

All types of data replication with OE databases

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All types of data replication

After-Image (Log based) Replication

OpenEdge Replication

Pro2 Replication

Custom Replication

All types of data replication

After-Image Replication

Version 5 (late 80-es)

```
$DLC/bin/rfutil db-name -C roll forward -a ai-name
```

```
$DLC/bin/rfutil db-name -C roll forward retry -a ai-name
```

```
$DLC/bin/rfutil db-name -C roll forward oplock -a ai-name
```



(10.1C)

Roll forward oplock

```
OpenEdge Release 11.7.1 as of Wed Jun 14 19:00:30 EDT 2017
```

```
Database has been locked during roll forward processes. (14072)  
Write access to the database will not be allowed until the roll forward operations have completed. (14073)
```

```
----- Error -----
```

```
Access to the database during roll forward process is not allowed because it  
will modify the database. (14076)  
Write access to the database will not be allowed until the roll forward  
operations have completed. (14073)
```

```
-----  
<OK>
```

Roll forward oplock

```
$DLC/bin/rfutil db-name -C roll opunlock
```

```
Unlocking the database with rfutil db_name roll opunlock  
OpenEdge Release 11.7.3 as of Fri Apr 27 17:00:39 EDT 2018  
  
The database will go through crash recovery and no roll forward can be executed  
after this. (14077)  
Are you sure you want to disable the protection on roll forward? (y/n) (14078)  
Database has been unlocked during roll forward process. (14074)
```

All types of data replication

OpenEdge Replication

Fathom Replication 1.0 (Since Progress v9 in 2001)

OpenEdge Replication

Oracle Data Guard

OpenEdge Replication **Plus** –

either a separate license or part of Advanced Enterprise License

All types of data replication

Pro2 Replication

BravePoint product

Pro Dump & Load (Dan Foreman and Co)

pro2pro pro2sql pro2ora

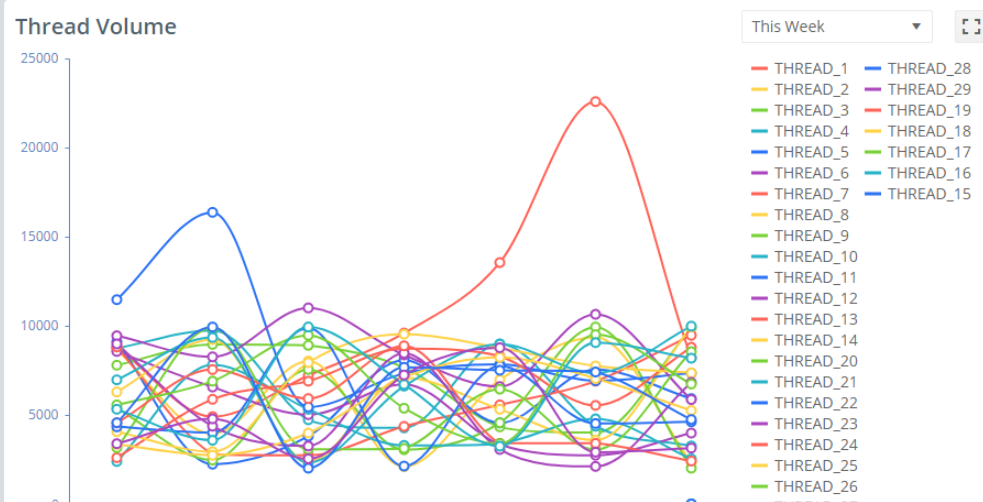
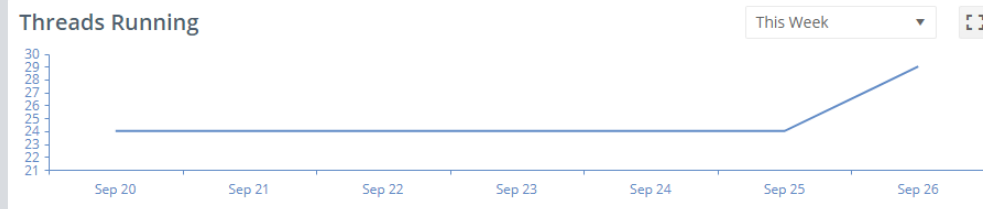
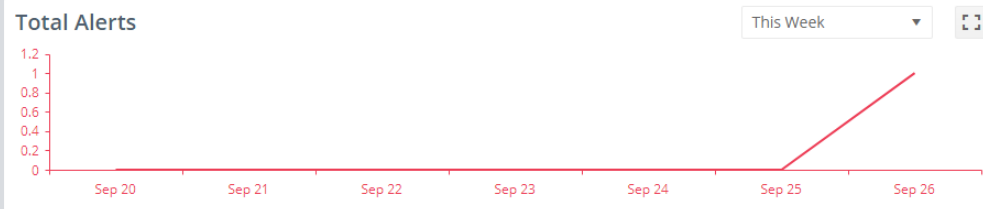
Pro2 Version 5 introduced CDC. We have version 4.6.7

Pro2 Version 6.0

1. It is browser based vs GUI client
2. It has background jobs

Pro2 > Dashboard

Total Threads <h1>22</h1> View Details	Active Threads <h1>22</h1> View Details	Total Source DBs <h1>1</h1> View Details	Total Target DBs <h1>1</h1> View Details	Pending Jobs Status: Running <h1>0</h1> View Details	Total Alerts <h1>1</h1> View Details
--	---	--	--	---	--



Replication Process

Id	Replication Control	Logging Level	Disposition	Status
<input type="checkbox"/> 1	Enabled	Moderate	Delete Record	RUNNING
<input type="checkbox"/> 2	Enabled	Moderate	Delete Record	RUNNING
<input type="checkbox"/> 11	Enabled	Moderate	Delete Record	RUNNING
<input type="checkbox"/> 12	Enabled	Moderate	Delete Record	RUNNING
<input type="checkbox"/> 13	Enabled	Moderate	Delete Record	RUNNING
<input type="checkbox"/> 14	Enabled	Moderate	Delete Record	RUNNING

Page 1 of 4

Pro2 > Dashboard

Total Threads

22

[View Details](#)

Active Threads

22

[View Details](#)

Total Source DBs

1

[View Details](#)

Total Target DBs

1

[View Details](#)

Pending Jobs
Status: Running

0

[View Details](#)

Total Alerts

1

[View Details](#)

Jobs Details

Status: Running

Job Control ENABLED

[Delete](#)

<input type="checkbox"/> JOBID ^	STATUS	TASK	CREATED DATE	COMPLETED DATE	DESCRIPTION	PARAMETERS
<input type="checkbox"/> 42	COMPLETE	ux_rungenreplproc.p	09/12/2019 17:22	12/09/2019 17:22	Generate Process Libraries	DBList=sports □
<input type="checkbox"/> 41	COMPLETE	ux_rungenschema.p	09/12/2019 16:10	12/09/2019 16:55	Generate Target Schema	DBList=sports PreserveArea=false Pro2Fields=f... □ ↓

- Select Source
- Set Target
- Generate Target Schema
- Mapping**
- CDC Mapping
- Advanced Configuration
- Generate Code

Create Replication : Mapping Source to Target Tables

Note: Auto mapping requires selection of one or more source tables and manual mapping requires a 1 : 1 linking (single source table or field to a single target table or field)

UnMapped Tables: sports

Search for table	
<input type="checkbox"/>	Source Tables
> <input type="checkbox"/>	Benefits
> <input type="checkbox"/>	BillTo
> <input type="checkbox"/>	Bin
> <input type="checkbox"/>	Class
> <input type="checkbox"/>	Department
> <input type="checkbox"/>	Employee
> <input type="checkbox"/>	Family
> <input type="checkbox"/>	Feedback
> <input type="checkbox"/>	InventoryTrans
> <input type="checkbox"/>	Invoice

Search for table	
Target Tables	
> <input type="checkbox"/>	BENEFITS
> <input type="checkbox"/>	BILLTO
> <input type="checkbox"/>	BIN
> <input type="checkbox"/>	CLASS
> <input type="checkbox"/>	DEPARTMENT
> <input type="checkbox"/>	EMPLOYEE
> <input type="checkbox"/>	FAMILY
> <input type="checkbox"/>	FEEDBACK
> <input type="checkbox"/>	INVENTORYTRANS
> <input type="checkbox"/>	INVOICE

Map

Auto Map

Un-Map

Mapped Tables

Source Tables	Target Tables
<input type="checkbox"/> Customer	CUSTOMER
<input type="checkbox"/> Address	ADDRESS
<input type="checkbox"/> Address2	ADDRESS2
<input type="checkbox"/> Balance	BALANCE
<input type="checkbox"/> City	CITY
<input type="checkbox"/> Comments	COMMENTS
<input type="checkbox"/> Contact	CONTACT
<input type="checkbox"/> Country	COUNTRY
<input type="checkbox"/> CreditLimit	CREDITLIMIT
<input type="checkbox"/> CustNum	CUSTNUM

All types of data replication

Custom Replication

Export data from Progress. Create .txt files. Daily.

Import data into Oracle. Using Oracle External Tables.



All types of data replication

Oracle

After-Image (Log based) Replication

Redo Log Shipment

OpenEdge Replication

Oracle Data Guard

Pro2 Replication

Oracle Golden Gate

Custom Replication

Custom Replication

Is it possible to Update Replication Target DB?

- Oracle 19c -- Active Data Guard DML Redirect
- Set startup parameter "ADG_REDIRECT_DML" to TRUE
`ALTER SESSION ENABLE ADG_REDIRECT_DML;`

After-Image

OE Replication

Pro2

Whole / Partial
Unit

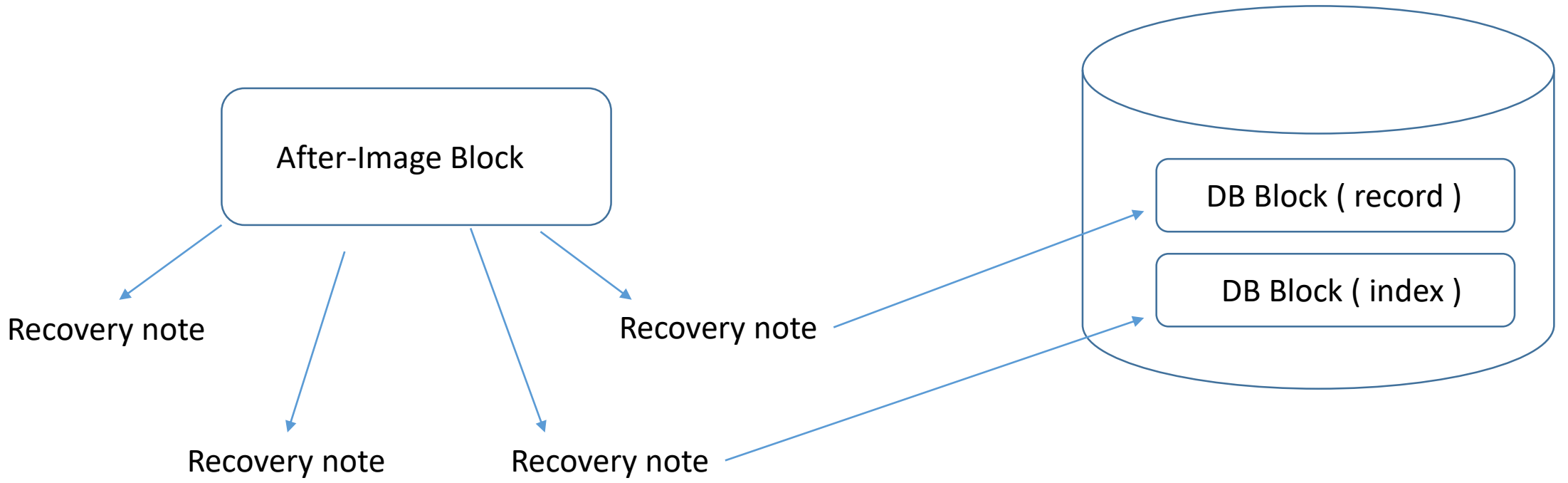
Whole Database

AI-Block

Whole Database

AI-Block

Partial / Table by Table
Record



`_StorageObject._Object-number ???`

	After-Image	OE Replication	Pro2
Whole / Partial	Whole Database	Whole Database	Partial / Table by Table
Unit	AI-Block	AI-Block	Record
DB Type	Pro to Pro	Pro to Pro	Pro to Other
Can use for DR/backup	Yes	Yes	Usually no
Can use for data reorganization	No	No	Yes (pro2pro)
Throughput	Fast	Faster	Slower
Instant replication	No	Yes	Yes
License	No	Yes	Yes
Access to Target DB	No	Yes (OE Repl Plus)	Yes
How difficult to setup	Very easy	Easy	More difficult / PSC help
Possibility of delay	Yes	No	May be

Possibility to delay replication using After-Image replication

Physical Corruption

Corruptions leading to errors with standard operations:
Reading, back out of a transaction, crash recovery

Logical Corruption

“Hand made corruptions” – deleting or wrongly changing important data

Both Corruptions could be fixed by delayed replication

Possibility to delay replication using After-Image replication

How long to delay? That is a question.

Time more than the longest transaction

Time when we expect to discover a physical or logical corruption
That is a very practical question.

Time to bring replication to current.

So it is a compromise between possibility of discovering corruption and time to transfer warm spare into live production database.

Possibility to delay replication using After-Image replication

Replication delay helps in investigation of issues

```
$DLC/bin/rfutil empty -C aimage truncate -aiblocksize <your_db_ai_block_size>
```

```
$DLC/bin/rfutil empty -C aimage scan verbose -a ai_file > some_file.txt
```



Any database with the same after-image block size



Demo slides (in case demo does not work)

(S-Source) proutil /home/job183/demo/sports -C enableSiteReplication source

(S) probkup online /home/job183/demo/sports /home/job183/demo/sports.bkp --REPLTargetCreation

(S) [ftp.sh](#) – FTP backup created in previous step from Source to Target

(T-Target) prorest /home/job183/demo/sports sports.bkp --verbose

(T) proutil /home/job183/demo/sports -C enableSiteReplication target

(T) proserve -pf /home/job183/demo/sports_target.pf

(S) dsrutil /home/job183/demo/sports -C restart server

----- Monitoring -----

(S/T) dsrutil /home/job183/demo/sports --C status

(S/T) dsrutil /home/job183/demo/sports --C status --verbose

(S/T) dsrutil /home/job183/demo/sports -C monitor

Demo slides (in case demo does not work)

Sample of sports.repl.properties file

[server]

control-agents=sportsagent1
database=sports
transition=manual
agent-shutdown-action=recovery
transition-timeout=600
defer-agent-startup=5760

Transition →
Transition →
Transition →

[control-agent.sportsagent1]

name=sportsagent1
database=sports
host=<Server-name>
port=65016
connect-timeout=120
replication-method=async
critical=0

[agent]

name=sportsagent1
database=sports
listener-minport=30003
listener-maxport=30100

[transition]

Transition → transition-to-agents=sportsagent1
Transition → database-role=reverse
Transition → auto-begin-ai=1
Transition → auto-add-ai-areas=0
Transition → source-startup-arguments=-DBService replserv -S
 demosports -pica 8192
Transition → target-startup-arguments=-S 65016 -DBService
 replagent
Transition → restart-after-transition=0

Demo slides (in case demo does not work)

The screenshot displays the 'FDM4 Production - Pro2SQL Administration Utility' window. The interface includes a menu bar (File, Tools, WAN, Help) and a toolbar with 'Local', 'Sleep Interval: 10', and 'Update' buttons. A 'Processors Stop: DAILY' section contains a 'Change' button and the text 'at 03:25'. The main area is titled 'Replication Queue and Options' and features a 'Refresh Interval: 2' with an 'Update' button. Below this is a table with columns for Event Type, Source Database, Source Table, Source Record, Event Date, Event Time, and User. The 'Replication Status' section at the bottom contains controls for 'Global Replication Control' (On/Off), 'Main Thread' (RUNNING), and 'Thread Two' through 'Thread Five' (all STOPPED). Each thread has 'On/Off' radio buttons, 'Logging Level' dropdowns (all set to 'Moderate'), and 'Queue Disposition' dropdowns (all set to 'Delete Record'). 'Save' and 'Reset' buttons are located at the bottom of the window.

Event Type	Source Database	Source Table	Source Record	Event Date	Event Time	User

Replication Status

Global Replication Control: On Off

Main Thread: **RUNNING** On Off Logging Level: Moderate Queue Disposition: Delete Record

Thread Two: **STOPPED** On Off Logging Level: Moderate Queue Disposition: Delete Record

Thread Three: **STOPPED** On Off Logging Level: Moderate Queue Disposition: Delete Record

Thread Four: **STOPPED** On Off Logging Level: Moderate Queue Disposition: Delete Record

Thread Five: **STOPPED** On Off Logging Level: Moderate Queue Disposition: Delete Record

Save Reset

Demo slides

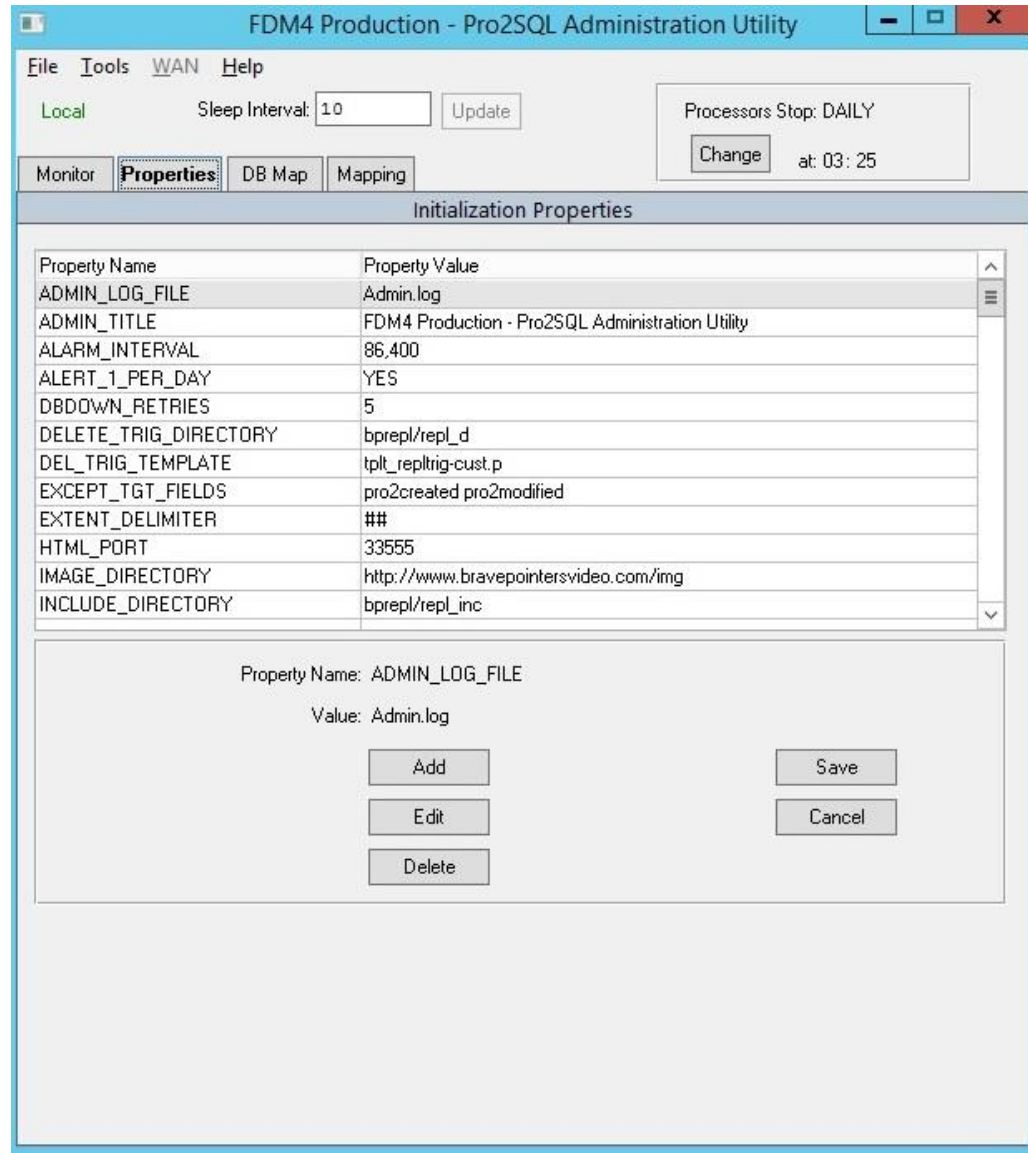
The screenshot displays the 'New setup - Pro2SQL Administration Utility' window. The interface includes a menu bar (File, Tools, WAN, CDC, Help) and a status bar (Local). Key settings include 'Sleep Interval: 60' and 'Processors Stop: NEVER'. The 'Monitor' tab is active, showing 'Replication Queue and Options' with a 'Refresh Interval: 10'. A table lists replication events, and a 'Global Controls' section shows 'Replication Control' set to 'On' and 'Logging' set to 'Moderate'. A detailed table at the bottom shows the status of replication threads.

Event Type	Source Database	Source Table	Source Record	Event Date	Event Time	User
W	atm	account	0x000000000db4908	27/09/2018	10:56:32	Administrator
W	atm	account	0x000000000d28002	27/09/2018	10:56:32	Administrator
W	atm	account	0x000000000dc2706	27/09/2018	10:56:32	Administrator
W	atm	account	0x000000000479492	27/09/2018	10:56:32	Administrator
W	atm	account	0x000000000927c1e	27/09/2018	10:56:32	Administrator
W	atm	account	0x000000000771820	27/09/2018	10:56:32	Administrator
W	atm	account	0x00000000099f2aa	27/09/2018	10:56:32	Administrator
W	atm	account	0x000000000a78992	27/09/2018	10:56:32	Administrator
W	atm	account	0x0000000000865718	27/09/2018	10:56:32	Administrator
W	atm	account	0x0000000000faed8a	27/09/2018	10:56:32	Administrator

THREAD #	REPL CONTROL	STATUS	LOGGING LEVEL	DISPOSITION
54	ON	RUNNING	MODERATE	DELETE RECORD
55	ON	RUNNING	MODERATE	DELETE RECORD
56	ON	RUNNING	MODERATE	DELETE RECORD
57	ON	RUNNING	MODERATE	DELETE RECORD
58	ON	RUNNING	MODERATE	DELETE RECORD
59	ON	RUNNING	MODERATE	DELETE RECORD

Pro2 Version 5

Demo slides (in case demo does not work)



Demo slides (in case demo does not work)

The screenshot displays the 'Mapping' tab of the Pro2SQL Administration Utility. The window title is 'FDM4 Production - Pro2SQL Administration Utility'. The interface includes a menu bar (File, Tools, WAN, Help), a 'Local' status indicator, a 'Sleep Interval' of 10, and a 'Processors Stop: DAILY' setting at 03:25. The 'Table Replication and Mapping' section shows the 'Source Database' as 'ddyn4'. A list of 'Currently Mapped Tables' is shown, with columns for Source Table, Schema Table, and Target Table. Below this, there are checkboxes for 'Generate Queue Record', 'Include in Differential', 'Process Queue Record', and 'Merged Triggers', along with a 'Queue Thread #' of 1. The 'Field Mapping' section at the bottom shows 'Currently Mapped Fields' with columns for Source Field, Schema Field, and Target Field. It also displays 'Source Data Type: character', 'Target Precision: 16', 'Schema Data Type: CHARACTER', and 'Target Data Type: NVARCHAR'.

Table Replication and Mapping

Source Database: **ddyn4** All Databases Connected

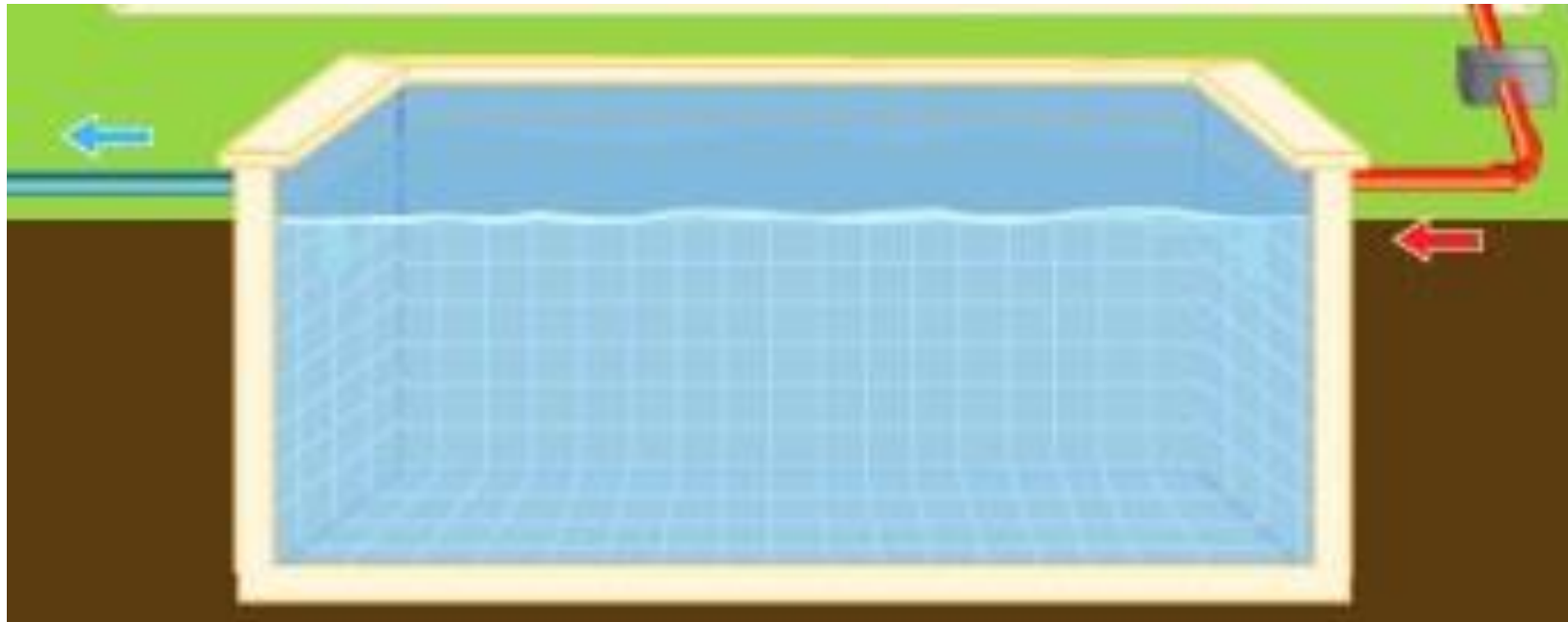
Source Table	Schema Table	Target Table
ab-catalog	ab_catalog	ab_catalog
acc-cent-val	acc_cent_val	acc_cent_val
acc-rollup	acc_rollup	acc_rollup
access-log	access_log	access_log
accessorial-detail	accessorial_detail_h	accessorial_detail
accessorial-hist	accessorial_hist	accessorial_hist

Field Mapping

Source Field	Schema Field	Target Field
ab-catcode	ab_catcode	ab_catcode
ab-catdesc	ab_catdesc	ab_catdesc
ab-catlink	ab_catlink	ab_catlink

Parameter -pica (Plugin Communication Area) Database Service Manager Queue

-pica is just a buffer for AI messages to be sent from source to target



Parameter -pica (Plugin Communication Area)

How to measure “in-pipe”?

Promon / R&D / 2 / 6

_ActAILog VST

```
10/03/18      Activity: AI Log
16:18:41      10/03/18 16:18 to 10/03/18 16:18 (11 sec)
```

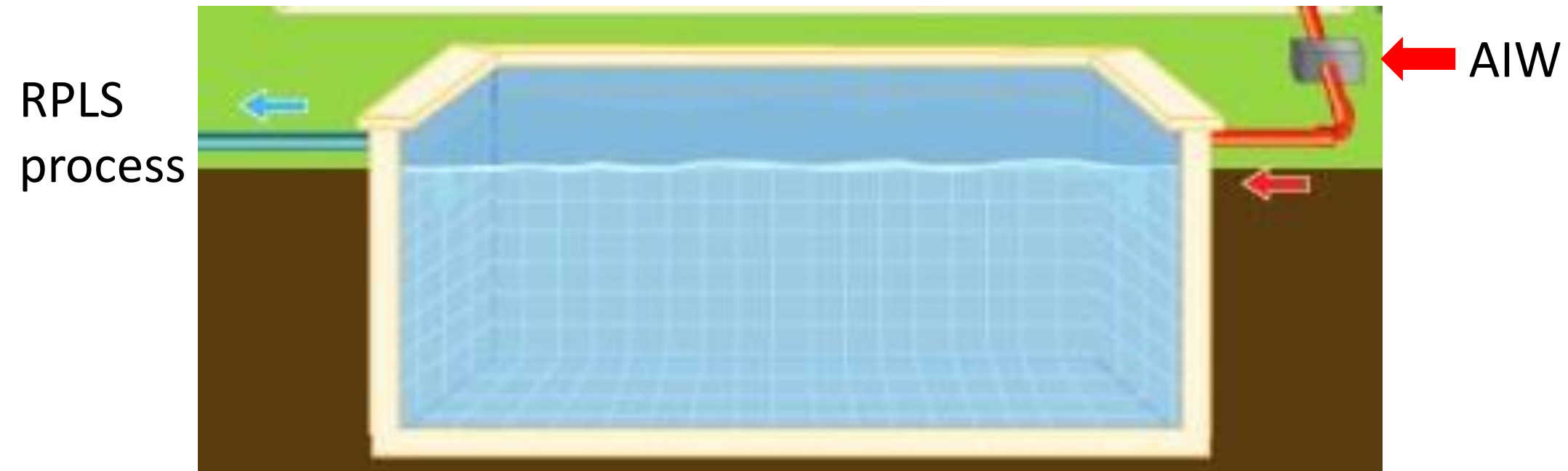
	Total	Per Min	Per Sec
Per Tx			
Total AI writes	636	3469	57.82
0.16			
AIW AI writes	626	3415	56.91
0.16			
Records written	59981	327169	5452.82
14.90			
Bytes written			939771.91
2567.68			
Busy buffer w		0	0.00
0.00			
Buffer not avail	0	0	0.00
0.00			
Partial writes	4	22	0.36
0.00			
Log force waits	0	0	0.00

AI writes per sec * after-image block size

$57.82 * 16,384 = 947,322$

Parameter -pica (Communication queue) Database Service Manager Queue

-pica is just a buffer for AI messages to be sent from source to target



Parameter -pica (Plugin Communication Area)

How to measure pool ?

Promon / R&D / 1 / 16

_db servicemanager
VST

```
Enter a number, <return>, P, T, or X (? for help): 16
```

```
10/03/18      Status: Database Service Manager  
16:58:18
```

```
Communication Area Size      :      262144.00 KB  
Total Message Entries        :      2396736  
Free Message Entries         :      2396736  
Used Message Entries         :           0  
Used HighWater Mark         :          1559  
Area Filled Count           :           0  
Service Latch Holder        :           -1  
Access Count                 :      4800658  
Access Collisions           :          2331
```

-pica 262144

Pool Size
Air
Water
2x AI blocks proc

```
Registered Database Service Objects
```

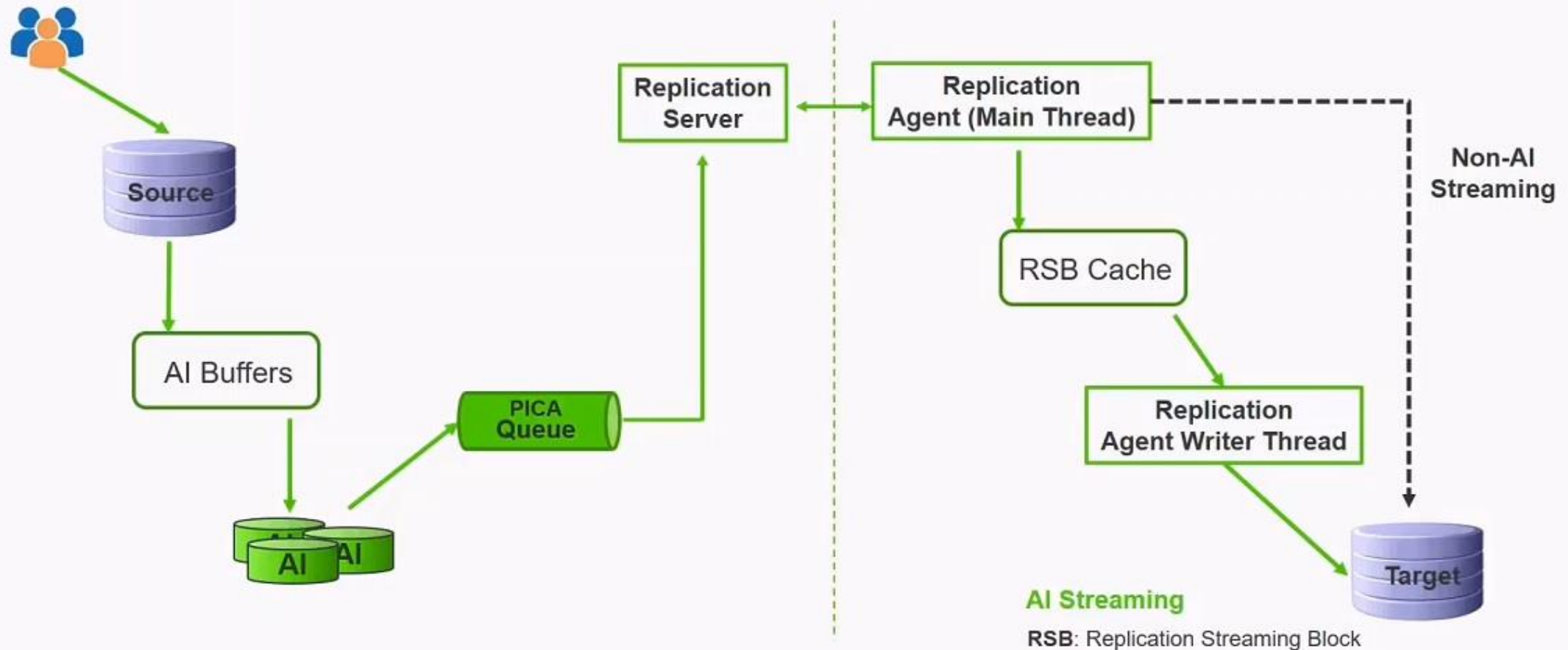
Total Message Entries 2,396,736 * 112 = 262143 KB

Parameter -pica (Plugin Communication Area)



OE version 12 new feature – AI Streaming

AI Streaming Replication Overview



Parameter -pica (Plugin Communication Area)

[agent]

ai-streaming=1

AI Streaming is enabled

rsb-cache-size=5000

Specifies the size of the Replication Streaming cache in units of an AI block

[agent]

ai-streaming=0

AI Streaming is disabled

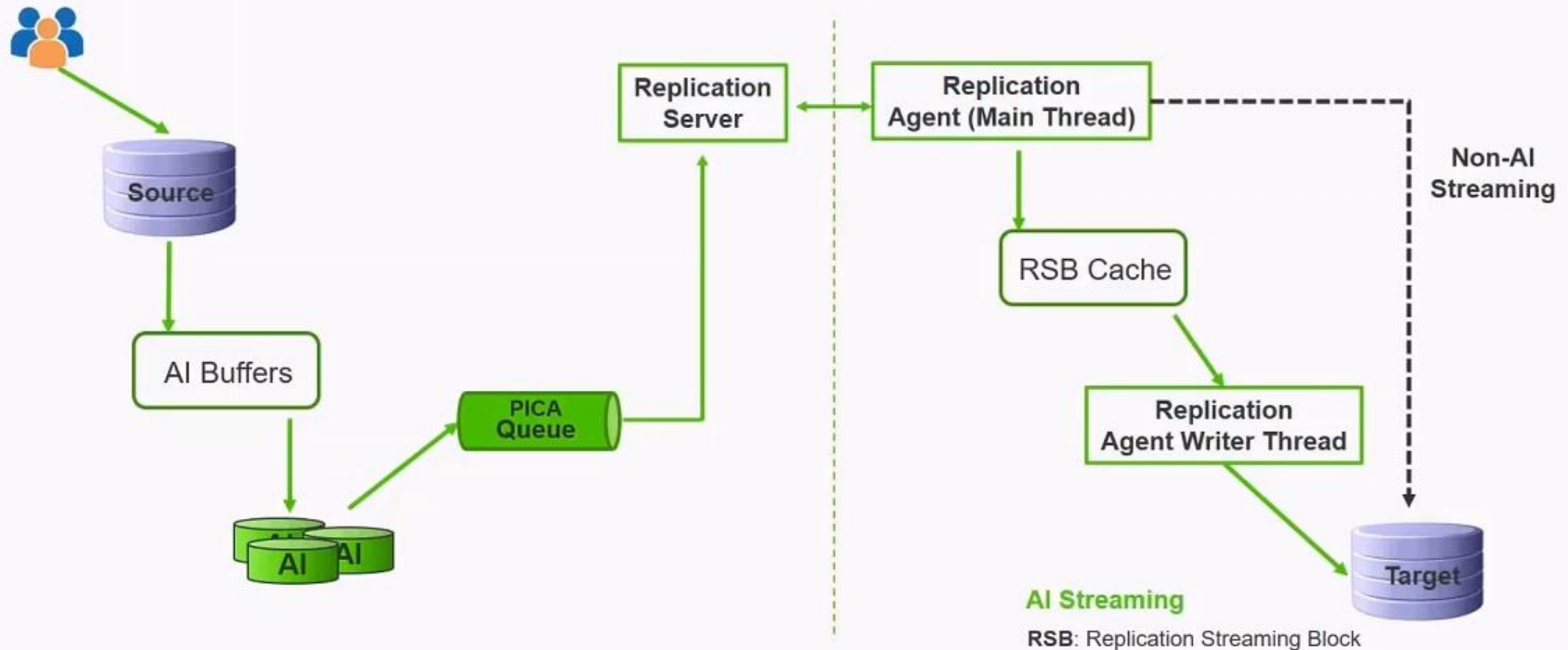
rsb-cache-size=5000

ignored

See `_Repl-AgentAIStreaming` VST for details

OE version 12 new feature – AI Streaming

AI Streaming Replication Overview



Starting 12.0 only asynchronous commit mode is supported.
Synchronous commit mode no longer supported.

New in version 12.1 Replication properties validation utility
dsrutil db-name -C validate

In future version 12.2 -pica could be changed online

Startup parameters

- Startup parameters on Source and Target should be the same

```
-L 500000
-B 20000
-spin 5000
# Startup parameters on Source and Target should be the same
-n 2700
-bibufs 200
-aibufs 200
-Mn 25
-Mi 2
-Mpb 1
-lruskips 100
-Mxs 5000
-tablerangesize 200
-indexrangesize 250
-crStatus 15
-crTXDisplay
-numCheckpointStats 128
-normtshutdown
-pf /usr/dbs/sof/pro2sqldb_repl.pf
```

Startup parameters

When Source and Target parameters do not match

Source_DB: status code 6060: Server is ended

Target_DB: status code 1063: Agent is Ended

```
[2018/06/01@03:50:15.796-0400] P-53805478 T-1 I RPLS 26: (10842) Connecting to Fathom Replication Agent pro2agent1.  
[2018/06/01@03:50:18.820-0400] P-53805478 T-1 I RPLS 26: (19049) The sum value of database startup parameters -n and -Mn must be greater than or equal to the value on the Source database.  
[2018/06/01@03:50:18.824-0400] P-53805478 T-1 I RPLS 26: (10700) The Fathom Replication Agent pro2agent1 is being terminated.
```

Startup parameters

- replication related parameters we put into a separate .pf

```
[corpdev]/home/job183/demo> ls sports*.pf
sports.pf          sports_source.pf  sports_target.pf
[corpdev]/home/job183/demo> cat sports_source.pf
-pf /home/job183/demo/sports.pf
-S demosports
-pica 8192
-DBService Replserv
[corpdev]/home/job183/demo> cat sports_target.pf
-pf /home/job183/demo/sports.pf
-S 65016
-DBService replagent
[corpdev]/home/job183/demo> cat sports.pf
# Startup Parameters
-db /home/job183/demo/sports
-L 10000
-B 2000
-c 100
-n 100
-spin 2000
-Mn 15
-Mpb 5
```

Startup Synchronization

```
[alphas3]/home/job183> dsrutil /usr/dbx/live/imi -C monitor
```

```
OpenEdge Replication Monitor
```

```
Page 1
```

```
Database: /usr/dbx/live/imi
```

- S. Replication server status
- R. Replication server remote agents
- A. Replication agent status**
- I. Replication inter-agent status

- M. Modify display defaults
- Q. Quit

```
Enter your selection:
```


Startup Synchronization

```
(B) TELNET (172.16.18.100) - PowerTerm Plus
File Edit Terminal Communication Sessions Options Script Help

Database: /usr/dbx/live/fdm4

Database is enabled as OpenEdge Replication: Target

Agent:
  Name:          fdm4agent1
  ID:            1
  Host name:     192.168.10.100
  State:         Startup Synchronization
  Ready:         Yes
  Critical:      No
  Method:        Asynchronous
  Agent is waiting for: Nothing
  Maximum bytes in TCP/IP message: 16704
  Server/Agent connection time: Fri May 25 06:19:00 2018
  Delay Interval (current / min / max): 5 / 5 / 500
  Transition information:
    Type:        Manual
  The last block received at: Fri May 25 06:33:01 2018
  Activity information:
    Blocks received: 18038
    Blocks processed: 18039

RETURN - show remaining. U - continue uninterrupted: █
```

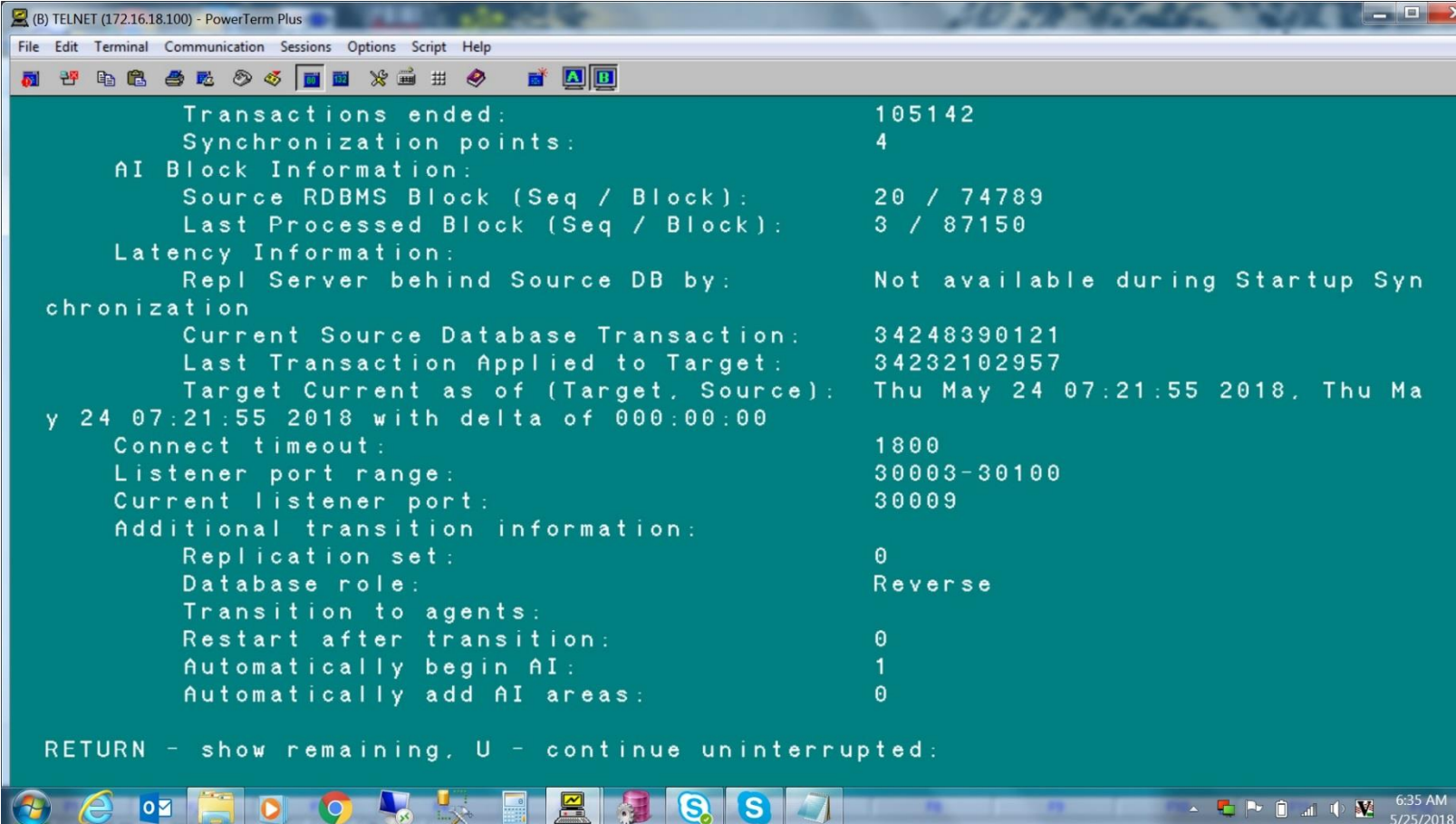
6:33 AM
5/25/2018

Startup Synchronization

```
(B) TELNET (172.16.18.100) - PowerTerm Plus
File Edit Terminal Communication Sessions Options Script Help
Transactions ended: 1483177
Synchronization points: 18
AI Block Information:
Source RDBMS Block (Seq / Block): 20 / 71356
Last Processed Block (Seq / Block): 3 / 69112
Latency Information:
Repl Server behind Source DB by: Not available during Startup Syn
chronization
Current Source Database Transaction: 34248382411
Last Transaction Applied to Target: 34231997815
Target Current as of (Target, Source): Thu May 24 05:32:30 2018, Thu Ma
y 24 05:32:30 2018 with delta of 000:00:00
Connect timeout: 1800
Listener port range: 30003-30100
Current listener port: 30009
Additional transition information:
Replication set: 0
Database role: Reverse
Transition to agents:
Restart after transition: 0
Automatically begin AI: 1
Automatically add AI areas: 0

RETURN - show remaining, U - continue uninterrupted:
```

Startup Synchronization



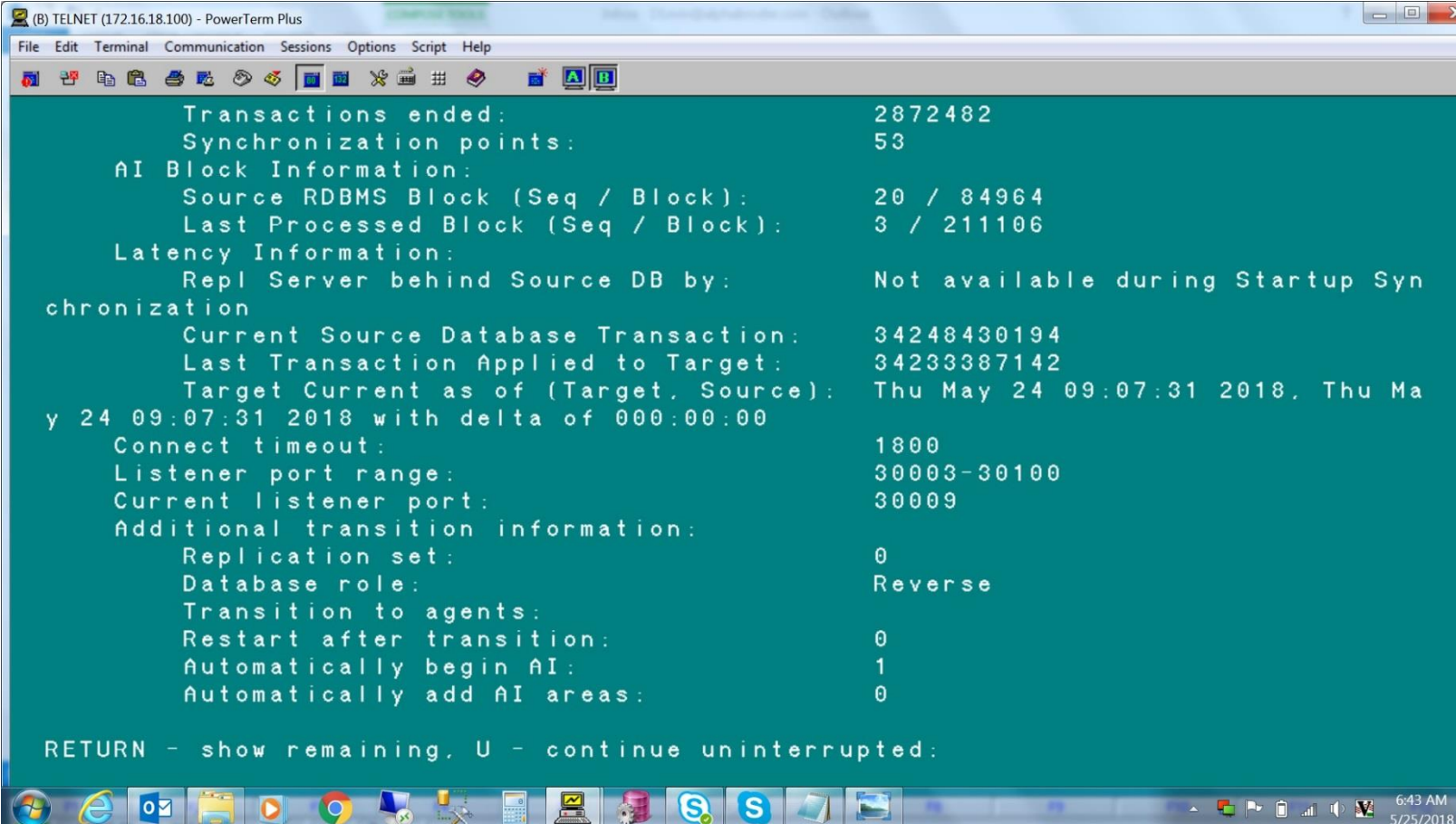
The screenshot shows a terminal window titled "(B) TELNET (172.16.18.100) - PowerTerm Plus". The terminal output displays the following information:

```
Transactions ended: 105142
Synchronization points: 4
AI Block Information:
  Source RDBMS Block (Seq / Block): 20 / 74789
  Last Processed Block (Seq / Block): 3 / 87150
Latency Information:
  Repl Server behind Source DB by: Not available during Startup Syn
chronization
  Current Source Database Transaction: 34248390121
  Last Transaction Applied to Target: 34232102957
  Target Current as of (Target, Source): Thu May 24 07:21:55 2018, Thu Ma
y 24 07:21:55 2018 with delta of 000:00:00
Connect timeout: 1800
Listener port range: 30003-30100
Current listener port: 30009
Additional transition information:
  Replication set: 0
  Database role: Reverse
  Transition to agents:
  Restart after transition: 0
  Automatically begin AI: 1
  Automatically add AI areas: 0

RETURN - show remaining, U - continue uninterrupted:
```

The terminal window includes a menu bar (File, Edit, Terminal, Communication, Sessions, Options, Script, Help) and a taskbar at the bottom with various application icons and a system tray showing the time as 6:35 AM on 5/25/2018.

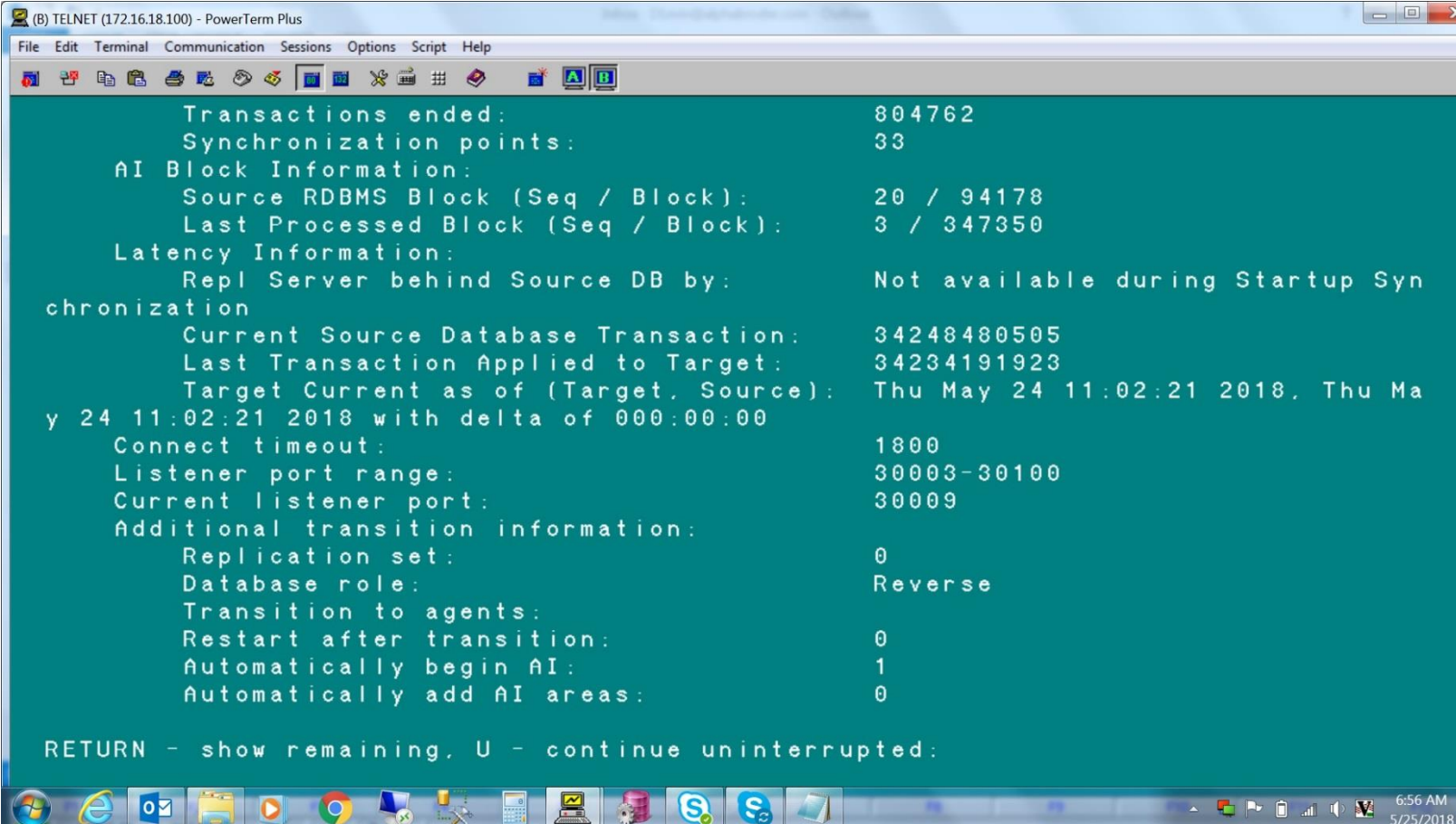
Startup Synchronization



```
(B) TELNET (172.16.18.100) - PowerTerm Plus
File Edit Terminal Communication Sessions Options Script Help
Transactions ended: 2872482
Synchronization points: 53
AI Block Information:
Source RDBMS Block (Seq / Block): 20 / 84964
Last Processed Block (Seq / Block): 3 / 211106
Latency Information:
Repl Server behind Source DB by: Not available during Startup Syn
chronization
Current Source Database Transaction: 34248430194
Last Transaction Applied to Target: 34233387142
Target Current as of (Target, Source): Thu May 24 09:07:31 2018, Thu Ma
y 24 09:07:31 2018 with delta of 000:00:00
Connect timeout: 1800
Listener port range: 30003-30100
Current listener port: 30009
Additional transition information:
Replication set: 0
Database role: Reverse
Transition to agents:
Restart after transition: 0
Automatically begin AI: 1
Automatically add AI areas: 0

RETURN - show remaining, U - continue uninterrupted:
```

Startup Synchronization



```
(B) TELNET (172.16.18.100) - PowerTerm Plus
File Edit Terminal Communication Sessions Options Script Help
Transactions ended: 804762
Synchronization points: 33
AI Block Information:
Source RDBMS Block (Seq / Block): 20 / 94178
Last Processed Block (Seq / Block): 3 / 347350
Latency Information:
Repl Server behind Source DB by: Not available during Startup Syn
chronization
Current Source Database Transaction: 34248480505
Last Transaction Applied to Target: 34234191923
Target Current as of (Target, Source): Thu May 24 11:02:21 2018, Thu Ma
y 24 11:02:21 2018 with delta of 000:00:00
Connect timeout: 1800
Listener port range: 30003-30100
Current listener port: 30009
Additional transition information:
Replication set: 0
Database role: Reverse
Transition to agents:
Restart after transition: 0
Automatically begin AI: 1
Automatically add AI areas: 0

RETURN - show remaining, U - continue uninterrupted:
```

Startup Synchronization

```
(B) TELNET (172.16.18.100) - PowerTerm Plus
File Edit Terminal Communication Sessions Options Script Help
Transactions ended: 4552507
Synchronization points: 164
AI Block Information:
Source RDBMS Block (Seq / Block): 21 / 7037
Last Processed Block (Seq / Block): 6 / 35808
Latency Information:
Repl Server behind Source DB by: Not available during Startup Syn
chronization
Current Source Database Transaction: 34248533313
Last Transaction Applied to Target: 34235067193
Target Current as of (Target, Source): Thu May 24 14:21:22 2018, Thu Ma
y 24 14:21:22 2018 with delta of 000:00:00
Connect timeout: 1800
Listener port range: 30003-30100
Current listener port: 30009
Additional transition information:
Replication set: 0
Database role: Reverse
Transition to agents:
Restart after transition: 0
Automatically begin AI: 1
Automatically add AI areas: 0

RETURN - show remaining, U - continue uninterrupted:
```

Startup Synchronization

```
Database is enabled as OpenEdge Replication: Target

Agent:
  Name:          imiagent1
  ID:            1
  Host name:     192.168.10.100
  State:         Normal Processing
  Ready:         Yes
  Critical:      No
  Method:        Asynchronous
  Agent is waiting for: Nothing
  Maximum bytes in TCP/IP message: 8512
  Server/Agent connection time: Fri May 25 03:47:01 2018
  Delay Interval (current / min / max): 240 / 5 / 500
  Transition information:
    Type:        Manual
  The last block received at: Fri May 25 16:03:01 2018
  Activity information:
    Blocks received: 66
    Blocks processed: 66
```

A couple OE Replication advices

- After switch database roles do not forget to turn off AI or run archiver on Target (that was Source at some point in time)
- The agent name has a limit of 15 characters

```
[server ]  
  control-agents=sportsagent1  
  database=sports  
  transition>manual
```

- Do not run backup before synchronization started
- If you disabled replication, delete the repl.recovery files

