ORACLE

Processes

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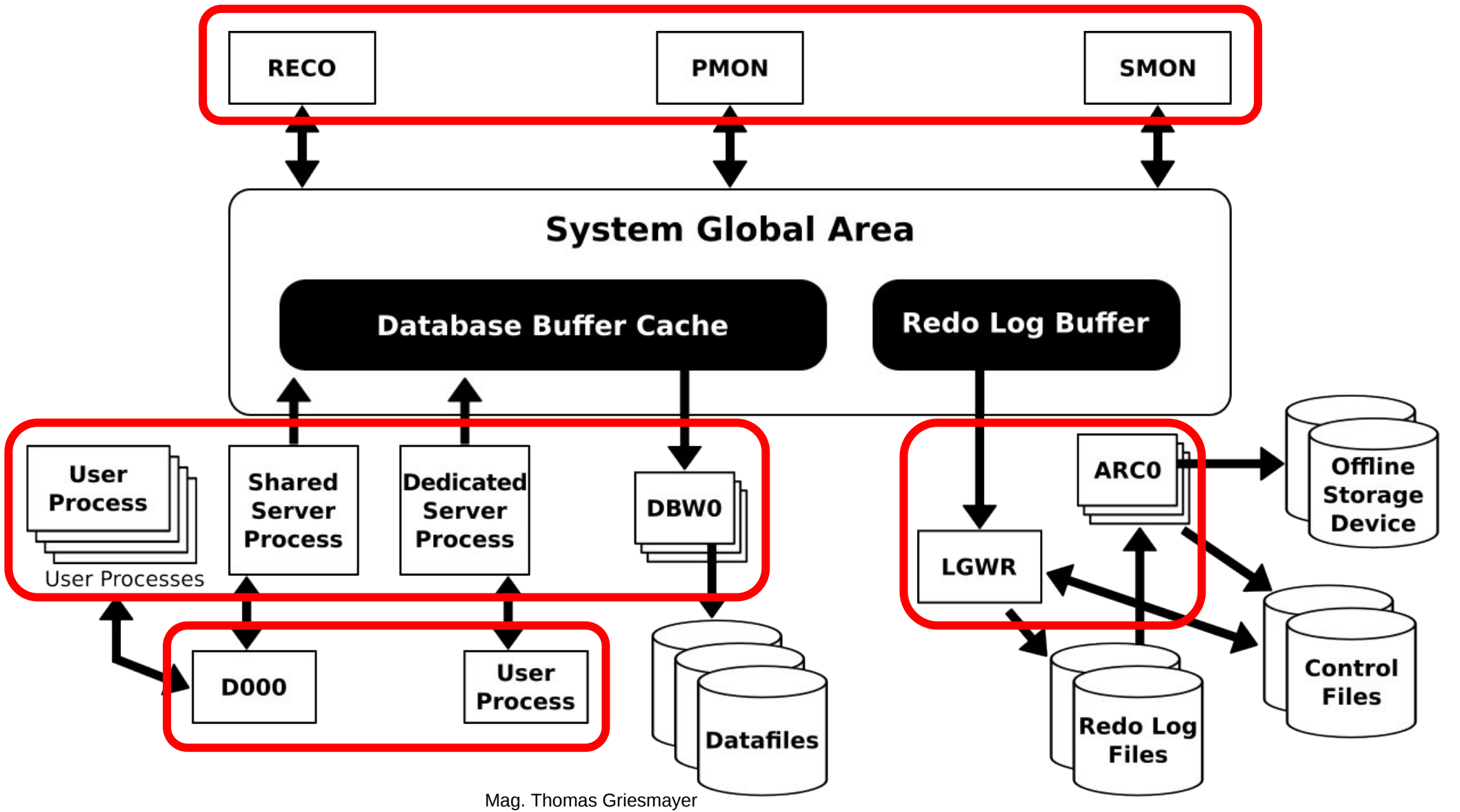
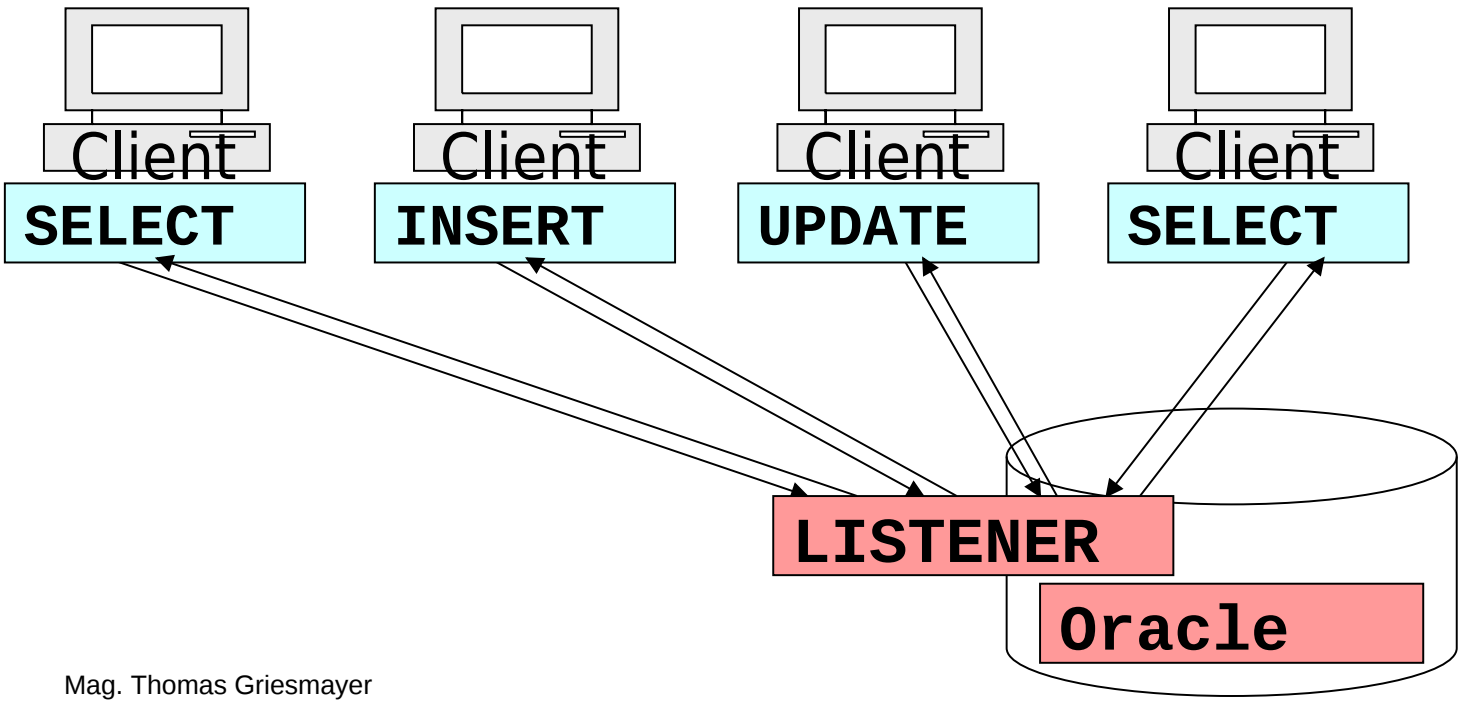

RECO
PMON
SMON
System Global Area
Database Buffer Cache
Redo Log Buffer
User Process
User Processes
Shared Server Process
Dedicated Server Process
DBW0
ARC0
Offline Storage Device
LGWR
D000
User Process
Datafiles
Redo Log Files
Control Files

- The client application connects to an Oracle Database to send or retrieve data.
- Client server application:
  - Request
  - Processing
  - Resultset
  - Display



lsnrctl

```
docker@docker:~$ docker exec -it oracle21c /bin/bash
bash-4.4$ lsnrctl status

LSNRCTL for Linux: Version 21.0.0.0.0 - Production on 16-OCT-2024 18:34:33

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Connecting to (DESCRIPTION=(ADDRESS=(PROTOCOL=IPC)(KEY=EXTPROC_FOR_XE)))
STATUS of the LISTENER
------------------------
Alias                     LISTENER
Version                   TNSLSNR for Linux: Version 21.0.0.0.0 - Production
Start Date                16-OCT-2024 18:33:18
Uptime                    0 days 0 hr. 1 min. 14 sec
Trace Level               off
Security                  ON: Local OS Authentication
SNMP                      OFF
Default Service           XE
Listener Parameter File   /opt/oracle/homes/OraDBHome21cXE/network/admin/listener.ora
Listener Log File         /opt/oracle/diag/tnslsnr/3f7f82cc8be5/listener/alert/log.xml
```
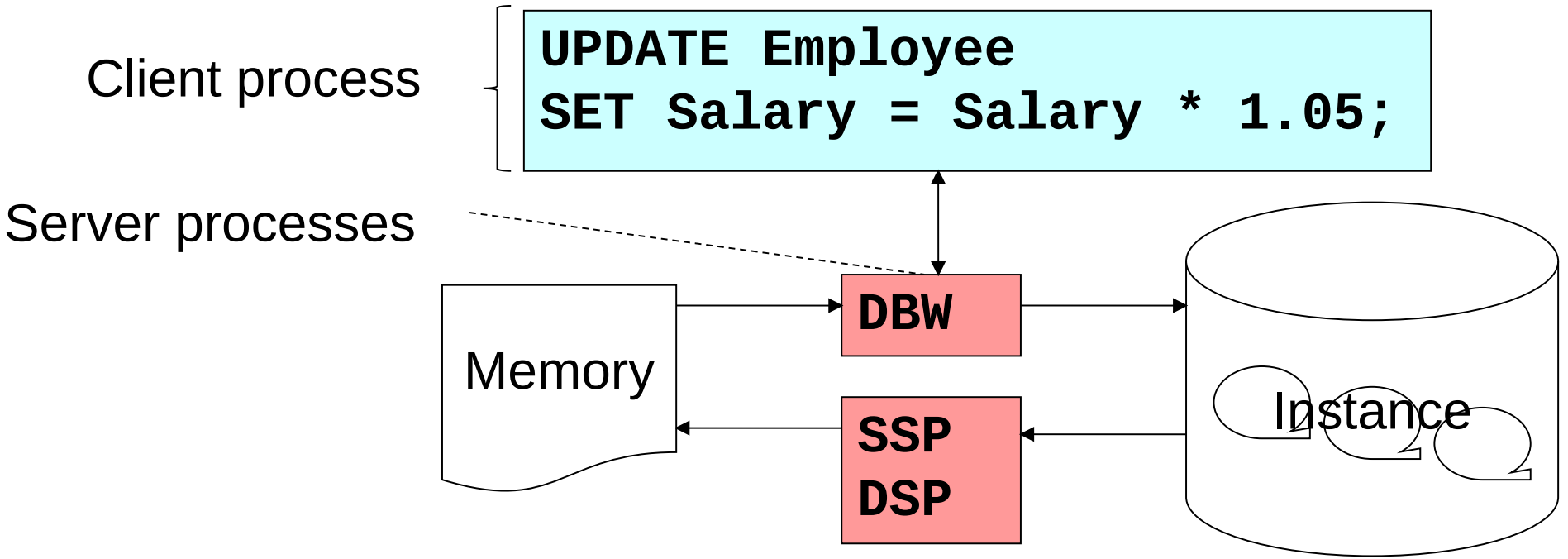
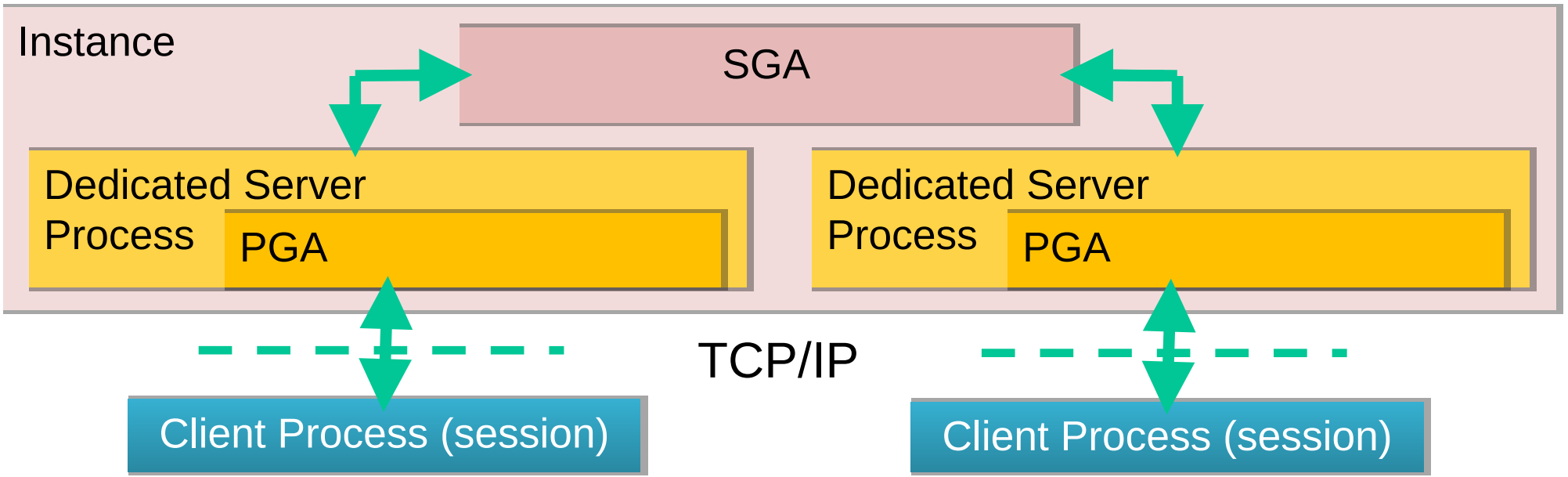

- Background processes manages the memory structures of an instance.
- These processes are performing asynchronously I/O to different files on a disk.



dedicated server process

- Each client connection is associated with one server process.
- This server process is dedicated to its client process for the duration of the session.

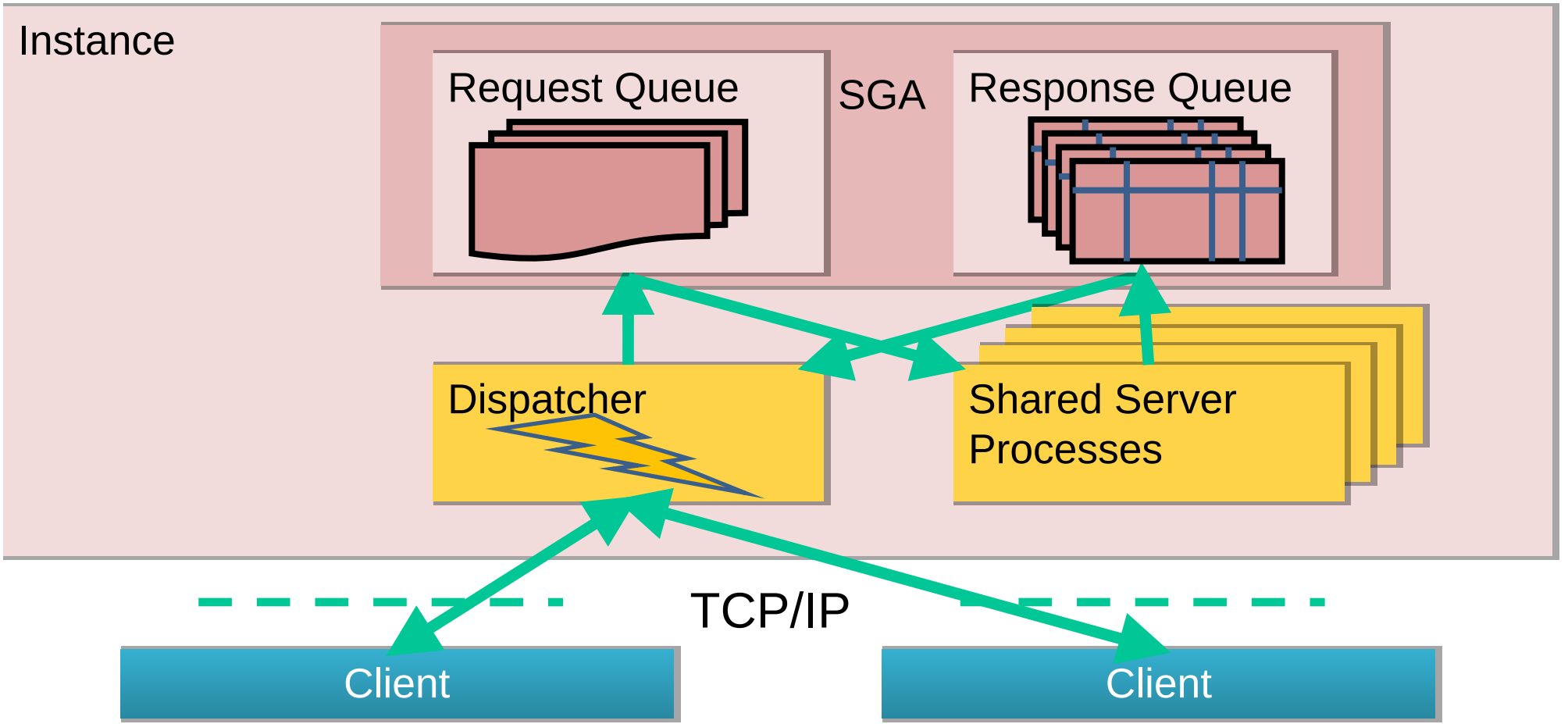


shared server process

- Each client (applications) connects over a network to a dispatcher process.
- The dispatcher process puts the received requests into a request queue.
- The first available shared server process takes the request, processes it and place the result into the dispatcher response queue.
- The dispatcher process monitors this queue and transmits the result to the client.

https://docs.oracle.com/database/121/CNCPT/transact.htm#CNCPT117 (13.9.2015)

shared server process



process monitor (PMON)

- The process monitor (PMON) monitors the other background processes and performs process recovery when a server or dispatcher process terminates abnormally.
- PMON is responsible for cleaning up the database buffer cache and freeing resources that the client process was using.
- For example, PMON resets the status of the active transaction table, releases locks that are no longer required, and removes the process ID from the list of active processes.

https://docs.oracle.com/cd/E11882_01/server.112/e40540/process.htm#CNCPT008 (8.9.2019)

system monitor (SMON)

- The system monitor process (SMON) is in charge of a variety of system-level cleanup duties.
- The duties assigned to SMON include:
  - Performing instance recovery, if necessary, at instance startup.
  - Recovering terminated transactions that were skipped during instance recovery because of file-read or tablespace offline errors.
  - SMON recovers the transactions when the tablespace or file is brought back online.
  - Cleaning up unused temporary segments.

https://docs.oracle.com/cd/E11882_01/server.112/e40540/process.htm#CNCPT008 (8.9.2019)

database writer(DBWn)

- The database writer process (DBWn) writes modiefied blocks from the database buffer cache to the disk.
- The DBWn process writes dirty buffers to disk under the following conditions:
- When a server process cannot find a clean reusable buffer, it signals DBWn to write. DBWn writes dirty buffers to disk asynchronously if possible while performing other processing.
- DBWn periodically writes buffers to advance the checkpoint, which is the position in the redo thread from which instance recovery begins.

https://docs.oracle.com/cd/E11882_01/server.112/e40540/process.htm#CNCPT008 (8.9.2019)

log writer(LGWR)

- The log writer process (LGWR) writes one contiguous portion of the redo log to the online redo log.
- LGWR writes all redo entries:
  - A user commits a transaction.
  - An online redo log switch occurs.
  - Three seconds have passed since LGWR last wrote.
  - The redo log buffer is one-third full.
  - DBWn must write modified buffers to disk.
  - Before DBWn can write a dirty buffer, redo records associated with changes to the buffer must be written to disk (the write-ahead protocol).

https://docs.oracle.com/cd/E11882_01/server.112/e40540/process.htm#CNCPT008 (8.9.2019)

archiver (ARCn)

- The archiver processes (ARCn) copy online redo log files to offline storage after a redo log switch occurs.
- ARCn processes exist only when the database is in ARCHIVELOG mode and automatic archiving is enabled.

https://docs.oracle.com/cd/E11882_01/server.112/e40540/process.htm#CNCPT008 (8.9.2019)

processes

*<system> Script-1 ×

```
SELECT PID as ORA_PID,
       SPID as LNX_PID,
       PNAME,
       USERNAME
FROM   V$PROCESS
WHERE  PNAME IS NOT NULL
ORDER BY PNAME;
```

Results 1 ×

SELECT PID as ORA_PID, SPID as LNX_PID, PNAME, | Enter a SQL expression to filter results (u

Grid | Text

	ORA_PID	LNX_PID	PNAME	USERNAME
1	55	168	AQPC	oracle
2	48	152	ARC0	oracle
3	50	156	ARC1	oracle
4	51	158	ARC2	oracle

DBW0
LGWR
PMON
RECO
SMON

kill

*<system> Script-1 × *<thomas> Script-2 *<griesma

```
SELECT SID,
       SERIAL#,
       STATUS,
       USERNAME
FROM   V$SESSION
WHERE  USERNAME = 'GRIESMAYER'
```

Results 1 ×

SELECT SID, SERIAL#, STATUS, USERNAME FROM \ Enter a SQL expression to filter res

Grid Text

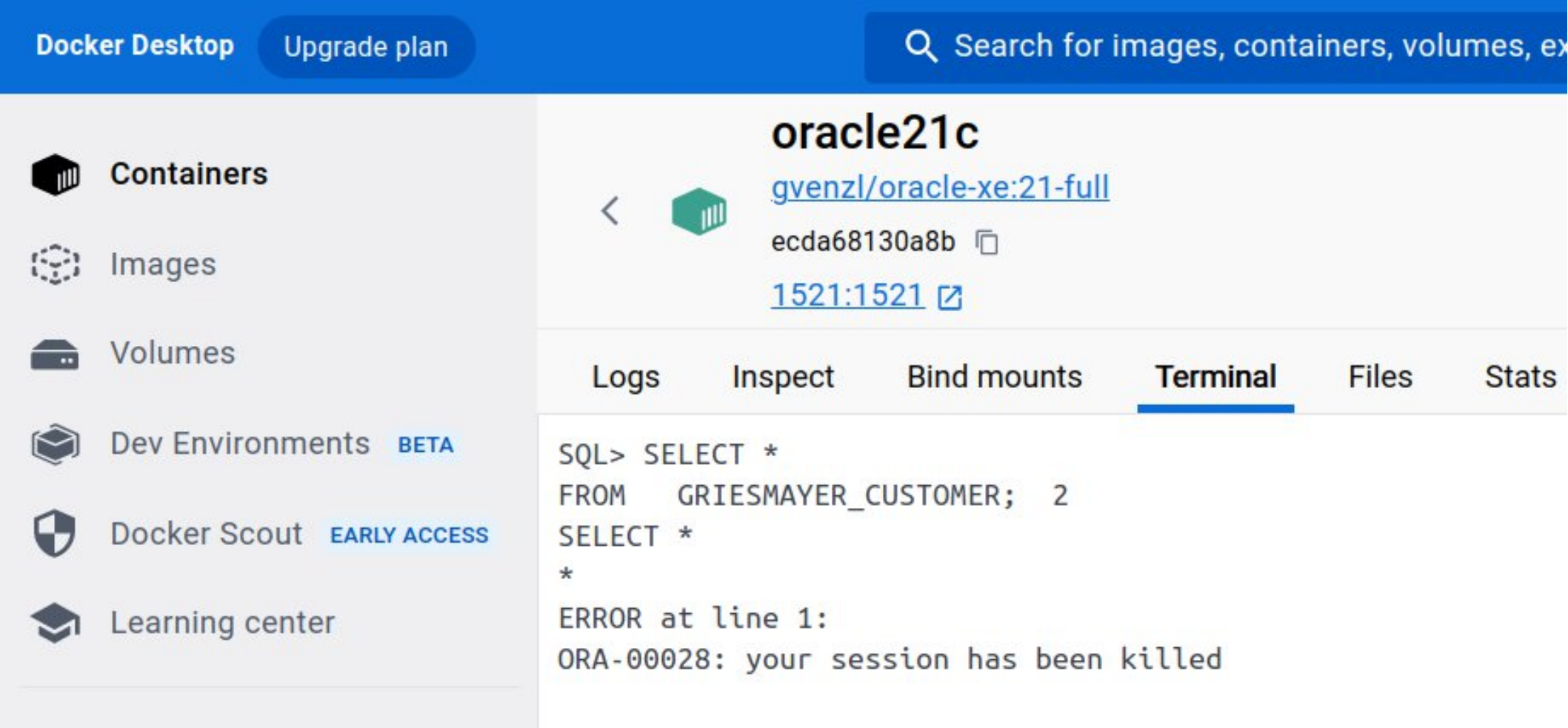
	SID	SERIAL#	STATUS	USERNAME
1	54	14,628	INACTIVE	GRIESMAYER
2	58	36,677	INACTIVE	GRIESMAYER
3	297	16,326	INACTIVE	GRIESMAYER

*<system> Script-1 × *<thomas> Script-2 *<griesmayer> Script

```
ALTER SYSTEM KILL SESSION '54,14628';
ALTER SYSTEM KILL SESSION '58,36677';
ALTER SYSTEM KILL SESSION '297,16326';
```

Statistics 1 ×

Name	Value
Queries	3
Updated Rows	0
Execute time (ms)	13
Fetch time (ms)	0
Total time (ms)	13
Start time	2023-10-05 19:03:22.257
Finish time	2023-10-05 19:03:22.274


Docker Desktop
Upgrade plan
Search for images, containers, volumes, ex
Containers
Images
Volumes
Dev Environments BETA
Docker Scout EARLY ACCESS
Learning center
oracle21c
gvenzl/oracle-xe:21-full
ecda68130a8b
1521:1521
Logs
Inspect
Bind mounts
Terminal
Files
Stats
SQL> SELECT *
FROM GRIESMAYER_CUSTOMER; 2
SELECT *
*
ERROR at line 1:
ORA-00028: your session has been killed