

Skills101

SharePlex Advanced Operations – Part 1

***Best Practices for
Production Efficiency
Monitoring, Tuning &
Troubleshooting***



The Presenter



Entrepreneur, engineer, passionate, tech enthusiast, with more than 20 years of experience working in IT for various international software vendors, and in daily contact with new technologies (such as AI recently).

A bit of a geek at heart and fascinated by Japanese culture!



Bilel SFAXI

Sr. Presales Engineer

bilel.sfaxi@quest.com

<https://www.linkedin.com/in/bilelsfaxi/>



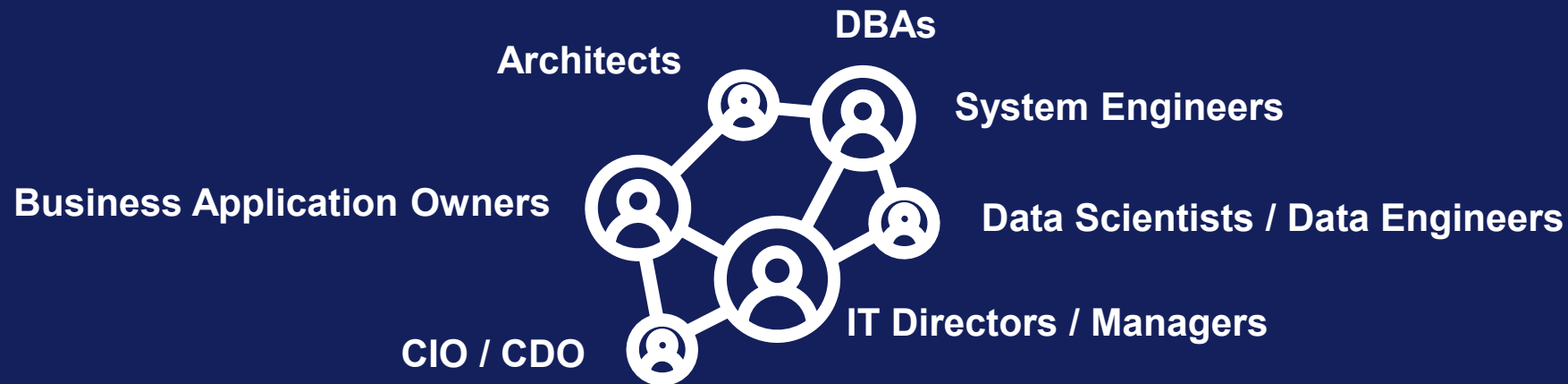
Topics

- Intended audience
- Architecture recap
- Best Practices for production
- Monitoring
- Tuning
- Troubleshooting
- Q&A



Intended Audience

Do you have database responsibility or influence?



This presentation is designed for a **technical audience including DBAs & System Engineers**, who possess at least basic knowledge on SharePlex.

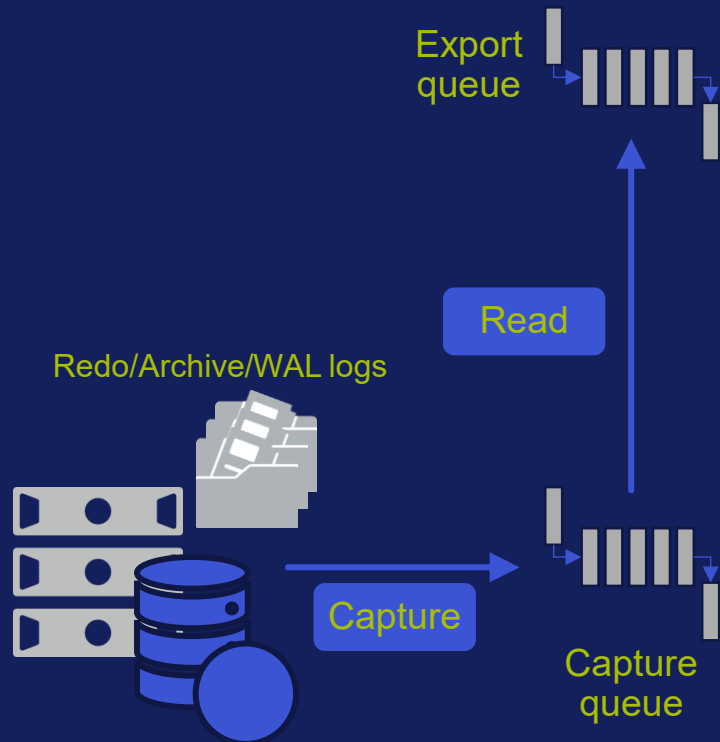
Architecture



SharePlex Architecture

Decoupled, Asynchronous, Parametrized

Source

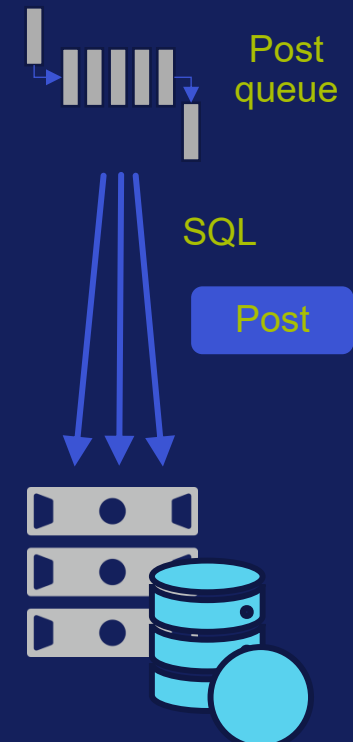


Export

Network

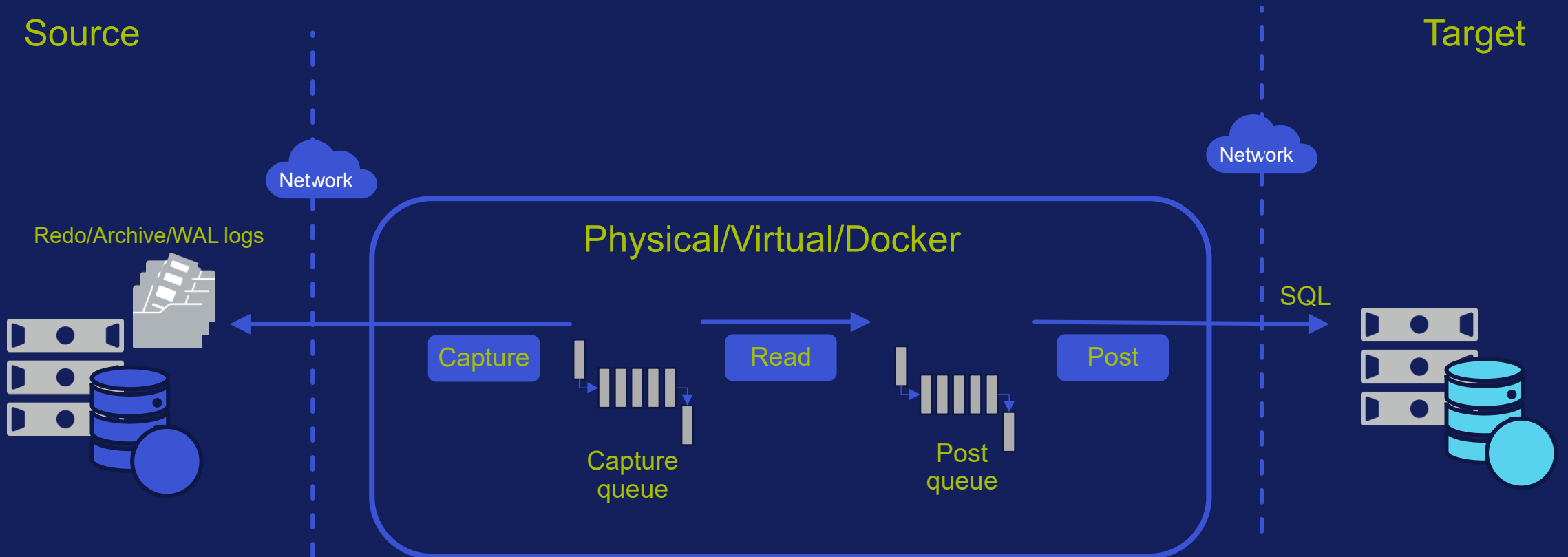
Import

Target



SharePlex Architecture (Variant)

Decoupled, Asynchronous, Parametrized



Best Practices



Production efficiency

Environment variables, aliases, etc.

OS user profile:

```
###SPLEX PROFILE#####
export SP_SYS_PRODDIR=/opt/shareplex/prod
export SP_SYS_VARDIR=/opt/shareplex/var
export SP_COP_TPORT=2100
export SP_COP_UPORT=2100
export SP_SYS_HOST_NAME=ora1.localdomain
export ORACLE_HOME=/u01/app/oracle/product/19.0.0/dbhome_1
export ORACLE_SID=pdbora1
export PATH=$PATH:$SP_SYS_PRODDIR/bin:$ORACLE_HOME/bin

alias spbin='cd $SP_SYS_PRODDIR/bin'
alias spvar='cd $SP_SYS_VARDIR'
alias splog='cd $SP_SYS_VARDIR/log'
alias gocop='$SP_SYS_PRODDIR/bin/sp_cop &'
alias spc='$SP_SYS_PRODDIR/bin/sp_ctrl'
#####
```

Run multiple replication flows in parallel:

- More than one sp_cop on a server.
- Each sp_cop requires a dedicated
 - Port
 - Variable data directory
 - SharePlex internal schema
- Possibility to share the same binaries
- Careful Administration is a must!!!
 - Create a separate environmental profile (.profile) for each port for example.

Accelerate administration:

- By scripting. Ex: “**spc list config**”

Production efficiency

Parameters for operations

```
[splex@dm03db02 bin]$ spc
```

```
sp_ctrl (ora1.localdomain:2100)> list param
```

Oracle Capture parameters:

Parameter Name	Actual Value	Units	Set At
SP_OCT_ARCH_LOC			Live
SP_OCT_AUTOADD_ENABLE	1	boolean	Restart Process
SP_OCT_AUTOADD_MVIEW	0	boolean	Restart Process
SP_OCT_AUTOADD_SEQ	0	boolean	Restart Process
SP_OCT_BIO_CHECKSUM	0	boolean	Live
SP_OCT_CHECKPOINT_LOG	2	logs	Live
SP_OCT_DATA_OBJ_CACHE_SIZE	50	values	Live
SP_OCT_DATE_MSG	0		Live
SP_OCT_DDL_LOGGING	2		Live
SP_OCT_DDL_UPDATE_CONFIG	1	boolean	Unknown
SP_OCT_DEF_DAY	1		Live
SP_OCT_DEF_HOUR	0		Live
SP_OCT_DEF_MIN	0		Live
SP_OCT_DEF_MONTH	1		Live
SP_OCT_DEF_SEC	0		Live
SP_OCT_DEF_YEAR	1999		Live
SP_OCT_DENIED_USERID	0x00000000	number	Live

.....

```
sp_ctrl (ora1.localdomain:2100)> list param modified
```

Oracle Capture parameters:

Parameter Name	Actual Value	Units	Set At
SP_OCT_REPLICATE_ALL_DDL	1		Live
Default Value:	0		

System parameters:

Parameter Name	Actual Value	Units	Set At
SP_SYS_LIC_56047	XXXXXXXXXXXXXXXXXXXX		Install

Usage: list param [basic all modified] [module] [on host]



DEMO

Monitoring



Monitoring

Commands, scripts & SharePlex Manager

- **sp_ctrl commands:**
 - status
 - qstatus
 - show config
 - show log reverse
 - show capture/read/export/import/post full detail
 - show sync
 - show statusdb
 - show sql
 - compare/repair/job status
- **Monitoring logs:**
 - Main log event_log
 - Processes (capture/post/etc) log
 - Jobs log
- **Utilities monitoring scripts:**
 - sp_eventmon
 - sp_logmon
 - sp_ps
 - sp_qstatmon

The screenshot displays the SharePlex Manager web interface. The top section, 'Replication Overview', shows a table with columns: Status, Stream Name, Instance Name, Latency, Operation Rate, Operations in Period, Total Operations, and Events. The table contains one entry for stream 192.168.56.101:2100, showing a latency of 0.0 sec and 0 operations in the period.

The bottom section, 'Source', shows details for the source database 'pdb1' on host '192.168.56.101'. It includes a 'Capture' button and a 'Read' button. The 'Events' section shows a list of events with columns: Time, Event Level, Messages, and Event Count. The events include an error (ORA-1034) and two warnings related to activation and capture.

The 'Export' section shows details for the target database 'pdb1' on host 'o7-121-splex2'. It includes an 'Import' button and a 'Post' button. The 'Events' section shows a list of events with columns: Time, Event Level, Messages, and Event Count. The events include an error (ORA-1034) and two warnings related to activation and capture.



DEMO

Tuning



Tuning

Capture process

- Disable LOB Mapping
 - set param SP_OCT_ENABLE_LOBMAP 0
- Tune Capture on ASM/Exadata
 - set param SP_OCT_ASM_MULTI_OCI 3
- Tune Checkpointing
 - use the SP_OCT_CHECKPOINT_LOG parameter
- Add a second thread
 - set param SP_OCT_OLOG_RDS_MINER 1

Tuning

Post process

- Use INDEX hints
 - Use the *hints.SID* file
- Tune SQL Caching
 - set param SP_OPO_SQL_CACHE_DISABLE 1
 - set param SP_OPO_MAX_CDA 50
- Adjust open cursors
 - Oracle parameter OPEN_CURSORS
- Skip maintenance DML
 - Use SHAREPLEX_IGNORE_TRANS provided procedure
- Make small transactions faster
 - set param SP_OPO_DEPENDENCY_CHECK 1
 - set param SP_OPO_COMMIT_REDUCE_MSGS 100

- Split a large transaction into a smaller one
 - Currently supported for JMS
 - target r.mydb queue q1 set resources
commit_frequency=10000
- Tune queue performance
 - Both SP_IMP_QUEUE_PAUSE and SP_IMP_QUEUE_RESUME must be greater than zero, and SP_IMP_QUEUE_PAUSE must be greater than SP_IMP_QUEUE_RESUME.
- Tune hash-based horizontally partitioned replication
 - Set param SP_OCF_HASH_BY_BLOCK 1

Tuning

Parameters for high transactional volumes

```
sp_ctrl (UP0DC006.sigce.caisse-epargne.fr:2100)> list param modified
```

Oracle Capture parameters:

Parameter Name	Actual Value	Units	Set At
SP_OCT_ASM_MULTI_OCI	12	count	Restart Process
Default Value:	0		
SP_OCT_ASM_SUPPORT	1	flag	Restart Process
Default Value:	0		
SP_OCT_CHECKPOINT_FREQ	100000	message	Live
Default Value:	40000		
SP_OCT_LOG_READ_SIZE	1024		Restart Process
Default Value:	64		
SP_OCT_OLOG_QUEUE_SIZE	196608	# Queue	Restart Process
Default Value:	16384		
SP_OCT_REDO_RAW_OFFSET	0	bytes	Restart Process
Default Value:	-1		

SharePlex Queues parameters:

Parameter Name	Actual Value	Units	Set At
SP_QUE_Q_SHMSIZE	512	Mbytes	Restart Cop
Default Value:	8		

SharePlex Statistics parameters:

Parameter Name	Actual Value	Units	Set At
SP_SHS_SHMSIZE	128	Mbytes	Restart Cop
Default Value:	32		

```
sp_ctrl>set param SP_OCT_ASM_MULTI_OCI 8
```

```
sp_ctrl>set param SP_OCT_OLOG_QUEUE_SIZE 65536
```

```
sp_ctrl>set param SP_OCT_LOG_READ_SIZE 512
```

```
sp_ctrl>set param SP_OCT_CHECKPOINT_FREQ 100000
```

```
sp_ctrl>set param SP_QUE_Q_SHMSIZE 512
```

Tuning

Named Queues

- Suitable for parallel replication of non linked datasets.
 - Named Export queue
 - Fully control process for each target
 - Increase transfer bandwidth between source and target due to tcp/ip limitation of 128k packet size. More export queue and process will control the bandwidth that SharePlex will utilize
 - Named export queue config file syntax:
`splex.tabA splex.tabA srcsys:exportqname*targetsys@o.targetdb`
 - Named Post queue
 - Increase the posting performance to the target database.
 - Will utilize more resources with more post queue
 - Oracle sessions consideration when use more named post queue
 - Named post queue config file syntax:
`splex.tabA splex.tabA targetsys:postqname@o.targetdb`
- ⇒ **Combination of named export and import queues:**
`splex.tabA splex.tabA srcsys:exportqname*targetsys:postqname@o.targetdb`



DEMO

Trouble shooting



Troubleshooting

Overview

Common operational issues & how to resolve them

- Process failures (capture, read, post, export/import)
- Latency / queue growth
- Stuck or crashing post process
- ORA-errors, deadlocks & blocking
- Out-of-sync (OOS) detection
- High CPU / I/O contention
- Network bottlenecks (export/import)
- Configuration errors or missing objects
- Incorrect environment variables or ports

Troubleshooting

Debug mode

- Each SharePlex process (Capture, Read, Export, Import, Post, Open Target Post) has its own log/trace and a set of parameters that control how verbose and detailed its debugging output is.
- You typically identify which process is suspect, then enable debug only for that process, reproduce the issue, and disable debug again to avoid overhead.
- List of DEBUG mode parameters:
 - SP_OPO_DEBUG_FLAG
 - SP_COP_DEBUG
 - SP_CNC_DEBUG
 - SP_QUE_DEBUG
 - SP_XPT_DEBUG
 - SP_IMP_DEBUG
 - SP_DEQ_COMPARE_DEBUG



DEMO

Don't Miss What's Next!

Adv. SharePlex Operations:

***When Replication Breaks –
Your Recovery Playbook***

March 26th @ 11:00a.m. ET



 **Quest**

Thank You!