



# **Oracle 10g Tuner for Windchill® Solutions Installation and Configuration Guide**

**Windchill® 8.0 and 9.0**

**Pro/INTRALINK® 8.0 and 9.0**

**Arbortext® Content Manager™**

**Windchill PDMLink™**

**Windchill ProjectLink™**

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# About This Guide

The *Oracle 10g Tuner for Windchill Solutions Installation and Configuration Guide* contains information about installing and using the Oracle 10g Tuner. The information provided is applicable to all Windchill solutions that use the Oracle 10g database.

This guide contains the following:

- Installation instructions in the first chapter.
- Information on using the tuner in the second chapter.

Examples in this guide referencing third-party products are intended for demonstration purposes only. For additional information about third-party products, contact individual product vendors.

Some code examples in this guide have been reformatted for presentation purposes and, therefore, may contain hidden editing characters (such as tabs and end-of-line characters) and extraneous spaces. If you cut and paste code from this manual, check for these characters and remove them before attempting to use the example in your application.

## Related Documentation

The following documentation may be helpful:

- *Windchill Performance Tuning Guide*
- *Windchill Installation and Configuration Guide*

The latest version of this guide can be found on the Reference Documents Web site. See [Documentation for PTC Products](#).

## Technical Support

Contact PTC Technical Support via the PTC Web site, phone, fax, or e-mail if you encounter problems using the Oracle 10g Tuner or the product documentation.

For complete details, refer to Contacting Technical Support in the *PTC Customer Service Guide*. This guide can be found under the Related Links section of the PTC Web site at:

<http://www.ptc.com/support/index.htm>

The PTC Web site also provides a search facility for technical documentation of particular interest. To access this page, use the following URL:

<http://www.ptc.com/support/support.htm>

You must have a Service Contract Number (SCN) before you can receive technical support. If you do not have an SCN, contact PTC Maintenance Department using the instructions found in your *PTC Customer Service Guide* under Contacting Your Maintenance Support Representative.

## Documentation for PTC Products

You can access PTC guides using the following resources:

- **Product CD** — All relevant PTC documentation is included on the CD set.
- **Reference Documents Web Site** — All books are available from the Reference Documents link of the PTC Web site at the following URL:

<http://www.ptc.com/appserver/cs/doc/refdoc.jsp>

A Service Contract Number (SCN) is required to access the PTC documentation from the Reference Documents Web site. For more information on SCNs, see Technical Support:

<http://www.ptc.com/support/support.htm>

## Comments

PTC welcomes your suggestions and comments on its documentation. You can submit your feedback through the online survey form at the following URL:

[http://www.ptc.com/go/wc\\_pubs\\_feedback](http://www.ptc.com/go/wc_pubs_feedback)

# 1

## Installing the Oracle 10g Tuner

Use the sections in this chapter as a guide to installing the Oracle 10g Tuner. The sections describe how to start the installer and provide the details about the fields in the installer panels.

PTC recommends that you read through these sections and gather the relevant information needed before starting the installer.

**Caution:** Install the Oracle 10g Tuner on the server where Oracle 10g is installed. Do not try to use this tuner with Oracle 9i or SQL Server.

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## Before You Begin the Installation

Before running the Oracle 10 g Tuner installer, you must have configured the Windchill database as described in the *Windchill Installation and Configuration Guide - Advanced*.

**Note:** You must run the installer from the server where the Oracle 10g database is installed.

**Note:** PTC recommends that you use the Oracle 10g Tuner to automate tuning, especially if your site personnel do not have a lot of experience in tuning Oracle 10g databases. You could choose not to use the tuner if your site has knowledgeable database administrators who maintain schema statistics and manually manage the database performance. Additionally, you can stop using the tuner at any time by completing the activities as described in [Uninstalling the Oracle 10g Tuner](#).

Complete the following activities before starting the Oracle 10g Tuner installer:

- Download the software package for the Oracle 10g Tuner from the PTC software downloads site. The name of the package is:

Oracle 10g Tuner for Windchill Solutions

You can access the software downloads site from the main PTC Web site using the following URL:

<http://www.ptc.com/cgi/cs/apps/SftUpd/SftUpdProd.pl>

Log on using your customer number. On the page that opens, select your Windchill solution from the **Product Name** drop-down list. The software package for the Oracle 10g Tuner appears in the list of products for your solution.

- Determine the Oracle 10g installation location (sometimes stored in ORACLE\_HOME).
- Determine the Windchill database name that was defined when the database was configured to use Windchill (sometimes stored in ORACLE\_SID).
- If the Oracle 10g Tuner has already been installed, determine the user name and password for the Oracle 10g Tuner owner.
- Decide which tablespaces to use for the Oracle 10g Tuner working and temporary tablespaces. These are existing tablespaces in your database.
- Determine the name of an SMTP (Simple Mail Transfer Protocol) server that can be used by the Oracle 10g Tuner to send e-mail notifications and set up an e-mail address that will receive the notifications.

If you do not know the name of an SMTP server or one has not been set up for your use, contact your IT group to have them set one up and provide you with the name and e-mail address to enter.



## Starting the Oracle 10g Tuner Installer

The installer is at the top level of the Oracle 10g Tuner software package that was downloaded.

Use the following steps to start the Oracle 10g Tuner installer:

1. Navigate to the top-level directory of the software package and run the setup script:
  - On Windows: `<dir>\setup.vbs`
  - On UNIX: `<dir>/setup`
2. The first panel that opens is the **Before You Begin** panel. This panel summarizes the preinstallation requirements and references this guide, the *Oracle 10g Tuner for Windchill Solutions Installation and Configuration Guide*.
3. When you are ready to proceed with the installation, click **Next**.

## Entering Required Information on Installation Panels

You enter information on each panel that displays and then click **Next** to go to the next panel. To review previous settings, you can click **Back** on any of the panels.

The following steps describe the panels that display and the actions required on each panel:

1. On the **Select Directory** panel, select the installation directory for the Oracle 10g Tuner:
  - The Windows default directory is `C:\ptc\Ora10gTuner`.
  - The UNIX default directory is your oracle home directory followed by `/ptc/Ora10gTuner`.

To use a different directory as the Oracle 10g Tuner installation directory, select **Specify another directory** and either type in a new path or click **Browse** to locate a different directory.

2. On the **Oracle Server Installation Location** panel, specify the Oracle installation directory.

The default value in the field is the first Oracle installation directory the installer finds. If this is not the Oracle database for which you want to install the tuner, you can either type in a new path or click **Choose** to locate a different database.

3. On the **Windchill Database Name** panel, enter the Windchill database name (also known as the Oracle database system identifier, SID).

This name was defined when the Windchill database was created and, in some cases, is stored in the `ORACLE_SID` variable.

4. If there are existing installations of the Oracle 10g Tuner, the **Existing Installations** panel displays.

**Note:** Only one installation of the Oracle 10g Tuner can be running on a server.

To remove all existing installations of the Oracle 10g Tuner and re-install the tuner, click **Next**.

5. On the **Oracle 10g Tuner Database User** panel, either:
  - Enter a new user name and password. This user is created and becomes the owner of the tuner.
  - Select the **Use existing database user** check box and enter the user name and password of an existing user who had been the owner of a previous version of the Oracle 10g Tuner.
6. On the **Windchill Database User** panel, enter the user name and password of the Windchill database user.
7. On the **Database Tablespace Settings** panel, select from the list of available in the database tablespaces. The tablespaces you select will be used as Working and Temporary tablespaces for the Oracle 10g Tuner database user.
8. On the **E-mail Notification Settings** panel, enter the name of an outgoing SMTP server and e-mail address that you want the Oracle 10g Tuner to use when it sends automatic notifications.

If you do not know the name of an SMTP server or one has not been set up for your use, contact your IT group to have them set one up and provide you with the name to enter.

**Note:** The default port for SMTP server is 25. If your e-mail system uses SMTP server with non-default port, you must enter the SMTP server information in the following format:

*<SMTP\_server\_name>:<port number>*

## Completing the Oracle 10g Tuner Installation

The **Review Settings** panel lists the selections you specified for the installation. Verify that the information is correct, and click **Install**.

After you have installed the Oracle 9i Tuner, review the information provided in the [Using the Oracle 10g Tuner](#) chapter to determine how to monitor the automated tuning activities.

If you need to remove the tuner from the database, see the [Uninstalling the Oracle 10g Tuner](#) section.

## Accessing the Oracle 10g Tuner Installation Logs

The Oracle 10g Tuner installation logs are located in the following directory:

```
<Tuner>/installer/logs
```

where *<Tuner>* is the installation directory of the Oracle 10g Tuner.

This directory contains two types of log files:

- Log files in plain format (file extension .log)
- Log files in XML format (file extension .xml)

When pursuing an issue with PTC Technical Support, both types of log files are required.

## Uninstalling the Oracle 10g Tuner

To remove the Oracle 10g Tuner from the database, log in as the user who installed the tuner and enter one of the following commands from a command line:

- On Windows, enter:

```
<Tuner>\uninstall\remove_tuner.bat
```

where *<Tuner>* is the installation directory of the Oracle 10g Tuner.

- On UNIX, enter:

```
<Tuner>/uninstall/remove_tuner.csh
```

where *<Tuner>* is the installation directory of the Oracle 10g Tuner.

If the name of the database using the tuner is windchill, the following information displays:

```
*****
* Removing Oracle 10g Tuner from the database
*
* Database Name: windchill
*
*****
Do you want to proceed? [n/y]
```

Enter **y** to remove the tuner.

# 2

## Using the Oracle 10g Tuner

This chapter describes the Oracle 10g Tuner schedule, reports, and configuration settings. It also provides information about how to resolve issues that may come up.

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## Oracle 10g Tuner Schedule

Oracle 10g Tuner does not use a hard-coded schedule. Instead, it uses specific Oracle database indicators to determine how frequently the tuner runs:

- If the system load is changing rapidly, the tuner runs more often.
- If the system load is changing slowly, tuner runs less often.

# Oracle 10g Tuner Reports

Two reports have been designed to help identify tuner and system activity:

- The daily report shows the tuner activity overview over the past day.
- The statistics report shows overall Oracle database activity statistics.

The following sections describe the reports and describe how the reports are delivered and where they are stored after they are generated.

## Daily Tuner Activity Report

This report shows activity statistics for three main functional areas:

- Core (in the report, this is called heartbeat)
- System performance statistics
- Data distribution statistics

The following is an example of the report that is sent. The report has a subject of **24 hour activity report**:

[illegible]

The data presented in the report is described in the following sections.

## Heartbeat Data

The core information shown in the daily report contains the minimum, maximum, and average number of heartbeat failures per hour.

Internally, the Oracle 10g Tuner can vary the heartbeat interval from 1 to 5 minutes.

If the daily report shows either of the following, there could be an internal problem with the Oracle 10g Tuner or Oracle Stream messaging system:

- High rate of heartbeat failures per hour.
- The minimum heartbeat rate drops below 12 per hour.

Additionally, either of the following indicators means that the system load is very volatile or there is different problem with the tuner:

- High average heartbeat rate.

Normally, your system should have an average heart rate that is between 20 and 30.

- A heartbeat rate maximum that comes close to the limit of 60.

If either of these things is true, the database needs further attention.

## Statistics Data

System performance statistics gathering can be initiated multiple times and this is usually normal. However, if the number of system statistics imported is high, this can indicate a very unstable pattern of load on the system and might require further investigation.

On a system where most of the data is read only, the data distribution statistics are rarely calculated; therefore, the highest value for the frequency that data distribution statistics are gathered should be close to 0.

## Reporting Issues

If you need help in understanding the data in the report or determining what needs to be done, contact PTC Technical Support. See [Reporting Oracle 10g Tuner or Database Issues to PTC](#).

## Oracle Database Activity Statistics Report

This report shows the overall Oracle database activity statistics.

The information in this report is similar to the data generated through a statspack report on an Oracle 9i database. For information about the data contained in the report, see the *Oracle Tuning Guide*.

The following table contains the data from an example statistics report:

Name	Per second	Per transaction	Other metric unit
Buffer Cache Hit Ratio	--	--	% (LogRead - PhyRead)/LogRead
Memory Sorts Ratio	--	--	% MemSort/(MemSort + DiskSort)
Redo Allocation Hit Ratio	--	--	% (#Redo - RedoSpaceReq)/#Redo
User Transaction	.35	--	--
Physical Reads	0	0	--
Physical Writes	.62	1.76	--
Physical Reads Direct	0	0	--
Physical Writes Direct	0	0	--
Physical Reads Direct Lobs	0	0	--
Physical Writes Direct Lobs	0	0	--
Redo Generated	1466.6	4190.29	--
Logons	.08	.24	--
Open Cursors	4.38	12.52	--
User Commits	.35	--	--
User Commits Percentage	--	--	% (UserCommit/TotalUserTxn)
User Rollbacks	0	--	--
User Rollbacks Percentage	--	--	% (UserRollback/TotalUserTxn)
User Calls	1.37	3.9	--
Recursive Calls	34.62	98.9	--
Logical Reads	131.5	375.71	--
DBWR Checkpoints	0	--	--



<b>Name</b>	<b>Per second</b>	<b>Per transaction</b>	<b>Other metric unit</b>
Background Checkpoints	0	--	--
Redo Writes	.87	2.48	--
Long Table Scans	0	0	--
Total Table Scans	2.37	6.76	--
Full Index Scans	.02	.05	--
Total Index Scans	6.05	17.29	--
Total Parse Count	4.6	13.14	--
Hard Parse Count	0	0	--
Parse Failure Count	0	0	--
Cursor Cache Hit Ratio	--	--	% CursorCacheHit/SoftParse
Disk Sort	0	0	--
Rows Per Sort	--	--	Rows Per Sort
Execute Without Parse Ratio	--	--	% (ExecWOParse/TotalExec)
Soft Parse Ratio	--	--	% SoftParses/TotalParses
User Calls Ratio	--	--	% UserCalls/AllCalls
Host CPU Utilization (%)	--	--	% Busy/(Idle+Busy)
Network Traffic Volume	221.57	--	--
Enqueue Timeouts	0	0	--
Enqueue Waits	0	0	--
Enqueue Deadlocks	0	0	--
Enqueue Requests	14.33	40.95	--
DB Block Gets	8.57	24.48	--
Consistent Read Gets	122.93	351.24	--
DB Block Changes	10.35	29.57	--
Consistent Read Changes	.1	.29	--

<b>Name</b>	<b>Per second</b>	<b>Per transaction</b>	<b>Other metric unit</b>
CPU Usage	.87	2.5	--
CR Blocks Created	.1	.29	--
CR Undo Records Applied	.1	.29	--
User Rollback UndoRec Applied	0	0	--
Leaf Node Splits	0	0	--
Branch Node Splits	0	0	--
PX downgraded 25% or more	0	--	--
PX downgraded 50% or more	0	--	--
PX downgraded 75% or more	0	--	--
PX downgraded Parallel Operation	0	--	--
PX downgraded to serial	0	--	--
Physical Read Total IO Requests	.08	--	--
Physical Read Total Bytes	1365.33	--	--
GC CR Block Received	0	0	--
GC Current Block Received	0	0	--
Global Cache Average CR Get Time	--	--	CentiSeconds Per Get
Global Cache Average Current Get Time	--	--	CentiSeconds Per Get
Physical Write Total IO Requests	1.95	--	--
Global Cache Blocks Corrupted	--	--	Blocks
Global Cache Blocks Lost	--	--	Blocks
Current Logons Count	--	--	Logons
Current Open Cursors Count	--	--	Cursors
User Limit %	--	--	% Sessions/License_Limit
SQL Service Response Time	--	--	CentiSeconds Per Call

<b>Name</b>	<b>Per second</b>	<b>Per transaction</b>	<b>Other metric unit</b>
Database Wait Time Ratio	--	--	% Wait/DB_Time
Response Time	--	2.55	--
Row Cache Hit Ratio	--	--	% Hits/Gets
Row Cache Miss Ratio	--	--	% Misses/Gets
Library Cache Hit Ratio	--	--	% Hits/Pins
Library Cache Miss Ratio	--	--	% Misses/Gets
Shared Pool Free %	--	--	% Free/Total
PGA Cache Hit %	--	--	% Bytes/TotalBytes
Process Limit %	--	--	% Processes/Limit
Session Limit %	--	24	--
Executions	8.4	--	--
Txns Per Logon	--	--	Txns Per Logon
Database Time	.89	--	--
Physical Write Total Bytes	22809.6	--	--
Physical Read IO Requests	0	--	--
Physical Read Bytes	0	--	--
Physical Write IO Requests	.4	--	--
Physical Write Bytes	10103.47	--	--
DB Block Changes Per User Call	--	--	Blocks Per Call
DB Block Gets Per User Call	--	--	Blocks Per Call
Executions Per User Call	--	--	Executes Per Call
Logical Reads Per User Call	--	--	Reads Per Call
Total Sorts Per User Call	--	--	Sorts Per Call
Total Table Scans Per User Call	--	--	Tables Per Call
Current OS Load	--	--	Number of Processes

## Report Delivery and Storage

The e-mail address specified during the installation of the Oracle 10g Tuner receives daily messages containing the tuner activity for the last 24 hours and receives periodic messages that give the statistics collected for the database activity.

### Daily Report Storage

The daily reports are saved in the following directory:

```
<Tuner>/reports
```

where *<Tuner>* is the installation directory of the Oracle 10g Tuner.

The format of the file name of the daily reports is as follows:

```
reportYYYY-MM-DD 01.00.00.txt
```

where *YYYY-MM-DD* is the year, month, and day when the report was generated.

By default, daily reports are kept for 30 days.

You can change the number of days daily reports are kept and change who receives the notification e-mails. See [Oracle 10g Tuner Configuration Settings](#).

### Statistics Report Storage

The statistics reports are saved in the following directory:

```
<Tuner>/installer/logs
```

where *<Tuner>* is the installation directory of the Oracle 10g Tuner.

The format of the file name of the statistics reports is as follows:

```
dbstatsYYYY-MM-DD 01.00.00.txt
```

where *YYYY-MM-DD* is the year, month, and day when the report was generated.

The tuner does not manage the reports that are in the logs directory; set up your own manual schedule to review and clean up the files stored in this directory. PTC recommends that you keep reports for a period of a month.

# Oracle 10g Tuner Configuration Settings

Out of the box, the Oracle 10g Tuner configuration settings are as follows:

Description	Default Value	Parameter
List of e-mail recipients who will receive an e-mail notifying them of generated reports.  If you want to specify multiple recipients, separate the e-mail addresses using the semi-colon.	E-mail address entered during installation	MAIL_RECEPIENTS
System activity logging level	50	LOG_LEVEL
Length of time (in days) that the Oracle 10g Tuner daily reports are kept	30 days	LOG_HISTORY_KEEP_TIME
Time interval for load sampling	600 seconds	LOAD_SAMPLING_TIME_INTERVAL
Load per second per CPU delta threshold.  This threshold indicates a change in load that requires the attention of the Oracle 10g Tuner.	0.05	LOAD_CHANGE_THRESHOLD

**Note:** In most cases, PTC recommends that you do not change the default configuration settings.

If you need to make any changes, log in as the owner of the Oracle 10g Tuner and use sqlplus to execute one of the following commands:

- If you are changing a numeric value, enter:

```
exec db_tune.modify_parameter('<parameter name>', nvalue => <numeric value>);
```

- If you are changing a string value, enter:

```
exec db_tune.modify_parameter('<parameter name>', svalue => '<string value>');
```

Replace *<parameter name>* with the parameter name listed in the previous table, and replace either *<numeric value>* or *<string value>* with the new value.

## Reporting Oracle 10g Tuner or Database Issues to PTC

If a tuner or database issue requires the attention of PTC Technical Support, perform following steps and include the resulting data when you report the issue:

- Export of the Oracle 10g Tuner report owner schema. For example, log in as the Oracle account owner and enter the following from the command line:

```
exp <tuner_owner>/<tuner_password> file=tunerdump.dmp
```

where *<tuner\_owner>* and *<tuner\_password>* are the user name and password of the Oracle 10g Tuner owner.

- Locate the Oracle database activity statistics report for the time of the issue.

For information about contacting PTC Technical Support, see [Technical Support](#).

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