uniformance

Implement PHD Tag Database Synchronization

Lesson Objective

Objective

Perform the configuration to automatically update the PHD reference database with changes made to tag descriptions and ranges on the source system.

Topics

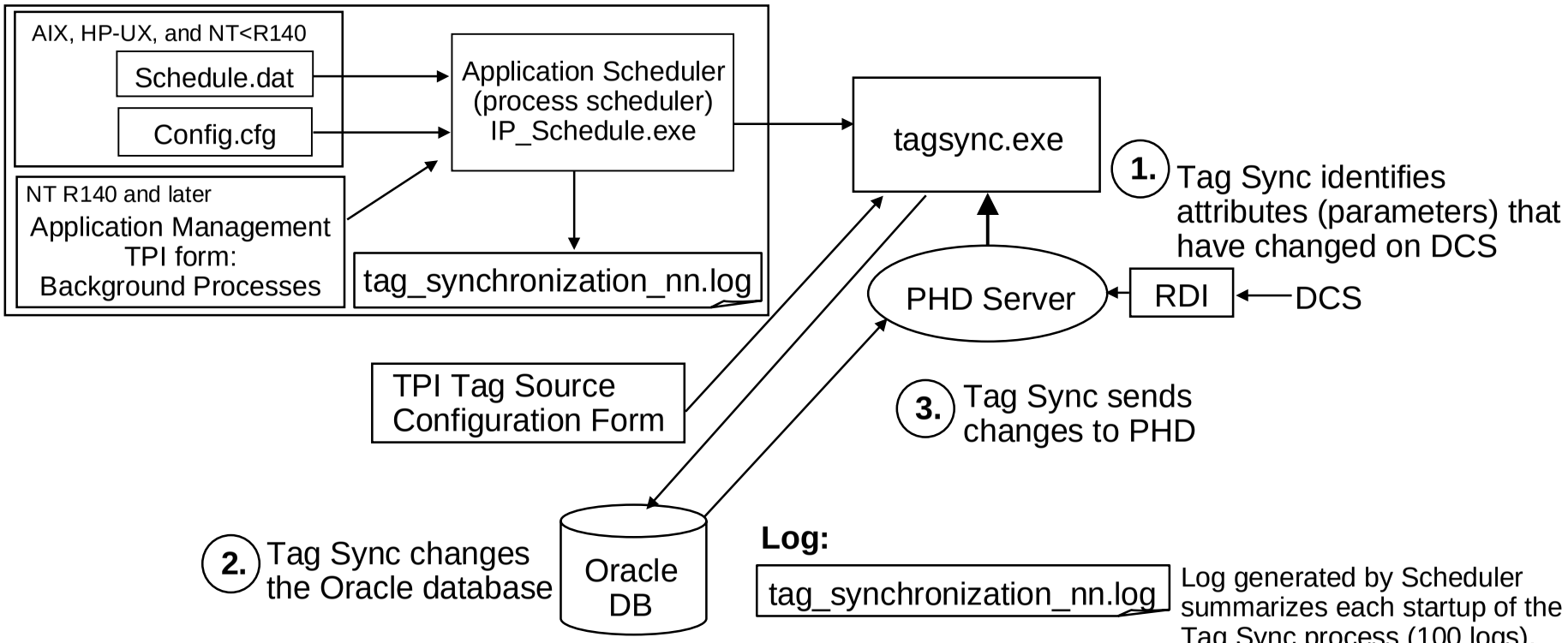
- Components and Data Flow
- Tag Sync Example
- Tag Sync Operation
- Tag Source Configuration Procedure
- Tag Sync Considerations
- Scheduling Tag Sync
- Tag Sync Log

References

- *PHD User Manual*, Background Processes, PIM0201
- *Uniformance System Environment User Guide, SM0401*
- *Uniformance Background Processing Descriptions User Guide*, PIM1001

Tag Synchronization - Components and Data Flow

- Tag Reference Database Synchronization (Tag Sync) synchronizes selected PHD tag definitions with tag information returned from the source system. Example: Synchronizes the HI_EXTREME parameter of PHD tag TIC3000.PV when PVEUHI of DCS tag TIC3000 changes.
- **Tag descriptions** and **high/low extremes** may be synchronized. The source system parameters must be collected.
- Configuration is not on a per point basis. You perform system-wide Tag Sync configuration through the Tag Source Configuration form.
- Tag Sync is a background process running at a user-defined frequency (typically once a day).



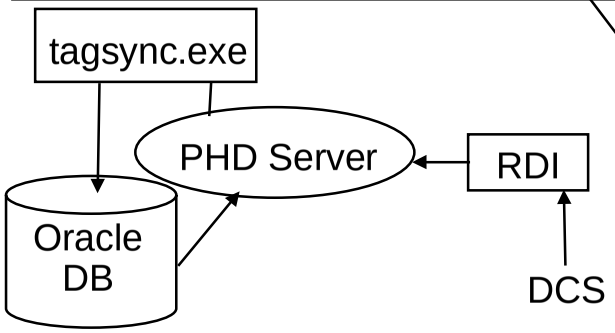
Tag Sync - Hi Extreme Example

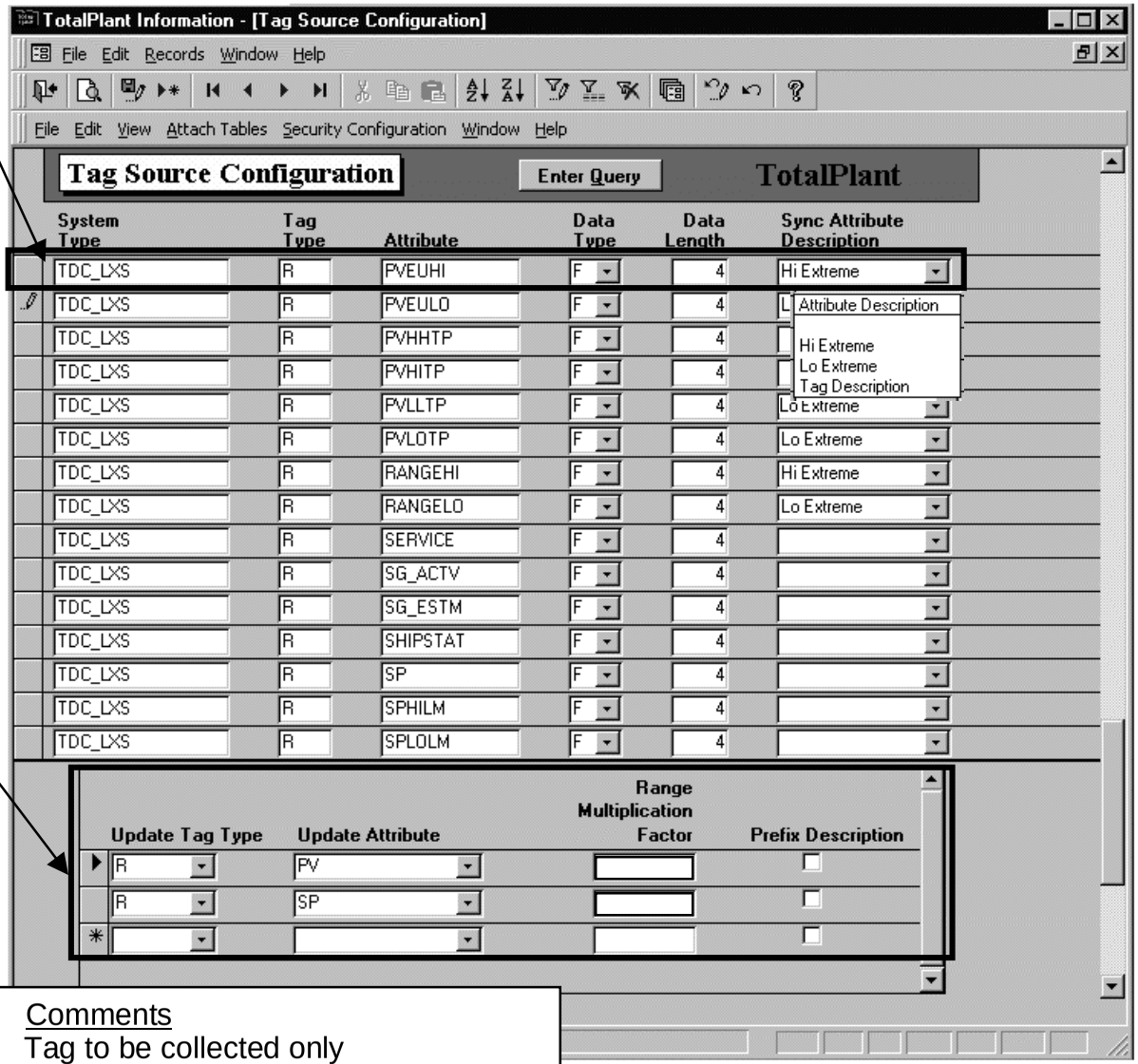
In the example shown here:

Tag Sync detects PVEUHI changes for any PHD tag with TDC_LXS as its source system type and PVEUHI as its source attribute.

Ex: The PVEUHI of DCS tag TIC3000 changed from "500" to "1000".

When Tag Sync detects the change for PHD tag TIC3000.PVEUHI, it updates the Hi Extreme of PHD tags having the same source tagname and having a source attribute of PV, or SP.

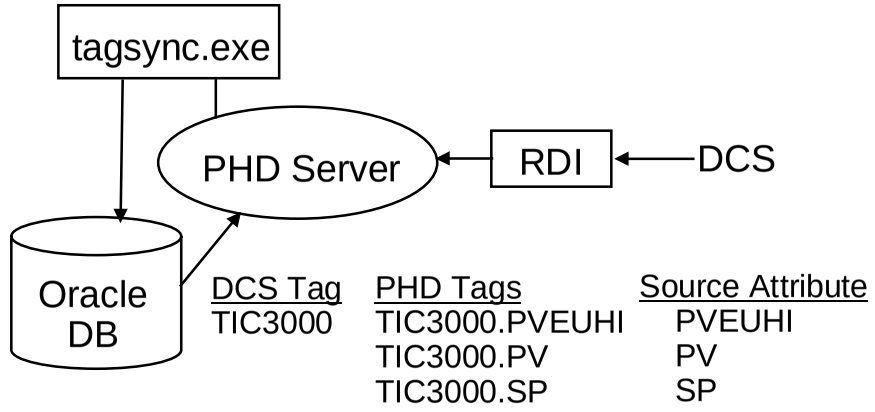


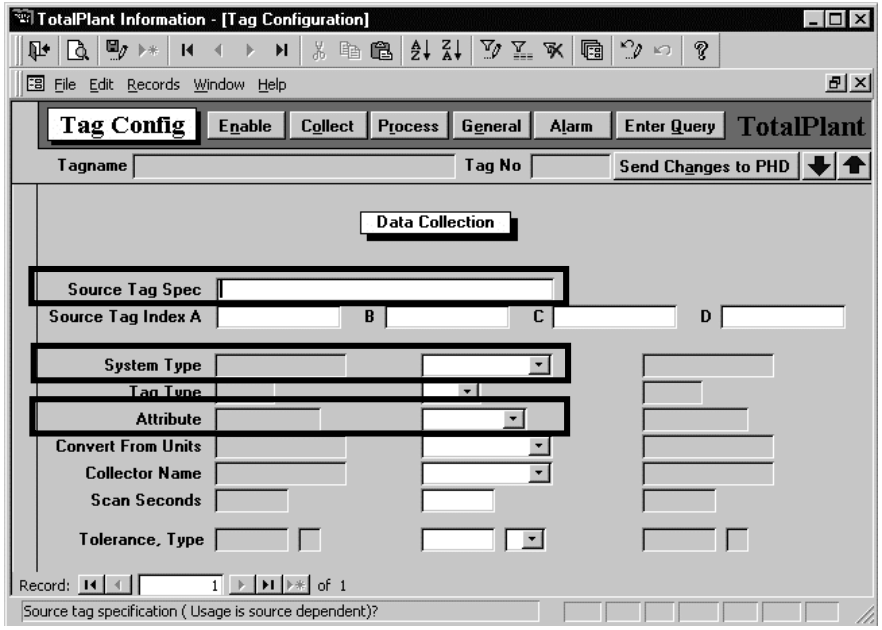


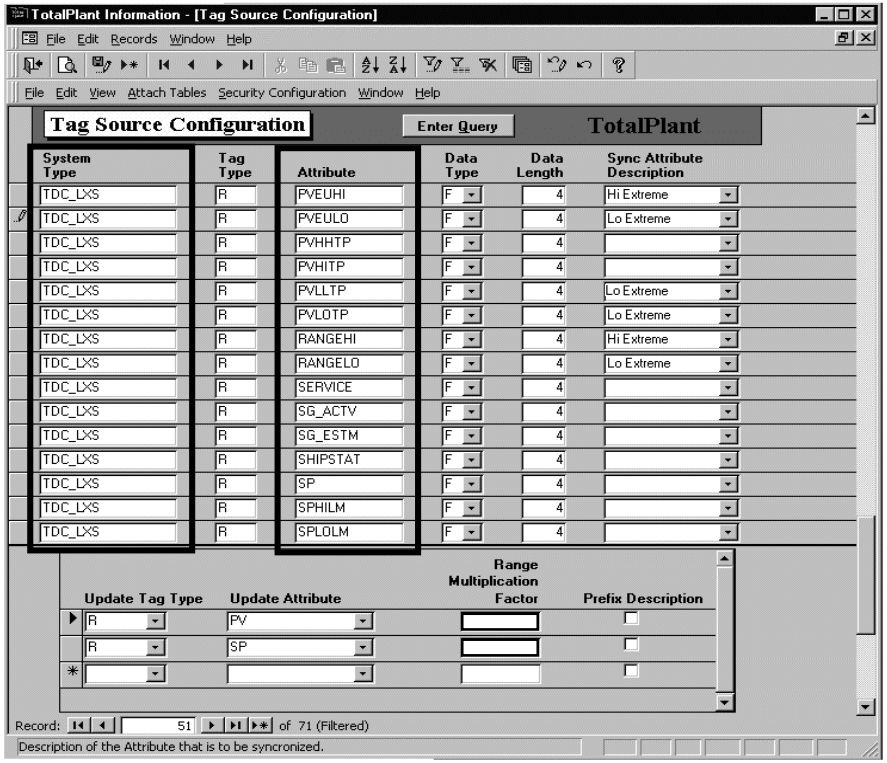
DCS Tag	PHD Tags	Source Attribute	Comments
TIC3000	TIC3000.PVEUHI	PVEUHI	Tag to be collected only
	TIC3000.PV	PV	Tag to be collected and synchronized
	TIC3000.SP	SP	Tag to be collected and synchronized

Tag Sync Operation

- Tag Sync does not know any thing about RDIs, so it does not care about the RDI type (Remote or Local) or the collector name of the RDI being used.
- Tag Sync only cares about three tag definition fields: source System Type, Source Tag Spec, and source Attribute.
- Tag Sync uses the source System Type field to match synchronization attributes to tags to be synched--RDIs have no effect.







Tag Source Configuration Procedure

1. Select a master record (attribute) in the top half of the screen. Enter the Synch Attribute Description for the master record.

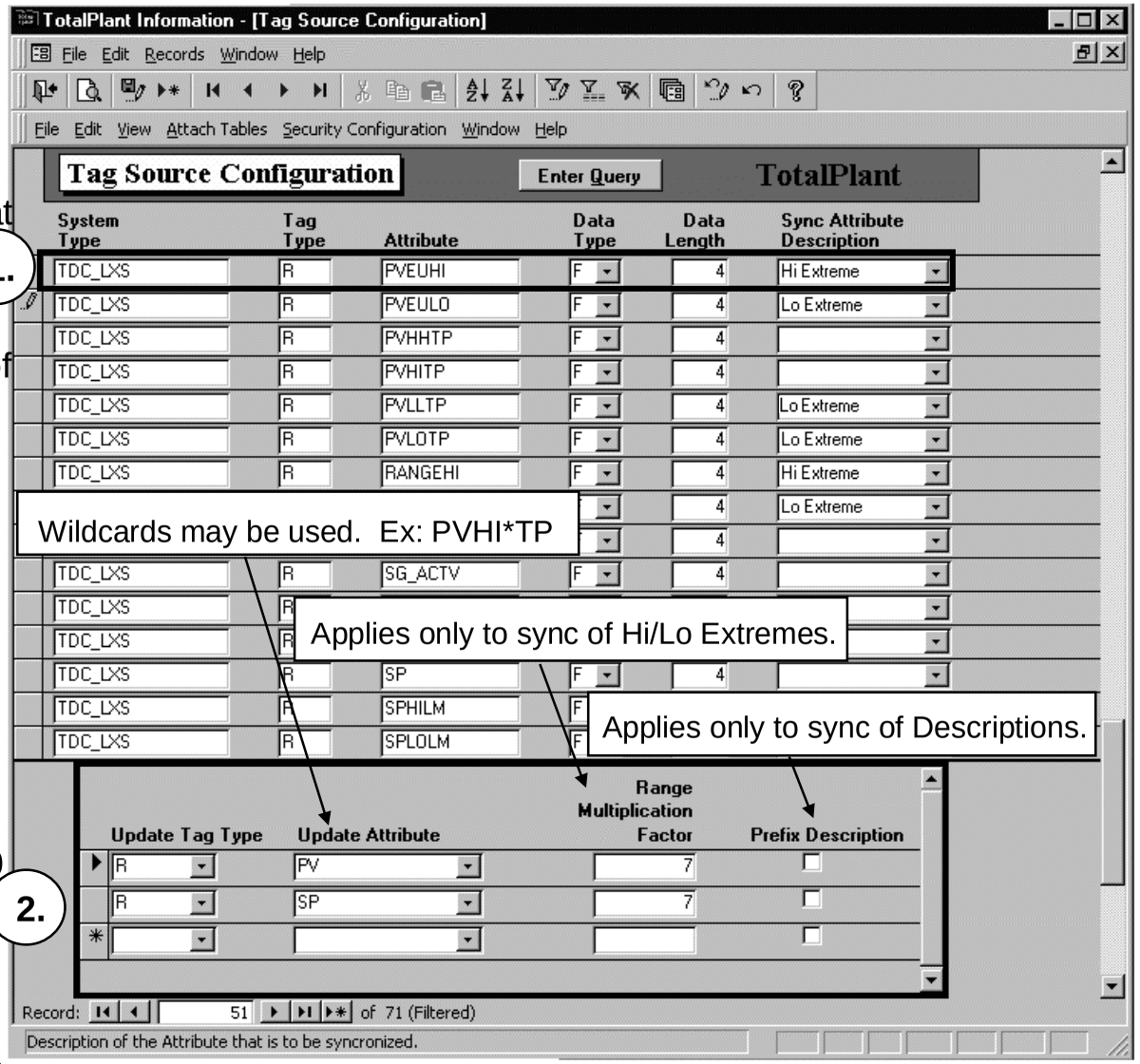
2. Enter the details corresponding to that master record in the bottom half of the screen.

Update Tag Type - Defines the type of tags that Tag Sync searches for.

Update Attribute - Defines the source attribute that tagsync searches for when locating tags eligible to be synchronized.

Range Multiplication Factor - Modifies Hi or Lo Extreme by a percentage to accommodate values outside the normal operating range:
Hi = Hi + (Hi - Lo) * MULT_FCTR/100
Lo = Lo - (Hi - Lo) * MULT_FCTR/100

Prefix Description - For tag documentation, this option adds the attribute ID as a prefix to an updated tag description (ex. PV - Pond Temp).



For details, refer to *PHD User Manual*, Synchronization Example.

Written Exercise

Complete the following statements as they apply to the attribute highlighted in the display.

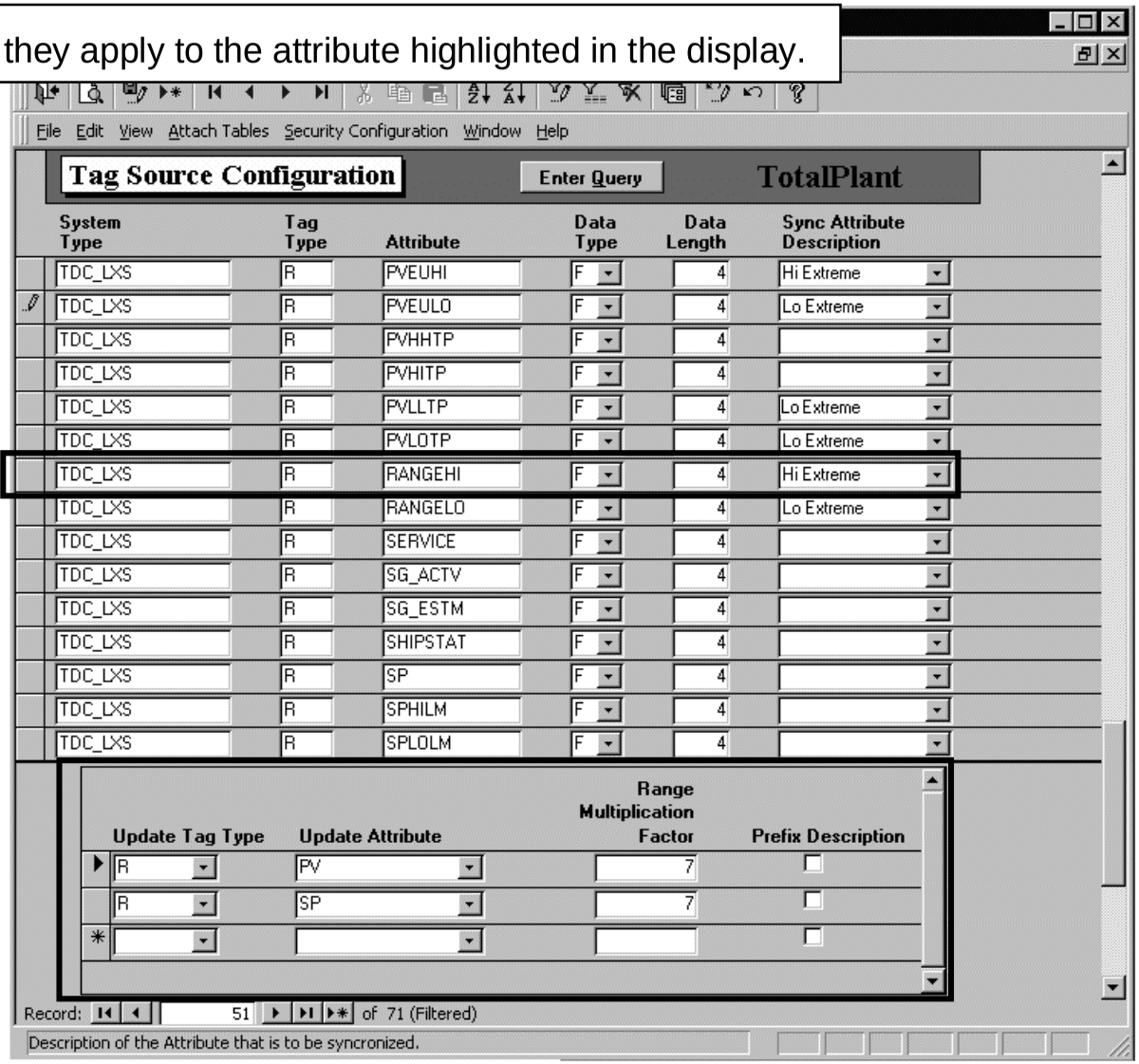
1. A change to the value of attribute _____ on the DCS causes synchronization to occur.

2. What value on the PHD system will be synched to the source system?_____

3. What PHD tags will be synched?
   _____

4. Explain a probable reason why OP was not included as an update attribute.

The answers are on the next page.



Written Exercise Answers

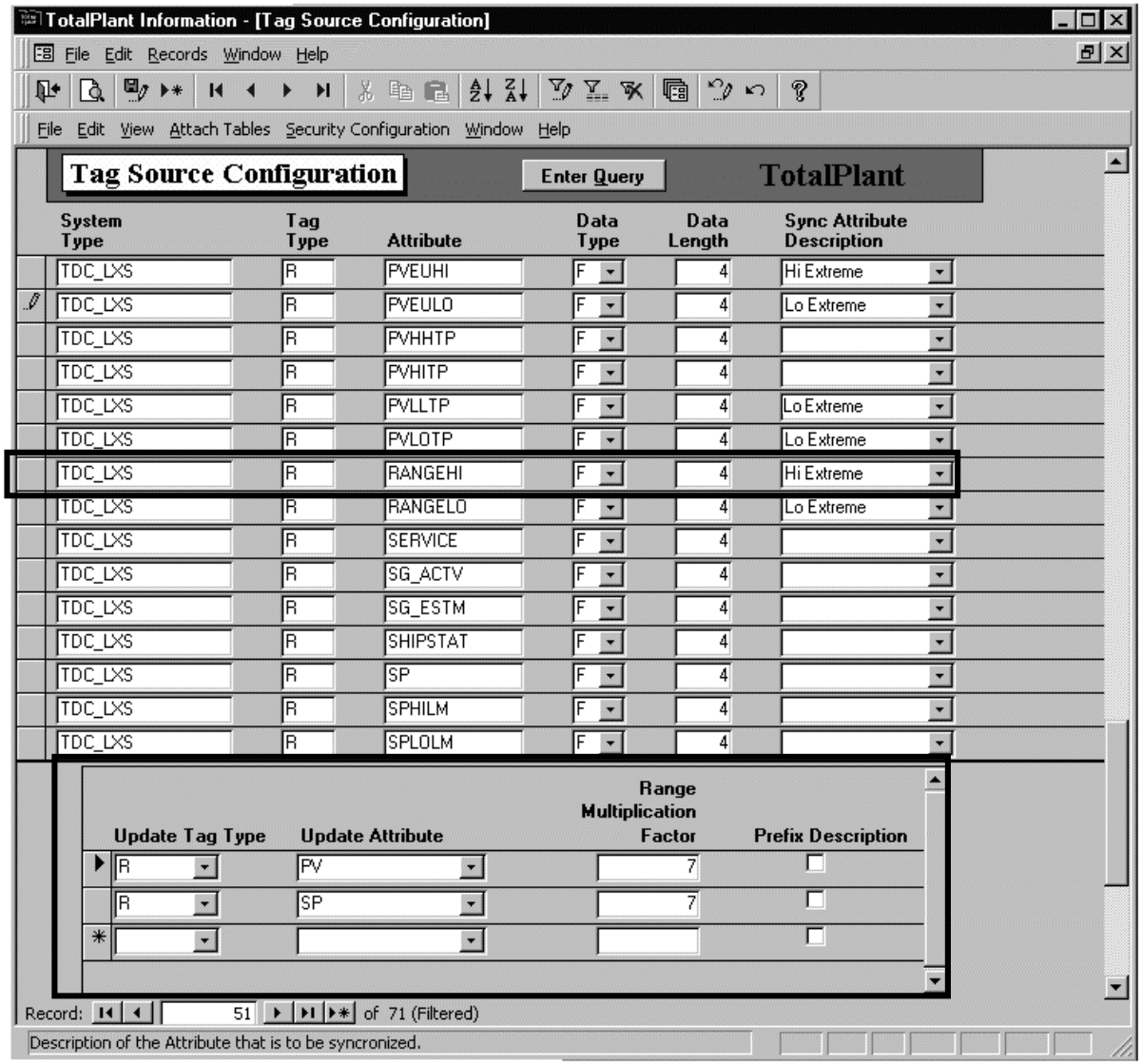
Answers:

1. A change to the value of attribute *RANGEHI* on the DCS causes synchronization to occur.

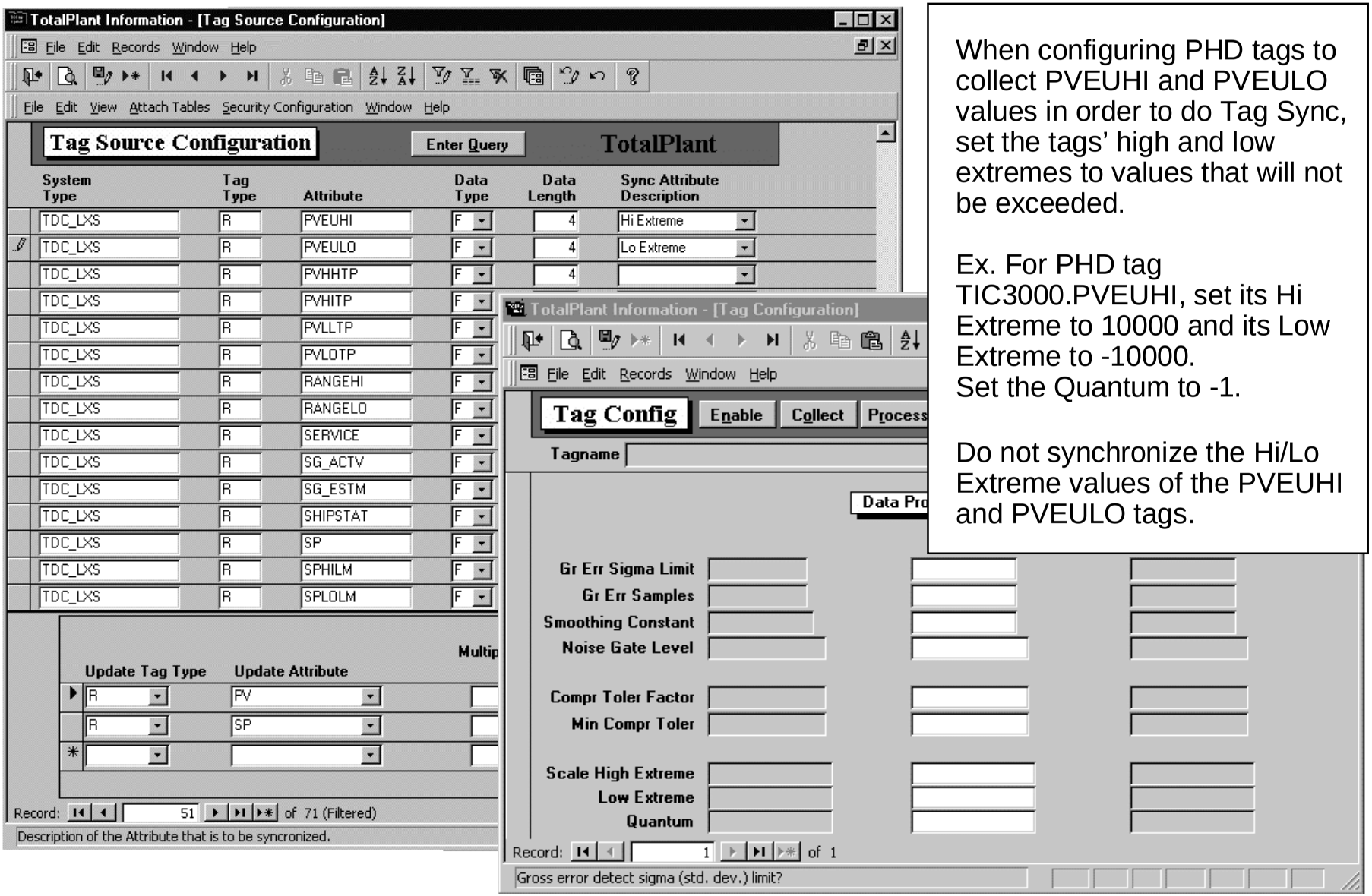
2. What value on the PHD system will be synched to the source system? *The value of Hi Extreme on the PHD system is synched to the value of RANGEHI on the DCS.*

3. What PHD tags will be synched? *Any Real tag having TDC_LXS as its source system, having the same tagname as the changed tag, having its RANGEHI collected by PHD, and having PV or SP as its source attribute.*

4. Explain a probable reason for why OP was not included as an update attribute.
   The Hi Extreme of OP (+107) was not the same as the Hi Extreme of PV and SP.



Collecting Hi/Lo Extreme Values



When configuring PHD tags to collect PVEUHI and PVEULO values in order to do Tag Sync, set the tags' high and low extremes to values that will not be exceeded.

Ex. For PHD tag TIC3000.PVEUHI, set its Hi Extreme to 10000 and its Low Extreme to -10000.
Set the Quantum to -1.

Do not synchronize the Hi/Lo Extreme values of the PVEUHI and PVEULO tags.

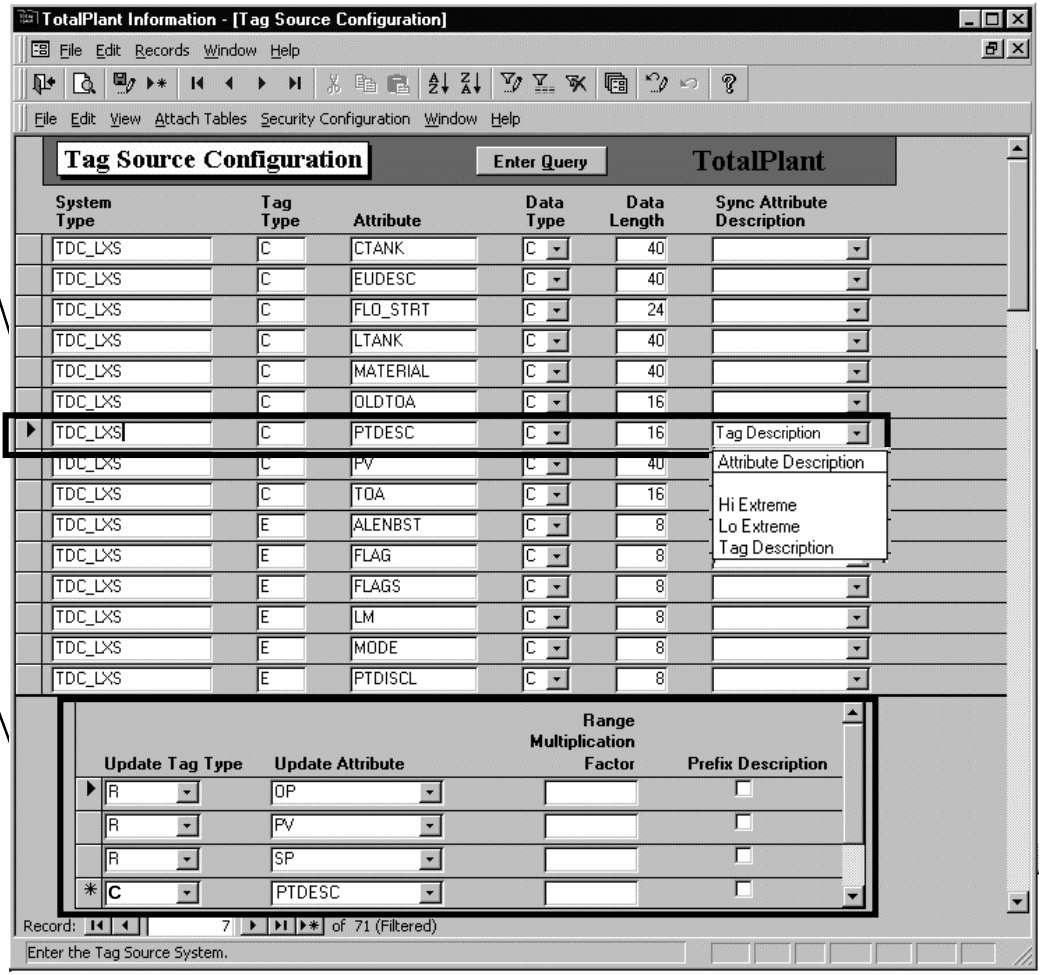
Tag Sync - Tag Description Example

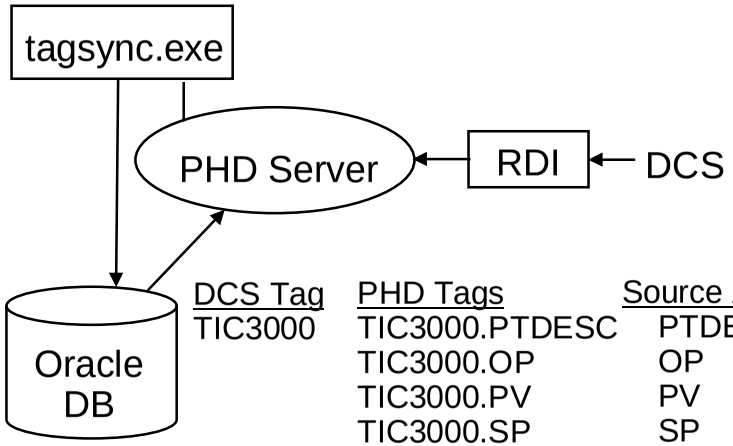
In the example shown here:

Tag Sync detects tag description changes for any PHD tag with TDC_LXS as its source system type and PTDESC as its source attribute.

Ex: The PTDESC of DCS tag TIC3000 changed from “Lake Temp” to “Pond Temp”.

When Tag Sync detects the change for PHD tag TIC3000.PTDESC, it updates the tag description of PHD tags having the same source tagname and having a source attribute of PTDESC, OP, PV, or SP.





DCS Tag	PHD Tags	Source Attribute
TIC3000	TIC3000.PTDESC	PTDESC
	TIC3000.OP	OP
	TIC3000.PV	PV
	TIC3000.SP	SP

Tag Description Prefix

Configuring Tag Sync to add a Prefix to a Tag Description is a configuration option at the bottom of the Tag Source Configuration form.

Example:

old description: `Lake Temperature`
new description; `PV - Pond Temperature`

Show below is an excerpt from a Tag Sync log. The log shows Tag Description changes with the prefix option.

```
ProcUpdTags - Updating tag: SRC_A.MVT0000.EUDESC
        Dscr - New: EUDESC - misc custom time, old: misc custom time point
ProcUpdTags - Updating tag: SRC_A.MVT0001.PV
        Dscr - New: PV - misc custom time, old: misc custom time
```

Tag Sync Considerations

- **Collection Frequency** - Since tag definitions do not change very often, you may want to put the tags that are collecting Tag Sync attributes (such as PVEUHI and PVEULO) in a different RDI using a slower collection frequency.

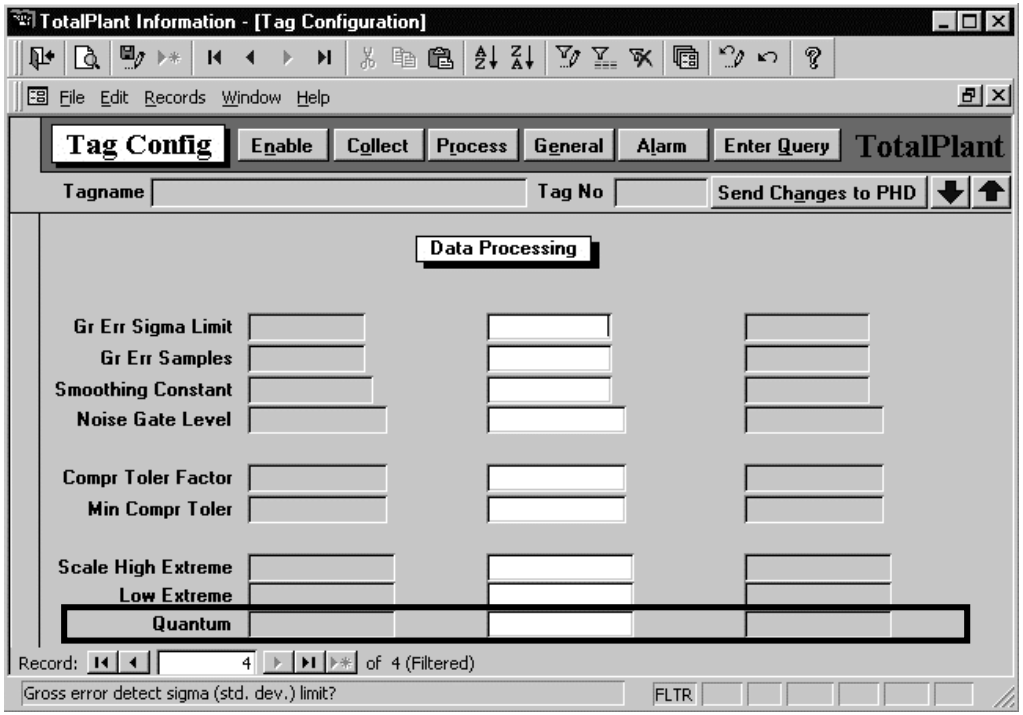
- **Tag Descriptors** - Before implementing synchronization of Tag Descriptors, make sure that its benefits justify the use of PHD system resources.

- **Preview Mode** - Through a command line parameter, you can set tagsync to preview mode. In preview mode, no modifications are made to the database, but a tab delimited file is created (tagsync_preview.dat) showing old and new values which would be updated.
  For more details, refer to *PHD User Manual*, Command Line Parameters.)

- **Quantum** - When Tag Sync synchronizes Hi or Low Extreme values, the PHD system recalculates the Quantum if it was not manually set or if the entered value is too small to span the new range.

  The PHD system assumes the Quantum was manually set if it is not equal to (OldHi - OldLo)/65535.

  For more details, refer to *PHD User Manual*, Synchronization Example.



Tag Sync Considerations, *continued*

Tag Sync Node
It is not a requirement to run Tag Sync on the same node as Oracle or PHD; however, Remote Operating System Authentication must be enabled.

Shadowed Systems
The GOTAGUP.CMD file handles Tag Sync changes on a shadowed system. If Tag Sync connects to the same server as PHD_HOST (R150 and later) or PHD Connect (R140 and earlier), then "Send Changes to PHD" and GOTAGUP will work the same.

Peer to Peer Systems
Since Peer to Peer is two separate PHD systems, you must run Tag Sync against both databases.

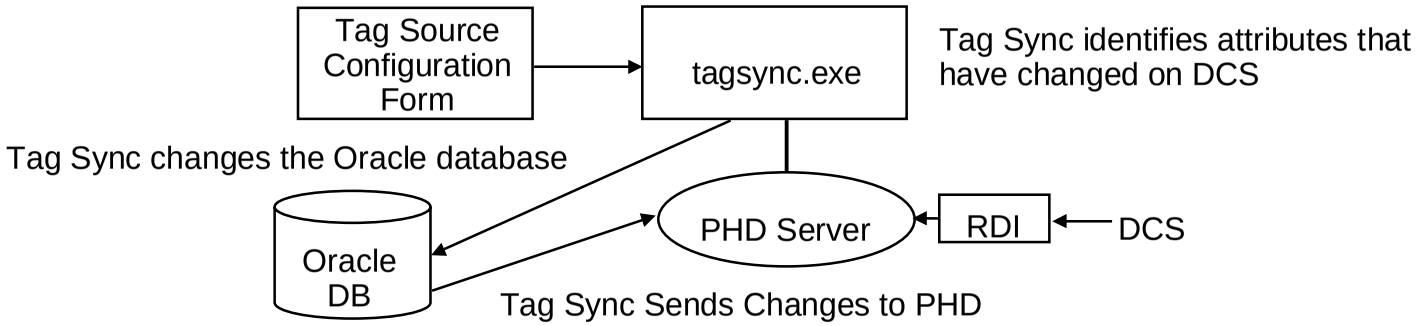
Excerpt from R140.1 Software Change Notice document:

13.3 Tag Synchronization

Description Tag Synchronization consumes a lot of CPU time when it executes, and each execution may last for several minutes depending on the number of tags being synchronized and the scanning frequencies for the tags. It can slow the whole system and may interfere with other PHD tasks.

Workaround It is possible to minimize the interference to PHD tasks while still using Tag Synchronization.

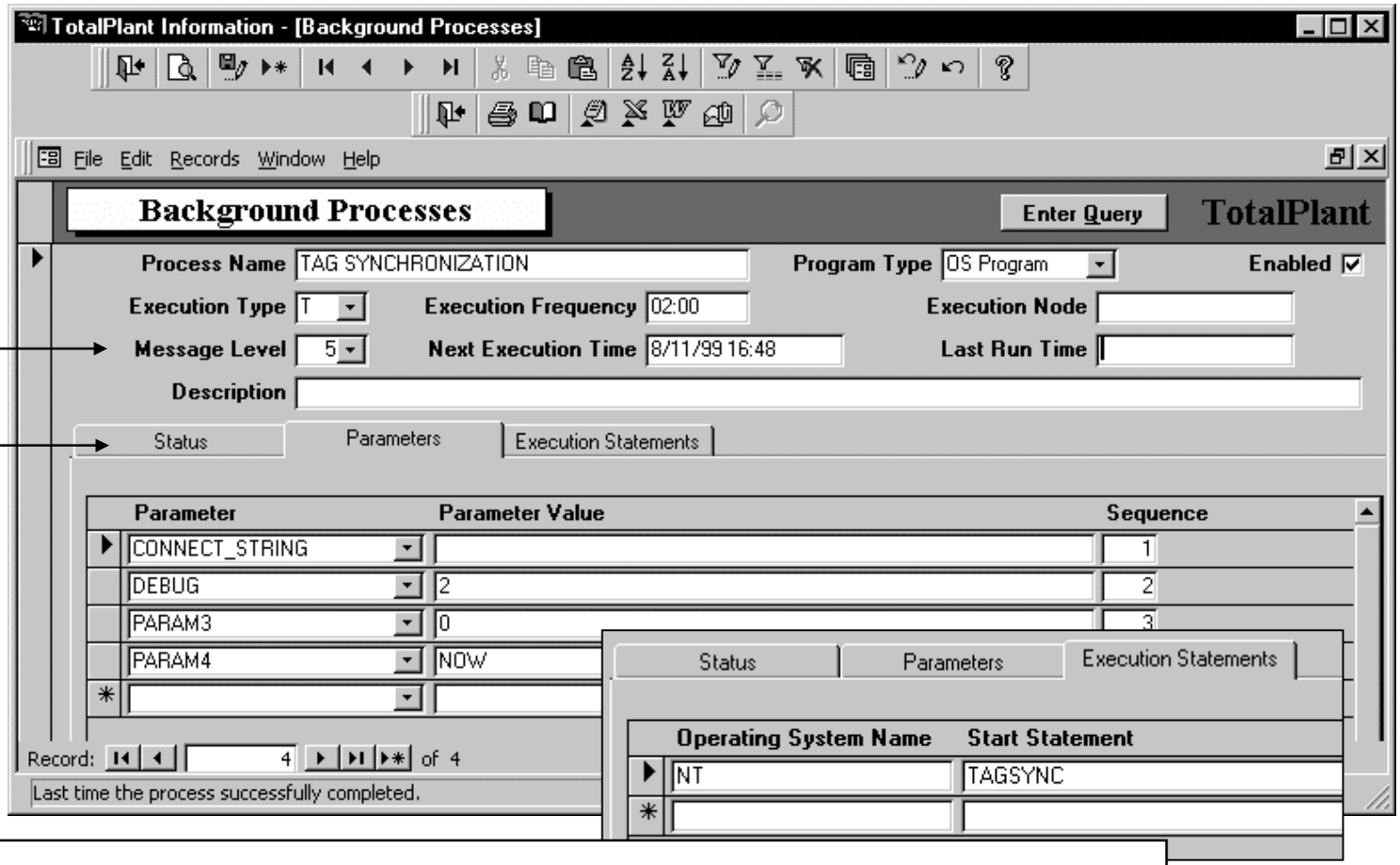
- Do not run Oracle Server and Tagsync on the same machine. Using Oracle Server remotely helps because more than half of the CPU resources are consumed by Oracle Server when Tagsync is running.
- Use Tagsync at off-peak times to minimize degradations on the RDIs.



Configuring Background Processes - Tag Sync

On NT R140 and later, Tag Sync is scheduled through the Background Processes TPI form (TPI/Application Management/Background Processes). The Application Scheduler reads the information that is entered into the form.

Tag Synchronization and other background processes that existed prior to R140 do not use the **Message Level** parameter or the **Status tab**.



Reference: *Uniformance TPI Application User Guide,* AM1001, Configuration Forms

Configuring Background Processes - Tag Sync, *continued*

For definitions of parameters, look up the specific background process in the *Uniformance Background Processing Descriptions User Guide*, PIM1001, Application Server section.

Excerpts from the documentation:

Application	Process Name	Program Type	Exec Type	Description
PHD	TAG Synchronization	OS Program	T	Tag synchronization

Tag Synchronization

Execution Statement: Operating System Name: NT
Start Statement: tagsync

If using INTS, the best choice is to leave this value NULL.

Parameter	Default Value	Seq	Parameter Reqd	Value Reqd	Description
CONNECT_STRING		1	Yes	Yes	Database connections string. If left NULL then the Scheduler will default to the account and database to which it has connected.
DEBUG	0	2	Yes	Yes	A number specifying level of messages to be printed. 0 – Errors 1 – Summary 2 – Information 3 – Detailed logging 4 – Debug level (content varies)
PARAM3	0	3	Yes	Yes	Optional flag indicating to run in preview mode if non-zero. In this mode, no modifications are made to the Oracle database. A tab-delimited file tagsync_preview.dat is created, which shows old and new values for all tags that would be updated. This file can be reviewed in Excel before scheduling Tagsync on a daily basis.
PARAM4	NOW	4	Yes	Yes	Time string (dd-mon-yy hh:mi:ss) used for data query.

Value must be ≥ 2
Default is zero.

Value must be NOW

Schedule.dat and Config.cfg (AIX, HP-UX, and <140 NT)

For platforms other than NT/R140, the Schedule.dat and Config.cfg files are used to configure and schedule Tag Sync.

In the examples shown below, what time does Tag Sync execute? _____

How often does it execute? _____

Schedule.dat - Notepad

File Edit Search Help

```
#
# !!! IMPORTANT NOTE !!!
# This file is no longer used for application scheduling.
# Please see documentation for Background Processes configuration.
#
# File with process scheduling information, used by schedule process
# Format:
#   process name, schedule type, program name, process frequency, default frequ
# Where optional arguments take the form:
#   argument name, argument type, argument value
#

AUTO_REPROCESS, PERIODIC, auto_reprocess.exe, AUTO_REPROCESS_QUEUE_FREQ, 00:15:
BATCH_TRACK, PERIODIC, batch_tracking.exe, BATCH_TRACK_QUEUE_FREQ, 00:10:00
EXTRACT_SCHED, PERIODIC, ext_sched.exe, EXTRACT_SCHED_QUEUE_FREQ, 00:02:00
INSTRUCTION_CREATE, PERIODIC, auto_create_instrctn.exe, AUTO_INSTRUCTION_CREATE
INSTRUCTION_SCHED, PERIODIC, sched.exe, INSTRUCTION_SCHED_QUEUE_FREQ, 02:00:00,
LAB_DATA_INTEGRATOR, PERIODIC, ip_routine_limstoqm.cmd, LIMS_QUEUE_FREQ, 00:15:
NIGHTLY, TIMEOFDAY, ip_nightly.cmd, NIGHTLY_START, 06:30:00, AUTO_PROCESS, QUER
OPERATION_ALARMS, PERIODIC, op_alarm.exe, OPERATION_ALARMS_QUEUE_FREQ, 00:15:00
OPERATION_EVENTS, PERIODIC, op_event.exe, OPERATION_EVENTS_QUEUE_FREQ, 00:15:00
OPERATION_MONITORING, PERIODIC, op_mon.exe, OPERATION_MONITORING_QUEUE_FREQ, 00
PHDATALOADER, PERIODIC, phddataloader.exe, PHDATALOADER_QUEUE_FREQ, 00:05:00
PRODUCTMOVE_SCHED, PERIODIC, sched.exe, PRODUCTMOVE_SCHED_QUEUE_FREQ, 00:02:00,
PRODUCTION_SCHED, PERIODIC, process_prod_sched.exe, PROD_SCHED_QUEUE_FREQ, 00:1
SAMPLE_SCHED, PERIODIC, sched.exe, SAMPLE_SCHED_QUEUE_FREQ, 02:00:00, SAMPLE_SC
TAG_SYNCHRONIZATION, TIMEOFDAY, tagsync.exe, TAGSYNC_EXECUTION_TIME, 06:30:00
TANK_COMP, PERIODIC, tank_comp.exe, TANK_COMP_QUEUE_FREQ, 00:10:00
PHD_TO_REL, PERIODIC, phd2rel.exe, PHD_TO_REL_QUEUE_FREQ, 00:15:00, PHD_TO_REL_
REL_TO_PHD, PERIODIC, pipetophd.exe, REL_TO_PHD_QUEUE_FREQ, 00:01:00
EVENT_JOURNAL, PERIODIC, evt_jrnl.exe, EVENT_JOURNAL_QUEUE_FREQ, 00:00:10, EVEN
```

Config.cfg - Notepad

File Edit Search Help

```
/
/ !!! IMPORTANT NOTE !!!
/ This file is no longer used for appl
/ Please see documentation for Backgro
/
/ Uniformance Application Server INI F
/ Comments in this file are introduced
/ Otherwise the format is much like an
/

[APPLICATIONS]
EVENT_JOURNAL
TAG_SYNCHRONIZATION
REL_TO_PHD
PHD_TO_REL
OPERATION_EVENTS
OPERATION_ALARMS

[APPLICATION_PARAMETERS]
EVENT_JOURNAL_INI_FILE=EVT_JRNL.INI
EVENT_JOURNAL_QUEUE_FREQ=00:00:10
TAGSYNC_EXECUTION_TIME=02:00
REL_TO_PHD_QUEUE_FREQ=00:01:00
PHD_TO_REL_QUEUE_FREQ=00:15:00
PHD_TO_REL_INIFILE=PHD2REL.INI
OPERATION_EVENTS_QUEUE_FREQ=00:06:00
OPERATION_ALARMS_QUEUE_FREQ=00:05:00
```

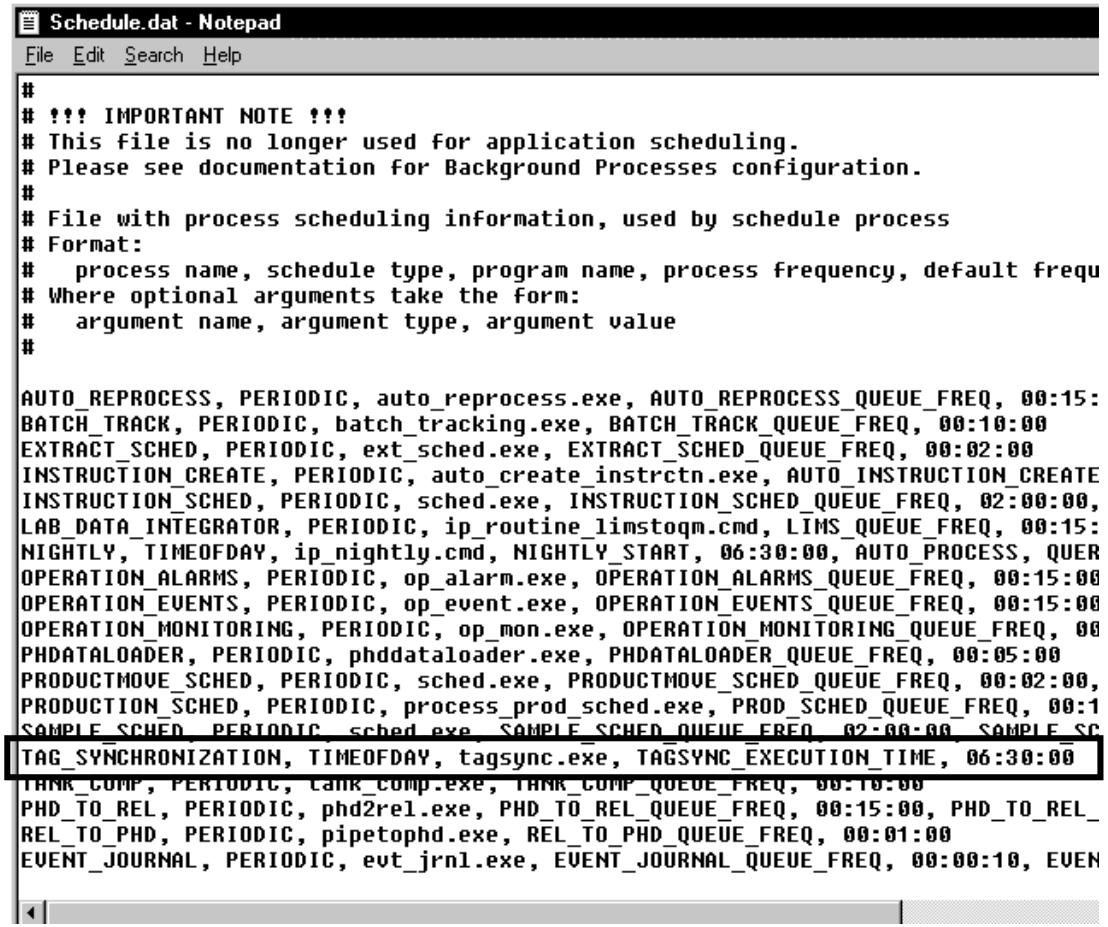
The answers are on the next page.

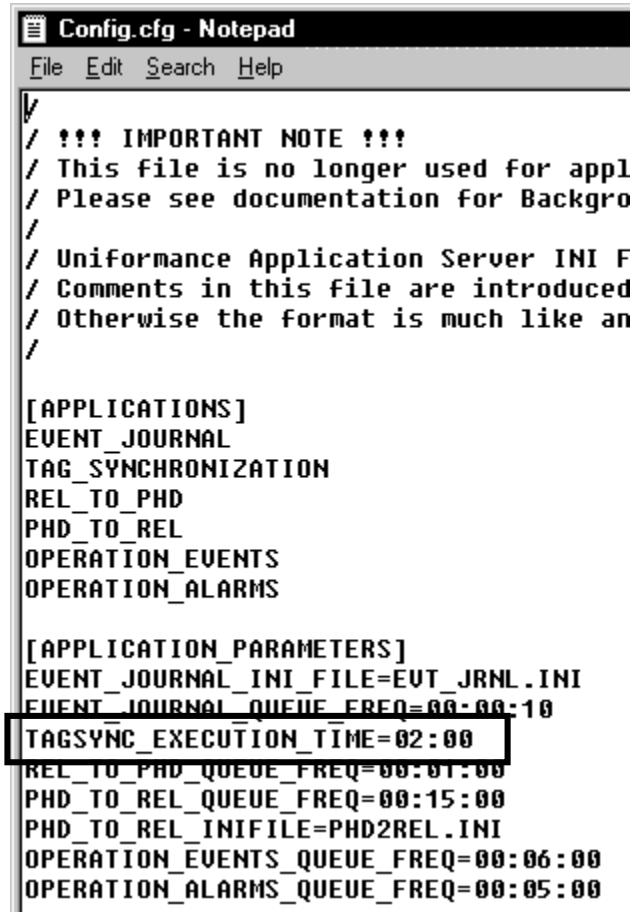
Schedule.dat and Config.cfg (AIX, HP-UX, and <140 NT), *continued*

ANSWERS:

In the examples shown below, what time does Tag Sync execute? *2:00 AM (TAGSYNC_EXECUTION_TIME=02:00:00 defined in Config.cfg overrides default in Schedule.dat)*

How often does it execute? *Once a day (TIMEOFDAY) as defined in Schedule.dat).*





Tag Sync Log

Complete the following statements as they apply to the tagsync log shown here.

1. How many PHD tags were updated with new values?

   _____

2. What attributes were updated?

   _____

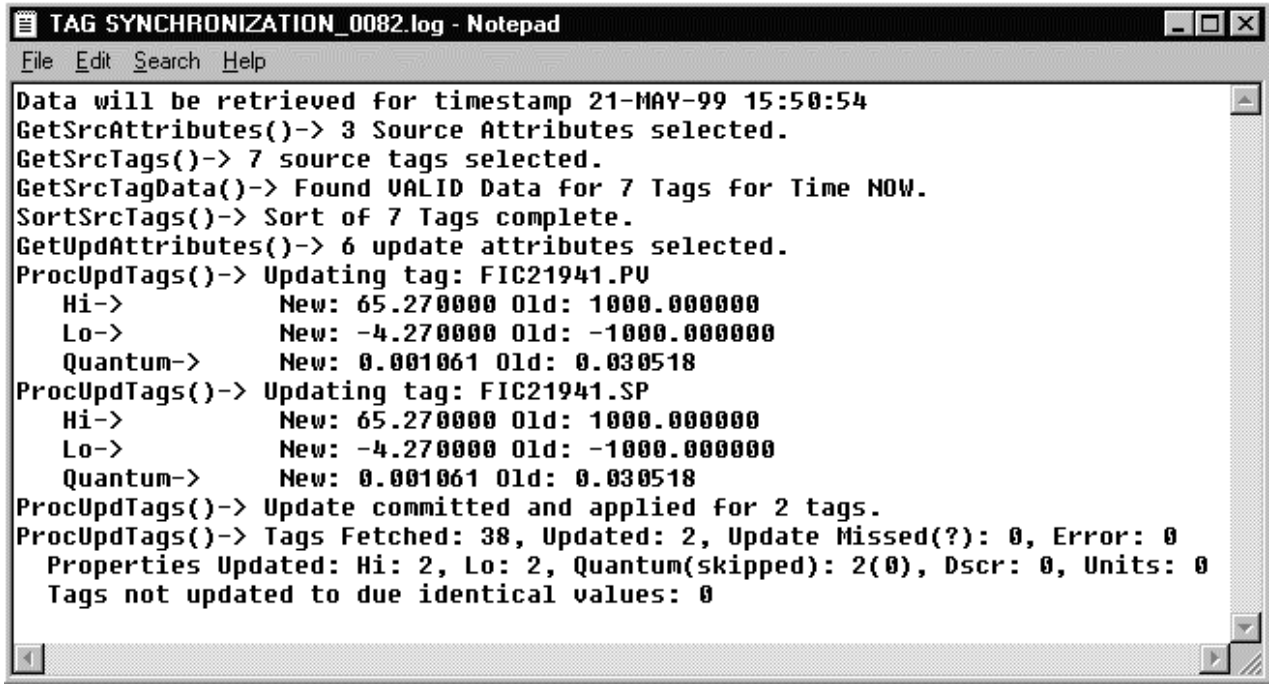
   _____

   _____

   _____

   _____

   _____



Answers on next page.

Tag Sync Log, *continued*

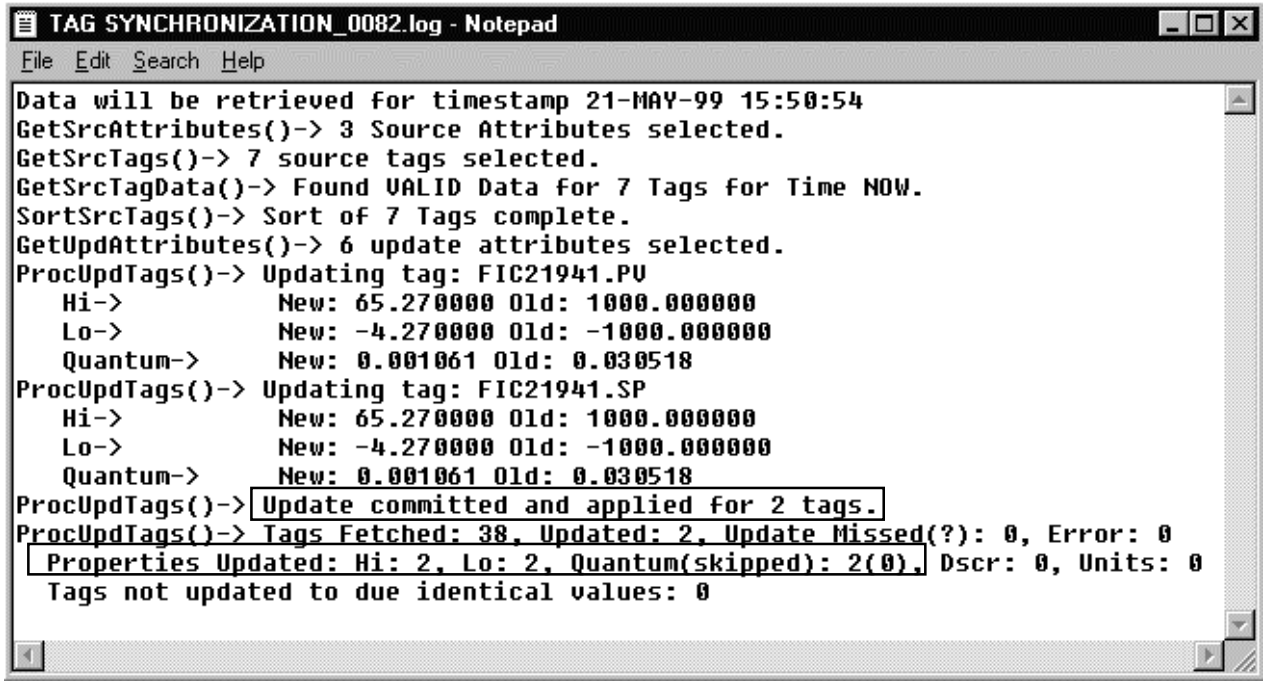
Answers:

1. How many PHD tags were updated with new values?

   2

2. What attributes were updated?

   Hi Extreme, Lo Extreme, and Quantum

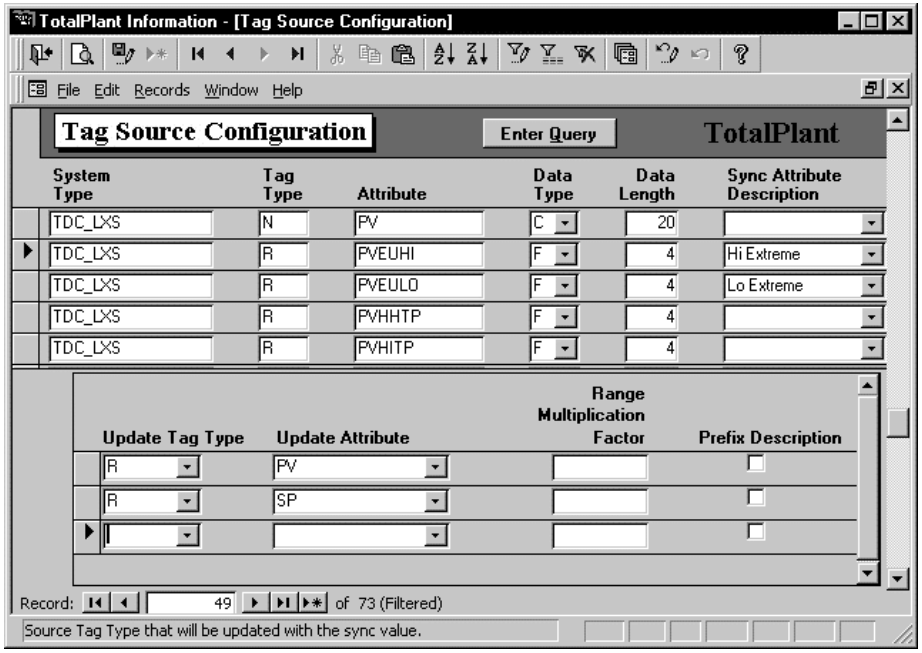


Hands-On Exercise

Instructions

1. Build these PHD tags for this exercise:
   - TIC21###.PVEUHI and TIC21###.PVEULO to collect the range of source system tag TIC21###, where ### is your assigned number. Set the hi/lo extreme values to ±10000 to ensure they will not be exceeded. Set the Quantum to -1 and the Compression Tolerance to -1.

2. Configure the TPI PHD Tag Source Configuration form to synchronize PVEUHI and PVEULO on the source system to the hi/lo extreme values of PHD tags that historize PVs and SPs.



Hands-On Exercise, *continued*

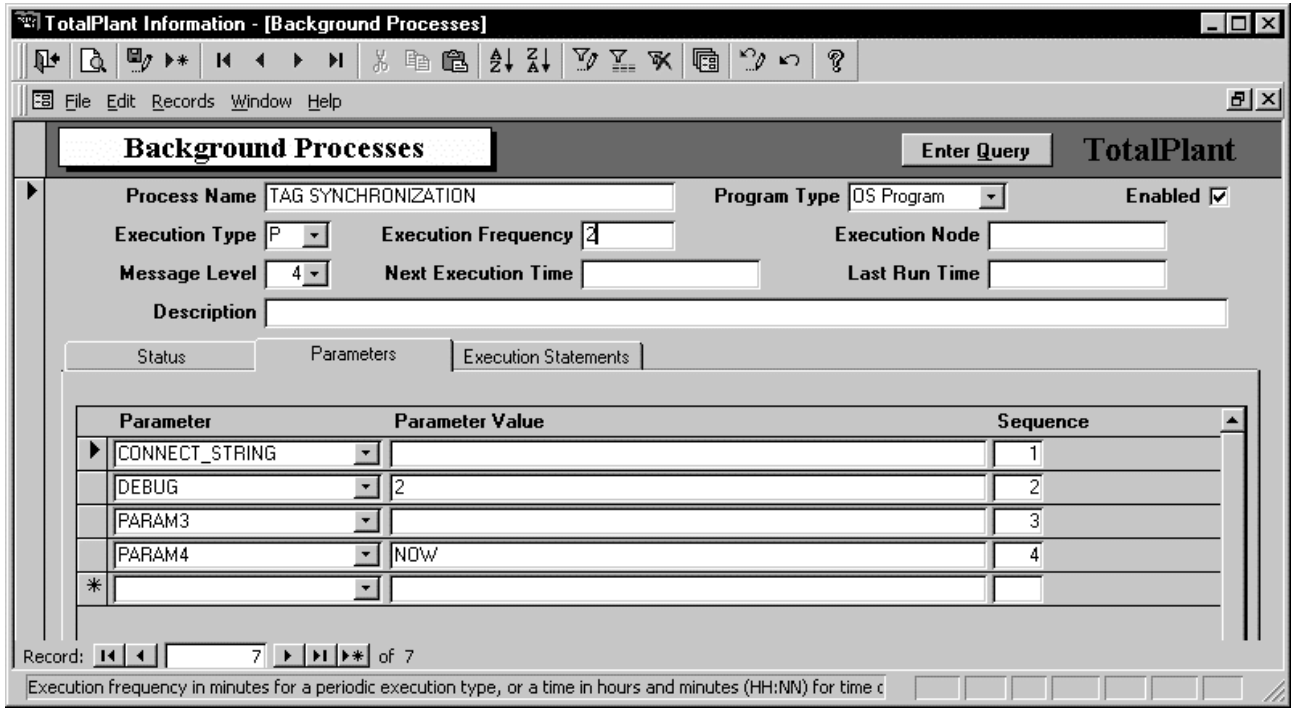
3. Look on the documentation CD for the required entry for Background Processes (*Background Processes Descriptions User Guide).*

4. Look in the online (PC-resident) documentation for the same information.

5. Configure and enable MSGLOGSERVER in the Background Processes TPI form.

6. Look on the documentation CD and in the online (PC-resident) documentation for the Tag Sync entries.

7. Configure the Tag Sync entries in the Background Processes TPI form, as shown below. This will cause Tag Sync to execute every 2 minutes.



Hands-On Exercise, *continued*

8. Stop, then Start the HoneywellBackgroundSchedulerTOTALPLANT to cause Tag Sync to execute immediately (Start\Settings\Control Panel\Services).

9. Look at the Tag Sync log (tag_synchronization_nn.log) in the Uniformance Application Server directory.

10. Use Mod Tag to check the current hi extreme value of TIC21###.PV.

11. From TPI Tag Configuration, change the hi extreme value of TIC21###.PV.

12. Wait for Tag Sync to run, then check the Tag Sync log again.

End of Exercise

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