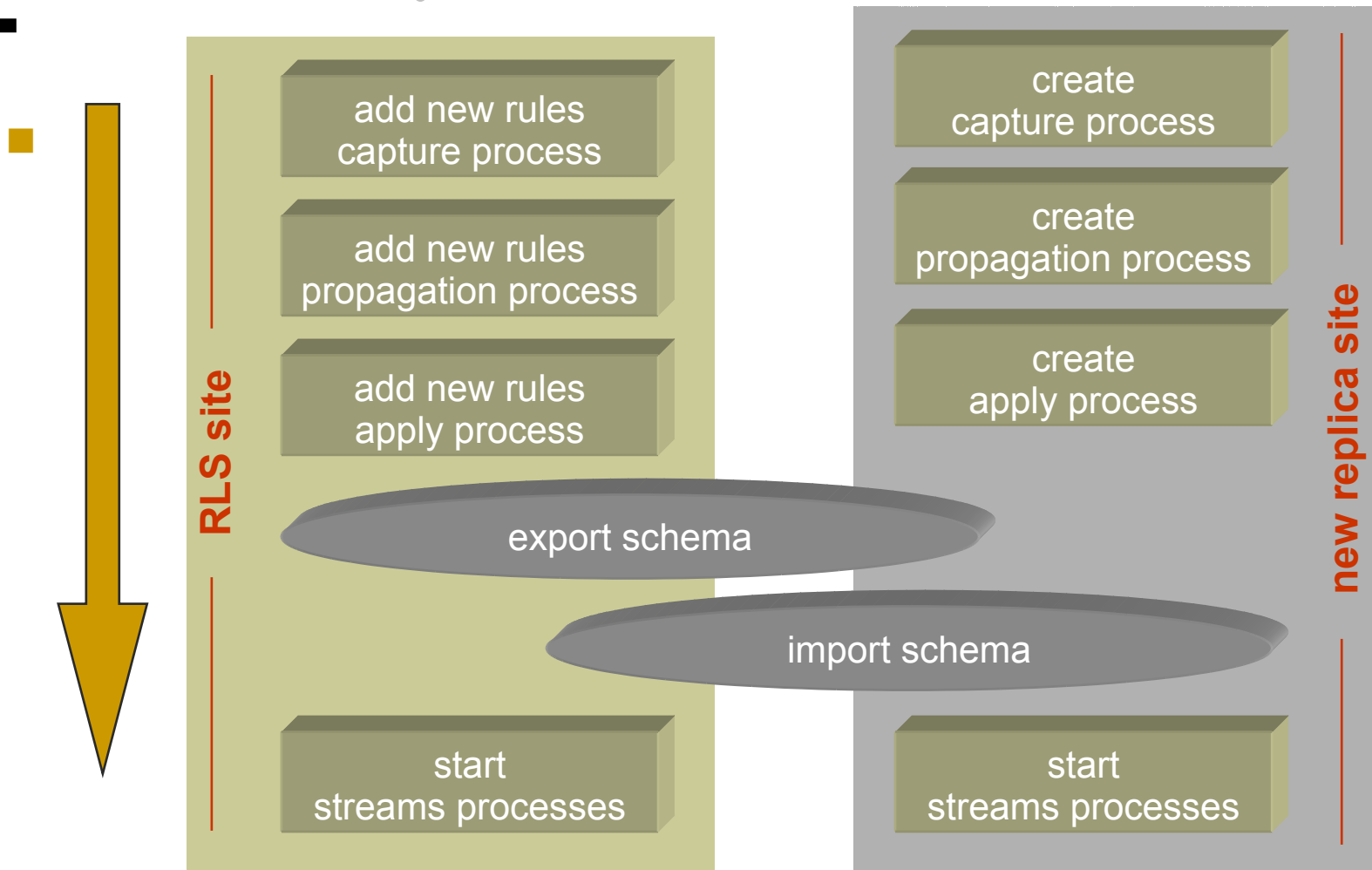
10g streams\_pool\_size

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 ]



# [ Next Steps ]

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

# [ Questions & Answers ]

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# STREAMS Issues

propagation time  
(after machine is recovered)

