Contents

Send Us Your Comments .................................................................................................................. xxii

Preface ................................................................................................................................................ xxiii
  Audience .......................................................................................................................................... xxiv
  Organization ................................................................................................................................... xxiv
  Related Documentation .................................................................................................................. xxv
  Conventions ................................................................................................................................... xxvi
  Documentation Accessibility ......................................................................................................... xxxii

Part I  Control Utilities

1  Listener Control Utility
  Listener Control Utility Overview ................................................................................................. 1-2
  SET and SHOW Commands of the Listener Control Utility ......................................................... 1-3
  Distributed Operations ................................................................................................................. 1-4
  Listener Security ......................................................................................................................... 1-4
  Listener Control Utility Commands ............................................................................................ 1-5
    CHANGE_PASSWORD ............................................................................................................... 1-5
    EXIT ........................................................................................................................................ 1-7
    HELP ...................................................................................................................................... 1-8
    QUIT ....................................................................................................................................... 1-9
    RELOAD ................................................................................................................................. 1-10
    SAVE_CONFIG ...................................................................................................................... 1-11
2 Oracle Connection Manager Control Utility

Oracle Connection Manager Control Utility Overview ....................................................... 2-2
SET Commands of the Oracle Connection Manager Control Utility .............................. 2-3
Distributed Operations ..................................................................................................... 2-4
Oracle Connection Manager Control Utility Commands .................................................. 2-5
  ACCEPT_CONNECTIONS ..................................................................................................... 2-5
  CLOSE_RELAY .................................................................................................................. 2-6
  EXIT ................................................................................................................................ 2-7
  HELP ............................................................................................................................... 2-8
  QUIT ................................................................................................................................ 2-9
  SET ................................................................................................................................ 2-10
  SET AUTHENTICATION_LEVEL ..................................................................................... 2-11
  SET DISPLAYMODE ....................................................................................................... 2-12
  SET LOG_LEVEL ........................................................................................................... 2-13
3 Oracle Names Control Utility

Oracle Names Control Utility Overview ................................................................. 3-2
SET and SHOW Commands of the Oracle Names Control Utility ..................... 3-3
Distributed Operations ......................................................................................... 3-3
Oracle Names Server Security ............................................................................ 3-5
Confirmation Mode in the Oracle Names Control Utility ................................. 3-6
Oracle Names Control Utility Commands ........................................................... 3-6
  DELEGATE_DOMAIN ......................................................................................... 3-6
  DOMAIN_HINT ................................................................................................. 3-7
  DUMP_ALIAS .................................................................................................... 3-9
  DUMP_LDAP ..................................................................................................... 3-13
  DUMP_TNSNAMES ......................................................................................... 3-17
  EXIT .................................................................................................................. 3-18
  FLUSH ............................................................................................................. 3-19
  FLUSH_NAME ................................................................................................. 3-20
  HELP .............................................................................................................. 3-21
  LIST_DELEGATED ......................................................................................... 3-23
  LIST_DOMAINS ............................................................................................... 3-24
  LIST_OBJECTS ................................................................................................. 3-25
6 Profile Parameters (sqlnet.ora)

Overview of Profile Configuration File ................................................................. 6-2
Profile Parameters ........................................................................................................ 6-3
   BEQUEATH_DETACH .............................................................................................. 6-3
   DISABLE_OOB ........................................................................................................ 6-4
   LOG_DIRECTORY_CLIENT ..................................................................................... 6-4
   LOG_DIRECTORY_SERVER ..................................................................................... 6-5
   LOG_FILE_CLIENT ................................................................................................. 6-5
   LOG_FILE_SERVER ................................................................................................. 6-5
   NAMES.CONNECT_TIMEOUT .................................................................................. 6-6
   NAMES.DCE.PREFIX ............................................................................................... 6-6
   NAMES.DEFAULT_DOMAIN ..................................................................................... 6-7
   NAMES.DIRECTORY_PATH ...................................................................................... 6-7
   NAMES.INITIAL_RETRY_TIMEOUT ......................................................................... 6-9
   NAMES.MAX_OPEN_CONNECTIONS ....................................................................... 6-9
   NAMES.MESSAGE_POOL_START_SIZE ..................................................................... 6-10
   NAMES.NIS.META_MAP ......................................................................................... 6-10
   NAMES.PREFERRED_SERVERS ............................................................................... 6-11
   NAMES.REQUEST_RETRIES .................................................................................. 6-11
   NAMESCTL.ECHO .................................................................................................. 6-12
   NAMESCTL.INTERNAL_ENCRYPT_PASSWORD ...................................................... 6-13
   NAMESCTL.INTERNAL_USE ................................................................................... 6-13
   NAMESCTL.NO_INITIAL_SERVER ........................................................................ 6-14
   NAMESCTL.NOCONFIRM ....................................................................................... 6-14
   NAMESCTL.SERVER_PASSWORD .......................................................................... 6-15
   NAMESCTL.TRACE_DIRECTORY ............................................................................ 6-15
   NAMESCTL.TRACE_FILE ....................................................................................... 6-15
   NAMESCTL.TRACE_LEVEL .................................................................................... 6-16
   NAMESCTL.TRACE_TIMESTAMP .......................................................................... 6-17
   NAMESCTL.TRACE_UNIQUE .................................................................................. 6-17
   SQLNET.AUTHENTICATION_KERBEROS5_SERVICE .......................................... 6-18
   SQLNET.AUTHENTICATION_GSSAPI_SERVICE ................................................. 6-18
7 Local Naming Parameters (tnsnames.ora)

Overview of Local Naming Parameters .......................................................... 7-2
General Syntax of tnsnames.ora ................................................................... 7-2
Multiple Descriptions in tnsnames.ora ...................................................... 7-3
Multiple Address Lists in tnsnames.ora ................................................... 7-4
Connect-Time Failover and Client Load Balancing with Oracle Connection Managers ...... 7-5
Local Naming Parameters ........................................................................... 7-7
  Connect Descriptor Descriptions .............................................................. 7-7
    DESCRIPTION ...................................................................................... 7-7
    DESCRIPTION_LIST ........................................................................... 7-8
  Protocol Address Section ........................................................................ 7-8
    ADDRESS ............................................................................................ 7-8
    ADDRESS_LIST .................................................................................. 7-9
  Optional Parameters for Lists ................................................................... 7-10
    FAILOVER .......................................................................................... 7-10
    LOAD_BALANCE ............................................................................... 7-11
8 Listener Parameters (listener.ora)

Overview of Listener Configuration File ................................................................. 8-2
Listener Parameters .............................................................................................. 8-3
Protocol Address Section ...................................................................................... 8-4
  DESCRIPTION ....................................................................................................... 8-4
  ADDRESS ............................................................................................................ 8-4
  QUEUESIZE ........................................................................................................ 8-5
Static Service Registration (SID_LIST) Section .................................................... 8-6
  SID_LIST .......................................................................................................... 8-6
  SID_DESC ....................................................................................................... 8-7
  ENVS ............................................................................................................. 8-7
  GLOBAL_DBNAME ......................................................................................... 8-9
  ORACLE_HOME ............................................................................................. 8-10
  PROGRAM ..................................................................................................... 8-10
  SID_NAME ..................................................................................................... 8-11
Control Parameters ............................................................................................. 8-11
  ADMIN_RESTRICTIONS_listener_name ......................................................... 8-12
  INBOUND_CONNECT_TIMEOUT_listener_name ........................................... 8-13
  LOG_DIRECTORY_listener_name ................................................................. 8-14
9 Oracle Connection Manager Parameters (cman.ora)

Overview of Oracle Connection Manager Configuration File ............................................... 9-2
Oracle Connection Manager Parameters .............................................................................. 9-3
  Listening Endpoint List ........................................................................................................ 9-3
  CMAN ................................................................................................................................. 9-3
  CMAN_ADMIN ..................................................................................................................... 9-4
  Route List .......................................................................................................................... 9-4
  CMAN_RULES ................................................................................................................... 9-4
Parameter List ..................................................................................................................... 9-6
  CMAN_PROFILE ............................................................................................................... 9-6
  ANSWER_TIMEOUT ........................................................................................................... 9-8
  AUTHENTICATION_LEVEL ............................................................................................... 9-8
  LOG_LEVEL ....................................................................................................................... 9-8
  MAX_FREELIST_BUFFERS ............................................................................................... 9-8
  MAXIMUM_CONNECT_DATA .............................................................................................. 9-9
  MAXIMUM_RELAYS .......................................................................................................... 9-9
  RELAY_STATISTICS ........................................................................................................ 9-9
  REMOTE_ADMIN .............................................................................................................. 9-10
  SHOW_TNS_INFO ............................................................................................................ 9-10
  TRACING ........................................................................................................................ 9-10
  TRACE_DIRECTORY ......................................................................................................... 9-11

LOG_FILE_listener_name ...................................................................................................... 8-14
LOGGING_listener_name ........................................................................................................ 8-15
PASSWORDS_listener_name ..................................................................................................... 8-15
SAVE_CONFIG_ON_STOP_listener_name ............................................................................... 8-16
SSL_CLIENT_AUTHENTICATION ............................................................................................ 8-16
STARTUP_WAIT_TIME_listener_name ..................................................................................... 8-17
TRACE_DIRECTORY_listener_name ......................................................................................... 8-18
TRACE_FILE_listener_name .................................................................................................... 8-18
TRACE_FILELEN_listener_name .............................................................................................. 8-19
TRACE_FilenO_listener_name ................................................................................................ 8-19
TRACE_LEVEL_listener_name ................................................................................................. 8-20
TRACE_TIMESTAMP_listener_name ......................................................................................... 8-20
WALLET_LOCATION ................................................................................................................ 8-21
10 Oracle Names Parameters (names.ora)

Overview of Oracle Names Server Configuration File .................................................. 10-2

Oracle Names Parameters ............................................................................................. 10-3
- NAMES.ADDRESSES .................................................................................................... 10-3
- NAMES.ADMIN_REGION ............................................................................................... 10-4
- NAMES.AUTHORITY_REQUIRED ................................................................................... 10-7
- NAMES.AUTO_REFRESH_EXPIRE ................................................................................... 10-7
- NAMES.AUTO_REFRESH_RETRY ..................................................................................... 10-8
- NAMES.CACHE_CHECKPOINT_FILE .............................................................................. 10-8
- NAMES.CACHE_CHECKPOINT_INTERVAL ..................................................................... 10-9
- NAMES.CONFIG_CHECKPOINT_FILE ........................................................................... 10-9
- NAMES.CONNECT_TIMEOUT ........................................................................................ 10-10
- NAMES.DEFAULT_FORWARDERS ................................................................................... 10-11
- NAMES.DEFAULT_FORWARDERS_ONLY ........................................................................... 10-12
- NAMES.DOMAIN_CHECKPOINT_FILE ........................................................................... 10-12
- NAMES.DOMAINS ......................................................................................................... 10-13
- NAMES.DOMAIN_HINTS ............................................................................................... 10-15
- NAMES.FORWARDING_AVAILABLE ............................................................................... 10-17
- NAMES.FORWARDING_DESIRED ................................................................................... 10-17
- NAMES.KEEP_DB_OPEN ............................................................................................... 10-18
- NAMES.LOG_DIRECTORY ............................................................................................... 10-18
- NAMES.LOG_FILE ......................................................................................................... 10-19
- NAMES.LOG_STATS_INTERVAL ..................................................................................... 10-19
- NAMES.LOG_UNIQUE .................................................................................................... 10-20
- NAMES.MAX_OPEN_CONNECTIONS ............................................................................... 10-20
- NAMES.MAX_REFORWARDS .......................................................................................... 10-21
- NAMES.MESSAGE_POOL_START_SIZE .......................................................................... 10-21
- NAMES.NO_MODIFY_REQUESTS ................................................................................... 10-22
- NAMES.NO_REGION_DATABASE ...................................................................................... 10-23
- NAMES.PASSWORD ....................................................................................................... 10-23
11 Directory Usage Parameters (ldap.ora)

Overview of Directory Server Usage File ................................................................. 11-2
Directory Usage Parameters ................................................................................. 11-2
  DIRECTORY_SERVERS .................................................................................. 11-2
  DIRECTORY_SERVER_TYPE ........................................................................ 11-3
  DEFAULT_ADMIN_CONTEXT .................................................................... 11-3

Part III Appendixes

A LDAP Schema for Oracle Net Services

Structural Object Classes ......................................................................................... A-2
  orclDBServer ......................................................................................... A-2
  orclNetService ..................................................................................... A-2
  orclNetServiceAlias ............................................................................ A-3
  orclNetDescription ............................................................................. A-3
  orclNetDescriptionList ........................................................................ A-4
  orclNetAddress ................................................................................... A-4
  orclNetAddressList ............................................................................. A-4

Attributes .............................................................................................................. A-5
B Commands and Parameters Not Supported in This Release

Overview of Unsupported Features ............................................................... B-2
Unsupported Parameters ............................................................................ B-4
Unsupported Control Utility Commands .................................................... B-6

Glossary

Index
List of Figures

7–1  Basic Format of tnsnames.ora File ........................................................................... 7-2
7–2  Net Service Name with Multiple Connect Descriptors in tnsnames.ora .................. 7-3
7–3  Multiple Address Lists in tnsnames.ora ................................................................. 7-4
7–4  Multiple Oracle Connection Manager Addresses in tnsnames.ora ....................... 7-5
7–5  Client Load Balancing in tnsnames.ora ................................................................. 7-6
8–1  Example listener.ora File ........................................................................................ 8-3
9–1  Example cman.ora File .......................................................................................... 9-2
10–1 Example names.ora File ......................................................................................... 10-2
## List of Tables

<table>
<thead>
<tr>
<th>Table</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>5–1</td>
<td>Protocol-Specific Parameters</td>
<td>5-3</td>
</tr>
<tr>
<td>5–2</td>
<td>Recommended Port Numbers</td>
<td>5-4</td>
</tr>
<tr>
<td>5–3</td>
<td>tnslsnr Utility Options</td>
<td>5-5</td>
</tr>
<tr>
<td>A–1</td>
<td>LDAP Schema Attributes for Oracle Net Services</td>
<td>A-5</td>
</tr>
<tr>
<td>B–1</td>
<td>Unsupported Networking Parameters</td>
<td>B-4</td>
</tr>
<tr>
<td>B–2</td>
<td>Unsupported Network Control Utility Commands</td>
<td>B-6</td>
</tr>
</tbody>
</table>
Send Us Your Comments

Oracle9i Net Services Reference Guide, Release 2 (9.2)
Part No.  A96581-02

Oracle Corporation welcomes your comments and suggestions on the quality and usefulness of this document. Your input is an important part of the information used for revision.

- Did you find any errors?
- Is the information clearly presented?
- Do you need more information? If so, where?
- Are the examples correct? Do you need more examples?
- What features did you like most?

If you find any errors or have any other suggestions for improvement, please indicate the document title and part number, and the chapter, section, and page number (if available). You can send comments to us in the following ways:

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- FAX: (650) 506-7227  Attn: Server Technologies Documentation Manager
- Postal service:
  Oracle Corporation
  Server Technologies Documentation
  500 Oracle Parkway, Mailstop 4op11
  Redwood Shores, CA  94065
  USA

If you would like a reply, please give your name, address, telephone number, and (optionally) electronic mail address.

If you have problems with the software, please contact your local Oracle Support Services.
The Oracle9i Net Services Reference Guide contains a complete listing and description of the control utility commands and configuration file parameters available for managing components of Oracle Net Services.

This preface contains these topics:

- Audience
- Organization
- Related Documentation
- Conventions
- Documentation Accessibility
Audience

Oracle9i Net Services Reference Guide is intended for network administrators who are responsible for configuring and administering network components.

To use this document, you need to be familiar with the networking concepts and configuration tasks described in Oracle Net Services Administrator's Guide.

Organization

This document contains:

Part I, "Control Utilities"

Chapter 1, "Listener Control Utility"
This chapter describes the Listener Control utility commands.

Chapter 2, "Oracle Connection Manager Control Utility"
This chapter describes the Oracle Connection Manager Control utility commands.

Chapter 3, "Oracle Names Control Utility"
This chapter describes the Oracle Names Control utility commands.

Part II, "Configuration Parameters"

Chapter 4, "Syntax Rules for Configuration Files"
This chapter describes the syntax rules for networking configuration files.

Chapter 5, "Protocol Address Configuration"
This chapter describes how to configure a protocol address.

Chapter 6, "Profile Parameters (sqlnet.ora)"
This chapter describes the sqlnet.ora file parameters.

Chapter 7, "Local Naming Parameters (tnsnames.ora)"
This chapter describes the tnsnames.ora file parameters.
Chapter 8, "Listener Parameters (listener.ora)"
This chapter describes the listener.ora file parameters.

Chapter 9, "Oracle Connection Manager Parameters (cman.ora)"
This chapter describes the cman.ora file parameters.

Chapter 10, "Oracle Names Parameters (names.ora)"
This chapter describes the names.ora file parameters.

Chapter 11, "Directory Usage Parameters (ldap.ora)"
This chapter describes the ldap.ora file parameters.

Part III, "Appendixes"

Appendix A, "LDAP Schema for Oracle Net Services"
This appendix describes the Oracle schema for Oracle Net Services.

Appendix B, "Commands and Parameters Not Supported in This Release"
This appendix describes the control utility commands and parameters no longer supported by Oracle Net Services.

Glossary

Related Documentation
For more information, see these Oracle resources:
■ Oracle Net Services Administrator’s Guide
■ Oracle9i documentation set

Many books in the documentation set use the sample schemas of the seed database, which is installed by default when you install Oracle. Refer to Oracle9i Sample Schemas for information on how these schemas were created and how you can use them yourself.

In North America, printed documentation is available for sale in the Oracle Store at http://oraclestore.oracle.com/
Customers in Europe, the Middle East, and Africa (EMEA) can purchase documentation from
http://www.oraclebookshop.com/

Other customers can contact their Oracle representative to purchase printed documentation.

To download free release notes, installation documentation, white papers, or other collateral, please visit the Oracle Technology Network (OTN). You must register online before using OTN; registration is free and can be done at
http://otn.oracle.com/admin/account/membership.html

If you already have a username and password for OTN, then you can go directly to the documentation section of the OTN Web site at
http://otn.oracle.com/docs/index.htm

To access the database documentation search engine directly, please visit
http://tahiti.oracle.com

Conventions

This section describes the conventions used in the text and code examples of this documentation set. It describes:

■ Conventions in Text
■ Conventions in Code Examples
■ Conventions for Windows Operating Systems
**Conventions in Text**

We use various conventions in text to help you more quickly identify special terms. The following table describes those conventions and provides examples of their use.

<table>
<thead>
<tr>
<th>Convention</th>
<th>Meaning</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Bold</strong></td>
<td>Bold typeface indicates terms that are defined in the text or terms that appear in a glossary, or both.</td>
<td>When you specify this clause, you create an index-organized table.</td>
</tr>
<tr>
<td><strong>Italics</strong></td>
<td>Italic typeface indicates book titles or emphasis.</td>
<td>Oracle9i Database Concepts</td>
</tr>
<tr>
<td><strong>UPPERCASE</strong></td>
<td>Uppercase monospace typeface indicates elements supplied by the system. Such elements include parameters, privileges, datatypes, RMAN keywords, SQL keywords, SQL*Plus or utility commands, packages and methods, as well as system-supplied column names, database objects and structures, usernames, and roles.</td>
<td>Ensure that the recovery catalog and target database do not reside on the same disk.</td>
</tr>
<tr>
<td><strong>lowercase</strong></td>
<td>Lowercase monospace typeface indicates executables, filenames, directory names, and sample user-supplied elements. Such elements include computer and database names, net service names, and connect identifiers, as well as user-supplied database objects and structures, column names, packages and classes, usernames and roles, program units, and parameter values. Note: Some programmatic elements use a mixture of UPPERCASE and lowercase. Enter these elements as shown.</td>
<td>You can specify this clause only for a NUMBER column. You can back up the database by using the BACKUP command. Query the TABLE_NAME column in the USER_TABLES data dictionary view. Use the DBMS_STATS.GENERATE_STATS procedure.</td>
</tr>
<tr>
<td><strong>lowercase italic</strong></td>
<td>Lowercase italic monospace font represents placeholders or variables.</td>
<td>Enter sqlplus to open SQL*Plus. The password is specified in the orapwd file. Back up the datafiles and control files in the /disk1/oracle/dbs directory. The department_id, department_name, and location_id columns are in the hr.departments table. Set the QUERY_REWRITE_ENABLED initialization parameter to true. Connect as oe user. The JRepUtil class implements these methods. You can specify the parallel_clause. Run Uold_release.SQL where old_release refers to the release you installed prior to upgrading.</td>
</tr>
</tbody>
</table>
**Conventions in Code Examples**

Code examples illustrate SQL, PL/SQL, SQL*Plus, or other command-line statements. They are displayed in a monospace (fixed-width) font and separated from normal text as shown in this example:

```
SELECT username FROM dba_users WHERE username = 'MIGRATE';
```

The following table describes typographic conventions used in code examples and provides examples of their use.

<table>
<thead>
<tr>
<th>Convention</th>
<th>Meaning</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>[ ]</td>
<td>Brackets enclose one or more optional items. Do not enter the brackets.</td>
<td>DECIMAL (digits [ , precision ])</td>
</tr>
<tr>
<td>{ }</td>
<td>Braces enclose two or more items, one of which is required. Do not enter the braces.</td>
<td>{ENABLE</td>
</tr>
<tr>
<td></td>
<td>A vertical bar represents a choice of two or more options within brackets or braces. Enter one of the options. Do not enter the vertical bar.</td>
<td>{ENABLE</td>
</tr>
<tr>
<td>...</td>
<td>Horizontal ellipsis points indicate either:</td>
<td>CREATE TABLE ... AS subquery;</td>
</tr>
<tr>
<td></td>
<td>■ That we have omitted parts of the code that are not directly related to the example</td>
<td>SELECT col1, col2, ... , coln FROM employees;</td>
</tr>
<tr>
<td></td>
<td>■ That you can repeat a portion of the code</td>
<td></td>
</tr>
<tr>
<td>. . .</td>
<td>Vertical ellipsis points indicate that we have omitted several lines of code not directly related to the example.</td>
<td>SQL&gt; SELECT NAME FROM V$DATAFILE;</td>
</tr>
<tr>
<td>. . .</td>
<td></td>
<td>NAME</td>
</tr>
<tr>
<td></td>
<td></td>
<td>------------------------------------</td>
</tr>
<tr>
<td></td>
<td></td>
<td>/fsl/dbs/tbs_01.dbf</td>
</tr>
<tr>
<td></td>
<td></td>
<td>/fsl/dbs/tbs_02.dbf</td>
</tr>
<tr>
<td></td>
<td></td>
<td>. . .</td>
</tr>
<tr>
<td></td>
<td></td>
<td>/fsl/dbs/tbs_09.dbf</td>
</tr>
<tr>
<td></td>
<td></td>
<td>9 rows selected.</td>
</tr>
<tr>
<td>Other notation</td>
<td>You must enter symbols other than brackets, braces, vertical bars, and ellipsis points as shown.</td>
<td>acctbal NUMBER(11,2);</td>
</tr>
<tr>
<td></td>
<td></td>
<td>acct CONSTANT NUMBER(4) := 3;</td>
</tr>
</tbody>
</table>
The following table describes conventions for Windows operating systems and provides examples of their use.

<table>
<thead>
<tr>
<th>Convention</th>
<th>Meaning</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Italics</td>
<td>Italicized text indicates placeholders or variables for which you must supply particular values.</td>
<td>CONNECT SYSTEM/system_password&lt;br&gt;DB_NAME = database_name&lt;br&gt;CONNECT SYSTEM/ system_password&lt;br&gt;DB_NAME = database_name</td>
</tr>
<tr>
<td>UPPERCASE</td>
<td>Uppercase typeface indicates elements supplied by the system. We show these terms in uppercase in order to distinguish them from terms you define. Unless terms appear in brackets, enter them in the order and with the spelling shown. However, because these terms are not case sensitive, you can enter them in lowercase.</td>
<td>SELECT last_name, employee_id FROM employees;&lt;br&gt;SELECT * FROM USER_TABLES;&lt;br&gt;DROP TABLE hr.employees;</td>
</tr>
<tr>
<td>lowercase</td>
<td>Lowercase typeface indicates programmatic elements that you supply. For example, lowercase indicates names of tables, columns, or files. Note: Some programmatic elements use a mixture of UPPERCASE and lowercase. Enter these elements as shown.</td>
<td>SELECT last_name, employee_id FROM employees;&lt;br&gt;sqlplus hr/hr&lt;br&gt;CREATE USER mjones IDENTIFIED BY ty3MU9;</td>
</tr>
</tbody>
</table>

**Conventions for Windows Operating Systems**
The following table describes conventions for Windows operating systems and provides examples of their use.

<table>
<thead>
<tr>
<th>Convention</th>
<th>Meaning</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Choose Start &gt;</td>
<td>How to start a program.</td>
<td>To start the Database Configuration Assistant, choose Start &gt; Programs &gt; Oracle - HOME_ NAME &gt; Configuration and Migration Tools &gt; Database Configuration Assistant.</td>
</tr>
<tr>
<td>File and directory names</td>
<td>File and directory names are not case sensitive. The following special characters are not allowed: left angle bracket (&lt;), right angle bracket (&gt;), colon (:), double quotation marks (&quot;), slash (/), pipe (</td>
<td>), and dash (-). The special character backslash () is treated as an element separator, even when it appears in quotes. If the file name begins with , then Windows assumes it uses the Universal Naming Convention.</td>
</tr>
<tr>
<td>Convention</td>
<td>Meaning</td>
<td>Example</td>
</tr>
<tr>
<td>------------</td>
<td>---------</td>
<td>---------</td>
</tr>
<tr>
<td>C:&gt;</td>
<td>Represents the Windows command prompt of the current hard disk drive. The escape character in a command prompt is the caret (^). Your prompt reflects the subdirectory in which you are working. Referred to as the command prompt in this manual.</td>
<td>C:\oracle\oradata&gt;</td>
</tr>
<tr>
<td>Special characters</td>
<td>The backslash () special character is sometimes required as an escape character for the double quotation mark (&quot;) special character at the Windows command prompt. Parentheses and the single quotation mark (’) do not require an escape character. Refer to your Windows operating system documentation for more information on escape and special characters.</td>
<td>C:&gt;exp scott/tiger TABLES=emp QUERY=&quot;WHERE job='SALESMAN' and sal&lt;1600&quot; C:&gt;imp SYSTEM/password FROMUSER=scott TABLES=(emp, dept)</td>
</tr>
<tr>
<td>HOME_NAME</td>
<td>Represents the Oracle home name. The home name can be up to 16 alphanumeric characters. The only special character allowed in the home name is the underscore.</td>
<td>C:&gt; net start OracleHOME_NAME TNSListener</td>
</tr>
<tr>
<td>Convention</td>
<td>Meaning</td>
<td>Example</td>
</tr>
<tr>
<td>------------</td>
<td>---------</td>
<td>---------</td>
</tr>
<tr>
<td>ORACLE_HOME and ORACLE_BASE</td>
<td>In releases prior to Oracle8i release 8.1.3, when you installed Oracle components, all subdirectories were located under a top level ORACLE_HOME directory that by default used one of the following names:</td>
<td>Go to the ORACLE_BASE\ORACLE_HOME\rdbms\admin directory.</td>
</tr>
<tr>
<td></td>
<td>■ C:\orant for Windows NT</td>
<td></td>
</tr>
<tr>
<td></td>
<td>■ C:\orawin98 for Windows 98</td>
<td></td>
</tr>
<tr>
<td></td>
<td>This release complies with Optimal Flexible Architecture (OFA) guidelines. All subdirectories are not under a top level ORACLE_HOME directory. There is a top level directory called ORACLE_BASE that by default is C:\oracle. If you install the latest Oracle release on a computer with no other Oracle software installed, then the default setting for the first Oracle home directory is C:\oracle\orann, where nn is the latest release number. The Oracle home directory is located directly under ORACLE_BASE.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>All directory path examples in this guide follow OFA conventions.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Refer to Oracle9i Database Getting Started for Windows for additional information about OFA compliances and for information about installing Oracle products in non-OFA compliant directories.</td>
<td></td>
</tr>
</tbody>
</table>
Documentation Accessibility

Our goal is to make Oracle products, services, and supporting documentation accessible, with good usability, to the disabled community. To that end, our documentation includes features that make information available to users of assistive technology. This documentation is available in HTML format, and contains markup to facilitate access by the disabled community. Standards will continue to evolve over time, and Oracle Corporation is actively engaged with other market-leading technology vendors to address technical obstacles so that our documentation can be accessible to all of our customers. For additional information, visit the Oracle Accessibility Program Web site at

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Accessibility of Code Examples in Documentation  JAWS, a Windows screen reader, may not always correctly read the code examples in this document. The conventions for writing code require that closing braces should appear on an otherwise empty line; however, JAWS may not always read a line of text that consists solely of a bracket or brace.
Oracle Net Services provides control utilities to administer listeners, Oracle Names servers, and Oracle Connection Managers. Part 1 lists the commands that are available with each utility, including any applicable prerequisites, passwords, syntax or argument rules, and usage notes or examples to help you use them.

This part contains the following chapters:

- Chapter 1, "Listener Control Utility"
- Chapter 2, "Oracle Connection Manager Control Utility"
- Chapter 3, "Oracle Names Control Utility"
This chapter describes the commands and associated syntax of the Listener Control utility.

This chapter contains these topics:

- Listener Control Utility Overview
- SET and SHOW Commands of the Listener Control Utility
- Distributed Operations
- Listener Security
- Listener Control Utility Commands
Listener Control Utility Overview

The Listener Control utility enables you to administer listeners. You can use its commands to perform basic management functions on one or more listeners. Additionally, you can view and change parameter settings.

The basic syntax of Listener Control utility commands is as follows:

```
lsnrctl command [listener_name]
```

where `listener_name` is the name of the listener to be administered. If no name is specified, then the default name, LISTENER, is assumed.

You can also issue Listener Control utility commands at the LSNRCTL> program prompt. To obtain the prompt, enter `lsnrctl` with no arguments at the operating system command line. When you run `lsnrctl`, the program is started. You can then enter the necessary commands from the program prompt. The basic syntax of issuing commands from LSNRCTL> program prompt is as follows:

```
lsnrctl
LSNRCTL> command [listener_name]
```

**Note:** You can combine commands in a standard text file, and then run them as a sequence of commands. To execute in batch mode, use the format:

```
lsnrctl @file_name
```

You can use either `REM` or `#` to identify comments in the batch script; all other lines are considered commands. Any commands that would typically require confirmation do not require confirmation during batch execution.
For a majority of commands, the Listener Control utility establishes an Oracle Net connection with the listener that is used to transmit the command. To initiate an Oracle Net connection to the listener, the Listener Control utility needs to obtain the protocol addresses for the named listener or a listener named LISTENER. This is done by resolving the listener name with one of the following mechanisms:

- listener.ora file in the directory specified by the TNS_ADMIN environment variable
- listener.ora file in the $ORACLE_HOME/network/admin directory on UNIX operating systems and the ORACLE_HOME\network\admin directory on Windows operating systems
- Naming method, for example, a tnsnames.ora file

If the listener name is LISTENER and it cannot be resolved, a protocol address of TCP/IP, port 1521 is assumed.

The Listener Control utility supports several types of commands:

- Operational commands, such as START, STOP, and so forth.
- Modifier commands, such as SET TRC_LEVEL
- Informational commands, such as STATUS and SHOW LOG_FILE
- Operational commands, such as EXIT, QUIT, and HELP

**SET and SHOW Commands of the Listener Control Utility**

You can use the **SET** command to alter parameter values for a specified listener. You set the name of the listener you want to administer with the **SET CURRENT_LISTENER** command. Parameter values remain in effect until the listener is shut down. If you want these settings to persist, use the **SAVE_CONFIG** command to save changes to the listener.ora.

You can use the **SHOW** command to display the current value of a configuration setting.
Distributed Operations

The Listener Control utility can perform operations on a local or a remote listener. To set up a computer to remotely administer a listener:

1. Ensure that the Listener Control utility (lsnrctl) executable is installed.
2. Ensure that the name of the listener you want to administer can be resolved through a listener.ora file or a naming method, as described in "Listener Control Utility Overview" on page 1-2.

All commands except START can be issued when a listener is administered remotely. The Listener Control utility can only start the listener on the same computer from where the utility is running.

When issuing commands, specify the listener name as an argument. For example:

```
LSNRCTL> SERVICES lsnr
```

If the name is omitted, then listener name set with the SET CURRENT_LISTENER command is used, or the default name, LISTENER is assumed.

Listener Security

It is important to provide security through a password for the listener. With a password, privileged operations, such as saving configuration changes or stopping the listener, used from the Listener Control utility will require a password.

Use the Listener Control utility’s CHANGE_PASSWORD command or Oracle Net Manager to set or modify an encrypted password in the PASSWORDS_listener_name parameter in the listener.ora file. If the PASSWORDS_listener_name parameter is set to an unencrypted password, you must manually remove it from the listener.ora file prior to modifying it. If the unencrypted password is not removed, you will be unable to successfully set an encrypted password.

If the PASSWORDS_listener_name parameter is set in the listener.ora file or the CHANGE_PASSWORD command has been used to create a new, encrypted password, then the Listener Control utility will require a SET PASSWORD command prior to any protected command, such as STOP.

---

**Note:** If you are administering the listener remotely over an insecure network and require maximum security, configure the listener with a secure protocol address that uses the **TCP/IP with SSL protocol**. If the listener has multiple protocol addresses, ensure that the TCP/IP with SSL protocol address is listed first in the listener.ora file.
Listener Control Utility Commands

This section lists and describes the Listener Control utility commands.

CHANGE_PASSWORD

Purpose

Use the CHANGE_PASSWORD command to establish an encrypted password or change an encrypted password set with the PASSWORDS_listener_name parameter in the listener.ora file.

Prerequisites

None

Password Required If One Has Been Set:

Yes. If a password is set, then issue then issue the SET PASSWORD command prior to this command.

Syntax

From the operating system:

lsnrctl CHANGE_PASSWORD [listener_name]

From the Listener Control utility:

LSNRCTL> CHANGE_PASSWORD [listener_name]

Arguments

[listener_name]: Specify the listener name, if the default name of LISTENER is not used.

Usage Notes

The Listener Control utility prompts you for the old password and then for the new one. It asks you to re-enter the new one, and then changes it. Neither the old nor the new password displays during this procedure. CHANGE_PASSWORD is usually followed by the SAVE_CONFIG command to save the new password in the listener.ora file. If a SAVE_CONFIG command is not issued, then the new password will be in effect only until the listener is shut down.

See Also: Oracle9i Net Services Administrator’s Guide for further information about password security of the listener
Example

The following shows a new password of lsnrc9i being set:

```
LSNRCTL> CHANGE_PASSWORD
Old password:
New password: lsnrc9i
Reenter new password: lsnrc9i
Connecting to (ADDRESS=(PROTOCOL=ipc)(KEY=iris))
Password changed for LISTENER
The command completed successfully
```

```
LSNRCTL> SAVE_CONFIG
The command completed successfully
```

The following shows the password being changed from lsnrc80 to lsnrc90:

```
LSNRCTL> CHANGE_PASSWORD
Old password: lsnrc8i
New password: lsnrc9i
Reenter new password: lsnrc9i
Connecting to (ADDRESS=(PROTOCOL=ipc)(KEY=iris))
Password changed for LISTENER
The command completed successfully
```

```
LSNRCTL> SAVE_CONFIG
The command completed successfully
```
EXIT

Purpose
Use the EXIT command to exit from the Listener Control utility.

Prerequisites
None

Password Required If One Has Been Set
No. If a password is set, then the SET PASSWORD command does not need to be issued prior to this command.

Syntax
From the Listener Control utility:
LSNRCTL> EXIT

Arguments
None

Usage Notes
This command is identical to the QUIT command.

Example
LSNRCTL> EXIT
HELP

Purpose
Use the command HELP to provide a list of all the Listener Control utility commands or provide syntax help for a particular Listener Control utility command.

Prerequisites
None

Password Required If One Has Been Set
No. If a password is set, then the SET PASSWORD command does not need to be issued prior to this command.

Syntax
From the operating system:
lsnrctl HELP [command]

From the Listener Control utility:
LSNRCTL> HELP [command]

Arguments
[command]: Specify a HELP command. Commands are shown in the following example output.

When you enter a command as an argument to HELP, the Listener Control utility displays information about how to use the command. When you enter HELP without an argument, the Listener Control utility displays a list of all the commands.
Example

```
LSNRCTL> HELP
The following operations are available
An asterisk (*) denotes a modifier or extended command:
change_password
exit
quit
reload
services
set*
show*
spawn
start
status
stop
trace
version
```

QUIT

Purpose

Use the QUIT command to exit the Listener Control utility and return to the operating system prompt.

Prerequisites

None

Password Required If One Has Been Set

No. If a password is set, then the SET PASSWORD command does not need to be issued prior to this command.

Syntax

From the Listener Control utility

```
LSNRCTL> QUIT
```

Arguments

None
Usage Notes

This command is identical to the EXIT command.

Example

LSNRCTL> QUIT

RELOAD

Purpose

Use the RELOAD command to reread the listener.ora file. This command enables you to add or change statically configured services without actually stopping the listener.

In addition, the database services, instances, service handlers, and listening endpoints that were dynamically registered with the listener will be unregistered and subsequently registered again.

Prerequisites

None

Password Required If One Has Been Set

Yes. If a password is set, then issue the SET PASSWORD command prior to this command.

Syntax

From the operating system:

lsnrctl RELOAD [listener_name]

From the Listener Control utility:

LSNRCTL> RELOAD [listener_name]

Arguments

[listener_name]: Specify the listener name, if the default name of LISTENER is not used.
Example

```
LSNRCTL> RELOAD
Connecting to
  (DESCRIPTION=(ADDRESS=(PROTOCOL=TCP)(HOST=sales-server)(PORT=1521)))
The command completed successfully
```

SAVE_CONFIG

Purpose

Use the SAVE_CONFIG command to compare the current configuration state of the listener, including trace level, trace file, trace directory, and logging to the listener.ora file. Any changes are stored in listener.ora, preserving formatting, comments, and case as much as possible. Prior to modification of the listener.ora file, a backup of the file, called listener.bak, is created.

Password Required If One Has Been Set

Yes. If a password is set, then issue the SET PASSWORD command prior to this command.

Syntax

From the operating system:

```
lsnrctl SAVE_CONFIG [listener_name]
```

From the Listener Control utility:

```
LSNRCTL> SAVE_CONFIG [listener_name]
```

Arguments

```
[listener_name]: Specify the listener name, if the default name of LISTENER is not used.
```

Usage Notes

This command enables you to save all runtime configuration changes to the listener.ora file, which can be especially useful for saving changed encrypted passwords.
Example

LSNRCTL> SAVE_CONFIG listener
Connecting to
(DESCRIPTOR=(ADDRESS=(PROTOCOL=TCP)(HOST=sales-server)(PORT=1521)))
Saved LISTENER configuration parameters.
Listener Parameter File /oracle9i/network/admin/listener.ora
Old Parameter File /oracle9i/network/admin/listener.bak
The command completed successfully

SERVICES

Purpose

Use the SERVICES command to obtain detailed information about the database services, instances, and service handlers (dispatchers and dedicated servers) to which the listener forwards client connection requests.

Prerequisites

None

Password Required If One Has Been Set

Yes. If a password is set, then issue the SET PASSWORD command prior to this command.

Syntax

From the operating system:
lsnrctl SERVICES [listener_name]

From the Listener Control utility:
LSNRCTL> SERVICES [listener_name]

Arguments

[listener_name]: Specify the listener name, if the default name of LISTENER is not used.
Usage Notes

See Also:  *Oracle9i Net Services Administrator’s Guide* for a complete description of SERVICES output

The SET DISPLAYMODE command changes the format and the detail level of the output.

Example

This example shows SERVICES output in the default display mode. The output shows the following:

- An instance named sales belonging to two services, sales1.us.acme.com and sales2.us.acme.com, with a total of three service handlers.

- Service sales1.us.acme.com is handled by one dispatcher only.

- Service sales2.us.acme.com is handled by one dispatcher and one dedicated server, as specified by in the following output.

LSNRCTL> SERVICES
Connecting to (DESCRIPTION=(ADDRESS=(PROTOCOL=ipc)(KEY=net)))
Services Summary...
Service "sales1.us.acme.com" has 1 instance(s).
Instance "sales", status READY, has 1 handler(s) for this service...
  Handler(s):
  "D000" established:0 refused:0 current:0 max:10000 state:ready
  DISPATCHER <machine: sales-server, pid: 5696>
  (ADDRESS=(PROTOCOL=tcp) (HOST=sales-server) (PORT=53411))
Service "sales2.us.acme.com" has 1 instance(s).
Instance "sales", status READY, has 2 handler(s) for this service...
  Handler(s):
  "DEDICATED" established:0 refused:0 state:ready
  LOCAL SERVER
  "D001" established:0 refused:0 current:0 max:10000 state:ready
  DISPATCHER <machine: sales-server, pid: 5698>
  (ADDRESS=(PROTOCOL=tcp) (HOST=sales-server) (PORT=52618))

The command completed successfully
SET

Purpose

Use the SET command to alter the parameter values for the listener. Parameter values changes remain in effect until the listener is shut down. To make the changes permanent, use the SAVE_CONFIG command to save changes to the listener.ora file.

Prerequisites

None

Password Required If One Has Been Set

No. If a password is set, then the SET PASSWORD command does not need to be issued prior to this command.

Syntax

From the operating system:
lsnrctl SET [parameter]

From the Listener Control utility:
LSNRCTL> SET [parameter]

Arguments

[parameter]: Specify a SET parameter to modify its configuration setting. Parameters are shown in the example output.

When you enter SET without an argument, the Listener Control utility displays a list of all the parameters.

Usage Notes

If you are using the SET commands to alter the configuration of a listener other than the default LISTENER listener, use the SET CURRENT_LISTENER command to set the name of the listener you want to administer.
Example

LSNRCTL> SET
The following operations are available with set.
An asterisk (*) denotes a modifier or extended command.
current_listener
displaymode
log_file
log_directory
log_status
password
raw_mode
save_config_on_stop
startup_waittime
trc_file
trc_directory
trc_level
SET CURRENT_LISTENER

Purpose

Use the SET CURRENT_LISTENER command to set the name of the listener to administer. Subsequent commands that would normally require listener_name can be issued without it.

Password Required If One Has Been Set

No. If a password is set, then the SET PASSWORD command does not need to be issued prior to this command.

Syntax

From the Listener Control utility

LSNRCTL> SET CURRENT_LISTENER [listener_name]

Arguments

[listener_name]: Specify the listener name, if the default name of LISTENER is not used.

Usage Notes

When SET CURRENT_LISTENER is set, the Listener Control utility commands act on the listener you set. You do not have to specify the name of the listener.

Example

LSNRCTL> SET CURRENT_LISTENER lsnr
Current Listener is lsnr
SET DISPLAYMODE

Purpose
Use the SET DISPLAYMODE command to change the format and level of detail for the SERVICES and STATUS commands.

Password Required If One Has Been Set
No. If a password is set, then the SET PASSWORD command does not need to be issued prior to this command.

Syntax
From the Listener Control utility:

`LSNRCTL> SET DISPLAYMODE {compat | normal | verbose | raw}`

Arguments

- `[compat]`: Specify to display output that is compatible with older versions of the listener.
- `[normal]`: Specify to display output in a formatted and descriptive output. Oracle Corporation recommends this mode.
- `[verbose]`: Specify to display all data received from the listener in a formatted and descriptive output.
- `[raw]`: Specify to display all data received from the listener without any formatting. This output should be used only if recommended by Oracle Support Services.

Example

`LSNRCTL> SET DISPLAYMODE normal
Service display mode is NORMAL`
**SET LOG_DIRECTORY**

**Purpose**

Use the command `SET LOG_DIRECTORY` to set destination directory where the listener log file is written. By default, the log file is written to the `$ORACLE_HOME/network/log` directory on UNIX operating systems and the `ORACLE_HOME\network\log` directory on Windows NT.

**Prerequisites**

None

**Password Required If One Has Been Set**

Yes. If a password is set, then issue the `SET PASSWORD` command prior to this command.

**Syntax**

From the operating system:

```
lsnrctl SET LOG_DIRECTORY {directory}
```

From the Listener Control utility:

```
LSNRCTL> SET LOG_DIRECTORY {directory}
```

**Arguments**

 `{directory}`: Specify the directory path of the listener log file.

**Example**

```
LSNRCTL> SET LOG_DIRECTORY /usr/oracle/admin
Connecting to
(DESCRIPTION=(ADDRESS=(PROTOCOL=TCP)(HOST=sales-server)(PORT=1521))}
LISTENER parameter "log_directory" set to /usr/oracle/admin
The command completed successfully
```
**SET LOG_FILE**

**Purpose**
Use the command SET LOG_FILE to set the name for the listener log file. By default, the log file name is `listener.log`.

**Prerequisites**
None

**Password Required If One Has Been Set**
Yes. If a password is set, then issue the SET PASSWORD command prior to this command.

**Syntax**
From the operating system:
```
lsnrctl SET LOG_FILE { file_name }
```
From the Listener Control utility:
```
LSNRCTL> SET LOG_FILE {file_name}
```

**Arguments**
```
{file_name}: Specify file name of the listener log.
```

**Example**
```
LSNRCTL> SET LOG_FILE list.log
Connecting to (DESCRIPTION=(ADDRESS=(PROTOCOL=TCP)(HOST=sales-server)(PORT=1521)))
LISTENER parameter "log_file" set to list.log
The command completed successfully
```
SET LOG_STATUS

Purpose

Use the command SET LOG_STATUS to turn listener logging on or off

Prerequisites

None

Password Required If One Has Been Set

Yes. If a password is set, then issue the SET PASSWORD command prior to this command.

Syntax

From the operating system:
lnsrctl SET LOG_STATUS {on | off}

From the Listener Control utility:
LSNRCTL> SET LOG_STATUS {on | off}

Arguments

[on]: Specify to turn logging on.
[off]: Specify to turn logging off.

Example

LSNRCTL> SET LOG_STATUS on
Connecting to

{(DESCRIPTION=(ADDRESS=(PROTOCOL=TCP)(HOST=sales-server)(PORT=1521)))
listener parameter "log_status" set to ON
The command completed successfully
SET PASSWORD

Purpose

Use the command SET PASSWORD prior to privileged Listener Control utility commands, such as SAVE_CONFIG and STOP.

The password entered should match the one established for the PASSWORDS_listener_name parameter in the listener.ora file or set by the CHANGE_PASSWORD command.

Syntax

From the Listener Control utility:

```
LSNRCTL> SET PASSWORD
Password: password
```

Arguments

None

Usage Notes

You can enter this command when you start up the Listener Control utility or at any time during the session as needed.

See Also:  "Listener Security" on page 1-4

Example

```
LSNRCTL> SET PASSWORD
Password: lnrc9i
The command completed successfully
```
SET SAVE_CONFIG_ON_STOP

Purpose
Use the command SET SAVE_CONFIG_ON_STOP to specify whether or not changes made to the parameter values for the listener by the SET commands are to be saved to the listener.ora file at the time the listener is stopped with the STOP command.

When changes are saved, the Listener Control utility tries to preserve formatting, comments, and letter case. Prior to modification of the listener.ora file, a backup of the file, called listener.bak, is created.

To have all parameters saved right away, use the SAVE_CONFIG command.

Password Required If One Has Been Set
No. If a password is set, then the SET PASSWORD command does not need to be issued prior to this command.

Syntax
From the operating system:
lsnrctl SET SAVE_CONFIG_ON_STOP {on | off}

From the Listener Control utility:
LSNRCTL> SET SAVE_CONFIG_ON_STOP {on | off}

Arguments
[on]: Specify to save configuration to listener.ora.
[off]: Specify to not save configuration to listener.ora.

Example
LSNRCTL> SET SAVE_CONFIG_ON_STOP on
listener parameter "save_config_on_stop" set to ON
The command completed successfully
Listener Control Utility Commands

SET STARTUP_WAITTIME

**Purpose**
Use the command `SET STARTUP_WAITTIME` to specify the amount of time for the listener to wait before responding to a `START` command.

**Prerequisites**
None

**Password Required If One Has Been Set**
Yes. If a password is set, then issue the `SET PASSWORD` command prior to this command.

**Syntax**
From the operating system:
```
lsnrctl SET STARTUP_WAITTIME { time }
```

From the Listener Control utility:
```
LSNRCTL> SET STARTUP_WAITTIME { time }
```

**Arguments**
```
{ time }
```
Specify the time, in seconds.

**Example**
```
LSNRCTL> SET STARTUP_WAITTIME 10
Connecting to (DESCRIPTION=(ADDRESS=(PROTOCOL=TCP)(HOST=sales-server)(PORT=1521)))
listener parameter "startup_waittime" set to 10
The command completed successfully
```

---

**Note:** This command is deprecated in Oracle 9i and will be desupported in a future release. If you require this command to run the listener, please notify Oracle Support Services.
SET TRC_DIRECTORY

Purpose
Use the command SET TRC_DIRECTORY to set the destination directory where the listener trace files are written. By default, the trace file are written to the $ORACLE_HOME/network/trace directory on UNIX operating systems and the ORACLE_HOME\network\trace directory on Windows NT.

Prerequisites
None

Password Required If One Has Been Set
No. If a password is set, then the SET PASSWORD command does not need to be issued prior to this command.

Syntax
From the operating system:
lsnrctl SET_TRC_DIRECTORY {directory}

From the Listener Control utility:
LSNRCTL> SET TRC_DIRECTORY {directory}

Arguments
{directory}: Specify the directory path of the listener trace files.

Example
LSNRCTL> SET TRC_DIRECTORY /usr/oracle/admin
Connecting to
(DESCRIPTION=(ADDRESS=(PROTOCOL=TCP)(HOST=sales-server)(PORT=1521)))
LISTENER parameter "trc_directory" set to /usr/oracle/admin
The command completed successfully
**SET TRC_FILE**

**Purpose**
Use the command `SET TRC_FILE` to set the name of the listener trace file. By default, the trace file name is `listener.trc`.

**Prerequisites**
None

**Password Required If One Has Been Set**
No. If a password is set, then the `SET PASSWORD` command does not need to be issued prior to this command.

**Syntax**
From the operating system:
```bash
lsnrctl SET TRC_FILE {file_name}
```

From the Listener Control utility:
```plaintext
LSNRCTL> SET TRC_FILE {file_name}
```

**Arguments**

`{file_name}`: Specify the file name of the listener trace.

**Example**
```plaintext
LSNRCTL> SET TRC_FILE list.trc
Connecting to
{(DESCRIPTION=(ADDRESS=(PROTOCOL=TCP)(HOST=sales-server)(PORT=1521)))
LISTENER parameter "trc_file" set to list.trc
The command completed successfully
```
SET TRC_LEVEL

Purpose

Use the command SET TRC_LEVEL to set a specific level of tracing for the listener.

Prerequisites

None

Password Required If One Has Been Set

Yes. If a password is set, then issue the SET PASSWORD command prior to this command.

Syntax

From the operating system:

```
lsnrctl SET TRC_LEVEL {level}
```

From the Listener Control utility:

```
LSNRCTL> SET TRC_LEVEL {level}
```

Arguments

```
{level}: Specify one of the following trace levels:

- off for no trace output
- user for user trace information
- admin for administration trace information
- support for Oracle Support Services trace information
```

Usage Notes

This command has the same functionality as the TRACE command.

Example

```
LSNRCTL> SET TRC_LEVEL admin
Connecting to 
(DESCRIPTION=(ADDRESS=(PROTOCOL=TCP) (HOST=sales-server) (PORT=1521)))
listener parameter "trc_level" set to admin
The command completed successfully
```
SHOW

Purpose
Use the command SHOW to view the current parameter values for the listener.
All of the SET parameters, except SET PASSWORD, have equivalent SHOW parameters.

Prerequisites
None

Password Required If One Has Been Set
Yes. If a password is set, then issue the SET PASSWORD command prior to using this command.

Syntax
From the operating system:
lsnrctl SHOW [parameter]

From the Listener Control utility:
LSNRCTL> SHOW [parameter]

Arguments
[parameter]: Specify a SHOW parameter to view its configuration settings.
Parameters are shown in the example output.

When you enter SET without an argument, the Listener Control utility displays a list of all the parameters.
Example

LSNRCTL> SHOW
The following properties are available with SHOW:
An asterisk (*) denotes a modifier or extended command:
current_listener
displaymode
log_file
log_directory
log_status
rawmode
save_config_on_stop
startup_waittime
trc_file
trc_directory
trc_level

**Note:** SHOW STARTUP_WAITTIME is deprecated in Oracle9i and will be desupported in a future release. If you require this command to run the listener, please notify Oracle Support Services.
**SPAWN**

**Purpose**

Use the command `SPAWN` to start a program stored on the computer on which the listener is running, and which is listed with an alias in the `listener.ora` file.

**Prerequisites**

None

**Password Required If One Has Been Set**

Yes. If a password is set, then issue the `SET PASSWORD` command prior to this command.

**Syntax**

From the operating system:

```
lsnrctl SPAWN [listener_name] {alias} [(arguments=’arg1,arg2,...’)]
```

From the Listener Control utility

```
LSNRCTL> SPAWN [listener_name] {alias} [(arguments=’arg1,arg2,...’)]
```

**Arguments**

- `[listener_name]`: Specify the listener name, if the default name of LISTENER is not used.
- `{alias}`: Specify the alias name of the program specified by the `PROGRAM` parameter in the `listener.ora` file.
- `[(arguments=’arg1,arg2,...’)]`: Specify the arguments sent to by program that is to be spawned.

**Example**

```
LSNRCTL> SPAWN nstest_alias (ARGUMENTS=’’)
```
START

Purpose
Use the command START to start the named listener.

Prerequisites
Listener must not already be running.

Password Required If One Has Been Set
No. If a password is set, then the SET PASSWORD command does not need to be issued prior to this command.

Syntax
From the operating system:
lsnrctl START [listener_name]

From the Listener Control utility:
LSNRCTL> START [listener_name]

Arguments
[listener_name]: Specify the listener name, if the default name of LISTENER is not used.

Usage Notes
To start a listener configured in the listener.ora file with a name other than LISTENER, include that name.

For example, if the listener name is tcp_lsnr, enter:
lsnrctl START tcp_lsnr

From the Listener Control utility:
LSNRCTL> START tcp_lsnr
Example

LSNRCTL> START

Starting /private/dsteiner/sales/bin/tnslsnr: please wait...

TNSLSNR for Solaris: Version 9.0.1.0.0
System parameter file is /oracle9i/network/admin/listener.ora
Log messages written to /oracle9i/network/log/listener.log
Listening on:
  (DESCRIPTION= (ADDRESS=(PROTOCOL=tcp) (HOST=sales-server) (PORT=1521)))

Connecting to
  (DESCRIPTION= (ADDRESS= (PROTOCOL=TCP) (HOST=sales-server) (PORT=1521)))
STATUS of the LISTENER

-----------------------------------------
Alias            LISTENER
Version          TNSLSNR for Solaris: Version 9.0.1.0.0
Start Date       23-JAN-2002 18:02:25
Uptime           0 days 0 hr. 0 min. 0 sec
Trace Level      off
Security         OFF
SNMP             OFF
Listener Parameter File /oracle9i/network/admin/listener.ora
Listener Log File /oracle9i/network/log/listener.log
Listening Endpoints Summary...
  (DESCRIPTION= (ADDRESS= (PROTOCOL=tcp) (HOST=sales-server) (PORT=1521)))
The listener supports no services
The command completed successfully
Purpose

Use the command STATUS to display basic status information about a listener, including a summary of listener configuration settings, listening protocol addresses, and a summary of services registered with the listener.

Prerequisites

None

Password Required If One Has Been Set

Yes. If a password is set, then issue the SET PASSWORD command prior to this command.

Syntax

From the operating system:
lsnrctl STATUS [listener_name]

From the Listener Control utility:
LSNRCTL> STATUS [listener_name]

Arguments

[listener_name]: Specify the listener name, if the default name of LISTENER is not used.

Usage Notes

See Also: Oracle9i Net Services Administrator’s Guide for a complete description of STATUS output

The SET DISPLAYMODE command changes the format and level of the detail of the output.
Example

The following example shows STATUS output in the default display mode. The output contains:

- Listener configuration settings
- Listening endpoints summary
- Services summary, which is an abbreviated version of the SERVICES command output

```
LSNRCTL> STATUS
Connecting to (DESCRIPTION=(ADDRESS=(PROTOCOL=ipc)(KEY=net)))
STATUS of the LISTENER
----------------------------------------
Alias                     LISTENER
Version                   TNSLSNR for Solaris: Version 9.2.0.2.0 -
Development
Start Date                18-JAN-2002 12:02:00
Uptime                    0 days 0 hr. 5 min. 29 sec
Trace Level               support
Security                   OFF
SNMP                      OFF
Listener Parameter File   /oracle9i/network/admin/listener.ora
Listener Log File         /oracle9i/network/log/listener.log
Listener Trace File       /oracle9i/network/trace/listener.trc

Listening Endpoints Summary...
(DESCRIPTION=(ADDRESS=(PROTOCOL=ipc)(KEY=net)))
(DESCRIPTION=(ADDRESS=(PROTOCOL=tcp)(HOST=sales-server)(PORT=1521)))
(DESCRIPTION=(ADDRESS=(PROTOCOL=tcps)(HOST=sales-server)(PORT=2484)))

Services Summary...
Service "sales1.us.acme.com" has 1 instance(s).
  Instance "sales", status READY, has 1 handler(s) for this service...
Service "sales2.us.acme.com" has 1 instance(s).
  Instance "sales", status READY, has 2 handler(s) for this service...
The command completed successfully
```
STOP

Purpose

Use the command STOP to stop the named listener.

Prerequisites

The listener must be running.

Password Required If One Has Been Set

Yes. If a password is set, then issue the SET PASSWORD command prior to this command.

Syntax

From the operating system:

```
lsnrctl STOP [listener_name]
```

From the Listener Control utility:

```
LSNRCTL> STOP [listener_name]
```

Arguments

```
listener_name
```

Arguments: Specify the listener name, if the default name of LISTENER is not used.

Example

```
LSNRCTL> STOP
Connecting to
(DESCRIPTION=(ADDRESS=(PROTOCOL=TCP)(HOST=sales-server)(PORT=1521)))
The command completed successfully
```
**TRACE**

**Purpose**

Use the command TRACE to turn on tracing for the listener.

**Password Required If One Has Been Set**

Yes. If a password is set, then issue the `SET PASSWORD` command prior to this command.

**Syntax**

From the operating system:

```
lsnrctl trace {level}[listener_name]
```

From the Listener Control utility:

```
LSNRCTL> trace {level} [listener_name]
```

**Arguments**

- `(level)`: Specify one of the following trace levels:
  - `off` for no trace output
  - `user` for user trace information
  - `admin` for administration trace information
  - `support` for Oracle Support Services trace information

- `[listener_name]`: Specify the listener name, if the default name of LISTENER is not used.

**Usage Notes**

This command has the same functionality as SET TRC_LEVEL command.

**Example**

```
LSNRCTL> TRACE ADMIN lsnr
Connecting to (DESCRIPTION=(ADDRESS=(PROTOCOL=TCP)(HOST=sales-server)(PORT=1521)))
Opened trace file: /oracle9i/network/trace/listener.trc
The command completed successfully
```
VERSION

Purpose
Use the command VERSION to display the current version of Listener Control utility.

Prerequisites
None

Password Required If One Has Been Set
No. If a password is set, then the SET PASSWORD command does not need to be issued prior to this command.

Syntax
From the operating system:
lsnrctl VERSION [listener_name]

From the Listener Control utility:
LSNRCTL> VERSION [listener_name]

Arguments
[listener_name]: Specify the listener name, if the default name of LISTENER is not used.

Example
LSNRCTL> VERSION listener1
Connecting to
(DESCRIPTION=//(ADDRESS=(PROTOCOL=TCP) (HOST=sales-server) (PORT=1521)))
TNSLSNR for Solaris: Version 9.2.0.2.0
TNS for Solaris: Version 9.2.0.2.0
Oracle Bequeath NT Protocol Adapter for Solaris: Version 9.2.0.2.0
Unix Domain Socket IPC NT Protocol Adapter for Solaris: Version 9.2.0.2.0
TCP/IP NT Protocol Adapter for Solaris: Version 9.2.0.2.0
The command completed successfully
This chapter describes the commands and associated syntax of the Oracle Connection Manager Control utility.

This chapter contains these topics:

- Oracle Connection Manager Control Utility Overview
- SET Commands of the Oracle Connection Manager Control Utility
- Distributed Operations
- Oracle Connection Manager Control Utility Commands
Oracle Connection Manager Control Utility Overview

The Oracle Connection Manager Control utility enables you to administer Oracle Connection Managers. You can use its commands to perform basic management functions on one or more Oracle Connection Managers. Additionally, you can view and change parameter settings.

The basic syntax of the Oracle Connection Manager Control utility is as follows:

```
cmctl command [process_type]
```

where `process_type` is the name of the Oracle Connection Manager process. The choices are as follows:

- `cman` for both the CMGW process (gateway process) and the CMADMIN process
- `cm` for the CMGW process
- `adm` for the CMADMIN process

For example, the following command starts both the CMGW and CMADMIN processes:

```
CMCTL START cman
```

**Note:** In general, Oracle Corporation recommends using `cman` for commands. Once an Oracle Connection Manager is configured, the CMADMIN administrative process is not needed. If it is necessary to reserve resources, you can then use the `cm`. The CMGW gateway process performs all Oracle Connection Manager basic functions and can run without the CMADMIN process. There is no need for using the `adm` type.

**See Also:** Oracle9i Net Services Administrator’s Guide for an overview of the Oracle Connection Manager processes

You can also issue Oracle Connection Manager utility commands at the CMCTL> program prompt. To obtain the prompt, enter `cmctl` with no arguments at the operating system command line. When you run `cmctl`, the program is started. You can then enter the necessary commands from the program prompt. The basic syntax of issuing commands from CMCTL> program prompt is as follows:

```
cmctl
CMCTL> command [process_type]
```
The Oracle Connection Manager Control utility supports several types of commands:

- Operational commands, such as `START`
- Modifier commands, such as `SET LOG_LEVEL`
- Informational commands, such as `STATUS` and `SHOW ADDRESS`
- Command utility operational commands, such as `EXIT`, `QUIT`, and `HELP`

**Note:** You must statically set passwords for Oracle Connection Manager in the `cman.ora` file. The Oracle Connection Manager Control utility has no commands for setting or changing passwords.

**SET Commands of the Oracle Connection Manager Control Utility**

You can use the `SET` command to alter parameter values for an Oracle Connection Manager. Parameter values remain in effect until the Oracle Connection Manager is shut down. You cannot permanently save these temporary changes to the `cman.ora` file.

You can use the `SHOW` command to display the current value of a configuration setting.
Distributed Operations

The Oracle Connection Manager Control utility can perform operations on a local or a remote Oracle Connection Manager.

To set up a computer to remotely administer an Oracle Connection Manager:

1. Configure the local computer that runs the Oracle Connection Manager:
   a. Configure a cman.ora file that includes REMOTE_ADMIN=yes in the CMAN_PROFILE section.
      
      ```
      CMAN=
          (ADDRESS=(PROTOCOL=tcp)(HOST=proxysvr)(PORT=1630))
      CMAN_ADMIN=
          (ADDRESS=(PROTOCOL=tcp)(HOST=proxysvr)(PORT=1830))
      CMAN_PROFILE=
          (PARAMETER_LIST=
            (REMOTE_ADMIN=yes))
      ```
   b. Start the CMGW process. From the operating system, enter either of the following commands:
      
      ```
      cmctl START cm
      cmctl START cman
      ```

2. Configure the remote computer:
   a. Ensure that Oracle Connection Manager is installed.
   b. Configure a cman.ora file with the same values for the CMAN and CMAN_ADMIN parameters as you did for local Oracle Connection Manager computer. For example:
      
      ```
      CMAN=
          (ADDRESS=(PROTOCOL=tcp)(HOST=proxysvr)(PORT=1630))
      CMAN_ADMIN=
          (ADDRESS=(PROTOCOL=tcp)(HOST=proxysvr)(PORT=1830))
      ```

   All commands except START can be issued when an Oracle Connection Manager is administered remotely. The Oracle Connection Manager Control utility can only start the Oracle Connection Manager on the same computer from where the utility is running.
Oracle Connection Manager Control Utility Commands

This section lists and describes the Oracle Connection Manager Control utility commands.

ACCEPT_CONNECTIONS

Purpose

Use the ACCEPT_CONNECTIONS command to enable or disable Oracle Connection Manager to accept new connections.

Prerequisites

Oracle Connection Manager must be running.

Syntax

From the operating system:

```
cmctl ACCEPT_CONNECTIONS [on | off]
```

From the Oracle Connection Manager Control utility:

```
CMCTL> ACCEPT_CONNECTIONS [on | off]
```

Arguments

[on] (default): Specify to enable Oracle Connection Manager to accept new connections.

[off]: Specify to reject new connections to Oracle Connection Manager.

Usage Notes

If set to off, existing connections are not affected.

Example

```
CMCTL> ACCEPT_CONNECTIONS off
Profile of the CMAN
-----------------------------------------
Current state          offline
```

Oracle Connection Manager Control Utility 2-5
CLOSE_RELAY

Purpose

Use the CLOSE_RELAY command to enable a connection identified by relay number to be shut down.

**Note:** Use the SHOW RELAY command to obtain the relay numbers for connections.

Prerequisites

Oracle Connection Manager must be running.

Syntax

From the operating system:

```
cmctl CLOSE_RELAY [relay_num | ALL]
```

From the Oracle Connection Manager Control utility:

```
CMCTL> CLOSE_RELAY [relay_num | ALL]
```

Arguments

- `[relay_num]`: Specify the relay number of the connection to terminate immediately.
- `[ALL]`: Specify to immediately terminate all connections

Usage Notes

Use this command with caution. From the time that SHOW RELAY command is executed to the time this command is executed, the same relay may have been reused by another connection.

Example

```
CMCTL> CLOSE_RELAY 0
Relay is not active

CMCTL> CLOSE_RELAY 0
The command completed successfully
```
EXIT

Purpose

Use the EXIT command to exit from the Oracle Connection Manager Control utility.

Prerequisites

None

Syntax

From the operating system:

cmctl EXIT

From the Oracle Connection Manager Control utility:

CMCTL> EXIT

Usage Notes

This command is identical to QUIT command.

Example

CMCTL> EXIT
HELP

Purpose

Use the command HELP to provide a list of all the Oracle Connection Manager Control utility commands or provide syntax help for a particular Oracle Connection Manager Control utility command.

Prerequisites

None

Syntax

From the operating system:

cmctl HELP [command]

From the Oracle Connection Manager Control utility:

CMCTL> HELP [command]

Arguments

[command]: Specify a HELP command. Commands are shown in the following example output.

When you enter a command as an argument to HELP, the Oracle Connection Manager Control utility displays information about how to use the command. When you enter HELP without an argument, the Oracle Connection Manager Control utility displays a list of all the commands.

Example

CMCTL> HELP
The following operations are available
An asterisk (*) denotes a modifier or extended command:
accept_connections
close_relay
exit
quit
set*
show*
shutdown
start
Quit

Purpose

Use the QUIT command to exit the Oracle Connection Manager Control utility and return to the operating system prompt.

Prerequisites

None

Syntax

From the operating system:

```bash
cmctl QUIT
```

From the Oracle Connection Manager Control utility:

```
CMCTL> QUIT
```

Usage Notes

This command is identical to the EXIT command.

Example

```
CMCTL> QUIT
```
SET

Purpose
Use the SET command to alter the parameter values for the Oracle Connection Manager. Parameter values changes remain in effect until the Oracle Connection Manager is shut down. To make the changes permanent, manually update the parameter settings in the cman.ora file.

Prerequisites
None

Syntax
From the operating system:
```
cmctl SET [parameter]
```
From the Oracle Connection Manager Control utility:
```
CMCTL> SET [parameter]
```

Arguments

```
[parameter]: Specify a SET parameter to modify its configuration setting. Parameters are shown in the example output.
```
When you enter SET without an argument, the Oracle Connection Manager Control utility displays a list of all the parameters.

Example
```
CMCTL> SET
The following operations are available
An asterisk (*) denotes a modifier or extended command:
authentication_level
displaymode
log_level
relay_statistics
```
SET AUTHENTICATION_LEVEL

Purpose
Use the SET AUTHENTICATION_LEVEL command to set the level of security for the Oracle Connection Manager.

Prerequisites
Oracle Connection Manager must be running.

Syntax
From the operating system:
```
  cmctl SET AUTHENTICATION_LEVEL [0 | 1]
```
From the Oracle Connection Manager Control utility:
```
  CMCTL> SET AUTHENTICATION_LEVEL [0 | 1]
```

Arguments
- [0] (default): Specify so that no authentication is required for client connections.
- [1]: Specify to reject connections that are not employing Secure Network Service (SNS) to perform client authentication. SNS is part of the Oracle Advanced Security.

Example
```
  CMCTL> SET AUTHENTICATION_LEVEL 0
  Profile of the CMAN
  -----------------------------------------
  AUTHENTICATION_LEVEL   = 0
```
SET DISPLAYMODE

Purpose

Use the SET DISPLAYMODE command to change the format and level of detail for the START, STATS, STATUS, STOP, and VERSION commands.

Prerequisites:

None

Syntax

From the operating system:

```
cmctl SET DISPLAYMODE [compat | verbose]
```

From the Oracle Connection Manager Control utility:

```
CMCTL> SET DISPLAYMODE [compat | verbose]
```

Arguments

[compat] (default): Specify to display output that is compatible with older versions of Oracle Connection Manager.

[verbose] (recommended): Specify to display a formatted and descriptive output.

Example:

```
CMCTL> SET DISPLAYMODE compat
Current display mode is COMPATible
```
SET LOG_LEVEL

Purpose
Use the SET LOG_LEVEL command to set the log level for the Oracle Connection Manager.

Prerequisites
Oracle Connection Manager must be running.

Syntax
From the operating system:
```
cmct1 SET LOG_LEVEL [level]
```
From the Oracle Connection Manager Control utility:
```
CMCTL> SET LOG_LEVEL [level]
```

Arguments

[level]: Specify one of the following log levels:
- 0 (default) for no logging
- 1 for basic reporting
- 2 for RULE_LIST matching lookup reporting
- 3 for relay blocking reporting
- 4 for relay I/O counts reporting

Example
```
CMCTL> SET LOG_LEVEL 0
```

Profile of the CMAN
```
-----------------------------------------
LOG_LEVEL              = 0
```

Oracle Connection Manager Control Utility 2-13
SET RELAY_STATISTICS

Purpose

Use the SET RELAY_STATISTICS command to turn statistic collection pertaining to the I/O of connections of the Oracle Connection Manager on or off.

When a relay closes and this command is set to on, the following statistics are recorded in the appropriate LOG_RECORD of the cman_pid.log file on UNIX operating systems and cmanpid.log file on Windows NT:

- Number of inbound (IN) bytes
- Number of outbound (OUT) bytes
- Number of IN packets
- Number of OUT packets

Prerequisites

Oracle Connection Manager must be running.

Syntax

From the operating system:

    cmctl SET RELAY_STATISTICS [on | off]

From the Oracle Connection Manager Control utility:

    CMCTL> SET RELAY_STATISTICS [on | off]

Arguments

[on]: Specify to turn statistic collection on.
[off] (default): Specify to turn statistic collection off.

Example

    CMCTL> SET RELAY_STATISTICS off

Profile of the CMAN

-----------------------------------------
RELAY_STATISTICS        = no
-----------------------------------------

2-14   Oracle9i Net Services Reference Guide
**SHOW**

**Purpose**

Use the `SHOW` command to view the parameter values for the Oracle Connection Manager.

**Prerequisites**

None

**Syntax**

From the operating system:

```
cmctl SHOW [parameter]
```

From the Oracle Connection Manager Control utility:

```
CMCTL> SHOW [parameter]
```

**Arguments**

`[parameter]`: Specify a `SHOW` parameter to view its configuration setting. Parameters are shown in the example output.

When you enter `SHOW` without an argument, the Oracle Connection Manager Control utility displays a list of all the parameters.

**Example**

```
CMCTL> SHOW
The following operations are available
An asterisk (*) denotes a modifier or extended command:
address
ALL
displaymode
profile
relay
rules
```
SHOW ADDRESS

Purpose

Use the SHOW ADDRESS command to list the protocol address of the Oracle Connection Manager.

Prerequisites

None

Syntax

From the operating system:

```
cmctl SHOW ADDRESS
```

From the Oracle Connection Manager Control utility:

```
CMCTL> SHOW ADDRESS
```

Arguments

None

Usage Notes

The address is set with the CMAN parameter in the cman.ora file.

Example

```
CMCTL> SHOW ADDRESS

Address List
-----------------------------------------
(ADDRESS=(PROTOCOL=tcp) (HOST=proxysvr) (PORT=1630))
```
SHOW ALL

Purpose
Use the SHOW ALL command to display the output for SHOW ADDRESS, SHOW PROFILE, and SHOW RULES commands.

Prerequisites
None

Syntax
From the operating system:
cmctl SHOW ALL

From the Oracle Connection Manager Control utility:
CMCTL> SHOW ALL

Arguments
None
Example

CMCTL> **SHOW ALL**

Address List
-----------------------------------------
(ADDRESS=(PROTOCOL=tcp)(HOST=proxysvr)(PORT=1630))

Profile of the CMAN
-----------------------------------------
MAXIMUM_RELAYS = 2048
RELAY_STATISTICS = yes
AUTHENTICATION_LEVEL = 0
LOG_LEVEL = 4
ANSWER_TIMEOUT = 0
MAXIMUM_CONNECT_DATA = 1024
USE_ASYNC_CALL = yes
TRACING = yes
TRACE_DIRECTORY = default
MAX_FREELIST_BUFFERS = 0
REMOTE_ADMIN = no

Rule List
-----------------------------------------
(rule=(src=144.25.185.60)(dst=sales-server)(srv=sales.us.acme.com)(act=accept))
(rule=(src=client-pc)(dst=sales-server)(srv=sales.us.acme.com)(act=accept))
SHOW DISPLAYMODE

Purpose

Use the SHOW DISPLAYMODE to show the current display mode used for the START, STATS, STATUS, STOP, and VERSION commands.

Syntax

From the operating system:

cmctl SHOW DISPLAYMODE

From the Oracle Connection Manager Control utility:

CMCTL> SHOW DISPLAYMODE

Example

CMCTL> SHOW DISPLAYMODE
Current display mode is VERBose
SHOW PROFILE

Purpose
Use the SHOW PROFILE command to display the current parameter settings for the Oracle Connection Manager. Information is obtained from the CMAN_PROFILE parameters in the cman.ora file and any changes made with the SET command.

Syntax
From the operating system:

cmctl SHOW PROFILE

From the Oracle Connection Manager Control utility:

CMCTL> SHOW PROFILE

Example

CMCTL> SHOW PROFILE
Profile of the CMAN
-----------------------------------------
MAXIMUM_RELAYS  =  2048
RELAY_STATISTICS = yes
AUTHENTICATION_LEVEL =  0
LOG_LEVEL        =  4
SHOW_TNS_INFO    = yes
ANSWER_TIMEOUT   =  0
MAXIMUM_CONNECT_DATA = 1024
USE_ASYNC_CALL   = yes
TRACING          = yes
TRACE_DIRECTORY  = default
MAX_FREELIST_BUFFERS =  0
REMOTE_ADMIN     = no
SHOW RELAY

Purpose
Use the SHOW RELAY command to display the current status of a selected relay (connection) or all active relays for the Oracle Connection Manager.

Prerequisites
Oracle Connection Manager must be running.

Syntax
From the operating system:
```cmctl SHOW RELAY {relay_num | ACTIVE}```

From the Oracle Connection Manager Control utility:
```CMCTL> SHOW RELAY {relay_num | ACTIVE}```

Arguments
```
[relay_num]: Specify to show the status information for a specific relay.
[ACTIVE]: Specify to show the list of active relays.
```

Usage Notes
For active relays, only relay numbers are shown. For a given relay number, the following information is displayed:
- Relay number
- Source address (clientside endpoint)
- Destination address (serverside endpoint)
- Number of inbound (IN) bytes
- Number of IN packets
- Number of IN probes
- Number of outbound (OUT) bytes
- Number of OUT packets
- Number of OUT probes
Examples

CMCTL> SHOW RELAY active

Active Relays
-----------------------------------------
0000 0001

CMCTL> SHOW RELAY 0

Relay Information
-----------------------------------------
Relay number          0
Start-up time         22-JAN-2002 19:47:17
Src
  (ADDRESS=(PROTOCOL=tcp)(HOST=144.25.185.60)(PORT=35279))
Dest
  (ADDRESS=(PROTOCOL=tcp)(HOST=144.25.185.60)(PORT=1521))
Number of IN bytes    438
Number of IN packets  7
Number of IN DCD probes 0
Number of OUT bytes   364
Number of OUT packets 7
Number of OUT DCD probes 0
**SHOW RULES**

**Purpose**

Use the **SHOW RULES** to display the current access rules used by Oracle Connection Manager.

**Prerequisites**

Oracle Connection Manager must be running.

**Syntax**

From the operating system:

```bash
cmctl SHOW RULES
```

From the Oracle Connection Manager Control utility:

```sql
CMCTL> SHOW RULES
```

**Arguments:**

None

**Usage Notes:**

Rules are set with the **CMAN_RULES** parameter in the **cman.ora** file.

**Example**

```sql
CMCTL> SHOW RULES

Rule List
-----------------------
(rule=(src=144.25.185.60)(dst=sales-server)(srv=sales.us.acme.com)(act=accept))
(rule=(src=client-pc)(dst=sales-server)(srv=sales.us.acme.com)(act=accept))
```
SHUTDOWN

Purpose

Use the SHUTDOWN command to shut down the Oracle Connection Manager processes.

Prerequisites

None

Syntax

From the operating system:

    cmctl SHUTDOWN [normal | abort] [cman]

From the Oracle Connection Manager Control utility:

    CMCTL> SHUTDOWN [normal | abort] [cman]

Arguments

[normal] (default): Specify to accept new connections and terminate after all existing connections close.

[abort]: Specify to shut down Oracle Connection Manager immediately, closing down all open connections.

[cman]: Specify to start both CMGW and CMADMIN processes. normal and abort use this argument. Therefore, it is not necessary to explicitly specify it.

Example

    CMCTL> SHUTDOWN
    The command completed successfully

    CMCTL> SHUTDOWN ABORT
    The command completed successfully
START

Purpose
Use the START command to start Oracle Connection Manager.

Prerequisites
An Oracle Connection Manager configured with the same protocol address must not be running.

Syntax
From the operating system:
`cmctl START [cman | cm]`

From the Oracle Connection Manager Control utility:
`CMCTL> START [cman | cm]`

Arguments
[cman] (default): Specify to start both CMGW and CMADMIN processes.
[cm]: Specify to start the CMGW process.

Usage Notes
The `SET DISPLAYMODE` command changes the format and the level of detail of the output.
Examples

compat mode:

CMCTL> START cman
ADMIN Status:
(Status=(VERSION=9.2.0.2.0) (STARTED=22-JAN-2002 19:34:15) (STATE=RUNNING))
CMAN Status:
(Status=(VERSION=9.2.0.2.0) (STARTED=22-JAN-2002 19:34:17) (STATE=running))

verbose mode:

CMCTL> START cman
Starting /vobs/oracle/bin/cmadmin: please wait...
STATUS of the cmadmin
-----------------------------------------
ADMIN Version             9.2.0.2.0
Start-up time             22-JAN-2002 19:40:00
Current state             RUNNING

Starting /vobs/oracle/bin/cmgw: please wait...
STATUS of the cmgw
-----------------------------------------
CMAN Version              9.2.0.2.0
Start-up time             22-JAN-2002 19:40:02
Current state             running
STATS

Purpose

Use the STATS command to display statistical information for Oracle Connection Manager.

Prerequisites

Oracle Connection Manager must be running.

Syntax

From the operating system:

```
cmctl STATS [cman | cm]
```

From the Oracle Connection Manager Control utility:

```
CMCTL> STATS [cman | cm]
```

Arguments

[cman] (default): Specify to display statistics both the CMGW and CMADMIN processes.

[cm]: Specify to display status information for the CMGW process.

Usage Notes

The following statistics are displayed:

- **TOTAL_RELAYS (compat)** | Total number of connections handled (verbose)
  
  The total number of connections that Oracle Connection Manager has established since it started

- **ACTIVE_DELAYS (compat)** | Number of currently active relays (verbose)
  
  The number of currently active connections
• MOST_RELAYS (compat) | Peak active relays (verbose)
The maximum number of concurrent connections that Oracle Connection Manager has ever held since it started

• OUT_OF_RELAY (compat) | Total refusals due to max_relays exceeded (verbose)
The total number of connect request refusals due to out-of-relays since Oracle Connection Manager started

• TOTAL_REFUSED (compat) | Total number of connections refused (verbose)
The total number of connect request refusals since Oracle Connection Manager started

Usage Notes
The SET DISPLAYMODE command changes the format and the level of detail of the output.

Examples
compat mode:
CMCTL> STATS
CMAN Status:
(STATISTICS=(TOTAL_RELAYS=0) (ACTIVE_RELAYS=0) (MOST_RELAYS=0) (OUT_OF_RELAY=0) (TOTAL_REFUSED=0))

verbose mode:
CMCTL> STATS
STATISTICS of CMAN
-------------------------------------------
Total number of connections handled  0
Number of currently active relays    0
Peak active relays                  0
Total refusals due to max_relays exceeded 0
Total number of connections refused  0
STATUS

Purpose
Use the STATUS command to display basic status information, including version, start time, and current statistics.

Prerequisites
None

Syntax
From the operating system:

```
cmctl STATUS [cman | cm]
```

From the Oracle Connection Manager Control utility:

```
CMCTL> STATUS [cman | cm]
```

Arguments

- `[cman]` (default): Specify to display status information for both the CMGW and CMADMIN processes.
- `[cm]`: Specify to display status information for the CMGW process.

Usage Notes
The `SET DISPLAYMODE` command changes the format and the level of detail of the output.
Examples

compat mode:

CMCTL> STATUS
CMAN Status:
(STATUS=(VERSION=9.2.0.2.0) (STARTED=22-JAN-2002 19:34:17) (STATE=running))
ADMIN Status:
(STATUS=(VERSION=9.2.0.2.0) (STARTED=22-JAN-2002 19:34:15) (STATE=RUNNING))

verbose mode:

CMCTL> STATUS
STATUS of the cman
-----------------------------------------
CMAN Version             9.2.0.2.0
Start-up time             22-JAN-2002 19:40:02
Current state             running

STATUS of the cman_admin
-----------------------------------------
ADMIN Version             9.2.0.2.0
Start-up time             22-JAN-2002 19:40:00
Current state             RUNNING
STOP

Purpose
Use the STOP command to shut down Oracle Connection Manager immediately.

Prerequisites
Oracle Connection Manager must be running.

Syntax
From the operating system:
```
cmctl STOP [cman | cm]
```
From the Oracle Connection Manager Control utility:
```
CMCTL> STOP [cman | cm]
```

Arguments
[cman] (default): Specify to stop both CMGW and CMADMIN processes.
[cm]: Specify to stop both CMGW and CMADMIN processes.

Usage Notes
Oracle recommends the SHUTDOWN command to this command.
If you issue a stop command while connections remain active, you are prompted to confirm the stop.
The SET DISPLAYMODE command changes the format and the level of detail of the output.

Examples
compat mode:
```
CMCTL> STOP
The command completed successfully.
```

verbose mode:
```
CMCTL> STOP
The command completed successfully.
```
STOPNOW

Purpose

Use the STOPNOW command to shut down Oracle Connection Manager immediately, closing down all open connections without warning.

Prerequisites

Oracle Connection Manager must be running.

Syntax

From the operating system:

cmctl STOPNOW [cman | cm]

From the Oracle Connection Manager Control utility:

CMCTL> STOPNOW [cman | cm]

Arguments

[cman] (default): Specify to stop both CMGW and CMADMIN processes.
[cm]: Specify to stop both CMGW and CMADMIN processes.

Usage Notes

Oracle recommends the SHUTDOWN command to this command.

Example

CMCTL> STOPNOW
VERSION

Purpose
Use the VERSION command to display the current version and name of the Oracle Connection Manager Control utility.

Prerequisites
None

Syntax
From the operating system:
```cmctl VERSION```

From the Oracle Connection Manager Control utility:
```CMCTL> VERSION```

Usage Notes
The SET DISPLAYMODE command changes the format of the output.

Examples
compat mode:
```CMCTL> VERSION```
```CMCTL Version 9.2.0.2.0```

verbose mode:
```CMCTL> VERSION```
```CMCTL Version 9.2.0.2.0```
```CMAN Version 9.2.0.2.0```
This chapter describes the commands and associated syntax of the Oracle Names Control utility.

This chapter contains these topics:

- Oracle Names Control Utility Overview
- SET and SHOW Commands of the Oracle Names Control Utility
- Distributed Operations
- Oracle Names Server Security
- Confirmation Mode in the Oracle Names Control Utility
- Oracle Names Control Utility Commands
Oracle Names Control Utility Overview

The Oracle Names Control utility enables you to administer Oracle Names servers. You can use its commands to perform basic management functions on one or more Oracle Names servers. Additionally, you can view and change parameter settings.

The basic syntax of Oracle Names Control utility administrative commands is as follows:

```
namesctl command [onames_server]
```

where `onames_server` is the name of the Oracle Names server to be administered.

You can also issue Oracle Names Control utility commands at the `NAMESCTL>` program prompt. To obtain the prompt, enter `namesctl` with no arguments at the operating system command line. When you run `namesctl`, the program is started. You can then enter the necessary commands from the program prompt. The basic syntax of issuing commands from `NAMESCTL>` program prompt is as follows:

```
namesctl
NAMESCTL> command [onames_server]
```

When you start the Oracle Names Control utility, it starts a session with an Oracle Names server. The session is started with the first Oracle Names server listed in the discovery file (`.sdns.ora` on UNIX operating systems and `sdns.ora` on Windows operating systems) or the `sqlnet.ora` file (by the `NAMES.PREFERRED_SERVERS` parameter). The `SHOW SERVER` commands display the Oracle Names server that the Oracle Names Control utility is currently managing. If you want to start a session with another Oracle Names server, then use the `SET SERVER` command.

**Note:** The `START` command starts a session with the Oracle Names server that is started, even if the Oracle Names Control utility had a session with another Oracle Names server.
The Oracle Names Control utility supports several types of administrative commands:

- Operational commands, such as **START**, **STOP**, and **RESTART**
- Modifier commands, such as **SET TRACE_LEVEL**
- Informational commands, such as **STATUS**, **SHOW LOG_FILE_NAME**, and **PING**
- Command utility operational commands, such as **EXIT**, **QUIT**, and **HELP**

The Oracle Names Control utility also provides data operations command, such as **QUERY** and **REGISTER**.

**SET and SHOW Commands of the Oracle Names Control Utility**

You can use the **SET** command to change some parameter values for an Oracle Names server or the Oracle Names Control utility environment. Parameter values remain in effect until the Oracle Names server is shut down. If you want these settings to persist, use the **SAVE_CONFIG**, **SET SAVE_CONFIG_ON_STOP**, or **SET SAVE_CONFIG_INTERVAL** commands to save changes to the **names.ora**.

You can use the **SHOW** command to display the current value of a configuration setting.

**Distributed Operations**

The Oracle Names Control utility can perform operations on a local or a remote Oracle Names server. This is useful when a single administrator is managing all of the Oracle Names servers in a region, or wants to check the availability of a specific Oracle Names server.

To set up a computer to remotely administer an Oracle Names server, ensure that the Oracle Names Control utility (**namesctl**) executable is installed.
All commands except **START** can be issued when an Oracle Names server is administered remotely. The Oracle Names Control utility can only start the Oracle Names server on the same computer from where the utility is running.

When issuing commands, specify the name of the Oracle Names server as an argument. For example:

```
NAMESCTL> SHOW SYSTEM_QUERIES dolphin.us.acme.com
```

If the Oracle Names Control utility cannot locate the Oracle Names server, then a name lookup error appears:

```
NNL-00406: name "dolphin.us.acme.com" does not exist
```

If you know the **protocol address** of the particular Oracle Names server, then enter it in place of the name of the Oracle Names server. For example:

```
NAMESCTL> SHOW SYSTEM QUERIES
   (ADDRESS=(PROTOCOL=tcp)(HOST=dolphin.us.acme.com)(PORT=1575))
```

When the name omitted, the Oracle Names server that the Oracle Names Control utility has a session with is assumed. If a session cannot be established with any Oracle Names server, then the following error appears:

```
NNL-00005: no server has been set. Use the "SET SERVER" command first
```

Use the **SET SERVER** command to establish a session with an Oracle Name server. Once remote access is established, all commands except **START** can be issued.

**See Also:** "Oracle Names Control Utility Overview" on page 3-2 for further information about session establishment
Oracle Names Server Security

If the NAMES.PASSWORD parameter is set in the names.ora, then the Oracle Names Control utility requires a SET_PASSWORD command for any sensitive operations, such as stopping an Oracle Names server.

If the NAMESCTL.SERVER_PASSWORD parameter is set in the sqlnet.ora file on the node running the Oracle Names Control utility, you are prompted to use the SET_PASSWORD command each time a secure operation is performed.

If you are concerned with the security implications of explicitly putting an Oracle Names server password in the client sqlnet.ora file, you can omit the NAMESCTL.SERVER_PASSWORD parameter and always use the command:

```
NAMESCTL> SET PASSWORD
```

When passed over the network, the password is encrypted, regardless of how it was set in the names.ora file. However, if the NAMESCTL.INTERNAL_ENCRYPT_PASSWORD parameter is set to false in the sqlnet.ora file, then the password is not encrypted.
Confirmation Mode in the Oracle Names Control Utility

Some of the Oracle Names Control utility commands require confirmation before they are executed. When you issue the command, you are prompted:

confirm: [yes or no]

Enter yes to execute the command; enter no to cancel the command.

You can turn confirmation mode off by setting the parameter NAMESCTL.NOCONFIRM to true in the sqlnet.ora file.

Oracle Names Control Utility Commands

This section lists and describes the Oracle Names Control utility commands.

DELEGATE_DOMAIN

Purpose

Use the command DELEGATE_DOMAIN to define a domain as the start of a subregion for the current administrative region.

Prerequisites

None

Password Required If One Has Been Set

No. If a password is set, then the SET PASSWORD command does not need to be issued prior to this command.

Syntax

From the operating system prompt:

namesctl DELEGATE_DOMAIN {domain}{onames_server}{(ADDRESS=...)}

From the Oracle Names Control utility:

NAMESCTL> DELEGATE_DOMAIN {domain}{onames_server}{(ADDRESS=...)}
Oracle Names Control Utility Commands

Arguments

{domain}: Specify the domain name.
{onames_server}: Specify the Oracle Names server name.
{(ADDRESS=...)}: Specify the Oracle Names server protocol address.

See Also: Chapter 5, "Protocol Address Configuration" for further information about defining protocol addresses

Usage Notes

This command provides a dynamic way to subdivide the namespace.

Unless a domain is delegated from a region, the Oracle Names servers in that region assume authority over all subdomains. In order to delegate a domain, you must first create a new region.

Once a domain is delegated, the Oracle Names servers in the current administrative region forward subsequent operations to the subregion where the domain is administered by Oracle Names servers.

Examples

NAMESCTL> DELEGATE_DOMAIN webwidgets.acme.com ns1.webwidgets.acme.com
(ADDRESS=(PROTOCOL=tcp)(HOST=fred.webwidgets.acme.com)(PORT=1575))

DOMAIN_HINT

Purpose

Use the command DOMAIN_HINT to specify domain hints for requests for data from remote regions. A domain hint contains the name of a remote domain and at least one address of an Oracle Names server in that domain. A hint enables the Oracle Names server to forward the request to a specific address, reducing network traffic.

Without a domain hint, an Oracle Names server forwards a request to whatever remote Oracle Names servers it knows, which then forwards the request to the root Oracle Names server in its region. The root Oracle Names server forwards the request to the Oracle Names server which has information on the domain that the request refers to.

Oracle Names Control Utility 3-7
Prerequisites

None

Password Required If One Has Been Set

No. If a password is set, then the SET PASSWORD command does not need to be issued prior to this command.

Syntax

From the operating system:

```
namesctl DOMAIN_HINT {domain}{onames_server}{(ADDRESS=...)}
```

From the Oracle Names Control utility:

```
NAMESCTL> DOMAIN_HINT {domain}{onames_server}{(ADDRESS=...)}
```

Arguments

```
{domain}: Specify the domain name.
{onames_server}: Specify the Oracle Names server name.
{(ADDRESS=...)}: Specify the Oracle Names server protocol address.
```

See Also: Chapter 5, "Protocol Address Configuration" for further information about defining protocol addresses

Usage Notes

Any region that is not the root region will need at least the root region defined using this command in order to find objects in any other region. You can provide additional hints as optimizations to provide local Oracle Names servers with direct access to certain other regions.

Examples

```
NAMESCTL> DOMAIN_HINT ACME.COM ns0.acme.com (ADDRESS=(PROTOCOL=tcp) (HOST=top.acme.com) (PORT=1575))
```
DUMP_ALIAS

Purpose

Use the command DUMP_ALIAS to query all the alias data in a domain or domain subtree and export the data to a LDAP-compliant directory service or into an LDAP Data Interchange Format (LDIF) file, which can later be loaded into a directory.

Notes:

- Net service aliases are not supported using Microsoft Active Directory.
- This command does not verify that the object the alias is referencing exists in the directory. If an alias is exported and the object is referencing is not exported, then the DUMP_ALIAS command exports the alias without verifying that the referenced database service or net service name exists.
- The command should use the same destination as applied with the DUMP_LDAP command to the object the alias is referencing. If an alias and the object it is referencing are exported with different destinations, then the net service alias will not contain the correct name for the object it is referencing. This can occur in a case of tree rearrangement. See Oracle9i Net Services Administrator’s Guide for further information.

Prerequisites

The directory must already have the Oracle schema and one or more Oracle Contexts.

Password Required If One Has Been Set

A password for the directory may be required.
Syntax

Exporting Data to an LDIF File

NAMESCTL> DUMP_ALIAS [source] [destination] [options] [-f [filename]]

Exporting Data To a Directory

NAMESCTL> DUMP_ALIAS [source] [destination] [options] [-h host] [-p port] [-D user_dn] [-w password]

Arguments

[source]: Specify the source Oracle Names domain and, optionally, the -R argument:

(domain): Specify the domain name for aliases to be exported. The default domain is the root. The operation is forwarded to an Oracle Names server that is authoritative for that domain if the Oracle Names server which the client contacts is not authoritative.

[-R]: Specify to recursively descend the Oracle Names tree structure. Without -R, this command looks only at objects in the specified domain.

[destination]: Specify the distinguished name (DN) in the directory information tree (DIT) where to export net service aliases. A DN can be specified in one of following ways:

- A DN where all exported aliases will be located
  
  For example, (dn:dc=acme,dc=com) specifies to export all aliases to cn=OracleContext under dc=acme,dc=com. By default, cn=OracleContext is automatically inserted.

- A template to model the DIT structure where objects will be located
  
  You create a template by specifying attributes for mapping subdomains to the corresponding attribute/value pairs in a DN. A destination of (dn:o,ou,dc), for example, maps to a DIT structure that contains an organization (o), organization unit (ou), and a domain component (dc).

  When you use -R in the source argument, the domain in the source maps to the segment of the destination argument that contains the fully-specified attribute/value pairs, and subdomains of the source domain map to nodes specified in the destination argument by attributes without values. For example, if Oracle Names contains a root domain of acme.com and delegated domains of sales.acme.com and dev.acme.com, you can use a template of (dn:ou,o=acme,c=us) to create a DIT with a common structure of
o=acme,c=us and unique subtrees of ou=sales and ou=dev. Using the -R argument exports data in one of two ways:

- If the destination is specified with a DN, then the DUMP_ALIAS command recursively descends the Oracle Names tree structure and exports all aliases in that structure to the destination node in the DIT. All the aliases in all the subdomains map to a single DIT node.

Continuing with an example of an Oracle Names root domain of acme.com and delegated domains of sales.acme.com and dev.acme.com, issuing

DUMP_ALIAS acme.com (dn:dc=acme,dc=com) -R

exports all net services in acme.com, sales.acme.com, and dev.acme.com to dc=OracleContext, dc=acme, dc=com.

- If the destination is specified with a template, then the DUMP_ALIAS command recursively descends the Oracle Names tree structure and exports the aliases in the source domain and subdomains according to the template.

Issuing

DUMP_ALIAS acme.com (dn:ou,dc=acme,dc=com) -R

exports aliases in acme.com to dc=OracleContext, dc=acme, dc=com,
aliases in sales.acme.com to
dc=OracleContext, ou=sales, dc=acme, dc=com, and aliases in
dev.acme.com to dc=OracleContext, ou=dev, dc=acme, dc=com.

[options]: Arguments that specify how the export of the aliases is to occur:

- -c: Specify that the export should continue on error.
- -n: Specify to not perform an actual export. This argument enables you to perform a test run. The results display to the screen.
- -m: Specify that existing entries in the DIT are to be modified.
- -x: Specify to not include cn=OracleContext in each object’s DN.

[-f filename]: Specify that the exported data dumped into an LDIF file, which can later be loaded into a directory. The default file name is onames.ldif. To use onames.ldif as the default name, specify -f as the last argument.
These arguments specify the location of the directory server:

- **[-h host]**: Specify the host name of the directory server.
- **[-p port]**: Specify the port number the directory is configured to listen on. The default TCP/IP port number is 389.

These arguments specify the authentication credentials of the directory server:

- **[-D user_dn]**: Specify a directory administrator that has been given add and modify privileges. For example, **cn=Mary** is the DN for an administrator named Mary.
- **[-w password]**: Specify the password for the directory administrator.

**Usage Notes**

**See Also:** *Oracle9i Net Services Administrator’s Guide*

**Examples**

Exporting Net Service Aliases to a LDIF File

```bash
NAMESCTL> DUMP_ALIAS acme.com (dn:dc=sales,dc=com) -R -f test.ldif
```

Exporting Net Service Aliases Directly Into a Directory

```bash
NAMESCTL> DUMP_ALIAS acme.com (dn:dc=sales,dc=com) -R -h ldap-server -p 389 -D cn=orcladmin -w welcome
```
**DUMP_LDAP**

**Purpose**

Use the command `DUMP_LDAP` to query all the addresses of database objects in a domain or region and export the data to a LDAP-compliant directory service or into an LDIF file, which can later be loaded into a directory.

---

**Note:** Because database objects are exported as net service names, the username and password credentials for a global database link or link qualifier is not exported with the address information. In the same way you used global database links in Oracle Names, you can use a net service name from a directory to access an object in a database. However, the net service name will behave as a connected user database link.

---

**See Also:**
- Oracle9i Net Services Administrator’s Guide for further information about using global database links
- Oracle9i Database Administrator’s Guide for information about the supported types of database link users
- Oracle Advanced Security Administrator’s Guide for information about configuring database links in a directory

**Prerequisites**

The directory must already have an Oracle schema and one or more Oracle Contexts.

**Password Required If One Has Been Set**

A password for the directory may be required.
Syntax

Exporting Data to an LDIF File

NAMESCTL> DUMP_LDAP [source] [destination] [options] {-f [filename]}

Exporting Data To a Directory

NAMESCTL> DUMP_LDAP [source] [destination] [options] {-h host} {-p port} {-D user_dn} {-w password}

Arguments

[source]: Specify the source Oracle Names domain and, optionally, the -R argument:

domain: Specify the domain name for objects to be exported. The default domain is the root. The operation is forwarded to an Oracle Names server that is authoritative for that domain if the Oracle Names server which the client contacts is not authoritative.

[-R]: Specify to recursively descend the Oracle Names tree structure. Without -R, this command looks only at objects in the specified domain.

[destination]: Specify the DN in the DIT where to export objects. A DN can be specified in one of following ways:

- A DN where all exported aliases will be located
  
  For example, (dn:dc=acme,dc=com) specifies to export objects to cn=OracleContext under dc=acme,dc=com. By default, cn=OracleContext is automatically inserted.

- A template to model the DIT structure where objects will be located

  You create a template by specifying attributes for mapping subdomains to the corresponding attribute/value pairs in a DN. A destination of (dn:o,ou,dc), for example, maps to a DIT structure that contains an organization (o), organization unit (ou), and a domain component (dc).

  When you use -R in the source argument, the domain in the source maps to the segment of the destination argument that contains the fully-specified attribute/value pairs, and subdomains of the source domain map to nodes specified in the destination argument by attributes without values. For example, if Oracle Names contains a root domain of acme.com and delegated domains of sales.acme.com and dev.acme.com, you can use a template of (dn:ou,o=acme,c=us) to create a DIT with a common structure of o=acme,c=us and unique subtrees of ou=sales and ou=dev. Using the -R argument exports data in one of two ways:
If the destination is specified with a DN, then the DUMP_ALIAS command recursively descends the Oracle Names tree structure and exports all net service names and database services in that structure to the destination node in the DIT. All the objects in all the subdomains map to a single DIT node.

Continuing with the example of an Oracle Names root domain of acme.com and delegated domains of sales.acme.com and dev.acme.com, issuing

DUMP_LDAP acme.com (dn:dc=acme,dc=com) -R

exports all net service names and database services in acme.com, sales.acme.com, and dev.acme.com to dc=OracleContext,dc=acme,dc=com.

If the destination is specified with a template, then the DUMP_ALIAS command recursively descends the Oracle Names tree structure and exports the net service names and database services in the source domain and subdomains according to the template.

Issuing DUMP_LDAP acme.com (dn:ou,dc=acme,dc=com) -R
exports objects in acme.com to dc=OracleContext,dc=acme,dc=com, objects in sales.acme.com to dc=OracleContext,ou=sales,dc=acme,dc=com, and objects in dev.acme.com to dc=OracleContext,ou=dev,dc=acme,dc=com.

[options]: Arguments that specify how the export of data is to occur:

- c: Specify that the export should continue on error.
- n: Specify to not perform an actual export. This argument enables you to perform a test run. The results display to the screen.
- m: Specify that existing entries in the DIT are to be modified.
- x: Specify to not include cn=OracleContext in each object’s DN.

[-f filename]: Specify that the exported data be dumped into an LDIF file, which can later be loaded into a directory. The default file name is onames.ldif. To use onames.ldif as the default name, specify -f as the last argument.

These arguments specify the location of the directory server:

[-h host]: Specify the host name of the directory server.

[-p port]: Specify the port number the directory is configured to listen on. The default TCP/IP port number is 389.

These arguments specify the authentication credentials of the directory server:
DUMP_LDAP

[-D user_dn]: Specify a directory administrator that has been given add and modify privileges. For example, \texttt{cn=mary} is the DN for an administrator named Mary.

[-w password]: Specify the password for the directory administrator.

Usage Notes

See Also: Oracle9i Net Services Administrator’s Guide

Examples

Exporting Data to an LDIF File

\texttt{NAMESCTL> DUMP_LDAP sj.us.sczi.com (dn:ou=sj,dc=us,dc=sczi,dc=com) -R -f test.ldif}

Exporting Data Directly Into a Directory

\texttt{NAMESCTL> DUMP_LDAP sj.us.sczi.com (dn:ou=sj,dc=us,dc=sczi,dc=com) -R -h ldap-server -p 389 -D cn=orcladmin -w welcome}
DUMP_TNSNAMES

Purpose

Use the command DUMP_TNSNAMES to write the address information defined in the local region to a tnsnames.ora file.

Prerequisites

None

Password Required If One Has Been Set

No. If a password is set, then the SET PASSWORD command does not need to be issued prior to this command.

Syntax

From the operating system:

```
namesctl DUMP_TNSNAMES
```

From the Oracle Names Control utility:

```
NAMESCTL> DUMP_TNSNAMES
```

Arguments

None

Usage Notes

DUMP_TNSNAMES writes the addresses defined in the local region into tnsnames.ora, that is, everything with an address-type record, A.SMD.

The command creates or partially overwrites the tnsnames.ora file. Any entries in the existing tnsnames.ora that are not defined in the Oracle Names servers will remain. Any definitions in tnsnames.ora that are also defined in the Oracle Names servers will be overwritten. Entries that are defined in the Oracle Names servers but not in the tnsnames.ora are added.

Example

```
NAMESCTL> DUMP_TNSNAMES
```
EXIT

Purpose
Use the command EXIT to exit from the Oracle Names Control utility.

Prerequisites
The Oracle Names Control utility must be loaded.

Password Required If One Has Been Set
No. If a password is set, then the SET PASSWORD command does not need to be issued prior to this command.

Syntax
From the Oracle Names Control utility:
```
NAMESCTL> EXIT
```

Arguments
None

Usage Notes
EXIT has no affect on any Oracle Names servers; it affects only the Oracle Names Control utility.
This command is identical to the QUIT command.

Example
```
namesctl> EXIT
NL-00851: NAMESCTL finished
```
**FLUSH**

**Purpose**

Use the command `FLUSH` to instruct the Oracle Names server to clear all remote region information from its local cache checkpoint file, which has a default of `ckpcch.ora`.

**Prerequisites**

This command is relevant with an environment with multiple regions where there is authoritative data.

**Password Required If One Has Been Set**

Yes. If a password is set, then issue the `SET PASSWORD` command prior to this command.

**Syntax**

From the operating system prompt:

```
namesctl FLUSH [onames_server] [onames_server] [...]
```

From the Oracle Names Control utility:

```
NAMESCTL> FLUSH [onames_server] [onames_server] [...]
```

**Arguments**

`[onames_server]`: Specify zero or more Oracle Names servers separated by a space. If no names are supplied, then only the current Oracle Names server cache is flushed of the foreign names.

**Usage Notes**

`FLUSH` erases all remote data that has been cached. Typically, you should flush the foreign data cache for the following reasons:

- A large volume of data changes in the network and the normal time-to-live (TTL) aging mechanism will take too long.
- Unidentifiable errors in name resolution of cached foreign data are occurring. Flushing all foreign data from the cache forces it to be looked up again when it is requested the next time.
Names are flushed from the current Oracle Names server. The current Oracle Names server is either the default preferred Oracle Names server or the one set by using the `SET SERVER` command.

Examples

```
NAMESCTL> FLUSH
Confirm [yes or no]: yes
```

**FLUSH_NAME**

**Purpose**

Use the command FLUSH_NAME to instruct the Oracle Names server to clear information for a specific region from its local cache checkpoint file, which has a default of `ckpcch.ora`.

**Prerequisites**

This parameter is useful for an environment with multiple regions. (In central administration, there is no authoritative data.)

**Password Required If One Has Been Set**

Yes. If a password is set, then issue the `SET PASSWORD` command prior to this command.

**Syntax**

From the operating system prompt:

```
namesctl flush_name {domain}
```

From the Oracle Names Control utility:

```
NAMESCTL> flush_name {domain}
```

**Arguments**

`[domain]`: Specify the domain name.
Usage Notes

`FLUSH_NAME` erases only data cached from outside the region of the Oracle Names server, that is, non-authoritative data. Data is typically flushed when a name is behaving unusually, suggesting the source copy may have changed.

Names are flushed from the current Oracle Names server. The current Oracle Names server is either the default preferred Oracle Names server or the one set by using the `SET SERVER` command.

Example

```
NAMESCTL> FLUSH_NAME mountain.acme.com
```

HELP

Purpose

Use the command `HELP` to provide a list of all the Oracle Names Control utility commands or provide syntax help for a particular Oracle Names Control utility command.

Prerequisites

None

Password Required If One Has Been Set:

No. If a password is set, then the `SET PASSWORD` command does not need to be issued prior to this command.

Syntax

From the operating system:

```
namesctl HELP [command]
```

From the Oracle Names Control utility:

```
NAMESCTL> HELP [command]
```
Arguments

[command]: Specify a HELP command. Commands are shown in the following example output.

When you enter a command as an argument to HELP, the Oracle Names Control utility displays information about how to use the command. When you enter HELP without an argument, the Oracle Names Control utility displays a list of all the commands.

Example

NAMESCTL> HELP
The following operations are available:
An asterisk (*) denotes a modifier or extended command:
exit
flush
flush_name
log_stats
ping
query
quitreload
repeat*
reset_stats
restart
save_config
set*
show
shutdown
start
startup
status
stop
version
LIST_DELEGATED

Purpose
Use the command LIST_DELEGATED to list all the delegated domains for the root region or a specified domain.

Prerequisites
None

Password Required If One Has Been Set
No. If a password is set, then the SET PASSWORD command does not need to be issued prior to this command.

Syntax
From the operating system:

```
namesctl LIST_DELEGATED [domain]
```

From the Oracle Names Control utility

```
NAMESCTL> LIST_DELEGATED [domain]
```

Arguments
[domain]: Specify the domain name.

Usage Notes
Before exporting data from an Oracle Names server to a directory server, use this command to find out the current domain structure.

See Also: Oracle9i Net Services Administrator's Guide

Example

```
NAMESCTL> LIST_DELEGATED
europe.acme.com
asia.acme.com
africa.acme.com
```
LIST_DOMAINS

Purpose

Use the command LIST_DOMAINS to list all the domains in the root region or subdomains for a specified domain.

Prerequisites

None

Password Required If One Has Been Set

No. If a password is set, then the SET PASSWORD command does not need to be issued prior to this command.

Syntax

From the operating system

namesctl LIST_DOMAIN [domain]

From the Oracle Names Control utility:

NAMESCTL> LIST_DOMAIN [domain]

Arguments

[domain]: Specify the domain name.

Usage Notes

Before exporting data from an Oracle Names server to a directory server, use this command to determine the current domain structure.

See Also: Oracle9i Net Services Administrator’s Guide

Example

NAMESCTL> LIST_DOMAINS
com
sczi.com
us.sczi.com
sj.us.sczi.com
LIST_OBJECTS

Purpose

Use the command LIST_OBJECTS to list all the network objects for the root region or a specified domain.

Prerequisites

None

Password Required If One Has Been Set

No. If a password is set, then the SET PASSWORD command does not need to be issued prior to this command.

Syntax

From the operating system:

```
namesctl LIST_OBJECT [-R] [domain]
```

From the Oracle Names Control utility:

```
NAMESCTL> LIST_OBJECT [-R] [domain]
```

Arguments

[-R]: Specify that all authoritative subdomains of the given domain be listed.

[domain]: Specify the domain name.

Usage Notes

Before exporting data from an Oracle Names server to a directory server, use this command to determine the objects stored in a domain.

See Also: Oracle9i Net Services Administrator’s Guide

Example

```
NAMESCTL> LIST_OBJECTS
partsdb.widgets.acme.com
toolsdb.widgets.acme.com
partsdb.components.widgets.acme.com
sparepartsdb.gadgets.widgets.acme.com
```
LOAD_TNSNAMES

Purpose

Use the command LOAD_TNSNAMES to load all connect descriptors defined in one or more tnsnames.ora files into an Oracle Names server.

Prerequisites

None

Password Required If One Has Been Set

No. If a password is set, then the SET PASSWORD command does not need to be issued prior to this command.

Syntax

From the operating system prompt:

namesctl LOAD_TNSNAMES {directory_path/tnsnames.ora} [...] 

From the Oracle Names Control utility:

NAMESCTL> LOAD_TNSNAMES {directory_path/tnsnames.ora}[...]

Arguments

(directory_path/tnsnames.ora): Specify one or more tnsnames.ora files.

Usage Notes

This command would typically be used once when a site begins using Oracle Names after having used tnsnames.ora files. Run this command once for each region. The names defined during this operation will be defined permanently and will be propagated from one Oracle Names server to all the rest in the region.
Example

NAMESCTL> LOAD_TNSNAMES /oracle9i/network/admin/tnsnames.ora
Name: koala.lab.npd.us.acme.com
Response status: normal, successful completion
Name: devdd.rdbms.us.acme.com
Response status: normal, successful completion
Name: envyd.lab.npd.us.acme.com
Response status: normal, successful completion
Name: stealth.npd.us.acme.com
Response status: normal, successful completion
Name: null.us.acme.com
Response status: normal, successful completion
Name: slime.lab.npd.us.acme.com
Response status: normal, successful completion
Name: felix.hp.us.acme.com
Response status: normal, successful completion
Name: dtnet1.dec.acme.com
Response status: normal, successful completion
Name: devds.rdbms.us.acme.com
Response status: normal, successful completion
LOG_STATS

Purpose

Use the command LOG_STATS to log the current set of statistics to the configured log file for that Oracle Names server. The log file has a default of names.log.

Prerequisites

None

Password Required If One Has Been Set

Yes. If a password is set, then issue the SET PASSWORD command prior to this command.

Syntax

From the operating system prompt:
namesctl LOG_STATS [onames_server] [onames_server] [...]

From the Oracle Names Control utility:
NAMESCTL> LOG_STATS [onames_server] [onames_server] [...]

Arguments

[onames_server]: Specify zero or more Oracle Names servers separated by a space. When no names are supplied, then only the statistics for the current Oracle Names server are reset.

Usage Notes

Statistics may be logged if the STATUS command or other behavior indicates some data that you would like to capture in the log. This command does not affect the current log statistics interval.

Example

NAMESCTL> LOG_STATS
Statistics counters logged.
**PASSWORD**

**Purpose**
Use the command `PASSWORD` to set an encrypted password for privileged Oracle Names Control utility commands, such as `STOP`, `RESTART`, and `RELOAD`.

**Prerequisites**
The Oracle Names Control utility must be loaded.

**Password Required If One Has Been Set**
Not applicable

**Syntax**
From the Oracle Names Control utility:
```
NAMESCTL> PASSWORD [password]
```

**Arguments**
Text string matching the value encrypted in the `NAMES.PASSWORD` parameter in the `names.ora` file.

**Usage Notes**
This command does not change a password already established with the `NAMES.PASSWORD` parameter in the `names.ora` file. It simply sets an Oracle Names Control utility variable. Then, the value stored is sent from the Oracle Names Control utility with any command request to the Oracle Names server, and the value is compared to that on the Oracle Names server. If they match, then operations requiring passwords are allowed.

Only privileged operations are affected, that is, operations that alter the functioning of the Oracle Names server. Operations such as `SHOW` or `STATUS` are not considered privileged, and do not require a password.

The password can either be passed as an argument of the `PASSWORD` command, or, if no argument is given, you are prompted for the password. Note that the input is not displayed on the screen as it is entered.

When passed over the network, the password is always encrypted, regardless of how it is set.
Examples

```bash
NAMESCTL> PASSWORD open_sesame

NAMESCTL> PASSWORD
Enter name server password: names9i
```

PING

Purpose

Use the command `PING` to contact an Oracle Names server and display the request/response time.

Prerequisites

None

Password Required If One Has Been Set

No. If a password is set, then the `SET PASSWORD` command does not need to be issued prior to this command.

Syntax

From the operating system prompt:
```
namesctl PING [onames_server] [...]
```

From the Oracle Names Control utility:
```
NAMESCTL> PING [onames_server] [...]
```

Arguments

`[onames_server]`: Specify zero or more Oracle Names servers separated by a space. If no names are supplied, then only the current Oracle Names server is pinged.

Usage Notes

Ping ensures that an Oracle Names server is functioning and shows typical response times from the location of the Oracle Names Control utility user to an Oracle Names server.
Example

```bash
NAMESCTL> PING nserver.com
Round trip time is 0.04 seconds
```

QUERY

Purpose

Use the command QUERY to retrieve the contents of a network object stored in the Oracle Names server.

Prerequisites

None

Password Required If One Has Been Set

No. If a password is set, then the SET PASSWORD command does not need to be issued prior to this command.

Syntax

From the operating system prompt:
```
namesctl QUERY object_name [record_type] [modifiers]
```

From the Oracle Names Control utility:
```
NAMESCTL> QUERY object_name [record_type] [modifiers]
```

Arguments

[record_type]: Specify one of the following record types:
- `A.SMD` for a network address
- `CNAME.SMD` for an alias
- `DL.RDBMS.OMD` for a global database link
- `DLCR.RDBMS.OMD` for a global database link qualifier
- `NS.SMD` for an Oracle Names server
- `V1ADD.NPO.OMD` for a SQL*Net Version 1 connect descriptor
[modifier]: Specify one of the following modifier types:

- **authority**: Forces the query to be resolved at the source of the data (in the administrative region where the data is considered local) even if the data is in the local cache. Use this modifier if you suspect that the data has changed at the source.
- **noforward**: Queries for the data, but does not forward the request. When the data is not local and no forward is specified, the query is not be resolved.
- **trace**: Enables a trace of the path to the answer. This is useful whenever you want to find out which Oracle Names servers the request went to.

**Usage Notes**

**QUERY** can be used to verify that a defined piece of data can be found, and that the contents are correct.

If this command is used with just a name as a parameter, then Oracle Names server responds with the number of pieces of data with that name, and the time required to complete the operation.

If this command is used with the name and type supplied as arguments, the specific name is looked up and returned to the user.

The **QUERY** command can take multiple arguments. For example:

```
QUERY sales.com a.smd authority trace
```

This command operates on the current Oracle Names server, either the default, or as specified using the **SET SERVER** command.
Example

```
NAMESCTL> QUERY bones.dem.medicine a.smd
Total response time: 0.04 seconds
Response status: normal, successful completion
Authoritative answer: yes
Number of answers: 1
Canonical name: bones.dem.medicine
TTL: 1 day
Alias translations:
  from: bones.dem.medicine
  to: bones.dem.medicine
Answers:
  data type is "a.smd"
    Syntax is ADDR:...(DESCRIPTION=(ADDRESS=
      (PROTOCOL=TCP) (Host=bones-pc)
      (Port=1521)) (CONNECT_DATA=(SERVICE_NAME=bones.dem.medicine)))
```

QUIT

Purpose

Use the command **QUIT** to quit the Oracle Names Control utility.

Prerequisites

The Oracle Names Control utility must be loaded.

Password Required If One Has Been Set

No. If a password is set, then the **SET PASSWORD** command does not need to be issued prior to this command.

Syntax

From the Oracle Names Control utility:

```
NAMESCTL> QUIT
```

Arguments

None
Usage Notes

QUIT has no affect on any Oracle Names servers; it affects only the Oracle Names Control utility.

This command is identical to the EXIT command.

Example

 NAMESCTL> QUIT
 NL-00851: NAMESCTL finished

REGISTER

Purpose

Use the command REGISTER to register a network object to an Oracle Names server.

Password Required If One Has Been Set

No. If a password is set, then the SET PASSWORD command does not need to be issued prior to this command.

Syntax

From the operating system

namesctl REGISTER {object_name} [-t service_type]
[-d{(DESCRIPTION=] (ADDRESS=...)[(CONNECT_DATA=(SERVICE_NAME|SID=service_name|SID))][]} [-h host] [-l listener_name]

From the Oracle Names Control utility:

NAMESCTL> REGISTER {object_name} [-t service_type]
[-d{(DESCRIPTION=] (ADDRESS=...)[(CONNECT_DATA=(SERVICE_NAME|SID=service_name|SID))][]} [-h host] [-l listener_name]
### Arguments

*{object_name}*: Specify the object name.

*[-t service_type]*: Specify the service type of the object:

- ORACLE_DATABASE for an Oracle database
- ORACLE_LISTENER for a listener
- ORACLE_NAMESERVER for an Oracle Names server

**Note:** To register an Oracle Names server, use the `REGISTER_NS` command rather than the `REGISTER` command.

*[-d]*: Specify the protocol address of the listener or Oracle Names server object, or complete connect descriptor of the database object, net service name, alias, or global database link.

**See Also:** Chapter 5, "Protocol Address Configuration" for further information about protocol addresses and parameters

*[-h host]*: Specify the host name that the object resides on.

*[-l listener_name]*: Specify the name of the listener object.

The service type, address description, host, and listener name options are not necessary to make the registration process appear to work. However, they are necessary to make the registration useful. In other words, an object name registered without an address cannot be used.

**See Also:** Chapter 5, "Protocol Address Configuration" for further information about protocol addresses and parameters

**Note:** The protocol address cannot contain any spaces.
Usage Notes

This command provides a mechanism for registering a service, its type, its hostname, and its address. Both the type of service and the data can be any valid string, but the typical registration has either ORACLE_DATABASE or ORACLE_LISTENER as type of service, and the address as the data.

The object registration is propagated to all other Oracle Names servers in the region.

If the sqlnet.ora file is configured with the parameter NAMES.DEFAULT_DOMAIN to set the same domain name as the database domain, then the database name does not need to be qualified with the domain.

Example

The following example shows the registration of database service sales.us.acme.com.

```
NAMESCTL> REGISTER sales -t oracle_database -d (DESCRIPTION=(ADDRESS=(PROTOCOL=TCP)(HOST=sales-server)(PORT=1575)) (CONNECT_DATA=(SERVICE_NAME=sales.us.acme.com)))
```
REGISTER_NS

Purpose
Use the REGISTER_NS command to define an Oracle Names server and its authoritative domain.

Prerequisites
None

Password required if one has been set
No. If a password is set, then the SET PASSWORD command does not need to be issued prior to this command.

Syntax
From the operating system:
```bash
namesctl REGISTER_NS {onames_server}{(ADDRESS=...)}{domain}
```

From Oracle Names Control utility:
```bash
NAMESCTL> REGISTER_NS {onames_server}{(ADDRESS=...)}{domain}
```

Arguments
- `{onames_server}`: Specify the Oracle Names server name.
- `{ADDRESS=...}`: Specify the Oracle Names server protocol address.
- `{domain}`: Specify the domain name.

Usage Notes
This command provides a mechanism for registering an Oracle Names server as an authoritative server for a given domain. The command adds a network session record type, NS.SMD, for the Oracle Names server to the domain, and provides the Oracle Names server with an address record, A.SMD.

This command will fail if either the domain exists and has non-NS records or the Oracle Names server exists and has a type of service record that is other than 'ORACLE_NAMESERVER'.
Ordinarily, the Oracle Names servers maintain their own data by registering themselves when they start. This command is provided as a manual way to manage domain and Oracle Names server data if for some reason the Oracle Names server cannot. This may occur if the region database tables are set up as read-only for security reasons.

If the Oracle Names servers are not registering themselves, then use this command to define the region topology data. Each Oracle Names server in the region should be defined using this command for each top-level domain in the region. Usually, the top level consists of a single parent domain, for example, acme.com. However, a region may also have multiple sibling parent domains, for example, a region covering North America would have US, CA, and MX as its top-level parent domains.

Note the regions which were defined using the Oracle Network Manager in SQL*Net version 2 have NS.SMD records defined for every domain in the administrative region, but in Oracle Net only the top-level parent domains need to have ns.smd records defined for each server in the region.

Use the Oracle Names Control utility DELEGATE DOMAIN command to define Oracle Names servers which are delegation points for subregions.

Use the NAMES.DOMAIN_HINTS parameter in the names.ora file to provide data about any other Oracle Names servers in foreign regions.

Example

```bash
NAMESCTL> REGISTER_NS namesrv1
(ADDRESS=(PROTOCOL=tcp)(HOST=namesrv1)(PORT=1575))
Total response time: 7 minutes 59.14 seconds
Response status: normal, successful completion
```
RELOAD

Purpose
Use the command RELOAD to force the Oracle Names server to check immediately for data changes in its administrative region. If there are any changes, then the Oracle Names server reloads all database service names, net service names, global database links, and aliases.

Prerequisites
None

Password Required If One Has Been Set
Yes. If a password is set, then issue then the SET PASSWORD command prior to this command.

Syntax
From the operating system prompt:
namesctl RELOAD [onames_server] [...] 

From the Oracle Names Control utility:
NAMESCTL> RELOAD [onames_server] [...] 

Arguments
[onames_server]: Specify zero or more Oracle Names servers separated by a space. If no names are supplied, then only the current Oracle Names server is reloaded.

Usage Notes
All Oracle Names servers load their data directly from the database specified by the NAMES.ADMIN_REGION parameter in the names.ora file.

In an environment with multiple regions, RELOAD affects only the data for the current administrative region. All foreign data in the cache is unchanged.

Example
NAMESCTL> RELOAD
Server reloaded.
REORDER_NS

Purpose

Use the command `REORDER_NS` to create the file that lists local Oracle Names servers and their protocol addresses.

Prerequisites

None

Password Required If One Has Been Set

No. If a password is set, then the `SET PASSWORD` command does not need to be issued prior to this command.

Syntax

From the operating system prompt:
```
namesctl REORDER_NS [(ADDRESS=...)]
```

From the Oracle Names Control utility:
```
NAMESCTL> REORDER_NS [(ADDRESS=...)]
```

See Also: Chapter 5, "Protocol Address Configuration" for further information about protocol addresses and parameters

Arguments

`[(ADDRESS=...)]`: Specify an optional Oracle Names server address to be used as the initial Oracle Names server to contact.
Usage Notes

This command generates the file which defines Oracle Names server names and addresses to enable clients to contact Oracle Names servers for name lookup.

The `REORDER_NS` command performs the following tasks:

1. Searches for the first Oracle Names server in the following order:
   a. A **preferred Oracle Names server** configured in the `sqlnet.ora` file with the `NAMES.PREFERRED_SERVERS` parameter
   b. A **well-known Oracle Names server**
   c. A local Oracle Names server configured with TCP/IP on port 1575
2. Sends a query for all the Oracle Names servers in the local region
3. Sends a ping to each of these Oracle Names servers
4. Sorts the list of Oracle Names servers by increasing order of response time
5. Writes an Oracle Names server list with the sorted list of names and addresses

Example

```
NAMESCTL> REORDER_NS (ADDRESS=(PROTOCOL=tcp)(HOST=namesrv-server)(PORT=1575))
```
REPEAT

Purpose

Use the command REPEAT to perform QUERY, REGISTER, TIMED_QUERY, or UNREGISTER multiple times to compute average return rates.

Prerequisites

None

Password Required If One Has Been Set

No. If a password is set, then the SET PASSWORD command does not need to be issued prior to this command.

Syntax

From the operating system prompt:

```bash
namesctl REPEAT \{ number \} QUERY|REGISTER|TIMED_QUERY|UNREGISTER \{ record_type \}
```

From the Oracle Names Control utility:

```bash
NAMESCTL> REPEAT \{ number \} QUERY \{ record_type \}
```

Arguments

- `{number}`: Specify an integer
- `{record_type}`: Specify one of the following record types:
  - `A.SMD` for a network address
  - `CNAME.SMD` for an alias
  - `DL.RDBMS.OMD` for a global database link
  - `DLCR.RDBMS.OMD` for a global database link qualifier
  - `NS.SMD` for an Oracle Names server
  - `V1ADD.NPO.OMD` for a SQL*Net Version 1 connect descriptor
Usage Notes

This command is useful for understanding the average response time over a number of requests.

Do not specify too large a number here; while the number of iterations are occurring, the Oracle Names Control utility cannot perform any other operation.

Example

NAMESCTL> REPEAT 10 QUERY manatee a.smd
Number of requests: 10
Average response time: 0.01 seconds
Minimum response time: 0.01 seconds
Maximum response time: 0.04 seconds
Total response time: 0.14 seconds
Response status: normal, successful completion
Authoritative answer: yes
Number of answers: 1
TTL: 1 day
Answers:
    data type is "a.smd"
    Syntax is ADDR: (DESCRIPTION=(ADDRESS=(PROTOCOL=TCP)(Host=salmon)
                     (Port=1522))(CONNECT_DATA=(SID=otter)))
RESET_STATS

Purpose
Use the command RESET_STATS to reset the Oracle Names server statistics to the original values of the Oracle Names server at startup.

Prerequisites
None

Password Required If One Has Been Set
Yes. If a password is set, then issue the SET PASSWORD command prior to this command.

Syntax
From the operating system prompt:
```
namesctl RESET_STATS [onames_server] [...]
```
From the Oracle Names Control utility:
```
NAMESCTL> RESET_STATS [onames_server] [...]
```

Arguments

[onames_server]: Specify zero or more Oracle Names servers separated by a space. If no names are supplied, then only the current statistics for the Oracle Names server are reset.

Example
```
NAMESCTL> RESET_STATS
Confirm [yes or no]: yes
Server statistics reset.
```
RESTART

Purpose

Use the command RESTART to initiate a reset of an Oracle Names server to its original state at startup.

Prerequisites

None

Password Required If One Has Been Set

Yes. If a password is set, then issue the SET PASSWORD command prior to this command.

Syntax

From the operating system prompt:

```
namesctl RESTART [onames_server] [...]
```

From the Oracle Names Control utility:

```
NAMESCTL> RESTART [onames_server] [...]
```

Arguments

```
[onames_server]: Specify zero or more Oracle Names servers separated by a space. If no names are supplied, then only the current Oracle Names server is restarted.
```

Usage Notes

RESTART is the same as STARTUP, except that you use it when the Oracle Names server is already running.

Data is reloaded, statistics are reset, and all foreign data is flushed. Valid foreign cache data, that is, data with a TTL greater than 0, is retrieved from the checkpoint files.

Example

```
NAMESCTL> RESTART
Confirm [yes or no]: yes
Server restarted.
```
SAVE_CONFIG

Purpose

Use the SAVE_CONFIG command to compare the current configuration state of the Oracle Names server, including trace level, trace file, trace directory, and logging to the names.ora file. Any changes are stored in names.ora, preserving formatting, comments, and case as much as possible.

Password Required If One Has Been Set

Yes. If a password is set, then issue the SET PASSWORD command prior to this command.

Syntax

From the operating system:
lsnrctl SAVE_CONFIG

From the Oracle Names Control utility:
LSNRCTL> SAVE_CONFIG

Arguments

None

Example

NAMESCTL> SAVE_CONFIG
Server saving the config file now
SET

Purpose

Use the SET command to alter the parameter values for the Oracle Names server. These changes remain in effect until the Oracle Names is stopped. To make the changes permanent, use the SAVE_CONFIG, SET SAVE_CONFIG_ON_STOP, or SET SAVE_CONFIG_INTERVAL commands to save changes to the names.ora file.

Prerequisites

None

Password Required If One Has Been Set

No. If a password is set, then the SET PASSWORD command does not need to be issued prior to this command.

Syntax

From the operating system:

NAMESCTL SET [parameter]

From the Oracle Names Control utility:

namesctl> SET [parameter]

Arguments

[parameter]: Specify a SET parameter to modify its configuration setting. Parameters are shown in the example output.

When you enter SET without an argument, the Oracle Names Control utility displays a list of all the parameters.
SET CACHE_CHECKPOINT_INTERVAL

Example

NAMESCTL> SET
The following operations are available after set
An asterisk (*) denotes a modifier or extended command:
cache_checkpoint_interval
default_domain
forwarding_available
log_file_name
log_stats_interval
NAMESCTL_trace_level
password
requests_enabled
reset_stats_interval
save_config_interval
save_config_on_stop
server
trace_file_name
trace_level

SET CACHE_CHECKPOINT_INTERVAL

Purpose

Use the command SET CACHE_CHECKPOINT_INTERVAL to specify the time, in
seconds, of how often to save all collected information about remote regions to the
local cache file. By default, the cache checkpoint file name is ckpcch.ora.

Password Required If One Has Been Set

No. If a password is set, then the SET PASSWORD command does not need to be
issued prior to this command.

Syntax

From the operating system:
namesctl SET CACHE_CHECKPOINT_INTERVAL [time]

From the Oracle Names Control utility:
NAMESCTL> SET CACHE_CHECKPOINT_INTERVAL [time]
Arguments

(time): Specify the number of seconds.
For example, to increase the interval to 36 hours, set the following:
NAMESCTL> SET CACHE_CHECKPOINT_INTERVAL 129600

Usage Notes

Minimum Value: 10
Maximum Value: 259200 (3 days)
Default Value: 0 (disabled)

Example

NAMESCTL> SET CACHE_CHECKPOINT_INTERVAL 12

SET DEFAULT_DOMAIN

Purpose

Use the command SET DEFAULT_DOMAIN to set the domain from which the Oracle Names Control utility most often looks up names resolution requests. The domain set is used for the duration of the session, ignoring the NAMES.DEFAULT_DOMAIN parameter configured in the sqlnet.ora file.

Prerequisites

The Oracle Names Control utility must be loaded.

Password Required If One Has Been Set

No. If a password is set, then the SET PASSWORD command does not need to be issued prior to this command.

Syntax

From the Oracle Names Control utility:
NAMESCTL> SET DEFAULT_DOMAIN [domain_name]

Arguments

(domain): Specify the domain name. The root domain is the default domain.
**Usage Notes**

When a default domain is set, it is automatically appended to any unqualified net service name or service name. For example, if the default domain is set to `us.acme.com`, the global name `sales.us.acme.com` can be queried using:

```
NAMESCTL> QUERY sales
```

**Example**

```
NAMESCTL> SET DEFAULT_DOMAIN us.acme.com
Default domain is now "US.ACME.COM"
```

**SET FORWARDING_AVAILABLE**

**Purpose**

Use the command `SET FORWARDING_AVAILABLE` to set forwarding to remote Oracle Names servers for client name requests.

**Prerequisites**

Oracle Names server must be running.

**Password Required If One Has Been Set**

Yes. If a password is set, then issue the `SET PASSWORD` command prior to this command.

**Syntax**

From the operating system:

```
namesctl SET FORWARDING_AVAILABLE [yes | no] [onames_server] [...]
```

From the Oracle Names Control utility:

```
NAMESCTL> SET FORWARDING_AVAILABLE [yes | no] [onames_server] [...]
```
Arguments

[yes | no]: Specify yes or on to set forwarding on. Specify no or off (default) to set forwarding off.

[onames_server]: Specify zero or more Oracle Names servers separated by a space. If no names are supplied, then the setting is displayed for the current Oracle Names server.

Usage Notes

This command is intended for Oracle Names servers that have no local clients and are exclusively handling requests from remote Oracle Names servers. This usually would apply only to Oracle Names servers in the root region when the root is configured without clients or services. If such an Oracle Names server is a performance bottleneck in cross-region request processing, then disabling forwarding in that Oracle Names server can reduce its workload in half. Rather than forward the request and return the answer, the Oracle Names server simply tells the requestor the address of the Oracle Names server that can answer the request. Note that there is no overall reduction in work; the work is simply displaced from the non-forwarding Oracle Names server to the requesting Oracle Names server.

---

Caution: If SET FORWARDINGAVAILABLE is set to off or no, any clients that rely directly on that Oracle Names server will be unable to resolve remote names. Clients are not capable of redirecting their requests as Oracle Names servers are. Their requests will fail at that point, even if other Oracle Names servers are listed in the NAMES.PREFERRED_SERVERS parameter in the sqlnet.ora file.

---

Example

NAMESCTL> SET FORWARDINGAVAILABLE off
Request processing is now disabled.
SET LOG_FILE_NAME

Purpose

Use the command \texttt{SET LOG\_FILE\_NAME} to set the name for the Oracle Names server log file. By default, the log file name is \texttt{names.log}.

Prerequisites

None

Password Required If One Has Been Set

Yes. If a password is set, then issue the \texttt{SET PASSWORD} command prior to this command.

Syntax

From the operating system:
\texttt{namesctl SET LOG\_FILE\_NAME [file\_name]}

From the Oracle Names Control utility:
\texttt{NAMESCTL> SET LOG\_FILE\_NAME [file\_name]}

Arguments

\texttt{[file\_name]}: Specify file name of the Oracle Names trace. The default file name is \texttt{names.log}.

Usage Notes

The \texttt{LOG\_FILE\_NAME} changes the destination of all logging messages.

Example

\texttt{NAMESCTL> SET LOG\_FILE\_NAME namesvr1}
**SET LOG_STATS_INTERVAL**

**Purpose**

Use the command `SET LOG_STATS_INTERVAL` to change the frequency at which the statistics are logged to the log file. By default, the log file name is `names.log`.

**Prerequisites**

None

**Password Required If One Has Been Set**

Yes. If a password is set, then issue the `SET PASSWORD` command prior to this command.

**Syntax**

From the operating system:

```
namesctl SET LOG_STATS_INTERVAL [time]
```

From the Oracle Names Control utility:

```
NAMESCTL> SET LOG_STATS_INTERVAL [time]
```

**Arguments**

`{time}`: Specify the time in seconds or in `[n day[s]] [hh:mm:ss]`. For example, to increase the `LOG_STATS_INTERVAL` to 36 hours, both of the following can be set:

```
set log_stats_interval 129600
set log_stats_interval 1 day 12:00:00
```

You can specify any valid combination, such as the number of days combined with number of hours, minutes, and seconds, or just the number in hours.
SET NAMESCTL_TRACE_LEVEL

Restrictions

Minimum Value: 10
Maximum Value: None
Special Value: 0 (never reset)
Default value: 0 (no logging)

Usage Notes

The LOG_STATS_INTERVAL value is initially set based on the value configured in NAMES.LOG_STATS_INTERVAL parameter in the sqlnet.ora file when the Oracle Names server is loaded. By default, the value is 0 (no logging). This command is intended to override that value during server operation.

Example

NAMESCTL> SET LOG_STATS_INTERVAL 7200
Statistic counter logging interval is now 2 hours

SET NAMESCTL_TRACE_LEVEL

Purpose

Use the command SET NAMESCTL_TRACE_LEVEL to set the level at which the Oracle Names Control utility can be traced.

Prerequisites

None

Password Required If One Has Been Set

Yes. If a password is set, then issue the SET PASSWORD command prior to this command.
Syntax

From the operating system:

```
namesctl SET NAMESCTL_TRACE_LEVEL {level}
```

From the Oracle Names Control utility:

```
NAMESCTL> SET NAMESCTL_TRACE_LEVEL {level}
```

Arguments

```
{level}: Specify one of the following trace levels:
```

- off for no trace output
- user for user trace information
- admin for administration trace information
- support for Oracle Support Services trace information

Usage Notes

Tracing assists in diagnosing unexpected or unidentifiable failures in processing the Oracle Names Control utility. Tracing writes a series of events from normal Oracle Names Control utility processing to an operating system file for review by the administrator.

When no level is specified, the setting is reset to the level specified by the `NAMESCTL.TRACE_LEVEL` parameter in the `sqlnet.ora` file.

Example

```
NAMESCTL> SET NAMESCTL_TRACE_LEVEL admin
Controller’s local trace level changed from 0 to 4
```
SET PASSWORD

Purpose

Use the command SET PASSWORD to set the password for privileged Oracle Names Control utility commands, such as STOP, RESTART, and RELOAD.

The password entered should match the one set for the NAMES.PASSWORD parameter in the names.ora file.

Prerequisites

The Oracle Names Control utility must be loaded.

Password Required If One Has Been Set

Not applicable

Syntax

From the Oracle Names Control utility:

NAMESCTL> SET PASSWORD [password]

Arguments

(password): Specify the password.

Usage Notes

You can enter this command when you start up the Oracle Names Control utility or at any time during the session as needed.

When passed over the network, the password is always encrypted, regardless of how it is set.

See Also: "Oracle Names Server Security" on page 3-5

Example

NAMESCTL> SET PASSWORD open_sesame

NAMESCTL> SET PASSWORD

enter name server password: onames9i
SET REQUESTS_ENABLED

Purpose
Use the command SET REQUESTS_ENABLED to determine whether the current Oracle Names server will respond to requests.

Prerequisites
None

Password Required If One Has Been Set
Yes. If a password is set, then issue the SET PASSWORD command prior to this command.

Syntax
From the operating system:
namesctl SET REQUESTS_ENABLED [on | off]

From the Oracle Names Control utility:
NAMESCTL> SET REQUESTS_ENABLED [on | off]

Arguments
[on] (default): Specify to have the Oracle Names server respond to requests.
[off]: Specify to send refusals to all clients that approach with names resolution requests. This is primarily useful for diagnostics when an Oracle Names server is functioning unexpectedly.

Example
NAMESCTL> SET REQUESTS_ENABLED OFF
Confirm [yes or no]: yes
General request processing is now disabled
SET RESET_STATS_INTERVAL

Purpose
Use the command SET RESET_STATS_INTERVAL to change the time between the statistics being reset to 0 or initial values in the current Oracle Names server.

Prerequisites
None

Password Required If One Has Been Set
Yes. If a password is set, then issue the SET PASSWORD command prior to this command.

Syntax
From the operating system:
namesctl SET RESET_STATS_INTERVAL [time]

From the Oracle Names Control utility:
NAMESCTL> SET RESET_STATS_INTERVAL [time]

Arguments
{time}: Specify the time in seconds or in \([n \text{ day}[s]] \ [hh:mm:ss]\). For example, to increase the RESET_STATS_INTERVAL to 72 hours, the following can be set:

SET RESET_STATS_INTERVAL 259200
SET RESET_STATS_INTERVAL 3 days

Minimum Value: 10 seconds
Maximum Value: no maximum
Default value: 0 (never reset)
Usage Notes

The **RESET_STATS_INTERVAL** value is initially set based on the **NAMES.RESET_STATS_INTERVAL** parameter in the **names.ora** file. This command is intended to override that value during Oracle Names server operation.

Example

```
NAMESCTL> SET RESET_STATS_INTERVAL 1 day
Statistic counter reset interval is now 24 hours
```

**SET SAVE_CONFIG_INTERVAL**

**Purpose**

Use the command **SET SAVE_CONFIG_INTERVAL** to save any changes made by **SET** commands to the **names.ora** at an interval.

**Password Required If One Has Been Set**

Yes. If a password is set, then issue the **SET PASSWORD** command prior to this command.

**Syntax**

From the operating system:
```
namesctl SET SAVE_CONFIG_INTERVAL [time]
```

From the Oracle Names Control utility:
```
NAMESCTL> SET SAVE_CONFIG_INTERVAL [time]
```

**Arguments**

```
{time}: Specify the time in seconds.
```

**Example**

```
NAMESCTL> SET SAVE_CONFIG_INTERVAL 10
Scheduled configuration save to occur in 3 minutes
```
SET SAVE_CONFIG_ON_STOP

Purpose
Use the command SET SAVE_CONFIG_ON_STOP to specify whether or not changes made to the parameter values for the Oracle Names server by the SET commands are to be saved to the names.ora file at the time the Oracle Names server is stopped with the SHUTDOWN or STOP commands.

When changes are saved, the Oracle Names Control utility tries to preserve formatting, comments, and letter case.

To have all parameters saved right away, use the SAVE_CONFIG command.

Password Required If One Has Been Set
Yes. If a password is set, then issue the SET PASSWORD command prior to this command.

Syntax
From the operating system:
namesctl SET SAVE_CONFIG_ON_STOP [on | off]

From the Oracle Names Control utility:
NAMESCTL> SET SAVE_CONFIG_ON_STOP [on | off]

Arguments
[on]: Specify to save configuration to names.ora.
[off] (default): Specify to not save configuration to names.ora.

Example
NAMESCTL> SET SAVE_CONFIG_ON_STOP on
SET SERVER

Purpose

Use the command SET SERVER to set Oracle Names server for the Oracle Names Control utility to administer.

Prerequisites

The Oracle Names Control utility must be loaded.

Password Required If One Has Been Set

No. If a password is set, then the SET PASSWORD command does not need to be issued prior to this command.

Syntax

From the Oracle Names Control utility:

```
NAMESCTL> SET SERVER [onames_server | (ADDRESS=(protocol_address_information))]
```

See Also: Chapter 5, "Protocol Address Configuration" for further information about protocol addresses and parameters.

Arguments

```
[onames_server | (ADDRESS=(protocol_address_information))]:
```

Specify a valid Oracle Names server or Oracle Names server address.

If you specify no argument, this command defaults to the values set by the NAMES.PREFERRED_SERVERS parameter in the sqlnet.ora file.

Usage Notes

SET SERVER enables switching between multiple Oracle Names servers while running the Oracle Names Control utility. The qualifier can be a name where the name is defined in the memory of the current Oracle Names server, or it can be the TNS address of any Oracle Names server.
The Oracle Names server name specified is resolved through normal name lookup. Another Oracle Names server can be set only if the current Oracle Names server knows or can retrieve its address. If no current Oracle Names server is set, you must enter an address to complete this command.

Example

NAMESCTL> SET SERVER server1.us.acme

SET TRACE_FILE_NAME

Purpose

Use the command SET TRACE_FILE_NAME to set the name of the Oracle Names server trace file. By default, the trace file name is names.trc.

Prerequisites

None

Password Required If One Has Been Set

No. If a password is set, then the SET PASSWORD command does not need to be issued prior to this command.

Syntax

From the operating system:
namesctl SET TRACE_FILE_NAME [file_name]

From the Oracle Names Control utility:
NAMESCTL> SET TRACE_FILE_NAME [file_name]

Arguments

{file_name}: Specify the file name of the Oracle Names trace.

Example

NAMESCTL> SET TRACE_FILE_NAME namesvr1
SET TRACE_LEVEL

Purpose
Use the command SET TRACE_LEVEL to set a specific level of tracing for the Oracle Names server.

Prerequisites
None

Password Required If One Has Been Set
Yes. If a password is set, then issue the SET PASSWORD command prior to this command.

Syntax
From the operating system:
```
namesctl SET TRACE_LEVEL {level}
```

From the Oracle Names Control utility:
```
NAMESCTL> SET TRACE_LEVEL {level}
```

Arguments

{level}: Specify one of the following trace levels:
- off for no trace output
- user for user trace information
- admin for administration trace information
- support for Oracle Support Services trace information

Usage Notes
Tracing assists in diagnosing unexpected or unidentifiable failures in processing the current Oracle Names server. It writes a series of events from normal Oracle Names server processing to an operating system file for review by the administrator.

After the TRACE_LEVEL is set, tracing begins immediately. All operations are traced until it is reset to trace level off.
Trace files can grow very large. Remember to turn trace level off after diagnosing the problem.

Example

```shell
NAMESCTL> SET TRACE_LEVEL admin
Trace level is now 6.
```

SHOW

Purpose

Use the command SHOW to view the parameter values for the Oracle Names server. All of the SET commands listed except SET PASSWORD have equivalent SHOW commands.

Prerequisites

None

Password Required If One Has Been Set

No. If a password is set, then the SET PASSWORD command does not need to be issued prior to this command.

Syntax

From the operating system:

```shell
namesctl SHOW
namesctl SHOW [command]
```

From the Oracle Names Control utility:

```shell
NAMESCTL> SHOW
NAMESCTL> SHOW [command]
```

Arguments

```
[parameter]: Specify a SHOW parameter to view its configuration setting. Parameters are shown in the example output.

When you enter SET without an argument, the Oracle Names Control utility displays a list of all the parameters.
```
Example

```
NAMESCTL> SHOW
The following operations are available after show
An asterisk (*) denotes a modifier or extended command:
cache_checkpoint_interval
default_domain
forwarding_available
log_file_name
log_stats_interval
NAMESCTL_trace_level
requests_enabled
reset_stats_interval
save_config_interval
save_config_on_stop
server
status
system_queries
trace_file_name
trace_level
version
```
SHOW CACHE_CHECKPOINT_INTERVAL

Purpose

Use the command SHOW CACHE_CHECKPOINT_INTERVAL to show the frequency at which the Oracle Names server cache is written to the cache checkpoint file. By default, the cache checkpoint file name is cktccch.ora.

Prerequisites

None

Password Required If One Has Been Set

No. If a password is set, then the SET PASSWORD command does not need to be issued prior to this command.

Syntax

From the operating system:

namesctl SHOW CACHE_CHECKPOINT_INTERVAL

From the Oracle Names Control utility

NAMESCTL> SHOW CACHE_CHECKPOINT_INTERVAL

Arguments

None

Usage Notes

The interval is initially set with the value in NAMES.CACHE_CHECKPOINT_INTERVAL parameter in the names.ora file. By default, the value is 0, which disables cache checkpointing. Data written to the cache checkpoint file includes net service names, protocol addresses, and Oracle Names server addresses that were learned by the Oracle Names server as a result of forwarding a query to a foreign region on behalf of the client.

Example

NAMESCTL> SHOW CACHE_CHECKPOINT_INTERVAL
Cache checkpoint interval is currently 8 minutes 20 seconds
SHOW DEFAULT_DOMAIN

Purpose

Use the command SHOW DEFAULT_DOMAIN to show the domain set by the SET DEFAULT_DOMAIN command or the NAMES.DEFAULT_DOMAIN parameter in the sqlnet.ora file.

Prerequisites

None

Password Required If One Has Been Set

No. If a password is set, then the SET PASSWORD command does not need to be issued prior to this command.

Syntax

From the operating system:

namesctl SHOW DEFAULT_DOMAIN

From the Oracle Names Control utility:

NAMESCTL> SHOW DEFAULT_DOMAIN

Arguments

None

Usage Notes

When a default domain is set, it is automatically appended to any unqualified net service name or service name. For example, if the default domain is set to us.acme.com, the global name sales.us.acme.com can be queried using the following syntax:

NAMESCTL> QUERY sales

Example

NAMESCTL> SHOW DEFAULT_DOMAIN

Current default domain is "com"
SHOW FORWARDINGAVAILABLE

Purpose
Use the command SHOW FORWARDINGAVAILABLE to show whether the Oracle Names server is forwarding client requests to remote Oracle Names servers.

Prerequisites
None

Password Required If One Has Been Set
No. If a password is set, then the SET PASSWORD command does not need to be issued prior to this command.

Syntax
From the operating system:

```
namesctl SHOW FORWARDINGAVAILABLE [onames_server] [...]
```

From the Oracle Names Control utility:

```
NAMESCTL> SHOW FORWARDINGAVAILABLE [onames_server] [...]
```

Arguments

[onames_server]: Specify zero or more Oracle Names servers separated by a space. If no names are supplied, then the setting is displayed for the current Oracle Names server.

Usage Notes

By default, all Oracle Names servers forward requests to remote Oracle Names servers. If forwarding is disabled, then requests to remote Oracle Names server are redirected to an Oracle Names server in the region that is authoritative to the requested name.

Disabling forwarding can reduce the load on a particular Oracle Names server, but makes it impossible to direct clients to remote Oracle Names servers.

Use the SET FORWARDINGAVAILABLE command to turn forwarding on or off.
Example

NAMESCTL> SHOW FORWARDING_AVAILABLE
Request forwarding is currently enabled

SHOW LOG_FILE_NAME

Purpose

Use the command SHOW LOG_FILE_NAME to show the name of the file where the Oracle Names server writes logging information.

Prerequisites

None

Password Required If One Has Been Set

No. If a password is set, then the SET PASSWORD command does not need to be issued prior to this command.

Syntax

From the operating system:
	namesctl SHOW LOG_FILE_NAME

From the Oracle Names Control utility:

NAMESCTL> SHOW LOG_FILE_NAME

Arguments

None

Usage Notes

The log file name is initially set with the value of the NAMES.LOG_FILE parameter in the names.ora file. By default, the log file name is names.log.

Example

NAMESCTL> SHOW LOG_FILE_NAME
Log file name is currently
/oracle9i/network/log/names.log
SHOW LOG_STATS_INTERVAL

Purpose
Use the command SHOW LOG_STATS_INTERVAL to display the frequency at which statistics are logged to the log file.

Prerequisites
None

Password Required If One Has Been Set
No. If a password is set, then the SET PASSWORD command does not need to be issued prior to this command.

Syntax
From the operating system:
```
namesctl SHOW [onames_server] [...] LOG_STATS_INTERVAL
```
From the Oracle Names Control utility:
```
NAMESCTL> SHOW [onames_server] [...] LOG_STATS_INTERVAL
```

Arguments
[onames_server]: Specify zero or more Oracle Names servers separated by a space. If no names are supplied, then the setting is displayed for the current server.

Usage Notes
The interval is initially set with the value of the NAMES.LOG_STATS_INTERVAL parameter in the names.ora file. By default, the value is 0, or no logging.

Example
```
NAMESCTL> SHOW LOG_STATS_INTERVAL
Statistic counter logging is currently disabled
```
SHOW NAMESCTL_TRACE_LEVEL

Purpose
Use the command SHOW NAMESCTL_TRACE_LEVEL to display the level at which the Oracle Names Control utility is being traced.

Prerequisites
None

Password Required If One Has Been Set
No. If a password is set, then the SET PASSWORD command does not need to be issued prior to this command.

Syntax
From the operating system:

    namesctl SHOW NAMESCTL_TRACE_LEVEL

From the Oracle Names Control utility:

    NAMESCTL> SHOW NAMESCTL_TRACE_LEVEL

Arguments
None

Usage Notes
Tracing assists in diagnosing unexpected or unidentifiable failures in processing the Oracle Names Control utility. Tracing writes a series of events from normal Oracle Names Control utility processing to an operating system file for review by the administrator.

Tracing output is at four levels
- **off** for no trace output
- **user** for user trace information
- **admin** for administration trace information
- **support** for Oracle Support Services trace information
SHOW REQUESTS_ENABLED

Example

NAMESCTL> SHOW NAMESCTL_TRACE_LEVEL
Controller’s trace level is currently 0

SHOW REQUESTS_ENABLED

Purpose

Use the command SHOW REQUESTS_ENABLED to show whether the Oracle Names server is responding to requests.

Prerequisites

None

Password Required If One Has Been Set

No. If a password is set, then the SET PASSWORD command does not need to be issued prior to this command.

Syntax

From the operating system:

namesctl SHOW REQUESTS_ENABLED [names_server] [...]

From the Oracle Names Control utility:

NAMESCTL> SHOW REQUESTS_ENABLED [names_server] [...] 

Arguments

[names_server]: Specify zero or more Oracle Names servers separated by a space. If no names are supplied, then the setting is displayed for the current server.

Usage Notes

If requests are disabled, all requests to the Oracle Names server will be refused.

Example

NAMESCTL> SHOW REQUESTS_ENABLED
General request processing is currently enabled
SHOW RESETS_STATS_INTERVAL

Purpose

Use the command SHOW RESETS_STATS_INTERVAL to display the interval set for dumping statistics to the log file.

Prerequisites

None

Password Required If One Has Been Set

No. If a password is set, then the SET PASSWORD command does not need to be issued prior to this command.

Syntax

From the operating system:

namesctl SHOW RESET_STATS_INTERVAL

From the Oracle Names Control utility:

NAMESCTL> SHOW RESET_STATS_INTERVAL

Arguments

None

Usage Notes

The interval is initially set with the value of the NAMES.RESET_STATS_INTERVAL parameter in the names.ora file. By default the value is set to 0, or no reset.

For example, if statistics are reset every day, then the statistics will represent totals for the day rather than the entire time the Oracle Names server has been running.

Example

NAMESCTL> SHOW RESET_STATS_INTERVAL
Statistic counter reset interval is currently 5 minutes
SHOW SAVE_CONFIG_INTERVAL

Purpose

Use the command SHOW SAVE_CONFIG_INTERVAL to display the interval of when the SET command is scheduled to save to the names.ora file.

Prerequisites

The command only displays an interval if the SET SAVE_CONFIG_INTERVAL command was set.

Password Required If One Has Been Set

No. If a password is set, then the SET PASSWORD command does not need to be issued prior to this command.

Syntax

From the operating system:

namesctl SHOW SAVE_CONFIG_INTERVAL

From the Oracle Names Control utility:

NAMESCTL> SHOW SAVE_CONFIG_INTERVAL

Arguments

None

Example

NAMESCTL> SHOW SAVE_CONFIG_INTERVAL

Configuration will be saved in 1 minute 35 seconds
SHOW SAVE_CONFIG_ON_STOP

Purpose
Use the command "SHOW SAVE_CONFIG_ON_STOP" to show whether "SET commands" changes are scheduled to be saved to the names.ora file.

Prerequisites
None

Password Required If One Has Been Set
No. If a password is set, then the "SET PASSWORD" command does not need to be issued prior to this command.

Syntax
From the operating system:
namesctl SHOW SAVE_CONFIG_ON_STOP

From the Oracle Names Control utility:
NAMESCTL> SHOW SAVE_CONFIG_ON_STOP

Arguments
None

Example
NAMESCTL> SHOW SAVE_CONFIG_ON_STOP
Save_config_on_stop is currently ON
SHOW SERVER

Purpose

Prerequisites
None

Password Required If One Has Been Set
No. If a password is set, then the `SET PASSWORD` command does not need to be issued prior to this command.

Syntax

From the operating system:

```
namesctl SHOW SERVER
```

From the Oracle Names Control utility:

```
NAMESCTL> SHOW SERVER
```

Arguments
None

Usage Notes

SHOW SERVER displays the current Oracle Names server that commands will operate on.

Example

```
NAMESCTL> SHOW SERVER
currently managing name server "NameServer.us.acme.com"
Version banner is "Oracle Names for SunOS: Version 9.2.0.2.0"
```
SHOW STATUS

Purpose

Use the command SHOW STATUS to display general status information about the Oracle Names server.

Prerequisites

None

Password Required If One Has Been Set

No. If a password is set, then the SET PASSWORD command does not need to be issued prior to this command.

Syntax

From the operating system:

```
namesctl SHOW STATUS [onames_server] [...]
```

From the Oracle Names Control utility:

```
NAMESCTL> SHOW STATUS [onames_server] [...]
```

Arguments

[onames_server]: Specify zero or more Oracle Names servers separated by a space. If no names are supplied, then the setting is displayed for the current server.

Usage Notes

This command is identical to the STATUS command.

Example

```
NAMESCTL> SHOW STATUS
Version Banner is "Oracle Names for SunOS: Version 9.2.0.2.0" Server has been running for: 1 day 2 hours 3 minutes 35.16 seconds....
SHOW SYSTEM_QUERIES

Purpose

Use the command SHOW SYSTEM_QUERIES to display the next occurrence of all system queries.

Prerequisites

This is relevant only for distributed configurations. There are no system queries with only one administrative region.

Password Required If One Has Been Set

No. If a password is set, then the SET PASSWORD command does not need to be issued prior to this command.

Syntax

From the operating system:

```bash
namesctl SHOW SYSTEM_QUERIES
```

From the Oracle Names Control utility:

```bash
NAMESCTL> SHOW SYSTEM_QUERIES
```

Arguments

None

Usage Notes

System queries are performed at intervals to keep information among Oracle Names servers current.

There is no specific action that can change the activities listed as system queries. Being able to show them gives the administrator an understanding of when a system change will occur, and can assist in a decision to RESTART.
Example

NAMESTL> SHOW SYSTEM_QUERIES
System query index number:1
Query ID:49824
Query next issued in:2 hours 55 min 3.84 seconds
Query state:2
Name:""
Desired data type:ns.smd

SHOW TRACE_FILE_NAME

Purpose

Use the command SHOW TRACE_FILE_NAME to display the directory path and file name of the current Oracle Names server trace file.

Prerequisites

None

Password Required If One Has Been Set

No. If a password is set, then the SET PASSWORD command does not need to be issued prior to this command.

Syntax

From the operating system:
namesctl SHOW TRACE_FILE_NAME

From the Oracle Names Control utility:
NAMESTL> SHOW TRACE_FILE_NAME

Arguments

None

Usage Notes

The trace file name is initially set with the value of the NAMES_TRACE_FILE parameter in the names.ora file. The default value is names.trc.
SHOW TRACE_LEVEL

Example

```
NAMESCTL> SHOW TRACE_FILE_NAME
Trace file name is currently
/oracle9i/network/names.trc
```

SHOW TRACE_LEVEL

Purpose

Use the command SHOW TRACE_LEVEL to display the level of tracing for the current Oracle Names server.

Prerequisites

None

Password Required If One Has Been Set

No. If a password is set, then the `SET PASSWORD` command does not need to be issued prior to this command.

Syntax

From the operating system:
```
namesctl SHOW TRACE_LEVEL
```

From the Oracle Names Control utility:
```
NAMESCTL> SHOW TRACE_LEVEL
```

Arguments

None

Usage Notes

Tracing assists in diagnosing unexpected or unidentifiable failures in processing the current Oracle Names server. Tracing writes a series of events from normal Oracle Names server processing to an operating system file for review by the administrator.
Tracing is available at the following levels:

- **off** for no trace output
- **user** for user trace information
- **admin** for administration trace information
- **support** for Oracle Support Services trace information

**Example**

```
NAMESCTL> SHOW TRACE_LEVEL
Trace level is currently 0
```

**SHOW VERSION**

**Purpose**

Use the command `SHOW VERSION` to display the current version and name of the Oracle Names server.

**Prerequisites**

None

**Password Required If One Has Been Set**

No. If a password is set, then the `SET PASSWORD` command does not need to be issued prior to this command.

**Syntax**

From the operating system:

```
namesctl SHOW VERSION [onames_server] [...] VERSION
```

From the Oracle Names Control utility:

```
NAMESCTL> SHOW VERSION [onames_server] [...] VERSION
```

**Arguments**

`[onames_server]`: Specify zero or more Oracle Names servers separated by a space. If no names are supplied, then the setting is displayed for the current server.
SHUTDOWN

Usage Notes
This command identifies the Oracle Names server by name and version, which can be useful when clearing up minor difficulties. This command is enabled every time you connect Oracle Names Control utility to an Oracle Names server.

Example

NAMESCTL> SHOW VERSION
Currently managing Oracle Names server "NameServer.com"
Version banner is "Oracle Names for SunOS: Version 9.2.0.2.0"

SHUTDOWN

Purpose
Use the command SHUTDOWN to stop one or more Oracle Names servers.

Prerequisites
The Oracle Names server(s) must be started.

Password Required If One Has Been Set
Yes. If a password is set, then issue the SET PASSWORD command prior to this command.

Syntax
From the operating system:

namesctl SHUTDOWN [onames_server] [...]

From the Oracle Names Control utility:

NAMESCTL> SHUTDOWN [onames_server] [...]

Arguments

[onames_server]: Specify zero or more Oracle Names servers separated by a space. When no arguments are supplied, only the current Oracle Names server is shut down.
Usage Notes

SHUTDOWN stops the current Oracle Names server and unloads the program from memory. An Oracle Names server should be shut down only for operational reasons like upgrades or computer maintenance. The preferred way to stop and start an Oracle Names server is using the RESTART command because you can perform it from anywhere in the network. If SHUTDOWN and START are processed individually, then they must occur on the Oracle Names server computer.

This command is identical to the STOP command.

Example

NAMESCTL> SHUTDOWN
Confirm [yes or no] yes
Server shut down.

START

Purpose

Use the command START to load the Oracle Names server and start loading system and local administrative region data.

Prerequisites

Oracle Names server must be stopped.

Password Required If One Has Been Set

No. If a password is set, then the SET PASSWORD command does not need to be issued prior to this command.

Syntax

From the operating system:

namesctl START

From the Oracle Names Control utility:

NAMESCTL> START

Arguments

None
Usage Notes

`START` is the command to initially load an Oracle Names server into memory. At startup, the Oracle Names server reads its configuration files to set up its operating parameters, and then loads all data for the administrative region.

Security on Oracle Names server startup is supplied through the operating system that Oracle Names is installed on. Because an Oracle Names server must be started from a local session, network security is not an issue.

This command is identical to the `STARTUP` command.

Example

```
NAMESCTL> START
Starting "/private/dsteiner/sales/bin/names"...server successfully started

Currently managing name server "namesrv1.us.acme.com"
Version banner is "Oracle Names for Solaris: Version 9.2.0.2.0"

Server name: namesrv1.us.acme.com
Server has been running for: 0.16 seconds
Request processing enabled: yes
Request forwarding enabled: yes
Requests received: 0
Requests forwarded: 0
Foreign data items cached: 0
Region data next checked for reload in: not set
Region data reload check failures: 0
Cache next checkpointed in: not set
Cache checkpoint interval: not set
Cache checkpoint file name: /private/dsteiner/sales/network/names/ckpcch.ora
Statistic counters next reset in: not set
Statistic counter reset interval: not set
Statistic counters next logged in: not set
Statistic counter logging interval: not set
Trace level: 0
Trace file name: /private/dsteiner/sales/network/trace/names_10841.trc
Log file name: /private/dsteiner/sales/network/log/names.log
System parameter file name: /private/dsteiner/sales/network/admin/names.ora
Command-line parameter file name: ""
Administrative region name: ""
```
START_CLIENT_CACHE

Purpose

Use the command START_CLIENT_CACHE to start the client cache process. The client cache process finds a list of the local Oracle Names servers in a static list of preferred Oracle Names servers in the sqlnet.ora file or in the discovery list file (.sdns.ora or sdns.ora) the first time it runs. Afterwards, it relies on its cache checkpoint file. Once the client cache has contact with the local region server(s), it begins to cache data on all local servers, various foreign servers, and all the data it has been asked to find.

See Also: Oracle9i Net Services Administrator's Guide for more information about the usage of this command

Prerequisites

The client cache process must be stopped.

An Oracle Names server list must exist before you run the client cache process.

Password Required If One Has Been Set

No. If a password is set, then the SET PASSWORD command does not need to be issued prior to this command.

Syntax

From the operating system:

namesctl START_CLIENT_CACHE

From the Oracle Names Control utility:

NAMESCTL> START_CLIENT_CACHE

Arguments

None
Usage Notes

Once started, the client cache daemon process stores all information received from an Oracle Names server, making lookups faster.

Example

NAMESCTL> START_CLIENT_CACHE
Starting ".../onrsc"... server successfully started

STARTUP

Purpose

Use the command STARTUP to load the Oracle Names server and start loading system and local administrative region data.

Prerequisites

Oracle Names server must be stopped.

Password Required If One Has Been Set

No. If a password is set, then the SET PASSWORD command does not need to be issued prior to this command.

Syntax

From the operating system:

namesctl STARTUP

From the Oracle Names Control utility:

NAMESCTL> STARTUP

Arguments

None

Usage Notes

This command is identical to the START command.

Example

See example for START.
STATUS

Purpose
The command STATUS display statistics for one or more Oracle Names servers.

Prerequisites
Oracle Names server must be started.

Password Required If One Has Been Set
No. If a password is set, then the SET PASSWORD command does not need to be issued prior to this command.

Syntax
From the operating system:

namesctl STATUS [onames_server] [...]

From the Oracle Names Control utility:

NAMECTL> STATUS [onames_server] [...]

Arguments
[onames_server]: Specify zero or more Oracle Names servers separated by a space. When no arguments are supplied, status is given only for the current Oracle Names server.

Usage Notes
STATUS shows the activity of the Oracle Names server over time and its state at a point in time.

Example

NAMECTL> STATUS
Version banner is "Oracle Names for SunOS: 9.2.0.2.0"
Server name:NSERVER.com
Server has been running for:1 day 20 hours .......

Example
STOP

Purpose

Use the command STOP to stop one or more Oracle Names servers.

Prerequisites

Oracle Names server must be started.

Password Required If One Has Been Set

Yes. If a password is set, then issue the SET PASSWORD command prior to this command.

Syntax

From the operating system:

```
namesctl STOP [onames_server] [...]
```

From the Oracle Names Control utility:

```
NAMESCTL> STOP [onames_server] [...]
```

Arguments

```
[onames_server]: Specify zero or more Oracle Names servers separated by a space. When no arguments are supplied, only the current Oracle Names server is stopped.
```

Usage Notes

STOP stops the current Oracle Names server and unloads the program from memory. An Oracle Names server should be shut down only for operational reasons like upgrades or computer maintenance. The preferred way to stop and start an Oracle Names server is using the RESTART command because you can issue it from anywhere in the network. If STOP and START are processed individually, they must occur on the Oracle Names server computer.

This command is identical to the SHUTDOWN command.

Example

```
NAMESCTL> STOP
```
TIMED_QUERY

Purpose
Use the command TIMED_QUERY to show all data in the Oracle Names server cache.

Password Required If One Has Been Set
No. If a password is set, then the SET PASSWORD command does not need to be issued prior to this command.

Syntax
From the operating system:

```bash
namesctl TIMED_QUERY [timestamp]
```

From the Oracle Names Control utility:

```bash
NAMESCTL> TIMED_QUERY [timestamp]
```

Arguments
Time in seconds

Usage Notes
The first time you issue this command, do not use the `[timestamp]` argument. The output returned includes all the objects registered. At the end of returned output is a `Last timestamp` field that provides a time stamp.

After there has been an update of date, issue the command again. This time, pass the time stamp provided from the first output. The command displays the data updated since the last the command was issued.

Example
In the following output, TIMED_QUERY is issued for the first time:

```bash
NAMESCTL> TIMED_QUERY
Total response time: 0.26 seconds
```
Response status: normal, successful completion
Number of answers: 7
Name: [root]
  data type is "ns.smd"
  Syntax is DOMAIN: namesrv1
Name: us.acme.com
  data type is "ns.smd"
  Syntax is DOMAIN: us.acme.com
Name: hr.us.acme.com
  data type is "a.smd"
  Syntax is ADDR:
  ...(address=(protocol=tcp)(host=namesrv1-server)(port=1575))
Name: namesrv2
  data type is "a.smd"
  Syntax is ADDR:
  ...(address=(protocol=tcp)(Port=1575)(host=namesrv3-server))
  data type is "tos.npd.cmd"
  Syntax is CTEXT: "ORACLE_NAMESERVER"
  data type is "host.rm.cmd"
  Syntax is TEXT: "namesrv3-server"
Last timestamp: 1072

Note that the Last timestamp is 1072.
In the following output, TIMED_QUERY is issued before new data is registered.

NAMESCTL> TIMED_QUERY 1072
Total response time: 0.19 seconds
Response status: NNC-00408: name "1072" exists but desired data does not

In the following output, a new object is registered:

NAMESCTL> REGISTER sales -t oracle_database -d (DESCRIPTION=(ADDRESS=(PROTOCOL=TCP)(HOST=sales-server)(PORT=1575)) (CONNECT_DATA=(SERVICE_NAME=sales.us.acme.com)))
Total response time: 0.29 seconds
Response status: normal, successful completion
When TIMED_QUERY is issued again, the newly registered data displays in the output:

```
NAMESCTL> TIMED_QUERY 1072
Total response time:  0.13 seconds
Response status:       normal, successful completion
Number of answers:     1
Name:                  sales
    data type is "a.smd"
    Syntax is ADDR:
    (description=(address=(protocol=tcp)(host=sales-server)(port=1575))(connect_data=(service_name=sales.us.acme.com)
Last timestamp:        6107
```

**UNREGISTER**

**Purpose**

Use the command UNREGISTER to remove a network object from an Oracle Names server.

**Prerequisites**

None

**Password Required If One Has Been Set**

No. If a password is set, then the SET PASSWORD command does not need to be issued prior to this command.

**Syntax**

From the operating system

```
namesctl UNREGISTER {object_name} [-t service_type]
[-d{(DESCRIPTION=} (ADDRESS=...{(CONNECT_DATA=(SERVICE_NAME|SID=service_name|SID))})]
[-h host] [-l listener_name]
```

From the Oracle Names Control utility:

```
NAMESCTL> UNREGISTER {object_name} [-t service_type]
[-d{(DESCRIPTION=} (ADDRESS=...{(CONNECT_DATA=(SERVICE_NAME|SID=service_name|SID))})]
[-h host] [-l listener_name]
```
UNREGISTER

Arguments

{object_name}: Specify the object name.

[-t service_type]: Specify the service type of the object:

- ORACLE_DATABASE for an Oracle database
- ORACLE_LISTENER for a listener
- ORACLE_NAMESERVER for an Oracle Names server

Note: To remove an Oracle Names server, use the UNREGISTER_NS command rather than the UNREGISTER command.

[-d]: Specify the protocol address of the listener or Oracle Names server object, or complete connect descriptor of the database object, net service name, alias, or global database link

See Also: Chapter 5, "Protocol Address Configuration" for further information about protocol addresses and parameters

[-h host]: Specify the host name the object resides on.

[-l listener_name]: Specify the name of the listener object.

The service type, address description, host, and listener name options are not necessary to make the registration process appear to work. However, they are necessary to make the registration useful. In other words, an object name registered without an address cannot be used.

Note: The protocol address cannot contain any spaces.

Usage Notes

This command provides a manual mechanism for unregistering a service. The definition for that object is removed from the Oracle Names servers in the region. If the object was registered with an address, listener name, or a host name, then the address, listener name, or host name must be provided on the command line in order to unregister the object.
Example

NAMESCTL> UNREGISTER sales -t oracle_database -d
(description=(address= (protocol=tcp) (host=sales-server) (port=1575)) (connect_data=(service_name=db3)))

UNREGISTER NS

Purpose

Use the UNREGISTER NS command to undefine an Oracle Names server and its authoritative domain.

Prerequisites

None

Password required if one has been set

No. If a password is set, then the SET PASSWORD command does not need to be issued prior to this command.

Syntax

From the operating system:

namesctl UNREGISTER_NS {onames_server}{domain}

From Oracle Names Control utility:

NAMESCTL> UNREGISTER_NS {onames_server}{domain}

Arguments

{onames_server}: Specify the Oracle Names server name. If the sqlnet.ora file parameter NAMES_DEFAULT_DOMAIN to set to the same domain name as the Oracle Names server domain, then the Oracle Name server does not need to be qualified with its domain.

{domain}: Specify the domain name.
Usage Notes

This command provides a mechanism for unregistering an Oracle Names server as an authoritative server for a given domain. This command removes the NS.SMD record for the Oracle Names from the domain, and deletes the Oracle Names server and its A.SMD address record.

This command will fail if either the domain exists and has non-NS records or the server exists and has a type of service record that is other than 'ORACLE_NAMESERVER'.

Ordinarily, Oracle Names servers maintain their own data by registering themselves when they start. This command is provided as a manual way to manage domain and Oracle Names server data if for some reason the Oracle Names server cannot. This can occur if the region database tables are set up as read-only for security reasons.

If the Oracle Names servers are not registering themselves, then this command should be used to define the region topology data. Each Oracle Names server in the region should be defined using this command for each top-level domain in the region. Usually, the top level consists of a single parent domain, for example, acme.com. However, a region may also have multiple sibling parent domains, for example, a region covering North America would have US, CA and MX as its top-level parent domains.

Note the regions which were defined using the Oracle Network Manager in SQL*Net version 2 have ns.smd records defined for every domain in the administrative region, but in Oracle Net only the top-level parent domains need to have NS.SMD records defined for each server in the region.

Example

```
NAMESCTL> UNREGISTER_NS namesrv1.us.acme.com us.acme.com
Total response time: 7 minutes 59.14 seconds
Response status: normal, successful completion
```
VERSION

Purpose
Use the command VERSION to display the current version and name of the Oracle Names server.

Prerequisites
None

Password Required If One Has Been Set
No. If a password is set, then the SET PASSWORD command does not need to be issued prior to this command.

Syntax
From the operating system:
```
namesctl VERSION [onames_server] [...]
```

From the Oracle Names Control utility:
```
NAMESCTL> VERSION [onames_server] [...]
```

Arguments

[onames_server]: Specify zero or more Oracle Names servers separated by a space. If no names are supplied, then the setting is displayed for the current server.

Usage Notes
The output identifies the Oracle Names server by name and version, which can be useful when clearing up minor difficulties.

Example
```
NAMESCTL> VERSION
Currently managing Oracle Names server "NameServer.com"
Version banner is "Oracle Names for SunOS: Version 9.2.0.2.0"
```
Part II describes how to configure listening protocol addresses and Oracle Net Services configuration parameters.

This part contains the following chapters:

- Chapter 4, "Syntax Rules for Configuration Files"
- Chapter 5, "Protocol Address Configuration"
- Chapter 6, "Profile Parameters (sqlnet.ora)"
- Chapter 7, "Local Naming Parameters (tnsnames.ora)"
- Chapter 8, "Listener Parameters (listener.ora)"
- Chapter 9, "Oracle Connection Manager Parameters (cman.ora)"
- Chapter 10, "Oracle Names Parameters (names.ora)"
- Chapter 11, "Directory Usage Parameters (ldap.ora)"
This chapter describes the syntax rules for Oracle Net Services configuration files.

This chapter contains these topics:

- Configuration File Syntax Overview
- Further Syntax Rules for Configuration Files
- Network Character Set
- Character Set
Configuration File Syntax Overview

The Oracle Net Services configuration files consist of parameters which include keyword-value pairs. Keyword-value pairs are surrounded by parentheses:

\[ \text{parameter} = (\text{keyword} = \text{value}) \]

Some keywords have other keyword-value pairs as their values:

\[ (\text{keyword} = \]

\[ (\text{keyword} = \text{value}) \]

\[ (\text{keyword} = \text{value}) ) \]

For example, the address portion of a local naming configuration file (\textit{tnsnames.ora}) might include the following lines:

\[ \text{ADDRESS} = (\text{PROTOCOL} = \text{tcp}) \]

\[ (\text{HOST} = \text{sales-server}) \]

\[ (\text{PORT} = 1521) ) \]

Set up configuration files so that indentation reflects what keyword is the parent or owner of other keyword-value pairs.

Even if you do not choose to indent your files in this way, you must indent a wrapped line by at least one space, or it will be misread as a new parameter. The following layout is acceptable:

\[ \text{ADDRESS} = ( \text{PROTOCOL} = \text{tcp}) \]

\[ (\text{HOST} = \text{sales-server}) (\text{PORT} = 1521) ) \]

The following layout is not acceptable:

\[ \text{ADDRESS} = ( \text{PROTOCOL} = \text{tcp}) \]

\[ (\text{HOST} = \text{sales-server}) (\text{PORT} = 1521) ) \]
Further Syntax Rules for Configuration Files

The following rules apply to the syntax of configuration files:

- Any keyword in a configuration file that begins a parameter that includes one or more keyword-value pairs must be in the far left column of a line. If it is indented by one or more spaces, it is interpreted as a continuation of the previous line.

- All characters must belong to the network character set

  See Also: "Network Character Set" on page 4-4

- Keywords are not case sensitive. Values may be case sensitive, depending on the operating system and protocol.

- Spaces around the "=" sign are optional in keyword-value pairs.

- There is a hierarchy of keywords in that some keywords are always followed by others. At any level of the hierarchy, keywords can be listed in any order. For example, the following entries are equally valid:

  (ADDRESS=
   (PROTOCOL=TCP)
   (HOST=sales-server)
   (PORT=1521))
  (ADDRESS=
   (PROTOCOL=tcp)
   (PORT=1521)
   (HOST=sales-server))

- Keywords cannot contain spaces. Values must not contain spaces unless enclosed within double quotes ("'") or single quotes ("'").

- The maximum length of a connect descriptor is 4 KB

- Comments can be included using the pound sign # at the beginning of a line. Anything following the sign to the end of the line is considered a comment.

- If the keyword-value pair consists of a single word or a concatenation of words on either side of the equal sign, no parentheses are needed.
Network Character Set

The network character set for keyword values consists of the following characters. Connect descriptors must be made up of single-byte characters.

A-Z, a-z
0-9
( ) < > / \,
, :, ; ' "=- _
$ + * & ! % ? @

Within this character set, the following symbols are reserved:

( ) =\ " ' 

Reserved symbols are used as delimiters, not as part of a keyword or a value unless the keyword or value is quoted. Either single or double quotes can be used to enclose a value containing reserved symbols. To include a quote within a value that is surrounded by quotes, use different quote types. The backslash (\) is used as an escape character.

The following characters may be used within a connect descriptor, but not in a keyword or value:

<Space> <Tab> <Carriage Return> <Newline>

Character Set

The listener name, net service name, and Oracle Names server are limited to the following character set:

[a-z] [A-Z] [0-9] _

The first character must be an alphabetical character. In general, up to 64 characters is acceptable. A database service name must match the global database name defined by the database administrator, which consists of a database name (originally limited to eight characters), and the database domain. Net service names and global database names are not case sensitive.
A network object is identified by a **protocol address**. When a connection is made, the client and the receiver of the request (**listener**, **Oracle Connection Manager**, or **Oracle Names server**) are configured with identical protocol addresses.

The client uses this address to send the connection request to a particular network object location, and the recipient "listens" for requests on this address, and grants a connection based on its address information matching the client information.

This chapter contains these topics:

- ADDRESSes and ADDRESS_LISTs
- Protocol Parameters
- Recommended Port Numbers
- Port Number Limitations
ADDRESSes and ADDRESS_LISTs

Protocol address are comprised of ADDRESS and ADDRESS_LIST elements.

ADDRESS

Purpose

The ADDRESS parameter defines a protocol address.

Embed this parameter under an ADDRESS_LIST or DESCRIPTION parameter. A DESCRIPTION is used in a tnsnames.ora or a listener.ora file.

See Also: "Protocol Parameters" on page 5-3 for each protocol’s required parameters

Example

```
(ADDRESS=
  (PROTOCOL=tcp)
  (HOST=sales-server)
  (PORT=1521))
```

ADDRESS_LIST

Purpose

The ADDRESS_LIST parameter defines a list of protocol addresses that share common characteristics.

Example

```
(ADDRESS_LIST=
  (LOAD_BALANCE=on)
  (ADDRESS=
    (PROTOCOL=tcp)
    (HOST=sales-server)
    (PORT=1521))
  (ADDRESS=
    (PROTOCOL=tcp)
    (HOST=hr-server)
    (PORT=1521))
  (ADDRESS_LIST=
    (ADDRESS=
      (PROTOCOL=tcp)
      (HOST=finance-server)
      (PORT=1521))))
```

See Also:

- "Protocol Parameters" on page 5-3 for each protocol’s required parameters

5-2 Oracle9i Net Services Reference Guide
## Protocol Parameters

The listener, Oracle Names server and Oracle Connection Manager are identified by protocol addresses. Table 5–1 describes the parameters used by the Oracle protocol support.

### Table 5–1  Protocol-Specific Parameters

<table>
<thead>
<tr>
<th>Protocol</th>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>IPC</td>
<td>PROTOCOL</td>
<td>Specify <code>ipc</code> as the value.</td>
</tr>
</tbody>
</table>
|           | KEY       | Specify a unique name for the service. Oracle Corporation recommends using the service name or the Oracle System Identifier (SID) of the service.  
**Example:**  
`(PROTOCOL=ipc) (KEY=sales)` |
| Named Pipes | PROTOCOL | Specify `nmp` as the value. |
|           | SERVER    | Specify the name of the Oracle server computer. |
|           | PIPE      | Specify the pipe name you used to connect to the database server (the same PIPE keyword you specified on server with Named Pipes). This name can be any arbitrary name.  
**Example:**  
`(PROTOCOL=nmp) (SERVER=sales) (PIPE=dbpipe0)` |
| TCP/IP    | PROTOCOL  | Specify `tcp` as the value. |
|           | HOST      | Specify the host name or IP address of the computer. |
|           | PORT      | Specify the listening port number.  
**Example:**  
`(PROTOCOL=tcp) (HOST=sales-server) (PORT=1521)  
(PROTOCOL=tcp) (HOST=44.25.186.204) (PORT=1521)` |

**See Also:** "Recommended Port Numbers" on page 5-4
Recommended Port Numbers

Table 5–2  Recommended Port Numbers

<table>
<thead>
<tr>
<th>Port</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1521</td>
<td>Default listening port for client connections to the listener. In future releases, this port number may change to the officially registered port number of 2483 for TCP/IP and 2484 for TCP/IP with SSL.</td>
</tr>
<tr>
<td>1575</td>
<td>Default and officially registered listening port for client connections to an Oracle Names server using TCP/IP or TCP/IP with SSL</td>
</tr>
<tr>
<td>1630</td>
<td>Default and officially registered listening port for client connections to Oracle Connection Manager</td>
</tr>
<tr>
<td>1830</td>
<td>Default and officially registered listening port for administrative commands to Oracle Connection Manager</td>
</tr>
</tbody>
</table>
Port Number Limitations

Oracle Corporation allows port numbers from 1 to 65535. Port numbers less than 1024 are reserved for use by privileged processes on many operating systems.

On certain operating systems, only privileged processes can listen for TCP connections on ports less than 1024. If you need to configure listener to listen on a port number less than 1024, follow these general steps. Your operating system may require different procedures.

1. Use Oracle Net Configuration Assistant or Oracle Net Manager to configure the listener with protocol addresses and other configuration parameters.

   See Also: Oracle9i Net Services Administrator’s Guide

2. Log in as super user (root) and set file ownership and access permissions for the listener executable (tnslsnr) and the dependent shared libraries so that these files can be modified only by the super user.

   Ensure that the permissions of the individual directories found in the path names to these files, starting with the root directory, are also modified in the same way.

3. Start the listener as root.

   At the operating system prompt, enter tnslsnr with optional command line arguments. The usage is as follows:

   tnslsnr [listener_name] [-user user] [-group group]

   where:

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>listener_name</td>
<td>Specify the name of the listener. If omitted, the default name LISTENER will be used.</td>
</tr>
<tr>
<td>-user user</td>
<td>Specify the user whose privileges the listener will use when super user (root) privileges are not needed. After performing the privileged operations, the listener will give up root privileges irreversibly.</td>
</tr>
<tr>
<td>-group group</td>
<td>Specify the group whose privileges the listener will use when super user (root) group privileges are not needed. After performing the privileged operations, the listener will give up root group privileges irreversibly.</td>
</tr>
</tbody>
</table>
The listener will temporarily switch to the provided user and group immediately after startup. All subsequent operations will be done with the specified user and group privileges, except the system calls necessary to listen on configured endpoints. The listener will revert to super user (root) for a short period of time to listen on reserved addresses, such as TCP ports less than 1024. After the listener starts listening on all of its endpoints configured in listener.ora, it will switch to the specified user and group irreversibly. Therefore, the listener will give up the root privilege that it initially had. In the current release, -user and -group command line arguments only accept user and group identifiers specified in numeric form.

For example, to execute a root listener called mylsnr and have it use privileges of a user identified as 37555 with a group identifier of 16, enter the following at the operating system command prompt. Note that 37555 could be the identifier for user oracle and 16 could be the identifier for the dba group.

```
tnslsnr mylsnr -user 37555 -group 16
```

4. After the listener has been started, you can administer it with the Listener Control utility.

**Important Notes:**

- Oracle Corporation recommends that the user under which the listener process runs be oracle, as described in the example in Step 3, or whichever user the listener process normally runs as on the operating system.

- Do not leave the listener process running as root because doing so is a security vulnerability.
This chapter provides a complete listing of the sqlnet.ora file configuration parameters.

This chapter contains these topics:

- Overview of Profile Configuration File
- Profile Parameters
Overview of Profile Configuration File

The sqlnet.ora file enables you to:

■ Specify the client domain to append to unqualified names
■ Prioritize naming methods
■ Enable logging and tracing features
■ Route connections through specific processes
■ Configure parameters for external naming
■ Configure Oracle Advanced Security
■ Use protocol-specific parameters to restrict access to the database

By default, sqlnet.ora is located in the $ORACLE_HOME/network/admin directory on UNIX operating systems and the ORACLE_HOME\network\admin directory on Windows operating systems. sqlnet.ora can also be stored in the directory specified by the TNS_ADMIN environment variable.
Profile Parameters

This section lists and describes the sqlnet.ora file parameters.

BEQUEATH_DETACH

Purpose

Use the parameter BEQUEATH_DETACH to turn signal handling on or off for UNIX systems.

Default

no

Values

- yes to turn signal handling off
- no to leave signal handling on

Example

BEQUEATH_DETACH=yes
DISABLE_OOB

Purpose
If turned off, the parameter DISABLE_OOB enables Oracle Net to send and receive "break" messages using urgent data provided by the underlying protocol. If turned on, disables the ability to send and receive "break" messages using urgent data provided by the underlying protocol. Once enabled, this feature applies to all protocols used by this client.

See Also: Operating system-specific documentation to determine if the protocols you are using support urgent data requests. TCP/IP is an example of a protocol that supports this feature.

Default
off

Example
DISABLE_OOB=on

LOG_DIRECTORY_CLIENT

Purpose
Use the parameter LOG_DIRECTORY_CLIENT to specify the destination directory for the client log file.

Default
Current directory from which the executable is started

Example
LOG_DIRECTORY_CLIENT=/oracle/network/log
**LOG_DIRECTORY_SERVER**

**Purpose**

Use the parameter LOG_DIRECTORY_SERVER to specify the destination directory for the database server log file.

**Default**

Current directory from which the executable is started

**Example**

```
LOG_DIRECTORY_SERVER=/oracle/network/log
```

**LOG_FILE_CLIENT**

**Purpose**

Use the parameter LOG_FILE_CLIENT to specify the name of the log file for the client.

**Default**

sqlnet.log

**Example**

```
LOG_FILE_CLIENT=client
```

**LOG_FILE_SERVER**

**Purpose**

Use the parameter LOG_FILE_SERVER to specify the name of the log file for the database server.

**Default**

sqlnet.log
NAMES.CONNECT_TIMEOUT

Example

LOG_FILE_SERVER=svr.log

NAMES.CONNECT_TIMEOUT

Purpose
Use the parameter NAMES.CONNECT_TIMEOUT to specify the amount of time, in seconds, for the client to wait for a connection to an Oracle Names server to complete.

Default
3

Minimum Value
1

Maximum Value
600

Example
NAMES.CONNECT_TIMEOUT=8

NAMES.DCE.PREFIX

Purpose
Use the parameter NAMES.DCE.PREFIX to specify the Distributed Computing Environment (DCE) cell name (prefix) to use for name lookups.

Default
./subsys/oracle/names

Example
NAMES.DCE.PREFIX=./subsys/oracle/names
**NAMES.DEFAULT_DOMAIN**

**Purpose**

Use the parameter NAMES.DEFAULT_DOMAIN to set the domain from which the client most often looks up names resolution requests. When this parameter is set, the default domain name is automatically appended to any unqualified net service name or service name.

For example, if the default domain is set to us.acme.com, the connect string CONNECT scott/tiger@sales gets searched as sales.us.acme.com. If the connect string includes the domain extension, such as CONNECT scott/tiger@sales.acme.com, the domain is not appended.

**Default**

None

**Example**

NAMES.DEFAULT_DOMAIN=acme.com

**NAMES.DIRECTORY_PATH**

**Purpose**

Use the parameter NAMES.DIRECTORY_PATH to specify the order of the naming methods used for client name resolution lookups.

**Default**

NAMES.DIRECTORY_PATH=(tnsnames, onames, hostname)
### Values

<table>
<thead>
<tr>
<th>Naming Method Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>tnsnames</td>
<td>Set to resolve a <strong>net service name</strong> through the tnsnames.ora file on the client.</td>
</tr>
<tr>
<td><strong>local naming</strong> naming method</td>
<td>See Also: <em>Oracle9i Net Services Administrator’s Guide</em></td>
</tr>
<tr>
<td>ldap</td>
<td>Set to resolve a database service name, net service name, or <strong>net service alias</strong> through a <strong>directory server</strong>.</td>
</tr>
<tr>
<td><strong>directory naming</strong> naming method</td>
<td>See Also: <em>Oracle9i Net Services Administrator’s Guide</em></td>
</tr>
<tr>
<td>onames</td>
<td>Set to resolve database objects through a Oracle Names server.</td>
</tr>
<tr>
<td><strong>Oracle Names</strong> method</td>
<td>See Also: <em>Oracle9i Net Services Administrator’s Guide</em></td>
</tr>
<tr>
<td>hostname</td>
<td>Set to resolve a host name alias through an existing names resolution service or a centrally-maintained set of /etc/hosts files.</td>
</tr>
<tr>
<td><strong>host naming</strong> method</td>
<td>See Also: <em>Oracle9i Net Services Administrator’s Guide</em></td>
</tr>
<tr>
<td>cds</td>
<td>Set to resolve an Oracle database name in a Distributed Computing Environment (DCE) environment.</td>
</tr>
<tr>
<td><strong>Cell Directory Services (CDS)</strong> external naming method</td>
<td>See Also: <em>Oracle Advanced Security Administrator’s Guide</em></td>
</tr>
<tr>
<td>nis</td>
<td>Set to resolve service information through an existing NIS.</td>
</tr>
<tr>
<td><strong>Network Information Service (NIS)</strong> external naming method</td>
<td>See Also: <em>Oracle9i Net Services Administrator’s Guide</em></td>
</tr>
</tbody>
</table>

### Example

```
NAMES DIRECTORY PATH=(tnsnames, onames)
```
NAMES.INITIAL_RETRY_TIMEOUT

Purpose
Use the parameter NAMES.INITIAL_RETRY_TIMEOUT to determine how long a client waits for a response from an Oracle Names server before reiterating the request to the next Oracle Names server in the preferred servers list.

Default: 15

Minimum Value 1

Maximum Value 600

Example
NAMES.INITIAL_RETRY_TIMEOUT=20

NAMES.MAX_OPEN_CONNECTIONS

Purpose
Use the parameter NAMES.MAX_OPEN_CONNECTIONS to determine how many connections an Oracle Names client can have open at one time.

Default 10

Minimum Value 3

Maximum Value 64
**NAMES.MESSAGE_POOL_START_SIZE**

**Purpose**
Use the parameter `NAMES.MESSAGE_POOL_START_SIZE` to determine the initial number of messages allocated in the client message pool for message requests.

**Default**
10

**Minimum Value**
3

**Maximum Value**
256

**Example**

```
NAMES.MAX_OPEN_CONNECTIONS=3
NAMES.MESSAGE_POOL_START_SIZE=10
```

**NAMES.NIS.META_MAP**

**Purpose**
Use the parameter `NAMES.NIS.META_MAP` to specify the map file to be used to map Network Information Service (NIS) attributes to an NIS mapname.

**Default**
sqlnet.maps

**Example**

```
NAMES.NIS.META_MAP=sqlnet.maps
```
NAMES.PREFERRED_SERVERS

Purpose
Use the parameter NAMES.PREFERRED_SERVERS to indicate the name, protocol addresses, and order of Oracle Names servers that are used for client name requests.

Default
None

Example
NAMES.PREFERRED_SERVERS=
(ADDRESS_LIST=
 (ADDRESS=(PROTOCOL=icp) (KEY=n23))
 (ADDRESS=(PROTOCOL=tcp) (HOST=nineva) (PORT=1575))
 (ADDRESS=(PROTOCOL=tcp) (HOST=cicada) (PORT=1575)))

NAMES.REQUEST_RETRIES

Purpose
Use the parameter NAMES.REQUEST_RETRIES to specify the number of times the client should try each Oracle Names server in the list of preferred Oracle Names servers before allowing the operation to fail.

Default
1

Minimum Value
1

Maximum Value
5

Example
NAMES.REQUEST_RETRIES=5
NAMESCTL.ECHO

Purpose
If the parameter NAMESCTL.ECHO is set to true, then the Oracle Names Control utility echoes commands with prompts in the output. You can use this information to better interpret the output. You can use this information to better interpret the output, especially when the Oracle Names Control utility is run with a command script. The commands from the script appear before their output.

Default
false

Values
true | false

Example
NAMESCTL.ECHO=true

When the QUERY . ns.smd command is entered in the Oracle Names Control utility, the output that follows displays. Notice that QUERY . ns.smd command is echoed on the second line.

NAMESCTL> QUERY . ns.smd
NAMESCTL> QUERY . ns.smd
Total response time: 0.11 seconds
Response status: normal, successful completion
Authoritative answer: yes
Number of answers: 3
TTL: 1 day
Answers:
  data type is "ns.smd"
    Syntax is DOMAIN: sales
  data type is "ns.smd"
    Syntax is DOMAIN: dev
  data type is "ns.smd"
    Syntax is DOMAIN: rootserv1.acme.com
**NAMESCTL.INTERNAL_ENCRYPT_PASSWORD**

**Purpose**

If the parameter NAMESCTL.INTERNAL_ENCRYPT_PASSWORD is set to `true`, then the Oracle Names Control utility encrypts the password when it is sent to the Oracle Names server.

If set to `false`, the Oracle Names Control utility does not encrypt the password. A `false` setting enables unencrypted passwords to be set in the names.ora file with the `NAMES.PASSWORD` parameter.

**Default**

`true`

**Values**

`true | false`

**Example**

`NAMESCTL.INTERNAL_ENCRYPT_PASSWORD=true`

**NAMESCTL.INTERNAL_USE**

**Purpose**

If the parameter NAMESCTL.INTERNAL_USE is set to `true`, then the Oracle Names Control utility enables a set of internal undocumented commands. All internal commands are preceded by an underscore to distinguish them as internal.

**Default**

`false`

**Values**

`true | false`

**Example**

`NAMESCTL.INTERNAL_USE=true`
NAMESCTL.NO_INITIAL_SERVER

**Purpose**

If the parameter NAMESCTL.NO_INITIAL_SERVER is set to true, then the Oracle Names Control utility suppresses any error messages when the client is unable to connect to a default Oracle Names server.

**Default**

false

**Values**

ture | false

**Example**

NAMESCTL.NO_INITIAL_SERVER=true

NAMESCTL.NOCONFIRM

**Purpose**

Use the parameter NAMESCTL.NOCONFIRM to indicate whether sensitive commands, such as STOP, RELOAD, and RESTART, should be prompted with a confirmation when running the Oracle Names Control utility.

**Default**

off

**Values**

on | off

**Example**

NAMESCTL.NOCONFIRM=on
**NAMESCTL.SERVER_PASSWORD**

**Purpose**

Use the parameter NAMESCTL.SERVER_PASSWORD to indicate the value that matches the configured password set in the names.ora file with the NAMES.PASSWORD parameter. This eliminates the need to enter the password with the SET PASSWORD command each time you use the Oracle Names Control utility to use secure commands, such as STOP, RESTART, and RELOAD.

**Example**

`NAMESCTL.SERVER_PASSWORD=secret`

---

**NAMESCTL.TRACE_DIRECTORY**

**Purpose**

Use the parameter NAMESCTL.TRACE_DIRECTORY to specify the directory where trace output from the Oracle Names Control utility is placed.

**Default**

The $ORACLE_HOME/network/trace directory on UNIX operating systems and the ORACLE_HOME\network\trace directory on Windows NT

**Example**

`NAMESCTL.TRACE_DIRECTORY=/oracle/trace`

---

**NAMESCTL.TRACE_FILE**

**Purpose**

Use the parameter NAMESCTL.TRACE_FILE to specify the file in which the Oracle Names Control utility trace output is placed.

**Default**

`namesctl.trc`
Example

```
NAMESCTL.TRACE_FILE=nmsctl
```

**NAMESCTL.TRACE_LEVEL**

**Purpose**

Use the parameter `NAMESCTL.TRACE_LEVEL` to turn Oracle Names Control utility tracing on, at a specific level, or off.

**Default**

off

**Values**

- off for no trace output
- user for user trace information
- admin for administration trace information
- support for Oracle Support Services trace information

**Example**

```
NAMESCTL.TRACE_LEVEL=admin
```
**Namesctl.trace_timestamp**

**Purpose**

When parameter `namesctl.trace_level` is set to a specific tracing level, you can use the parameter `namesctl.trace_timestamp` to add a time stamp in the form of `dd-mon-yyyy hh:mm:ss:mil` to every trace event in the trace file for the Oracle Names Control utility.

**Default**

`true`

**Values**

`yes or true | no or false`

**Example**

```
namesctl.trace_timestamp=false
```

**Namesctl.trace_unique**

**Purpose**

Use the parameter `namesctl.trace_unique` to specify whether or not a unique trace file is created for each Oracle Names Control utility trace session. When the value is set to `on`, a process identifier is appended to the name of each trace file, enabling several files named `namesctlpid.trc` to coexist. When the value is set to `off`, data from a new trace session overwrites the existing file.

Use the parameter `namesctl.trace_unique` to specify whether or not a unique trace file is created for each Oracle Names Control utility trace session. When the value is set to `on`, a process identifier is appended to the name of each trace file, enabling several files to coexist. For example, trace files named `namesctlpid.trc` are created if default trace file name `namesctl.trc` is used. When the value is set to `off`, data from a new trace session overwrites the existing file.

**Default**

`on`
SQLNET.AUTHENTICATION_KERBEROS5_SERVICE

Values

on | off

Example

NAMESCTL_TRACE_UNIQUE=on

SQLNET.AUTHENTICATION_KERBEROS5_SERVICE

Purpose

Use the parameter SQLNET.AUTHENTICATION_KERBEROS5_SERVICE to define the name of the service used to obtain a Kerberos service ticket.

See Also: Oracle Advanced Security Administrator's Guide

Default

None

Example

SQLNET.AUTHENTICATION_KERBEROS5SERVICE=oracle

SQLNET.AUTHENTICATION_GSSAPI_SERVICE

Purpose

Use the parameter SQLNET.AUTHENTICATION_GSSAPI_SERVICE to define the CyberSAFE service principal.

See Also: Oracle Advanced Security Administrator's Guide
SQLNET.AUTHENTICATION_SERVICES

Purpose

Use the parameter SQLNET.AUTHENTICATION_SERVICES to enable one or more authentication services. If authentication has been installed, it is recommended that this parameter be set to either none or to one of the authentication methods.

Default

None

Values

Authentication Methods Available with Oracle Net Services:
- none for no authentication methods. A valid username and password can be used to access the database.
- all for all authentication methods
- nts for Windows NT native authentication

Authentication Methods Available with Oracle Advanced Security:
- kerberos5 for Kerberos authentication
- cybersafe for Cybersafe authentication
- radius for RADIUS authentication
- dcegssapi for DCE GSSAPI authentication

See Also: Oracle Advanced Security Administrator’s Guide

Example

SQLNET.AUTHENTICATION_SERVICES=(kerberos5, cybersafe)
SQLNET.CLIENT_REGISTRATION

Purpose
Use the parameter SQLNET.CLIENT_REGISTRATION to set a unique identifier for this client computer. This identifier is passed to the listener with any connection request and is included in the Audit Trail. The identifier can be any alphanumeric string up to 128 characters long.

Default
None

Example
SQLNET.CLIENT_REGISTRATION=1432

SQLNET.CRYPTO_CHECKSUM_CLIENT

Purpose
Use the parameter SQLNET.CRYPTO_CHECKSUM_CLIENT to specify the checksum behavior for the client.

Values
- accepted to enable the security service if required or requested by the other side
- rejected to disable the security service, even if the required by the other side
- requested to enable the security service if the other side allows it
- required to enable the security service and disallow the connection if the other side is not enabled for the security service

See Also: Oracle Advanced Security Administrator’s Guide
Example

SQLNET.CRYPTO_CHECKSUM_CLIENT=accepted

SQLNET.CRYPTO_CHECKSUM_SERVER

Purpose

Use the parameter SQLNET.CRYPTO_CHECKSUM_SERVER to specify the checksum behavior for the database server.

See Also: Oracle Advanced Security Administrator’s Guide

Default

rejected

Values

- accepted to enable the security service if required or requested by the other side
- rejected to disable the security service, even if the required by the other side
- requested to enable the security service if the other side allows it
- required to enable the security service and disallow the connection if the other side is not enabled for the security service

Example

SQLNET.CRYPTO_CHECKSUM_SERVER=accepted
SQLNET.CRYPTO_CHECKSUM_TYPE_CLIENT

**Purpose**

Use the parameter `SQLNET.CRYPTO_CHECKSUM_TYPE_CLIENT` to specify a list of crypto-checksum algorithms for the client to use.

*See Also:* Oracle Advanced Security Administrator’s Guide

**Default**

`md5`

**Values**

- `md5` for the RSA Data Security’s MD5 algorithm
- `sha1` for the Secure Hash algorithm

**Example**

```
SQLNET.CRYPTO_CHECKSUM_TYPE_CLIENT=(MD5)
```

SQLNET.CRYPTO_CHECKSUM_TYPE_SERVER

**Purpose**

Use the parameter `SQLNET.CRYPTO_CHECKSUM_TYPE_SERVER` to specify a list of crypto-checksum algorithms for the database server to use.

*See Also:* Oracle Advanced Security Administrator’s Guide

**Default**

`md5`

**Values**

- `md5` for the RSA Data Security’s MD5 algorithm
- `sha1` for the Secure Hash algorithm
Profile Parameters

Example

SQLNET_CRYPTO_CHECKSUM_TYPE_SERVER=(md5)

**SQLNET.CRYPTO_SEED**

**Purpose**

Use the parameter `SQLNET.CRYPTO_SEED` to specify the characters used when generating cryptographic keys. The more random the characters are, the stronger the keys are. The string should be 10-70 random characters. This is required for when encryption or checksumming are turned on. Encryption is turned on if the `SQLNET.ENCRYPTION_CLIENT` parameter is specified for the client and the `SQLNET.ENCRYPTION_SERVER` parameter is specified for the database server; checksumming is turned on if the `SQLNET.CRYPTO_CHECKSUM_CLIENT` parameter is specified for the client and the `SQLNET.CRYPTO_CHECKSUM_SERVER` parameter is specified for the database server.

**See Also:** *Oracle Advanced Security Administrator’s Guide*

**Default**

qwertyuiopasdfghjkl;zxcvbnm,.s1

**Example**

SQLNET.CRYPTO_SEED="qwertyuiopasdfghjkl;zxcvbnm,.s1"

**SQLNET.ENCRYPTION_CLIENT**

**Purpose**

Use the parameter `SQLNET.ENCRYPTION_CLIENT` to turn encryption on for the client.

**See Also:** *Oracle Advanced Security Administrator’s Guide*

**Default**

rejected
SQLNET.ENCRYPTION_SERVER

Values

- **accepted** to enable the security service if required or requested by the other side
- **rejected** to disable the security service, even if the required by the other side
- **requested** to enable the security service if the other side allows it
- **required** to enable the security service and disallow the connection if the other side is not enabled for the security service

Example

```
SQLNET.ENCRYPTION_CLIENT=accepted
```

SQLNET.ENCRYPTION_SERVER

Purpose

Use the parameter `SQLNET.ENCRYPTION_SERVER` to turn encryption on for the database server.

**See Also:** *Oracle Advanced Security Administrator’s Guide*

Default

```
rejected
```

Values

- **accepted** to enable the security service if required or requested by the other side
- **rejected** to disable the security service, even if the required by the other side
- **requested** to enable the security service if the other side allows it
- **required** to enable the security service and disallow the connection if the other side is not enabled for the security service

Example

```
SQLNET.ENCRYPTION_SERVER=accepted
```

6-24  Oracle9i Net Services Reference Guide
**SQLNET.ENCRYPTION_TYPES_CLIENT**

**Purpose**

Use the parameter `SQLNET.ENCRYPTION_TYPES_CLIENT` to specify a list of encryption algorithms for the client to use.

*See Also:* Oracle Advanced Security Administrator’s Guide

**Default**

All algorithms are used if none are specified.

**Values**

One or more of the following:

- `3des112` for triple DES with a two-key (112 bit) option
- `3des168` for triple DES with a three-key (168 bit) option
- `des` for standard 56 bit key size
- `des40` for 40 bit key size
- `rc4_40` for 40 bit key size
- `rc4_56` for 56 bit key size
- `rc4_128` for 128 bit key size
- `rc4_256` for 256 bit key size

**Example**

```
SQLNET.ENCRYPTION_TYPES_CLIENT=(rc4_56)
```
SQLNET.ENCRYPTION_TYPES_SERVER

Purpose

Use the parameter SQLNET.ENCRYPTION_TYPES_SERVER to specify a list of encryption algorithms for the database server to use.

See Also: Oracle Advanced Security Administrator’s Guide

Default

All algorithms are used if none are specified.

Values

One or more of the following:

- 3des112 for triple DES with a two-key (112 bit) option
- 3des168 for triple DES with a three-key (168 bit) option
- des for standard 56 bit key size
- des40 for 40 bit key size
- rc4_40 for 40 bit key size
- rc4_56 for 56 bit key size
- rc4_128 for 128 bit key size
- rc4_256 for 256 bit key size

Example

SQLNET.ENCRYPTION_TYPES_SERVER=(rc4_56, des, ...)

6-26 Oracle9i Net Services Reference Guide
**SQLNET.EXPIRE_TIME**

**Purpose**

Use parameter `SQLNET.EXPIRE_TIME` to specify a time interval, in minutes, to send a probe to verify that client/server connections are active. Setting a value greater than 0 ensures that connections are not left open indefinitely, due to an abnormal client termination. If the probe finds a terminated connection, or a connection that is no longer in use, it returns an error, causing the server process to exit. This parameter is primarily intended for the database server, which typically handles multiple connections at any one time.

Limitations on using this terminated connection detection feature are:

- It is not allowed on bequeathed connections.
- Though very small, a probe packet generates additional traffic that may downgrade network performance.
- Depending on which operating system is in use, the server may need to perform additional processing to distinguish the connection probing event from other events that occur. This can also result in degraded network performance.

**Default**

0

**Minimum Value**

0

**Recommended Value**

10

**Example**

`SQLNET.EXPIRE_TIME=10`
SQLNET.INBOUND_CONNECT_TIMEOUT

Purpose

Use the SQLNET.INBOUND_CONNECT_TIMEOUT parameter to specify the time, in seconds, for a client to connect with the database server and provide the necessary authentication information.

If the client fails to establish a connection and complete authentication in the time specified, then the database server terminates the connection. In addition, the database server logs the IP address of the client and an ORA-12170: TNS:Connect timeout occurred error message to the sqlnet.log file. The client receives either an ORA-12547: TNS:lost contact or an ORA-12637: Packet receive failed error message.

Without this parameter, a client connection to the database server can stay open indefinitely without authentication. Connections without authentication can introduce possible denial-of-service attacks, whereby malicious clients attempt to flood database servers with connect requests that consume resources.

To protect both the database server and the listener, Oracle Corporation recommends setting this parameter in combination with the INBOUND_CONNECT_TIMEOUT_listener_name parameter in the listener.ora file. When specifying values for these parameters, consider the following recommendations:

- Set both parameters to an initial low value.
- Set the value of the INBOUND_CONNECT_TIMEOUT_listener_name parameter to a lower value than the SQLNET.INBOUND_CONNECT_TIMEOUT parameter.

For example, you can set INBOUND_CONNECT_TIMEOUT_listener_name to 2 seconds and INBOUND_CONNECT_TIMEOUT parameter to 3 seconds. If clients are unable to complete connections within the specified time due to system or network delays that are normal for the particular environment, then increment the time as needed.

See Also: Oracle9i Net Services Administrator’s Guide for information about configuring these parameters

Default

None
**Example**

```
SQLNET.INBOUND_CONNECT_TIMEOUT=3
```

**SQLNET.KERBEROS5_CC_NAME**

**Purpose**

Use the parameter `SQLNET.KERBEROS5_CC_NAME` to specify the complete path name to the Kerberos credentials cache file.

**See Also:** *Oracle Advanced Security Administrator’s Guide*

**Default**

/usr/tmp/krbcache on UNIX operating systems and c:\tmp\krbcache on Windows operating systems

**Example**

```
SQLNET.KERBEROS5_CC_NAME=/usr/tmp/krbcache
```

**SQLNET.KERBEROS5_CLOCKSKEW**

**Purpose**

Use the parameter `SQLNET.KERBEROS5_CLOCKSKEW` to specify how many seconds can pass before a Kerberos credential is considered out of date.

**See Also:** *Oracle Advanced Security Administrator’s Guide*

**Default**

300

**Example**

```
SQLNET.KERBEROS5_CLOCKSKEW=1200
```
SQLNET.KERBEROS5_CONF

Purpose

Use the parameter SQLNET.KERBEROS5_CONF to specify the complete path name to the Kerberos configuration file, which contains the realm for the default Key Distribution Center (KDC) and maps realms to KDC hosts. The KDC maintains a list of user principals and is contacted through the kinit program for the user’s initial ticket.

See Also: Oracle Advanced Security Administrator’s Guide

Default

/krb5/krb.conf on UNIX operating systems and c:\krb5\krb.conf on Windows operating systems

Example

SQLNET.KERBEROS5_CONF=/krb5/krb.conf

SQLNET.KERBEROS5_KEYTAB

Purpose

Use the parameter SQLNET.KERBEROS5_KEYTAB to specify the complete path name to the Kerberos principal/secret key mapping file, which is used to extract keys and decrypt incoming authentication information.

See Also: Oracle Advanced Security Administrator’s Guide

Default

/etc/v5srvtab on UNIX operating systems and c:\krb5\v5srvtab on Windows operating systems

Example

SQLNET.KERBEROS5_KEYTAB=/etc/v5srvtab

6-30 Oracle9i Net Services Reference Guide
SQLNET.KERBEROS5_REALMS

Purpose

Use the parameter SQLNET.KERBEROS5_REALMS to specify the complete path name to the Kerberos realm translation file, which provides a mapping from a host name or domain name to a realm.

See Also: Oracle Advanced Security Administrator's Guide

Default

/krb5/krb.realms on UNIX operating systems and c:\krb5\krb.realms on Windows operating systems

Example

SQLNET.KERBEROS5_REALMS=/krb5/krb.realms
SQLNET.RADIUS_ALTERNATE

Purpose
Use the parameter SQLNET.RADIUS_ALTERNATE to specify an alternate RADIUS server to use in case the primary server is unavailable. The value can be either the IP address or host name of the server.

See Also: Oracle Advanced Security Administrator’s Guide

Default
None

Example
SQLNET.RADIUS_ALTERNATE=radius2

SQLNET.RADIUS_ALTERNATE_PORT

Purpose
Use the parameter SQLNET.RADIUS_ALTERNATE_PORT to specify the listening port of the alternate RADIUS server.

See Also: Oracle Advanced Security Administrator’s Guide

Default
1645

Example
SQLNET.RADIUS_ALTERNATE_PORT=1667
SQLNET.RADIUS_ALTERNATE_RETRIES

Purpose
Use the parameter SQLNET.RADIUS_ALTERNATE_RETRIES to specify the number of times the database server should resend messages to the alternate RADIUS server.

See Also: Oracle Advanced Security Administrator’s Guide

Default
3

Example
SQLNET.RADIUS_ALTERNATE_RETRIES=4

SQLNET.RADIUS_AUTHENTICATION

Purpose
Use the parameter SQLNET.RADIUS_AUTHENTICATION to specify the location of the primary RADIUS server, either by its host name or IP address.

See Also: Oracle Advanced Security Administrator’s Guide

Default
Local host

Example
SQLNET.RADIUS_AUTHENTICATION=officeacct
SQLNET.RADIUS_AUTHENTICATION_INTERFACE

**Purpose**

Use the parameter `SQLNET.RADIUS_AUTHENTICATION_INTERFACE` to specify the class containing the user interface used to interact with the user.

*See Also:* *Oracle Advanced Security Administrator’s Guide*

**Default**

`DefaultRadiusInterface`

**Example**

`SQLNET.RADIUS_AUTHENTICATION_INTERFACE=DefaultRadiusInterface`

SQLNET.RADIUS_AUTHENTICATION_PORT

**Purpose**

Use the parameter `SQLNET.RADIUS_AUTHENTICATION_PORT` to specify the listening port of the primary RADIUS server.

*See Also:* *Oracle Advanced Security Administrator’s Guide*

**Default**

`1645`

**Example**

`SQLNET.RADIUS_AUTHENTICATION_PORT=1667`
**SQLNET.RADIUS_AUTHENTICATION_RETRIES**

**Purpose**
Use the parameter `SQLNET.RADIUS_AUTHENTICATION_RETRIES` to specify the number of times the database server should resend messages to the primary RADIUS server.

*See Also:* *Oracle Advanced Security Administrator’s Guide*

**Default**
3

**Example**
```
SQLNET.RADIUS_AUTHENTICATION_RETRIES=4
```

**SQLNET.RADIUS_AUTHENTICATION_TIMEOUT**

**Purpose**
Use the parameter `SQLNET.RADIUS_AUTHENTICATION_TIMEOUT` to specify the time, in seconds, that the database server should wait for a response from the primary RADIUS server.

*See Also:* *Oracle Advanced Security Administrator’s Guide*

**Default**
5

**Example**
```
SQLNET.RADIUS_AUTHENTICATION_TIMEOUT=10
```
**SQLNET.RADIUS_CHALLENGE_RESPONSE**

**Purpose**

Use the parameter `SQLNET.RADIUS_CHALLENGE_RESPONSE` to turn challenge response on or off.

**Default**

off

**Values**

on | off

**Example**

`SQLNET.RADIUS_CHALLENGE_RESPONSE=on`

---

**SQLNET.RADIUS_SECRET**

**Purpose:**

Use the parameter `SQLNET.RADIUS_SECRET` to specify the location of the RADIUS secret key.

**See Also:** *Oracle Advanced Security Administrator’s Guide*

**Default**

The `$ORACLE_HOME/network/security/radius.key` file on UNIX operating systems and the `ORACLE_HOME/network/security/radius.key` file on Windows NT

**Example**

`SQLNET.RADIUS_SECRET=oracle/bin/admin/radiuskey`
**SQLNET.RADIUS_SEND_ACCOUNTING**

**Purpose**

Use the parameter `SQLNET.RADIUS_SEND_ACCOUNTING` to turn accounting on and off. If enabled, packets are sent to the active RADIUS server at listening port plus one. The default port is 1646.

*See Also:* Oracle Advanced Security Administrator’s Guide

**Default**

off

**Values**

on | off

**Example**

```
SQLNET.RADIUS_SEND_ACCOUNTING=on
```

**SSL_CIPHER_SUITES**

**Purpose**

Use the parameter `SSL_CIPHER_SUITES` to control what combination of encryption and data integrity is used by the Secure Sockets Layer (SSL).

**Default**

None

**Values**

*See Also:* Oracle Advanced Security Administrator’s Guide for further information about cipher suite values

**Example**

```
SSL_CIPHER_SUITE=(ssl_rsa_with_rc4_138_md5)
```

Profile Parameters (sqlnet.ora) 6-37
SSL_CLIENT_AUTHENTICATION

Purpose
Use the parameter SSL_CLIENT_AUTHENTICATION to specify whether or not a client—in addition to the database server—is authenticated using SSL.

See Also: Oracle Advanced Security Administrator’s Guide

Default
true

Values
ture | false

Example
SSL_CLIENT_AUTHENTICATION=true

SSL_SERVER_DN_MATCH

Purpose
Use the parameter SSL_SERVER_DN_MATCH to enforce that the distinguished name (DN) for the database server matches its service name. If you enforce the match verifications, then SSL ensures that the certificate is from the server. If you select to not enforce the match verification, then SSL performs the check but allows the connection, regardless if there is a match. Not enforcing the match allows the server to potentially fake its identify.

See Also: Oracle Advanced Security Administrator’s Guide

Default
no

Values
- yes | on | true to specify to enforce a match. If the DN matches the service name, then the connection succeeds. If the DN does not match the service name, then the connection fails.
Profile Parameters

- **no | off | false** to specify to not enforce a match. If does not match the service name, then the connection is successful, but an error is logged to the sqlnet.log file.

**Usage Notes**

In addition to the sqlnet.ora file, configure the tnsnames.ora parameter `SSL_SERVER_CERT_DN` to enable server DN matching.

**Example**

```sql
SSL_SERVER_DN_MATCH=yes
```

**SSL_VERSION**

**Purpose**

Use the parameter `SSL_VERSION` to force the version of the SSL connection. Clients and database servers must use a compatible version.

**See Also:** Oracle Advanced Security Administrator's Guide

**Default**

undetermined

**Values**

undetermined | 2.0 | 3.0

**Example**

```sql
SSL_VERSION=2.0
```
TCP.EXCLUDED_NODES

Purpose
Use the parameter TCP.EXCLUDED_NODES to specify which clients are denied access to the database.

Syntax
TCP.EXCLUDED_NODES=(hostname | ip_address, hostname | ip_address, ...)

Example
TCP.EXCLUDED_NODES=(finance.us.acme.com, mktg.us.acme.com, 144.25.5.25)

TCP.INVITED_NODES

Purpose
Use the parameter TCP.INVITED_NODES to specify which clients are allowed access to the database. This list takes precedence over the TCP.EXCLUDED_NODES parameter if both lists are present.

Syntax
TCP.INVITED_NODES=(hostname | ip_address, hostname | ip_address, ...)

Example
TCP.INVITED_NODES=(sales.us.acme.com, hr.us.acme.com, 144.185.5.73)
TCP.VALIDNODE_CHECKING

Purpose

Use the parameter TCP.VALIDNODE_CHECKING to check for the TCP.INVITED_NODES and TCP.EXCLUDED_NODES to determine which clients to allow or deny access.

Default

no

Values

yes | no

Example

TCP.VALIDNODE_CHECKING=yes

TCP.NODELAY

Purpose

Use the parameter TCP.NODELAY to preempt delays in buffer flushing within the TCP/IP protocol stack.

Default

no

Values

yes | no

Example

TCP.NODELAY=yes
TNSPING.TRACE_DIRECTORY

Purpose
Use the parameter TNSPING.TRACE_DIRECTORY to specify the destination directory for the TNSPING utility trace file, tnsping.trc.

Default
The $ORACLE_HOME/network/trace directory on UNIX operating systems and the ORACLE_HOME\network\trace directory on Windows operating systems

Example
TNSPING.TRACE_DIRECTORY=/oracle/traces

TNSPING.TRACE_LEVEL

Purpose
Use the parameter TNSPING.TRACE_LEVEL to turn TNSPING utility tracing on, at a specific level, or off.

Default
off

Values
- off for no trace output
- user for user trace information
- admin for administration trace information
- support for Oracle Support Services trace information

Example
TNSPING.TRACE_LEVEL=admin
TRACE_DIRECTORY_CLIENT

Purpose
Use the parameter TRACE_DIRECTORY_CLIENT to specify the destination directory for the client trace file.

Default
The $ORACLE_HOME/network/trace directory on UNIX operating systems and the ORACLE_HOME\network\trace directory on Windows operating systems

Example
TRACE_DIRECTORY_CLIENT=/oracle/traces

TRACE_DIRECTORY_SERVER

Purpose
Use the parameter TRACE_DIRECTORY_SERVER to specify the destination directory for the database server trace file.

Default
The $ORACLE_HOME/network/trace directory on UNIX operating systems and the ORACLE_HOME\network\trace directory on Windows NT

Example
TRACE_DIRECTORY_SERVER=/oracle/traces
TRACE_FILE_CLIENT

Purpose
Use the parameter TRACE_FILE_CLIENT to specify the name of the client trace file.

Default
sqlnet.trc

Example
TRACE_FILE_CLIENT=clientsqlnet.trc

TRACE_FILE_SERVER

Purpose
Use the parameter TRACE_FILE_SERVER to specify the name of the database server trace file.

Default
svr_pid.trc

Example
TRACE_FILE_SERVER=svrsqlnet.trc
**TRACE_FILELEN_CLIENT**

**Purpose**

Use the parameter `TRACE_FILELEN_CLIENT` to specify the size of the client trace files in kilobytes (KB). When the size is met, the trace information is written to the next file. The number of files is specified with the `TRACE_FILENO_CLIENT` parameter.

**Example**

```
TRACE_FILELEN_CLIENT=100
```

---

**TRACE_FILELEN_SERVER**

**Purpose**

Use the parameter `TRACE_FILELEN_SERVER` to specify the size of the database server trace files in kilobytes (KB). When the size is met, the trace information is written to the next file. The number of files is specified with the `TRACE_FILENO_SERVER` parameter.

**Example**

```
TRACE_FILELEN_SERVER=100
```
TRACE_FILENO_CLIENT

Purpose

Use the parameter TRACE_FILENO_CLIENT to specify the number of trace files for client tracing. When this parameter is set along with the TRACE_FILELEN_CLIENT parameter, trace files are used in a cyclical fashion. The first file is filled first, then the second file, and so on. When the last file has been filled, the first file is re-used, and so on.

The trace file names are distinguished from one another by their sequence number. For example, if the default trace file of sqlnet.trc is used, and this parameter is set to 3, the trace files would be named sqlnet1.trc, sqlnet2.trc and sqlnet3.trc.

In addition, trace events in the trace files are preceded by the sequence number of the file.

Default

None

Example

TRACE_FILENO_CLIENT=3

TRACE_FILENO_SERVER

Purpose

Use the parameter TRACE_FILENO_SERVER to specify the number of trace files for database server tracing. When this parameter is set along with the TRACE_FILELEN_SERVER parameter, trace files are used in a cyclical fashion. The first file is filled first, then the second file, and so on. When the last file has been filled, the first file is re-used, and so on.

The trace file names are distinguished from one another by their sequence number. For example, if the default trace file of svr_pid.trc is used, and this parameter is set to 3, the trace files would be named svr1_pid.trc, svr2_pid.trc and svr3_pid.trc.

In addition, trace events in the trace files are preceded by the sequence number of the file.
Default

None

Example

TRACE_FILENO_SERVER=3

TRACE_LEVEL_CLIENT

Purpose

Use the parameter TRACE_LEVEL_CLIENT to turn client tracing on, at a specific level, or off.

Default

off

Values

- off for no trace output
- user for user trace information
- admin for administration trace information
- support for Oracle Support Services trace information

Example

TRACE_LEVEL_CLIENT=user
TRACE_LEVEL_SERVER

Purpose
Use the parameter TRACE_LEVEL_SERVER to turn server tracing on, at a specific level, or off.

Default
off

Values
- off for no trace output
- user for user trace information
- admin for administration trace information
- support for Oracle Support Services trace information

Example
TRACE_LEVEL_SERVER=admin

TRACE_TIMESTAMP_CLIENT

Purpose
Use the parameter TRACE_TIMESTAMP_CLIENT to add a time stamp in the form of dd-mon-yyyy hh:mm:ss:mil to every trace event in the client trace file, which has a default name of sqlnet.trc.

Default
on

Values
on or true | off or false

Example
TRACE_TIMESTAMP_CLIENT=true
TRACE_TIMESTAMP_SERVER

Purpose
Use the parameter TRACE_TIMESTAMP_SERVER to add a time stamp in form of 
\texttt{dd-mon-yyyy hh:mm:ss:mill} to every trace event in the database server trace 
file, which has a default name of \texttt{svr\_pid.trc}.

Default
off

Values
on or true | off or false

Example
\texttt{TRACE_TIMESTAMP_SERVER=true}

TRACE_UNIQUE_CLIENT

Purpose
Use the parameter TRACE_UNIQUE_CLIENT to specify whether or not a unique 
trace file is created for each client trace session. When the value is set to \texttt{on}, a 
process identifier is appended to the name of each trace file, enabling several files to 
coexist. For example, trace files named \texttt{sqlnet\_pid.trc} are created if default trace 
file name \texttt{sqlnet.trc} is used. When the value is set to \texttt{off}, data from a new client 
trace session overwrites the existing file.

Default
on

Values
on or off

Example
\texttt{TRACE_UNIQUE_CLIENT=on}
USE_CMAN

Purpose

If set to true, the parameter USE_CMAN routes the client to a protocol address for an Oracle Connection Manager.

The following example shows two address lists. While the first address list routes the client to an Oracle Connection Manager, the second address list routes the client directly to a listener.

```
sales=
   (DESCRIPTION=
      (LOAD_BALANCE=on)
      (FAILOVER=on)
      (ADDRESS_LIST=
         (SOURCE_ROUTE=yes)
         (ADDRESS=(PROTOCOL=tcp) (HOST=host1) (PORT=1630))
         (ADDRESS=(PROTOCOL=tcp) (HOST=host2) (PORT=1521)))
      (ADDRESS_LIST=
         (ADDRESS=(PROTOCOL=tcp) (HOST=host3) (PORT=1521)))
      (CONNECT_DATA=(SERVICE_NAME=sales.us.acme.com)))
```

Without USE_CMAN=true, the client picks one of the address lists at random and fails over to the other address list if the chosen ADDRESS_LIST fails. With USE_CMAN=true, the client always uses the first address list.

If no Oracle Connection Manager addresses are available, connections are routed through any available listener address.

---

**Note:** If you are using Oracle Connection Manager with Oracle Names, this option must be set on clients and Oracle Names servers.

---

Default

false
Profile Parameters

Values

true | false

Example

USE_CMN=true

USEDEDICATEDSERVER

Purpose

If set to on, the parameter USEDEDICATEDSERVER automatically appends (SERVER=dedicated) to the connect data for a connect descriptor. This way connections from this client use a dedicated server process, even if shared server is configured.

This parameter adds (SERVER=dedicated) to the CONNECT_DATA section of the connect descriptor used by the client. It overrides the current value of the SERVER parameter in the tnsnames.ora file.

See Also: Oracle9i Net Services Administrator’s Guide for complete configuration information

Default

off

Values

■ on to append (SERVER=dedicated)
■ off to hand off requests to existing server processes

Example

USEDEDICATEDSERVER=on
Purpose

Use the parameter `WALLET_LOCATION` to specify the location of wallets. Wallets are certificates, keys, and trustpoints processed by SSL.

**See Also:** *Oracle Advanced Security Administrator’s Guide*

Syntax

Oracle wallets on file system:

```
WALLET_LOCATION=
  (SOURCE=
   (METHOD=file)
   (METHOD_DATA=
     (DIRECTORY=directory)))
```

Microsoft certificate store:

```
WALLET_LOCATION=
  (SOURCE=
   (METHOD=mcs))
```

Oracle wallets in the Windows NT registry:

```
WALLET_LOCATION=
  (SOURCE=
   (METHOD=reg)
   (METHOD_DATA=
     (KEY=registry_key)))
```
Entrust wallets:

\[
\text{WALLET\_LOCATION} = \left(\text{SOURCE} = \right)
\left(\text{METHOD} = \text{entr}\right)
\left(\text{METHOD\_DATA} = \right)
\left(\text{PROFILE} = \text{file.epf}\right)
\left(\text{INIFILE} = \text{file.ini}\right)\]

**Subparameters**

**WALLET\_LOCATION** supports the following subparameters:

- **SOURCE**: Specify the type of storage for wallets and storage location.
- **METHOD**: Specify the type of storage.
- **METHOD\_DATA**: Specify the storage location.
- **DIRECTORY**: Specify the location of Oracle wallets on file system.
- **KEY**: Specify the wallet type and location in the Windows NT registry.
- **PROFILE**: Specify the Entrust profile file (.epf).
- **INIFILE**: Specify the Entrust initialization file (.ini).

**Default**

None

**Usage Notes**

- The key/value pair for Microsoft’s certificate store (MCS) omits the **METHOD\_DATA** parameter because MCS does not use wallets. Instead, Oracle PKI (public key infrastructure) applications obtain certificates, trustpoints and private keys directly from the user’s profile.

- If an Oracle wallet is stored in the Windows NT registry and the wallet’s **key** (KEY) is **SALESAPP**, the storage location of the encrypted wallet is **HKEY\_CURRENT\_USER\SOFTWARE\ORACLE\WALLETS\SALESAPP\EWALLETP12**. The storage location of the decrypted wallet is **HKEY\_CURRENT\_USER\SOFTWARE\ORACLE\WALLETS\SALESAPP\CWALLETS.SSO**.
Examples

Oracle wallets on file system:

```
WALLET_LOCATION=
  (SOURCE=
    (METHOD=file)
    (METHOD_DATA=
      (DIRECTORY=/etc/oracle/wallets/databases)))
```

Microsoft certificate store:

```
WALLET_LOCATION=
  (SOURCE=
    (METHOD=mcs))
```

Oracle Wallets in the Windows NT registry:

```
WALLET_LOCATION=
  (SOURCE=
    (METHOD=REG)
    (METHOD_DATA=
      (KEY=SALESAPP)))
```

Entrust Wallets:

```
WALLET_LOCATION=
  (SOURCE=
    (METHOD=entr)
    (METHOD_DATA=
      (PROFILE=/etc/oracle/wallets/test.epf)
      (INIFILE=/etc/oracle/wallets/test.ini)))
```
This chapter provides a complete listing of the `tnsnames.ora` file configuration parameters.

This chapter contains these topics:

- Overview of Local Naming Parameters
- General Syntax of `tnsnames.ora`
- Multiple Descriptions in `tnsnames.ora`
- Multiple Address Lists in `tnsnames.ora`
- Connect-Time Failover and Client Load Balancing with Oracle Connection Managers
- Local Naming Parameters
Overview of Local Naming Parameters

This tnsnames.ora file is a configuration file that contains net service names mapped to connect descriptors for the local naming method, or net service names mapped to listener protocol addresses.

A net service name is an alias mapped to a database network address contained in a connect descriptor. A connect descriptor contains the location of the listener through a protocol address and the service name of the database to which to connect. Clients and database servers (that are clients of other database servers) use the net service name when making a connection with an application.

By default, tnsnames.ora is located in the $ORACLE_HOME/network/admin directory on UNIX operating systems and in the ORACLE_HOME\network\admin directory on Windows operating systems. tnsnames.ora can also be stored in the following locations:

- The directory specified by the TNS_ADMIN environment variable or registry value
- On UNIX operating systems, the global configuration directory. For example, on the Solaris Operating System, this directory is /var/opt/oracle.

See Also: Oracle operating system-specific documentation

General Syntax of tnsnames.ora

The basic syntax for a tnsnames.ora file is shown in Figure 7–1. DESCRIPTION contains the connect descriptor, ADDRESS contains the protocol address, and CONNECT_DATA contains the database service identification information.

**Figure 7–1 Basic Format of tnsnames.ora File**

```plaintext
net_service_name=
  (DESCRIPTION=
    (ADDRESS=(protocol_address_information))
    (CONNECT_DATA=
      (SERVICE_NAME=service_name)))
```
Multiple Descriptions in tnsnames.ora

A tnsnames.ora file can contain net service names with one or more connect descriptors. Each connect descriptor can contain one or more protocol addresses. Figure 7–2 shows two connect descriptors with multiple addresses. DESCRIPTION_LIST defines a list of connect descriptors.

Note: Oracle Net Manager does not support the creation of multiple connect descriptors for a net service name.

Figure 7–2 Net Service Name with Multiple Connect Descriptors in tnsnames.ora

```plaintext
net_service_name=
 (DESCRIPTION_LIST=
  (DESCRIPTION=
   (ADDRESS=(protocol_address_information))
   (ADDRESS=(protocol_address_information))
   (ADDRESS=(protocol_address_information))
   (CONNECT_DATA=
     (SERVICE_NAME=service_name))
  (DESCRIPTION=
   (ADDRESS=(protocol_address_information))
   (ADDRESS=(protocol_address_information))
   (ADDRESS=(protocol_address_information))
   (CONNECT_DATA=
     (SERVICE_NAME=service_name))))
```
Multiple Address Lists in tnsnames.ora

The tnsnames.ora file also supports connect descriptors with multiple lists of addresses, each with its own characteristics. In Figure 7–3, two address lists are presented. The first address list features client load balancing and no connect-time failover, affecting only those protocol addresses within the ADDRESS_LIST. The second protocol address list features connect-time failover and no client load balancing, affecting only those protocol addresses within the ADDRESS_LIST. The client first tries either the first or second protocol address at random, then tries protocol addresses three and four sequentially.

Note: Oracle Net Manager supports only the creation of one protocol address list for a connect descriptor.

Figure 7–3 Multiple Address Lists in tnsnames.ora

```sql
net_service_name=
  (DESCRIPTION=
    (ADDRESS_LIST=
      (LOAD_BALANCE=on)
      (FAILOVER=off)
      (ADDRESS=(protocol_address_information))
      (ADDRESS=(protocol_address_information)))
    (ADDRESS_LIST=
      (LOAD_BALANCE=off)
      (FAILOVER=on)
      (ADDRESS=(protocol_address_information))
      (ADDRESS=(protocol_address_information)))
  (CONNECT_DATA=
    (SERVICE_NAME=service_name)))
```

Note: Protocol address lists do not have to be embedded in an ADDRESS_LIST if there is only one list, as was the case prior to release 8.1.
Connect-Time Failover and Client Load Balancing with Oracle Connection Managers

When a connect descriptor in a `tnsnames.ora` file contains at least two protocol addresses for Oracle Connection Manager, parameters for connect-time failover and load balancing can be included in the file.

Figure 7–4 illustrates failover of multiple Oracle Connection Manager protocol addresses.

**Figure 7–4  Multiple Oracle Connection Manager Addresses in tnsnames.ora**

```xml
sample1=
  (DESCRIPTION=
    (SOURCE_ROUTE=yes)
    (ADDRESS=(PROTOCOL=tcp) (HOST=host1) (PORT=1630))    # hop 1
    (ADDRESS_LIST=
      (FAILOVER=on)
      (LOAD_BALANCE=off)
      (ADDRESS=(PROTOCOL=tcp) (HOST=host2a) (PORT=1630))
      (ADDRESS=(PROTOCOL=tcp) (HOST=host2b) (PORT=1630))
    ) (ADDRESS=(PROTOCOL=tcp) (HOST=host3) (PORT=1521))    # hop 3
    (CONNECT_DATA=(SERVICE_NAME=Sales.us.acme.com)))
```

In Figure 7–4:

1. The client is instructed to connect to an protocol address of the first Oracle Connection Manager, as indicated by:
   ```xml
   (ADDRESS=(PROTOCOL=tcp) (HOST=host1) (PORT=1630))
   ```

2. The first Oracle Connection Manager is then instructed to connect to the first protocol address of another Oracle Connection Manager. If the first protocol address fails, then it tries the second protocol address. This sequence is specified with the following configuration:
   ```xml
   (ADDRESS_LIST=
     (FAILOVER=on)
     (LOAD_BALANCE=off)
     (ADDRESS=(PROTOCOL=tcp) (HOST=host2a) (PORT=1630))
     (ADDRESS=(PROTOCOL=tcp) (HOST=host2b) (PORT=1630))
   )
   ```

3. The Oracle Connection Manager then connects to the database service using the following protocol address:
   ```xml
   (ADDRESS=(PROTOCOL=tcp) (HOST=host3) (PORT=1521))
   ```
**Figure 7–5** illustrates client load balancing among two Oracle Connection Managers and two protocol addresses:

**Figure 7–5  Client Load Balancing in tnsnames.ora**

```ora
sample2=
  (DESCRIPTION=
    (LOAD_BALANCE=on)
    (FAILOVER=on)
    (ADDRESS_LIST=
      (SOURCE_ROUTE=yes)
      (ADDRESS=(PROTOCOL=tcp) (HOST=host1) (PORT=1630))
      (ADDRESS=(PROTOCOL=tcp) (HOST=host2) (PORT=1521)))
    (ADDRESS_LIST=
      (SOURCE_ROUTE=yes)
      (ADDRESS=(PROTOCOL=tcp) (HOST=host3) (PORT=1630))
      (ADDRESS=(PROTOCOL=tcp) (HOST=host4) (PORT=1521)))
  )
  (CONNECT_DATA=(SERVICE_NAME=sales.us.acme.com)))
```

In **Figure 7–5**:

1. The client is instructed to pick an ADDRESS_LIST at random and to failover to the other if the chosen ADDRESS_LIST fails. This is indicated by the LOAD_BALANCE and FAILOVER parameters being set to on.

2. When an ADDRESS_LIST is chosen, the client first connects to the Oracle Connection Manager, using the Oracle Connection Manager protocol address that uses port 1630 indicated for the ADDRESS_LIST.

3. The Oracle Connection Manager then connects to the database service, using the protocol address indicated for the ADDRESS_LIST.
Local Naming Parameters

This section lists and describes the tnsnames.ora file parameters that comprise connect descriptors. Configuration parameters fall into the following categories:

- Connect Descriptor Descriptions
- Protocol Address Section
- Optional Parameters for Lists
- Connect Data Section
- Security Section

Connect Descriptor Descriptions

Each connect descriptor is contained within a DESCRIPTION parameter. Multiple connect descriptors are characterized by the DESCRIPTION_LIST parameter. These parameters are described next.

DESCRIPTION

Purpose

Use the DESCRIPTION parameter as a container for a connect descriptor.

Embed this parameter under the DESCRIPTION_LIST parameter.

Example

```
net_service_name=
(DESCRIPTION=
 (ADDRESS=...)
 (CONNECT_DATA=(SERVICE_NAME=sales.us.acme.com)))
```
DESCRIPTION_LIST

Purpose

Use the DESCRIPTION_LIST parameter to define a list of connect descriptors for a particular net service name.

Example

```
net_service_name=
  (DESCRIPTION_LIST= 
    (DESCRIPTION=  
      (ADDRESS=...)  
      (CONNECT_DATA=(SERVICE_NAME=sales.acme.com))  
    )  
    (DESCRIPTION=  
      (ADDRESS=...)  
      (CONNECT_DATA=(SERVICE_NAME=sales2.us.acme.com)))
  )

Protocol Address Section

The protocol address section of the tnsnames.ora file specifies the protocol addresses of the listener.

ADDRESS

Purpose

Use the parameter ADDRESS to define a single listener protocol address.

Embed this parameter under either the ADDRESS_LIST parameter or the DESCRIPTION parameter.

See Also:  Chapter 5, "Protocol Address Configuration" for descriptions of the correct parameters to use for each protocol.

Example

```
net_service_name=
  (DESCRIPTION=  
    (ADDRESS=(PROTOCOL=tcp)(HOST=sales-svr)(PORT=1521))  
    (CONNECT_DATA=(SERVICE_NAME=sales.us.acme.com))
  )
```
ADDRESS_LIST

Purpose

Use the parameter ADDRESS_LIST to define a list of protocol addresses. If there is only address list, ADDRESS_LIST is not necessary.

Embed this parameter under either the DESCRIPTION parameter or the DESCRIPTION_LIST parameter.

Example

```
net_service_name=
(Description=
  (ADDRESS_LIST=
     (ADDRESS=(PROTOCOL=tcp)(HOST=sales1-svr)(PORT=1521))
     (ADDRESS=(PROTOCOL=tcp)(HOST=sales2-svr)(PORT=1521)))
  (ADDRESS_LIST=
     (FAILOVER=on)
     (ADDRESS=(PROTOCOL=tcp)(HOST=sales1-svr)(PORT=1521))
     (ADDRESS=(PROTOCOL=tcp)(HOST=sales2-svr)(PORT=1521))
     (CONNECT_DATA=(SERVICE_NAME=sales.us.acme.com)))
```
Optional Parameters for Lists

For multiple addresses, the following parameters are available for usage:

- **FAILOVER**
- **LOAD_BALANCE**
- **SDU**
- **SOURCE_ROUTE**
- **TYPE_OF_SERVICE**

**FAILOVER**

**Purpose**

Use the parameter `FAILOVER` to enable or disable connect-time failover for multiple protocol addresses.

When you set the parameter to `on`, `yes`, or `true`, Oracle Net, at connect time, fails over to a different address if the first protocol address fails. When you set the parameter to `off`, `no`, or `false`, Oracle Net tries one protocol address.

Embed this parameter under either the `DESCRIPTION_LIST` parameter, the `DESCRIPTION` parameter, or the `ADDRESS_LIST` parameter.

**Important:** Do not set the `GLOBAL_DBNAME` parameter in the `SID_LIST_listener_name` section of the `listener.ora`. A statically configured global database name disables connect-time failover.

**Default**

`on` for `DESCRIPTION_LISTs`, `DESCRIPTIONs`, and `ADDRESS_LISTs`

**Values**

`on` | `off` | `yes` | `no` | `true` | `false`

**Example**

```sql
net_service_name=
  (DESCRIPTION=
    (FAILOVER=on)
    (ADDRESS=(PROTOCOL=tcp) (HOST=sales1-svr) (PORT=1521))
    (ADDRESS=(PROTOCOL=tcp) (HOST=sales2-svr) (PORT=1521)))
  (CONNECT_DATA=(SERVICE_NAME=sales.us.acme.com)))
```
LOAD_BALANCE

Purpose
Use the parameter LOAD_BALANCE to enable or disable client load balancing for multiple protocol addresses.

When you set the parameter to on, yes, or true, Oracle Net progresses through the list of addresses in a random sequence, balancing the load on the various listener or Oracle Connection Manager protocol addresses. When you set the parameter to off, no, or false, Oracle Net tries the protocol addresses sequentially until one succeeds.

Embed this parameter under either the DESCRIPTION_LIST parameter, the DESCRIPTION parameter, or the ADDRESS_LIST parameter.

Default
on for DESCRIPTION_LISTs

Values
on | off | yes | no | true | false

Example

```
net_service_name=
 (DESCRIPTION=
  (LOAD_BALANCE=on)
  (ADDRESS=(PROTOCOL=tcp) (HOST=sales1-svr) (PORT=1521))
  (ADDRESS=(PROTOCOL=tcp) (HOST=sales2-svr) (PORT=1521))
  (CONNECT_DATA=(SERVICE_NAME=sales.us.acme.com))
```
Purpose

Use the parameter SDU to instruct Oracle Net to optimize the transfer rate of data packets being sent across the network with the session data unit (SDU) size you specify.

Embed this parameter under the DESCRIPTION parameter.

See Also: Oracle9i Net Services Administrator’s Guide for complete configuration information

Default

2 KB

Usage

The SDU size can range from 512 bytes to 32 KB. The default SDU for the client and the database is 2 KB.

Optimal SDU size depends on the maximum segment size (MSS) and message fragmentation. For Two-Task Common (TTC) connections, configuring an SDU size larger than the 2 KB default requires configuring the SDU on both the client and server computers. When the configured values do not match, the lower of the two values will be used.

To minimize packet header overhead and message fragmentation, set the SDU size as a multiple of the MSS. When Oracle Advanced Security encryption is not used, increase the SDU size by one (1). For example, the TCP/IP version 4 MSS on Ethernet is 1460 bytes. Use a multiple of 1460 for the SDU size if encryption is used. If encryption is not used, increase the SDU size to 1461.

Example

```
net_service_name=
  (DESCRIPTION=
    (SDU=2920)
    (ADDRESS=...)
    (ADDRESS=...)
    (CONNECT_DATA=
      (SERVER_NAME=sales.us.acme.com))
```

## SOURCE_ROUTE

### Purpose

Use the parameter `SOURCE_ROUTE` to enable routing through multiple protocol addresses.

When you set to `on` or `yes`, Oracle Net uses each address in order until the destination is reached.

To use Oracle Connection Manager, an initial connection from the client to Oracle Connection Manager is required, and a second connection from Oracle Connection Manager to the listener is required.

Embed this parameter under either the `DESCRIPTION_LIST` parameter, the `DESCRIPTION` parameter, or the `ADDRESS_LIST` parameter.

**See Also:** Oracle9i Net Services Administrator’s Guide for complete configuration information

### Default

`off`

### Values

`yes` | `no` | `on` | `off`

### Example

```sql
net_service_name=
  (DESCRIPTION=
    (SOURCE_ROUTE=on)
    (ADDRESS=(PROTOCOL=tcp) (HOST=cman-pc) (PORT=1630))
    (ADDRESS=(PROTOCOL=tcp) (HOST=sales1-svr) (PORT=1521))
    (CONNECT_DATA=(SERVICE_NAME=sales.us.acme.com))
```


LOCAL NAMING PARAMETERS

TYPE_OF_SERVICE

Purpose

Use the parameter TYPE_OF_SERVICE parameter to specify the type of service to use for an Oracle Rdb database. This parameter should only be used if the application supports both an Oracle Rdb and Oracle database service, and you want the application to load balance between the two.

Embed this parameter under the DESCRIPTION parameter.

Example

net_service_name=
(DESCRIPTION_LIST=
 (DESCRIPTION=
 (ADDRESS=...)
 (CONNECT_DATA=
 (SERVICE_NAME=generic)
 (RDB_DATABASE=[.mf]mf_personal.rdb)
 (GLOBAL_NAME=alpha5))
 (TYPE_OF_SERVICE=rdb_database))
 (DESCRIPTION=
 (ADDRESS=...)
 (CONNECT_DATA=
 (SERVICE_NAME=sales.us.acme.com))
 (TYPE_OF_SERVICE=oracle9_database)))
Connect Data Section

The connection data section of the tnsnames.ora file specifies the name of the destination service.

CONNECT_DATA

Purpose

Use the parameter CONNECT_DATA to define the service to which to connect.

Embed this parameter under the DESCRIPTION parameter.

Usage Notes

CONNECT_DATA permits the following subparameters:

- FAILOVER_MODE
- GLOBAL_NAME
- HS
- INSTANCE_NAME
- RDB_DATABASE
- SERVER
- SERVICE_NAME
- SID

Example

```
net_service_name=
(DESCRIPTION=
 (ADDRESS=(PROTOCOL=tcp)(HOST=sales1-svr)(PORT=1521))
 (ADDRESS=(PROTOCOL=tcp)(HOST=sales2-svr)(PORT=1521))
 (CONNECT_DATA=
  (SERVICE_NAME=sales.us.acme.com)))
```
FAILOVER_MODE

Purpose

Use the parameter FAILOVER_MODE to instruct Oracle Net to fail over to a different listener if the first listener fails during runtime. Depending upon the configuration, session or any SELECT statements which were in progress are automatically failed over.

This type of failover is called Transparent Application Failover (TAF) and should not be confused with the connect-time failover FAILOVER parameter.

Embed this parameter under the CONNECT_DATA parameter.

See Also: Oracle9i Net Services Administrator’s Guide for complete configuration information

Subparameters

FAILOVER_MODE supports the following subparameters:

BACKUP: Specify the failover node by its net service name. A separate net service name must be created for the failover node.

TYPE: Specify the type of failover. Three types of Oracle Net failover functionality are available by default to Oracle Call Interface (OCI) applications:

  session: Fails over the session; that is, if a user’s connection is lost, a new session is automatically created for the user on the backup. This type of failover does not attempt to recover selects.

  select: Allows users with open cursors to continue fetching on them after failure. However, this mode involves overhead on the client side in normal select operations.

  none: This is the default, in which no failover functionality is used. This can also be explicitly specified to prevent failover from happening.
METHOD: Specify how fast failover is to occur from the primary node to the backup node:

- **basic**: Establishes connections at failover time. This option requires almost no work on the backup database server until failover time.
- **preconnect**: Pre-establishes connections. This provides faster failover but requires that the backup instance be able to support all connections from every supported instance.

RETRIES: Specify the number of times to attempt to connect after a failover. If DELAY is specified, RETRIES defaults to five retry attempts.

DELAY: Specify the amount of time in seconds to wait between connect attempts. If RETRIES is specified, DELAY defaults to one second.

---

**Note:** If a callback function is registered, then RETRIES and DELAY subparameters are ignored.

---

**Example**

**See Also:** Oracle9i Net Services Administrator’s Guide for implementation examples

**GLOBAL_NAME**

**Purpose**

Use the parameter GLOBAL_NAME to identify the Oracle Rdb database.

Embed this parameter under the CONNECT_DATA parameter.

**Example**

```plaintext
net_service_name=
 (DESCRIPTION= 
 (ADDRESS=...) 
 (ADDRESS=...) 
 (CONNECT_DATA= 
 (SERVICE_NAME=generic) 
 (RDB_DATABASE=[.mf]mf_personal.rdb) 
 (GLOBAL_NAME=alpha5)))
```
Local Naming Parameters

HS

Purpose
Use the parameter HS to instruct Oracle Net to connect to a non-Oracle system through Heterogeneous Services.

Embed this parameter under the CONNECT_DATA parameter.

See Also: Oracle9i Net Services Administrator’s Guide for complete configuration information

Default
None

Values
ok

Example

```
net_service_name=
  (DESCRIPTION=
   (ADDRESS=...)
   (ADDRESS=...)
   (CONNECT_DATA=
    (SID=sales6)
    (HS=ok) ))
```

INSTANCE_NAME

Purpose
Use the parameter INSTANCE_NAME to identify the database instance to access. Set the value to the value specified by the INSTANCE_NAME parameter in the initialization parameter file.

Embed this parameter under the CONNECT_DATA parameter.

See Also: Oracle9i Net Services Administrator’s Guide for information about the use of INSTANCE_NAME
Example

```
net_service_name=
  (DESCRIPTION=
    (ADDRESS=...)  
    (ADDRESS=...)  
    (CONNECT_DATA=
      (SERVICE_NAME=sales.us.acme.com)
      (INSTANCE_NAME=sales1)))
```

**RDB_DATABASE**

**Purpose**

Use the parameter `RDB_DATABASE` parameter to specify the file name of an Oracle Rdb database.

Embed this parameter under the `CONNECT_DATA` parameter.

**Example**

```
net_service_name=
  (DESCRIPTION=
    (ADDRESS=...)  
    (ADDRESS=...)  
    (CONNECT_DATA=
      (SERVICE_NAME=sales.us.acme.com)
      (INSTANCE_NAME=sales1)))
```

```
  (RDB_DATABASE= [.mf]mf_personal.rdb))
```
Local Naming Parameters

SERVER

Purpose

Use the parameter SERVER to instruct the listener to connect the client to a specific type of service handler.

Embed this parameter under the CONNECT_DATA parameter.

Values

- dedicated to specify that client requests be served by dedicated server
- shared to specify that client request be served by shared server

Note: Shared server must be configured in the database initialization file in order for the client to connect to the database with a shared server process. See the Oracle9i Net Services Administrator's Guide for configuration information.

Note: The USEDEDICATEDSERVER parameter in the sqlnet.ora file overrides this parameter.
Example

```plaintext
net_service_name =
(DESCRIPTION =
  (ADDRESS=...)
  (ADDRESS=...)
  (CONNECT_DATA =
    (SERVER_NAME=sales.us.acme.com)
    (SERVER=dedicated)))
```

**SERVICE_NAME**

**Purpose**

Use the parameter `SERVICE_NAME` to identify the Oracle9i or Oracle8i database service to access. Set the value to a value specified by the `SERVICE_NAMES` parameter in the initialization parameter file.

Embed this parameter under the `CONNECT_DATA` parameter.

**See Also:** *Oracle9i Net Services Administrator’s Guide* for information about the use of the `SERVICE_NAME` parameter

**Example**

```plaintext
net_service_name =
(DESCRIPTION =
  (ADDRESS=...)
  (ADDRESS=...)
  (CONNECT_DATA =
    (SERVICE_NAME=sales.us.acme.com)))
```
Local Naming Parameters

SID

Purpose

Use the parameter SID to identify the Oracle8 database instance by its Oracle System Identifier (SID). If the database is Oracle9i or Oracle8i, use the SERVICE_NAME parameter rather than the SID parameter.

See Also: Oracle9i Net Services Administrator’s Guide for information about the use of SID

Embed this parameter under the CONNECT_DATA parameter.

Example

```plaintext
net_service_name=
  (DESCRIPTION=
    (ADDRESS=...
    (ADDRESS=...
    (CONNECT_DATA=
      (SID=sales)))
```
Security Section

The security section of the tnsnames.ora file specifies security-related parameters for use with Oracle Advanced Security features.

SECURITY

Purpose

Use the parameter SECURITY to enable secure connections.

Embed this parameter under the DESCRIPTION parameter.

Usage Notes

SECURITY permits the SSL_SERVER_CERT_DN subparameter.

Example

```
net_service_name=
 (DESCRIPTION=
  (ADDRESS=(PROTOCOL=tcp)(HOST=sales1-svr)(PORT=1521))
  (ADDRESS=(PROTOCOL=tcp)(HOST=sales2-svr)(PORT=1521))
  (CONNECT_DATA=
    (SERVICE_NAME=sales.us.acme.com)
    (SECURITY=
      (SSL_SERVER_CERT_DN="cn=sales,cn=OracleContext,dc=us,dc=acme,dc=com")))
```
SSL_SERVER_CERT_DN

Purpose

Use the parameter SSL_SERVER_CERT_DN to specify the distinguished name (DN) of the database server. The client uses this information to obtain the list of DNs it expects for each of the servers, enforcing the database server DN to match its service name.

Usage Notes

Use this parameter in conjunction with the sqlnet.ora parameter SSL_SERVER_DN_MATCH to enable server DN matching.

See Also: Oracle Advanced Security Administrator’s Guide

Example

```
net_service_name=
 (DESCRIPTION=
   (ADDRESS=...)
   (ADDRESS=...)
   (CONNECT_DATA=
     (SERVICE_NAME=finance.us.acme.com))
   (SECURITY=
     (SSL_SERVER_CERT_DN="cn=finance,cn=OracleContext,dc=us,dc=acme,dc=com"))
```

This chapter provides a complete listing of the listener.ora file configuration parameters.

This chapter contains these topics:

- Overview of Listener Configuration File
- Listener Parameters
Overview of Listener Configuration File

Listener configuration, stored in the listener.ora file, consists of the following elements:

- Name of the listener
- Protocol addresses that the listener is accepting connection requests on
- Database services
  
  Dynamic service registration, a feature of Oracle9i and Oracle8i, eliminates the need for static configuration of supported services. However, static service configuration is required if you plan to use Oracle Enterprise Manager.

- Control parameters

By default, the listener.ora file is located in the $ORACLE_HOME/network/admin directory on UNIX operating systems and the ORACLE_HOME\network\admin directory on Windows NT. listener.ora can also be stored the following locations:

- The directory specified by the TNS_ADMIN environment variable or registry value

- On UNIX operating systems, the global configuration directory. For example, on the Solaris Operating System, this directory is /var/opt/oracle.

See Also: Oracle operating system-specific documentation

It is possible to configure multiple listeners, each with unique name, in one listener.ora file. Multiple listener configuration is possible because each of the top-level configuration parameters has a suffix of the listener name or is the listener name itself.

Note: It is often useful to configure multiple listeners in one listener.ora file. However, Oracle Corporation recommends running only one listener for each node in most customer environments.
Figure 8–1 shows a listener.ora file for a listener named LISTENER, which is the default name of the listener.

**Figure 8–1  Example listener.ora File**

```plaintext
LISTENER=
  (DESCRIPTION=
    (ADDRESS_LIST=
      (ADDRESS=(PROTOCOL=tcp) (HOST=sale-server) (PORT=1521))
      (ADDRESS=(PROTOCOL=ipc) (KEY=extproc)))
    SID_LIST_LISTENER=
      (SID_LIST=
        (SID_DESC=
          (GLOBAL_DBNAME=sales.us.acme.com)
          (ORACLE_HOME=/oracle9i)
          (SID_NAME=sales))
        (SID_DESC=
          (SID_NAME=plsextproc)
          (ORACLE_HOME=/oracle9i)
          (PROGRAM=extproc)))
```

**Listener Parameters**

This section lists and describes the listener.ora file parameters. Listener configuration parameters fall into the following categories:

- **Protocol Address Section**
- **Static Service Registration (SID_LIST) Section**
- **Control Parameters**
Protocol Address Section

The **protocol address** section of the `listener.ora` file defines the protocol addresses that the listener is accepting connection requests on. Discussed next are the most common parameters used in protocol addresses. Note that `ADDRESS_LIST` is also supported.

**See Also:** Chapter 5, "Protocol Address Configuration" for information about the `ADDRESS_LIST` parameter

**DESCRIPTION**

**Purpose**

Use the parameter `DESCRIPTION` as a container for listener protocol addresses.

**Example**

```plaintext
listener_name=
 (DESCRIPTION=
  (ADDRESS=(PROTOCOL=tcp) (HOST=hr-server) (PORT=1521))
  (ADDRESS=(PROTOCOL=tcp) (HOST=sales-server) (PORT=1521)))
```

**ADDRESS**

**Purpose**

Use the parameter `ADDRESS` to specify a single listener protocol address. Embed this parameter under the `DESCRIPTION` parameter.

**See Also:** Chapter 5, "Protocol Address Configuration" for descriptions of the correct parameters to use for each type of support protocol

**Example**

```plaintext
listener_name=
 (DESCRIPTION=
  (ADDRESS=(PROTOCOL=tcp) (HOST=hr-server) (PORT=1521))
  (ADDRESS=(PROTOCOL=tcp) (HOST=sales-server) (PORT=1521)))
```
**QUEUESIZE**

**Purpose**

Use the parameter `QUEUESIZE` to specify the number of concurrent connection requests that the listener can accept on a TCP/IP listening endpoint (protocol address).

Embed this parameter at the end of the protocol address with its value set to the expected number of concurrent connection requests.

**Default**

The default number of concurrent connection requests is operating system specific. Following are the defaults for the Solaris Operating System and Windows NT:

- **Solaris Operating System**: 5
- **Windows NT 4.0 Workstation**: 5
- **Windows NT 4.0 Server**: 50

**Usage Notes**

Specify this parameter if you expect the listener to handle more than the default number of concurrent connection requests.

**Example**

```sql
listener_name=
 (DESCRIPTION=
  (ADDRESS=(PROTOCOL=tcp)(HOST=hr-server)(PORT=1521) (QUEUESIZE=20)))
```
Static Service Registration (SID_LIST) Section

You can use the SID_LIST section of the listener.ora to statically configure service information for the listener.

The SID_LIST section is required for Oracle8 release 8.0 or Oracle7 database services, as well as external procedure calls and Heterogeneous Services, and some management tools, including Oracle Enterprise Manager.

```
SID_LIST_listener_name=
  (SID_LIST=
    (SID_DESC=
      (GLOBAL_DBNAME=global_database_name)
      (SID_NAME=sid)
      (ORACLE_HOME=oracle_home))
    (SID_DESC=...))
```

For Oracle9i and Oracle8i databases, the listener uses the dynamic service information about the database and instance it has received through service registration before using statically configured information in the listener.ora file. Therefore, the SID_LIST is not required, unless Oracle Enterprise Manager is used to monitor an Oracle9i or Oracle8i database.

SID_LIST

Purpose

Use the parameter SID_LIST to identify a list of SID descriptions.

Example

```
SID_LIST_listener_name=
  (SID_LIST=
    (SID_DESC=...))
  (SID_DESC=...))
```
Listener Parameters

SID_DESC

Purpose

Use the parameter SID_DESC to specify service information for a specific database instance or a non-database service.

Embed this parameter under the SID_LIST parameter.

Example

```
SID_LIST_listener_name=
  (SID_LIST=
    (SID_DESC=...)
    (SID_DESC=...))
```

SID_DESC permits the following parameters:

- ENVS
- GLOBAL_DBNAME
- ORACLE_HOME
- PROGRAM
- SID_NAME

ENVS

Purpose

Use the parameter ENVS to specify environment variables for the listener to set prior to executing (as a child process) a dedicated server program or an executable specified with the PROGRAM parameter.

Embed this parameter under the SID_DESC parameter.

---

**Note:** This parameter is not supported on Windows NT. Any process spawned by the listener will simply inherit the listener’s environment.
Listener Parameters

Usage Notes

Enclose an environment variable and its value within double quotes ("):

(ENVS="variable=value")

A list of environment variables and their values can be specified. Enclose the list within double quotes, from end to end, and separate environment variable definitions with commas and no space.

(ENVS="variable=value,variable=value")

---

**Note:** Single quotes (’) are supported for backward compatibility.

---

The use of the following characters within the environment variable or its value definition (ENVS="variable=value") are not supported:

- Comma (,)
- Single quotes (’)
- Double quotes ("")
- Equal sign (=)

Example

```
SID_LIST_listener_name=
 (SID_LIST=
  (SID_DESC=
   (SID_NAME=plsextproc)
   (ORACLE_HOME=/oracle9i)
   (PROGRAM=extproc)
   (ENVS="LD_LIBRARY_PATH=/oracle/9i/lib:/oracle/9i/ctx/lib")
  )
  (SID_DESC=
   (SID_NAME=test)
   (PROGRAM=/tmp/myexec)
   (ENVS="LD_LIBRARY_PATH=/private/xpm/lib:/private/mylibs,MYPATH=/usr/ucb:/usr/local/packages,APL_ENV_FILE=/apl/conf/env.txt")
  )
)
```
GLOBAL_DBNAME

Purpose
Use the parameter GLOBAL_DBNAME to identify the database service.

While processing a client connection request, the listener tries to match the value of this parameter with the value of the SERVICE_NAME parameter in the client connect descriptor. If the client connect descriptor uses the SID parameter, then the listener does not attempt to map the values. This parameter is primarily intended for configurations with Oracle8 release 8.0 or Oracle7 databases (where dynamic service registration is not supported for dedicated servers). This parameter may also be required for use with Oracle9i and Oracle8i database services by some configurations and management tools.

The value for this parameter is typically obtained from the combination of the DB_NAME and DB_DOMAIN parameters (DB_NAME, DB_DOMAIN) in the initialization parameter file, but the value can also contain any valid name used by clients to identify the service.

Embed this parameter under the SID_DESC parameter.

Example

```
SID_LIST_listener_name=
  (SID_LIST=
    (SID_DESC=
      (GLOBAL_DBNAME=sales.us.acme.com)
      (SID_NAME=sales)
      (ORACLE_HOME=/usr/oracle))
```
LISTENER PARAMETERS

ORACLE_HOME

Purpose

Use the parameter ORACLE_HOME to identify the Oracle home location of the service.

Embed this parameter under the SID_DESC parameter.

Example

SID_LIST_listener_name=
 (SID_LIST=
  (SID_DESC=
   (SID_NAME=extproc)
   (ORACLE_HOME=/usr/oracle)
   (PROGRAM=extproc)))

PROGRAM

Purpose

Use the parameter PROGRAM to identify the service executable program name.

Embed this parameter under the SID_DESC parameter.

Example

SID_LIST_listener_name=
 (SID_LIST=
  (SID_DESC=
   (SID_NAME=extproc)
   (ORACLE_HOME=/usr/oracle)
   (PROGRAM=extproc)))
**SID_NAME**

**Purpose**

Use the parameter **SID_NAME** to identify the *Oracle System Identifier (SID)* of the instance. You can obtain the SID value from the **INSTANCE_NAME** parameter in the initialization parameter file.

Embed this parameter under the **SID_DESC** parameter.

**Example**

```sql
SID_LIST_listener_name=
  (SID_LIST=
    (SID_DESC=
      (GLOBAL_DBNAME=sales.us.acme.com)
      (SID_NAME=sales)
      (ORACLE_HOME=/usr/oracle)))
```

**Control Parameters**

This section describes the following parameters that control the behavior of the listener:

- **ADMIN_RESTRICTIONS_listener_name**
- **INBOUND_CONNECT_TIMEOUT_listener_name**
- **LOG_DIRECTORY_listener_name**
- **LOG_FILE_listener_name**
- **LOGGING_listener_name**
- **PASSWORDS_listener_name**
- **SAVE_CONFIG_ON_STOP_listener_name**
- **SSL_CLIENT_AUTHENTICATION**
- **STARTUP_WAIT_TIME_listener_name**
- **TRACE_DIRECTORY_listener_name**
- **TRACE_FILE_listener_name**
- **TRACE_FILELEN_listener_name**
- **TRACE_FILENO_listener_name**
Listener Parameters

- TRACE_LEVEL_listener_name
- TRACE_TIMESTAMP_listener_name
- WALLET_LOCATION

**ADMIN_RESTRICTIONS_listener_name**

**Purpose**

Use the parameter ADMIN_RESTRICTIONS_listener_name to restrict runtime administration of the listener. The parameter is useful if the listener is not password-protected.

Setting ADMIN_RESTRICTIONS_listener_name=on disables the runtime modification of parameters in listener.ora. That is, the listener will refuse to accept SET commands that alter its parameters. To change any of the parameters in listener.ora, including ADMIN_RESTRICTIONS_listener_name itself, modify the listener.ora file manually and reload its parameters (with the RELOAD command) for the new changes to take effect without explicitly stopping and restarting the listener.

Oracle Corporation recommends establishing a password to secure the listener. To establish an encrypted password, use either the Listener Control utility CHANGE_PASSWORD command or Oracle Net Manager.

**See Also:** Oracle9i Net Services Administrator's Guide for further information about password security of the listener

**Default**

off

**Example**

ADMIN_RESTRICTIONS_listener=on
INBOUND_CONNECT_TIMEOUT_listener_name

Purpose

Use the INBOUND_CONNECT_TIMEOUT_listener_name parameter to specify the time, in seconds, for the client to complete its connect request to the listener after the network connection had been established.

If the listener does not receive the client request in the time specified, then it terminates the connection. In addition, the listener logs IP address of the client and an ORA-12525:TNS: listener has not received client’s request in time allowed error message to the listener.log file.

To protect both the listener and the database server, Oracle Corporation recommends setting this parameter in combination with the SQLNET.INBOUND_CONNECT_TIMEOUT parameter in the sqlnet.ora file. When specifying values for these parameters, consider the following recommendations:

■ Set both parameters to an initial low value.
■ Set the value of the INBOUND_CONNECT_TIMEOUT_listener_name parameter to a lower value than the SQLNET.INBOUND_CONNECT_TIMEOUT parameter.

For example, you can set INBOUND_CONNECT_TIMEOUT_listener_name to 2 seconds and INBOUND_CONNECT_TIMEOUT parameter to 3 seconds. If clients are unable to complete connections within the specified time due to system or network delays that are normal for the particular environment, then increment the time as needed.

See Also: Oracle9i Net Services Administrator’s Guide for information about configuring these parameters

Default

None

Example

INBOUND_CONNECT_TIMEOUT_listener=2
Listener Parameters

**LOG_DIRECTORY_listener_name**

**Purpose**
Use the parameter `LOG_DIRECTORY_listener_name` to specify the destination directory of the listener log file.

**Default**
The `$ORACLE_HOME/network/log` directory on UNIX operating systems and the `ORACLE_HOME\network\log` directory on Windows NT.

**Example**
```
LOG_DIRECTORY_listener=/oracle/network/admin/log
```

**LOG_FILE_listener_name**

**Purpose**
Use the parameter `LOG_FILE_listener_name` to specify the name of the log file for the listener.

**Default**
`listener.log`

**Example**
```
LOG_FILE_listener=list.log
```
**LOGGING_listener_name**

**Purpose**

Use the parameter `LOGGING_listener_name` to turn logging on or off.

**Default**

on

**Values**

on | off

**Example**

LOGGING_listener=on

**PASSWORDS_listener_name**

**Purpose**

Use the parameter `PASSWORDS_listener_name` to store an encrypted password for a listener, so that certain privileges operations, such as `SAVE_CONFIG` and `STOP`, used from the Listener Control utility are secure. An encrypted password can be set using either the Listener Control utility `CHANGE_PASSWORD` command or Oracle Net Manager.

**See Also:** *Oracle9i Net Services Administrator’s Guide* for further information about password security of the listener

**Example**

PASSWORDS_LISTENER=(2D6C48144CF753AC)
SAVE_CONFIG_ON_STOP_listener_name

Purpose
Use the parameter SAVE_CONFIG_ON_STOP_listener_name to specify whether or not runtime configuration changes are saved into the listener.ora file.

When you set the parameter to true, any parameters that were modified while the listener was running using the Listener Control utility SET command are saved to the listener.ora file when the STOP command is issued. When you set the parameter to false, the Listener Control utility does not save the runtime configuration changes to the listener.ora file.

Default
false

Values
true | false

Example
SAVE_CONFIG_ON_STOP_listener=true

SSL_CLIENT_AUTHENTICATION

Purpose
Use the parameter SSL_CLIENT_AUTHENTICATION to specify whether or not a client is authenticated using the Secure Sockets Layer (SSL).

Default
true

Values
true | false
Usage Notes

The database server authenticates the client. Therefore, this value should be set to false. If this parameter is set to true, the listener attempts to authenticate the client, which can result in a failure.

See Also: Oracle Advanced Security Administrator's Guide

Example

SSL_CLIENT_AUTHENTICATION=true

STARTUP_WAIT_TIME_listener_name

Note: This parameter is deprecated in Oracle9i and will be desupported in a future release. If you require this parameter to run the listener, please notify Oracle Support Services.

Purpose

Use the parameter STARTUP_WAIT_TIME_listener_name to set the number of seconds that the listener waits before responding to a Listener Control utility START command.

Default

0

Example

STARTUP_WAIT_TIME_listener=5
**TRACE_DIRECTORY_listener_name**

**Purpose**

Use the parameter `TRACE_DIRECTORY_listener_name` to specify the destination directory of the listener trace file.

**Default**

The `$ORACLE_HOME/network/trace` directory on UNIX operating systems and the `ORACLE_HOME\network\trace` directory on Windows NT

**Example**

```
TRACE_DIRECTORY_listener=/oracle/network/admin/trace
```

**TRACE_FILE_listener_name**

**Purpose**

Use the parameter `TRACE_FILE_listener_name` to specify the name of the trace file for the listener.

**Default**

`listener.trc`

**Example**

```
TRACE_FILE_listener=list.trc
```
**TRACE_FILELEN_listener_name**

**Purpose**
Use the parameter `TRACE_FILELEN_listener_name` to specify the size of the listener trace files in kilobytes (KB). When the size is met, the trace information is written to the next file. The number of files is specified with the `TRACE_FILENO_listener_name` parameter.

**Default**
Unlimited

**Example**
```
TRACE_FILELEN_listener=100
```

**TRACE_FILENO_listener_name**

**Purpose**
Use the parameter `TRACE_FILENO_listener_name` to specify the number of trace files for listener tracing. When this parameter is set along with the `TRACE_FILELEN_listener_name` parameter, trace files are used in a cyclical fashion. The first file is filled first, then the second file, and so on. When the last file has been filled, the first file is re-used, and so on.

The trace file names are distinguished from one another by their sequence number. For example, if the default trace file of `listener.trc` is used, and this parameter is set to 3, the trace files would be named `listener1.trc`, `listener2.trc` and `listener3.trc`.

In addition, trace events in the trace files are preceded by the sequence number of the file.

**Default**
1

**Example**
```
TRACE_FILENO_listener=3
```
TRACE_LEVEL_listener_name

Purpose
Use the parameter TRACE_LEVEL_listener_name to turn listener tracing on, at a specific level, or off.

Default
off

Values
- off for no trace output
- user for user trace information
- admin for administration trace information
- support for Oracle Support Services trace information

Example
TRACE_LEVEL_listener=admin

TRACE_TIMESTAMP_listener_name

Purpose
When parameter TRACE_LEVEL_listener_name is set to a specific tracing level, you can use the parameter TRACE_TIMESTAMP_listener_name to add a timestamp in the form of dd-mon-yyyy hh:mm:ss:mil to every trace event in the trace file for the listener.

Default
on

Values
on or true | off or false

Example
TRACE_TIMESTAMP_listener=true
**WALLET_LOCATION**

**Purpose**

Use the parameter WALLET_LOCATION to specify the location of wallets. Wallets are certificates, keys, and trustpoints processed by SSL that allow for secure connections.

See Also: Oracle Advanced Security Administrator’s Guide

**Syntax**

Oracle wallets on file system:

```
WALLET_LOCATION=
  (SOURCE=
    (METHOD=file)
    (METHOD_DATA=
      (DIRECTORY=directory))
  )
```

Microsoft certificate store:

```
WALLET_LOCATION=
  (SOURCE=
    (METHOD=mcs))
```

Oracle wallets in the Windows NT registry:

```
WALLET_LOCATION=
  (SOURCE=
    (METHOD=reg)
    (METHOD_DATA=
      (KEY=registry_key))
  )
```

Entrust wallets:

```
WALLET_LOCATION=
  (SOURCE=
    (METHOD=entr)
    (METHOD_DATA=
      (PROFILE=file.epf)
      (INIFILE=file.ini))
  )
```
**Subparameters**

`WALLET_LOCATION` supports the following subparameters:

- **SOURCE**: Specify the type of storage for wallets and storage location.
- **METHOD**: Specify the type of storage.
- **METHOD_DATA**: Specify the storage location.
- **DIRECTORY**: Specify the location of Oracle wallets on file system.
- **KEY**: Specify the wallet type and location in the Windows NT registry.
- **PROFILE**: Specify the Entrust profile file (.epf).
- **INIFILE**: Specify the Entrust initialization file (.ini).

**Default**

None

**Usage Notes**

- The key/value pair for Microsoft’s certificate store (MCS) omits the `METHOD_DATA` parameter because MCS does not use wallets. Instead, Oracle PKI (public key infrastructure) applications obtain certificates, trustpoints and private keys directly from the user’s profile.

- If an Oracle wallet is stored in the Windows NT registry and the wallet’s `key (KEY)` is `SALESAPP`, the storage location of the encrypted wallet is `HKEY_CURRENT_USER\SOFTWARE\ORACLE\WALLETS\SALESAPP\EWALLET.P12`. The storage location of the decrypted wallet is `HKEY_CURRENT_USER\SOFTWARE\ORACLE\WALLETS\SALESAPP\CWALLET.SSO`.

**Examples**

Oracle wallets on file system:

```bash
WALLET_LOCATION=
  (SOURCE=)
    (METHOD=file)
      (METHOD_DATA=)
        (DIRECTORY=/etc/oracle/wallets/databases))
```
Microsoft certificate store:

\texttt{WALLET\_LOCATION=}
  (\texttt{SOURCE=})
  (\texttt{METHOD=mcs})

Oracle Wallets in the Windows NT registry:

\texttt{WALLET\_LOCATION=}
  (\texttt{SOURCE=})
  (\texttt{METHOD=REG})
  (\texttt{METHOD\_DATA=})
    (\texttt{KEY=SALESAPP})

Entrust Wallets:

\texttt{WALLET\_LOCATION=}
  (\texttt{SOURCE=})
  (\texttt{METHOD=entr})
  (\texttt{METHOD\_DATA=})
    (\texttt{PROFILE=/etc/oracle/wallets/test.epf})
    (\texttt{INIFILE=/etc/oracle/wallets/test.ini})
This chapter provides a complete listing of the cman.ora file configuration parameters.

This chapter contains these topics:

- Overview of Oracle Connection Manager Configuration File
- Oracle Connection Manager Parameters
Overview of Oracle Connection Manager Configuration File

**Oracle Connection Manager** configuration, stored in the `cman.ora` file, consists of the following elements:

- Listening **protocol addresses** of the CMGW process (gateway process) and the CMADMIN process (administrative process)
- Access control parameters
- Control parameters

By default, the `cman.ora` file is located in the `$ORACLE_HOME/network/admin` directory on UNIX operating systems and in the `ORACLE_HOME\network\admin` directory on Windows NT. `cman.ora` can also be stored at the following locations:

- The directory specified by the `TNS_ADMIN` environment variable or registry value
- On UNIX operating systems, the global configuration directory. For example, on the Solaris Operating System, this directory is `/var/opt/oracle`.

**See Also:** Oracle operating system-specific documentation

Figure 9–1 shows an example `cman.ora` file.

**Figure 9–1  Example cman.ora File**

```ora
CMAN=
   (ADDRESS=(PROTOCOL=tcp) (HOST=proxysvr) (PORT=1630))
   (ADDRESS=(PROTOCOL=tcps) (HOST=144.25.22.217) (PORT=2484))
CMAN_ADMIN=
   (ADDRESS=(PROTOCOL=tcp) (HOST=proxysvr) (PORT=1830))
CMAN_RULES=
   (RULE=(SRC=206.62.226.32/27)(DST=sales-server)(SRV=*) (ACT=accept)))
CMAN_PROFILE=
   (PARAMETER_LIST=
      (LOG_LEVEL=2)
      (TRACING=on))
```
Oracle Connection Manager Parameters

This section lists and describes the cman.ora file parameters. Configuration parameters fall into the following categories:

- Listening Endpoint List
- Route List
- Parameter List

Listening Endpoint List

**CMAN**

**Purpose**

Use the parameter CMAN to specify the protocol addresses of the CMGW process.

**Default**

```
CMAN=(ADDRESS=(PROTOCOL=tcp)(HOST=local_host)(PORT=1630))
```

**Syntax**

```
CMAN=
    ([ADDRESS_LIST= ]
     (ADDRESS= ...)
    [(ADDRESS= ...)])
```
CMAN_ADMIN

Purpose
Use the parameter CMAN_ADMIN to specify the protocol addresses of the Oracle Connection Manager CMADMIN process.

Default
CMAN_ADMIN=(ADDRESS= (PROTOCOL=tcp) (HOST=anyhost) (PORT=1830))

Syntax
CMAN_ADMIN=
    ([ADDRESS_LIST= ]
     (ADDRESS= ...))
    [(ADDRESS= ...)])

Route List

CMAN_RULES

Purpose
Use the parameter CMAN_RULES to specify an access control rule list to filter incoming connections. A rule list specifies which connections are accepted, rejected, or dropped.

Syntax
CMAN_RULES=
    (RULE_LIST=
     (RULE= 
      (SRC=host)
      (DST=host)
      (SRV=service_name|sid)
      (ACT=accept|reject))
     [(RULE= ...)]
    )
Subparameters

The **RULE** parameter filters a connection or group of connections using the following subparameters:

- **SRC**: Specify the source host name or IP address in dot notation of the client.
- **DST**: Specify the destination server host name or IP address in dot notation of the database server.
- **SRV**: Specify database **service name** of the Oracle9i or Oracle8i database (obtained from the **SERVICE_NAME** parameter in the initialization parameter file) or **Oracle System Identifier (SID)** value of the pre-release 8.1 database (obtained from the **ORACLE_SID** environment variable or registry value).
- **ACT**: Specify to **accept** to accept incoming request or **reject** to reject incoming requests.

Usage Notes

- If no rules are specified, all connections are accepted.
- For rejected connections, Oracle Connection Manager displays an error message. For dropped connections, it displays no message.
- The wildcard for host name is an asterisk (*). In the case of an IP address (d.d.d.d), you can wildcard the individual d’s with this character.
- If connect descriptors used by clients contain both **SID** and **SERVICE_NAME** parameters, then both names requested need to be permitted by the rules respectively in order for client access to be allowed.

Example

```plaintext
CMAN_RULES=
(RULE_LIST=
 (RULE=
   (SRC=client1-pc)
   (DST=sales-server)
   (SRV=sales.us.acme.com)
   (ACT=reject))
 (RULE=
   (SRC=144.25.23.45)
   (DST=144.25.187.200)
   (SRV=db1)
   (ACT=accept)))
```
Parameter List

CMAN_PROFILE

Purpose
Use the parameter CMAN_PROFILE to specify the set attributes for an Oracle Connection Manager. To override the default setting for a parameter, enter the parameter and its nondefault value in the PARAMETER_LIST.

Default Parameters

ANSWER_TIMEOUT=0
AUTHENTICATION_LEVEL=0
LOG_LEVEL=0
MAX_FREELIST_BUFFERS=0
MAXIMUM_CONNECT_DATA=1024
MAXIMUM_RELAYS=128
RELAY_STATISTICS=NO
REMOTE_ADMIN=NO
SHOW_TNS_INFO=NO
TRACE_DIRECTORY=The $ORACLE_HOME/network/trace directory on UNIX operating systems and the ORACLE_HOME\network\trace directory on Windows NT
TRACE_FILELEN=unlimited
TRACE_FILENO=1
TRACE_TIMESTAMP=ON
TRACING=NO
USE_ASYNC_CALL=YES
Allowed Values of Parameters

**ANSWER_TIMEOUT**=[0 to $n$]
**AUTHENTICATION_LEVEL**=[0 | 1]
**LOG_LEVEL**=[0-4]
**MAXIMUM_CONNECT_DATA**=[257 to 4096]
**MAX_FREELIST_BUFFERS**=[0 to 10240]
**MAXIMUM_RELAYS**=[1 to 2048]
**RELAY_STATISTICS**=[YES | TRUE | ON | 1 | NO | FALSE | OFF | 0]
**REMOTE_ADMIN**=[YES | TRUE | ON | 1 | NO | FALSE | OFF | 0]
**SHOW_TNS_INFO**=[YES | TRUE | ON | 1 | NO | FALSE | OFF | 0]
**TRACE_DIRECTORY**=directory
**TRACE_FILELEN**=size of file in kilobytes
**TRACE_FILENO**=[1 to 8]
**TRACE_TIMESTAMP**=[YES | TRUE | ON | 1 | NO | FALSE | OFF | 0]
**TRACING**=[YES | TRUE | ON | 1 | NO | FALSE | OFF | 0]
**USE_ASYNC_CALL**=[YES | TRUE | ON | 1 | NO | FALSE | OFF | 0]

Example

```
CMAN_PROFILE=
  (PARAMETER_LIST=
    (MAXIMUM_RELAYS=512)
    (LOG_LEVEL=1)
    (RELAY_STATISTICS=YES)
    (REMOTE_ADMIN=YES)
    (SHOW_TNS_INFO=YES)
    (USE_ASYNC_CALL=YES)
    (AUTHENTICATION_LEVEL=0)
    (TRACING=YES)
    (TRACE_TIMESTAMP=YES)
    (TRACE_FILELEN=100)
    (TRACE_FILENO=2))
```
**ANSWER_TIMEOUT**

Use the parameter `ANSWER_TIMEOUT` to determine the time, in seconds, that Oracle Connection Manager uses to time out the protocol handshake associated with an incoming connection request.

The parameter accepts a range of 0 to \( n \).

**AUTHENTICATION_LEVEL**

Use the parameter `AUTHENTICATION_LEVEL` to specify the level of security. This parameter accepts the following values:

- 1 to instruct Oracle Connection Manager to reject connect requests that are not using Secure Network Services (SNS). SNS is part of the Oracle Advanced Security.
- 0 (default) to instruct Oracle Connection Manager not to check for SNS between the client and server

**LOG_LEVEL**

The `LOG_LEVEL` parameter specifies the level of logging performed by Oracle Connection Manager. This parameter accepts four log levels, ranging from 0 to 4:

- 0 (default) for no logging
- 1 for basic reporting
- 2 for `RULE_LIST` matching lookup reporting
- 3 for relay blocking reporting
- 4 for relay I/O counts reporting

The CMGW process creates a log file called `cman_pid.log`, and the CMADMIN process creates a log file called `cmadm_pid.log`. The log files are located in the `$ORACLE_HOME/network/log` directory on UNIX operating systems and the `ORACLE_HOME\network\log` directory on Windows NT.

**MAX_FREELIST_BUFFERS**

The `MAX_FREELIST_BUFFERS` parameter specifies the maximum number of buffers that **Transparent Network Substrate (TNS)** keeps in its freelist for later reuse instead of returning them to the operating system after a relay gets closed.

The parameter accepts a range of 0 to 10240.
**MAXIMUM_CONNECT_DATA**

Use the parameter `MAXIMUM_CONNECT_DATA` to limit the connect data string length of the incoming connection requests.

The parameter accepts a range of 257 to 4096.

**MAXIMUM_RELAYS**

Use the parameter `MAXIMUM_RELAYS` to specify the maximum number of concurrent connections supported.

The parameter accepts a range of 1 to 2048.

**RELAY_STATISTICS**

Use the parameter `RELAY_STATISTICS` to specify whether or not I/O statistics are recorded. This parameter accepts the following values:

- *yes* to instruct Oracle Connection Manager to maintain statistics pertaining to relay I/O activities, such as:
  - Number of inbound (IN) bytes
  - Number of outbound (OUT) bytes
  - Number of IN packets
  - Number of OUT packets

  This information is stored in the `cman_pid.log` file.

- *no* to record no I/O statistics
REMOTE_ADMIN

Use the parameter REMOTE_ADMIN to specify whether or not remote access to an Oracle Connection Manager is allowed. This parameter accepts the following values:

- yes to allow access from a remote Oracle Connection Manager Control utility session to Oracle Connection Manager
- no to allow only access to the local Oracle Connection Manager. This value prevents a user running a remote Oracle Connection Manager Control utility session access to Oracle Connection Manager.

See Also: "Distributed Operations" on page 2-4 for configuration details

SHOW_TNS_INFO

Use the parameter SHOW_TNS_INFO to specify whether or not TNS information is to be recorded. This parameter accepts the following values:

- yes to instruct Oracle Connection Manager to include TNS information in the cman_pid.log file
- no to instruct Oracle Connection Manager to not include TNS events in the log file

TRACING

Use the parameter TRACING to specify whether or not tracing is enabled for the Oracle Connection Manager. This parameter accepts the following values:

- yes to enable tracing for Oracle Connection Manager. The CMGW process creates a trace file called cman_pid.trc, and the CMADMIN process creates a trace file called cmadm_pid.trc.
- no to disable tracing
**TRACE_DIRECTORY**

Use the parameter `TRACE_DIRECTORY` to specify the destination directory for the trace files. You must set this parameter to a nondefault location if you plan to use the `TRACE_FILELEN` or `TRACE_TIMESTAMP` parameters.

**TRACE_FILELEN**

Use the parameter `TRACE_FILELEN` to specify the size of the trace file in kilobytes (KB). When the size is met, the trace information is written to the next file. The number of files is specified with the `TRACE_FILENO` parameter.

**TRACE_FILENO**

Use the parameter `TRACE_FILENO` to specify the number of trace files for Oracle Connection Manager tracing. When this parameter is set along with the `TRACE_FILELEN` parameter, trace files are used in a cyclical fashion. The first file is filled first, then the second file, and so on. When the last file has been filled, the first file is reused, and so on.

The trace file names are distinguished from one another by their sequence number. For example, if this parameter is set to 3, the CMGW gateway trace files would be named `cman1_pid.trc`, `cman2_pid.trc` and `cman3_pid.trc` and the CMADMIN administrative trace files would be named `cmadm1_pid.trc`, `cmadm2_pid.trc` and `cmadm3_pid.trc`.

In addition, trace events in the trace files are preceded by the sequence number of the file.

**TRACE_TIMESTAMP**

When the parameter `TRACING` is enabled, you can use the parameter `TRACE_TIMESTAMP` to add a time stamp in the form of `dd-mon-yyyy hh:mm:ss:ms` to every trace event in the trace files for Oracle Connection Manager.

**Note:** This parameter requires a nondefault trace directory be specified with the `TRACE_DIRECTORY` parameter.
USE_ASYNC_CALL

Use the parameter USE_ASYNC_CALL to specify whether or not Oracle Connection Manager is to use asynchronous functions while in the answering or calling phase of establishing an Oracle Net connection. This parameter accepts the following values:

- **yes** to instruct Oracle Connection to use all asynchronous functions
- **no** to instruct Oracle Connection Manager not to use asynchronous functions
This chapter provides a complete listing of the names.ora file configuration parameters.

This chapter contains these topics:

- Overview of Oracle Names Server Configuration File
- Oracle Names Parameters
Overview of Oracle Names Server Configuration File

**Oracle Names server** configuration, stored in the *names.ora* file, consists of the following elements:

- Name of the Oracle Names server
- Protocol addresses that it is accepting connection requests on
- Location of **administrative region** information
- Domain information
- Control parameters

By default, *names.ora* is located in the `$ORACLE_HOME/network/admin` directory on UNIX operating systems and the `ORACLE_HOME\network\admin` directory on Windows NT. *names.ora* can also be stored the following locations:

- The directory specified by the `TNS_ADMIN` environment variable or registry value
- On UNIX operating systems, the global configuration directory. For example, on the Solaris Operating System, this directory is `/var/opt/oracle`.

**See Also:** Oracle operating system-specific documentation

Figure 10–1 shows a *names.ora* file for an Oracle Names server named namesvr2.us.acme.com.

**Figure 10–1  Example names.ora File**

```
NAMES.SERVER_NAME=namesvr2.us.acme.com
NAMES.ADDRESSES=
  (ADDRESS=(PROTOC=tcp) HOST=namesvr2-server PORT=1575)
NAMES.ADMIN_REGION=
  (REGION=
    (DESCRIPTION=
      (ADDRESS=(PROTOCOL=tcp) HOST=sales-server PORT=1521))
      (CONNECT_DATA=
        (SERVICE_NAME=sales.us.acme.com))
      (USERID=system)
      (PASSWORD=manager)
      (NAME=local_region)
      (REFRESH=86400)
      (RETRY=60)
      (EXPIRE=600))
```

Oracle9i Net Services Reference Guide
Oracle Names Parameters

This section lists and describes the names.ora file parameters.

**NAMES.ADDRESSES**

**Purpose**

Use the parameter NAMES.ADDRESSES to list the protocol addresses on which the Oracle Names server listens. Any valid ADDRESS or ADDRESS_LIST is allowed.

**See Also:**
- "ADDRESSes and ADDRESS_LISTs" on page 5-2 for a description of address syntax
- "Protocol Parameters" on page 5-3 for descriptions of the correct parameters to use for each protocol

**Syntax**

NAMES.ADDRESSES=
[(ADDRESS_LIST=]
 (ADDRESS=...)
 (ADDRESS=...)][]

**Default**

NAMES.ADDRESSES=
 (ADDRESS=(PROTOCOL=tcp) (HOST=namesvr-server) (PORT=1575))
Example

```sql
NAMES.ADDRESSES=
  (ADDRESS_LIST=
    (ADDRESS=(PROTOCOL=tcp) (HOST=namesrv2-server) (PORT=1575))
    (ADDRESS=(PROTOCOL=tcp) (HOST=namesrv2-server) (PORT=1375)))
```

**NAMES.ADMIN_REGION**

**Purpose**

Use the parameter `NAMES.ADMIN_REGION` to specify the data source for an administrative region.

**Syntax**

```sql
NAMES.ADMIN_REGION=
  (REGION=
    (DESCRIPTION=
      (ADDRESS=...)
      (CONNECT_DATA=(SERVICE_NAME|SID=service_name|sid))
      (USERID=user)
      (PASSWORD=password)
      (REFRESH=seconds)
      (RETRY=seconds)
      (EXPIRE=seconds)
      (VERSION=version)
      (TYPE=ldap|ldif)
      (HOST=directory_host)
      (PORT=port)
      (TIMEOUT=time)
    )
    (SUBTREE_LIST=
      (SUBTREE=(BASE=base_DN) ((SCOPE=sub|one)))
    )
  )
```

10-4  Oracle9i Net Services Reference Guide
Subparameters

**REGION** supports the following subparameters:

**DESCRIPTION:** Specify the connect descriptor that the Oracle Names server uses to connect to the region database.

**USERID:** If loading data from the region database, specify a database user. If loading restricted data from a LDAP-compliant directory server, specify a directory user with read privileges in the form of a distinguished name (DN).

**PASSWORD:** Specify the password for the database user or directory user.

**REFRESH:** Specify the interval in seconds when the memory cache (not the cache checkpoint file) for the local Oracle Names server will be refreshed from the region database.

The interval value for this parameter is irrelevant for Oracle Names LDAP Proxy servers, because the directory has no mechanism for enabling the Oracle Names LDAP Proxy server to determine if there is new data. Even if this parameter is specified, an Oracle Names LDAP Proxy server always has a reload interval of 248 days, 13 hours, and 20 minutes.

**RETRY:** Specify the interval in seconds the Oracle Names server will wait after a failure to connect to the region database before trying again.

**EXPIRE:** Specify the time in seconds to wait before terminating the retry attempt.

**VERSION:** Specify an arbitrary value. Even though the value is irrelevant, this parameter is still necessary.

The following parameters are reserved for Oracle Names LDAP Proxy servers:

**TYPE:** Specify how the Oracle Names LDAP Proxy server is to load data from a directory server. This parameter supports the following values:

- ldap: Specifies that the Oracle Names LDAP Proxy server is to load data directly from a directory server
- ldif: Specifies that the Oracle Names LDAP Proxy server is to use data from an LDAP Data Interchange Format (LDIF) file

The following subparameters are for (TYPE=ldap):

**HOST:** Specify the directory server host name.

**PORT:** Specify the listening TCP/IP port for the directory server. If you do not specify this option, the default port (389) is used.

**TIMEOUT:** Specify the time limit in seconds in which the Oracle Names LDAP Proxy server can spend performing a search of directory objects. This
time limit cannot be greater than the time limit set for searches in the directory server. By default, the time limit is set to 10 seconds, which is sufficient for most searches.

**SUBTREE_LIST | SUBTREE**: Use the **SUBTREE** parameter to specify the DN. Use the **SUBTREE_LIST** parameter if there are multiple DNs. The **SUBTREE** parameter supports the following subparameters:

- **BASE**: Specify a subtree location in the directory information tree (DIT) from which the Oracle Names Proxy server should load data. The location is specified as a DN of a LDAP directory entry. The Oracle Names Proxy loads directory naming data from one or more Oracle Contexts located in the subtree following the entry specified.

**Note**: Do not prefix the DN with "dn:". For example, (BASE=dn:dc=com) is not acceptable.

**SCOPE**: Specifies where the Oracle Names Proxy server looks for directory data to load. one (default) specifies that the Oracle Names Proxy server look only in one Oracle Context directly following the entry specified in the **BASE** parameter. sub specifies the Oracle Names Proxy server look in all the Oracle Contexts in the subtree following the entry specified in the **BASE** parameter.

**See Also**: Oracle9i Net Services Administrator’s Guide for more information about configuring the **NAMES.ADMIN_REGION** parameter for Oracle Names LDAP Proxy servers

**Example**

```apl
NAMES.ADMIN_REGION=
(REGION=
 (DESCRIPTION=
  (ADDRESS=(PROTOCOL=tcp)(HOST=sales-server)(PORT=1575))
  (CONNECT_DATA=(SERVICE_NAME=sales.us.acme.com)))
 (USERID=system)
 (PASSWORD=manager)
 (REFRESH=172800)
 (RETRY=2700)
 (EXPIRE=8700)
 (VERSION=34619392))
```
NAMES.AUTHORITY_REQUIRED

Purpose
Use the parameter NAMES.AUTHORITY_REQUIRED to specify whether or not system queries require authoritative answers.

Default
false

Example
NAMES.AUTHORITY_REQUIRED=true

NAMES.AUTO_REFRESH_EXPIRE

Purpose
Use the parameter NAMES.AUTO_REFRESH_EXPIRE to specify the amount of time, in seconds, for the Oracle Names server to cache database server addresses in other administrative regions obtained through the NAMES.DOMAIN.HINTS parameter. At the end of this interval, the Oracle Names server issues a query to the other regions to refresh the database server addresses.

Default
600

Acceptable Values
60 to 1209600

Example
NAMES.AUTO_REFRESH_EXPIRE=1200000
NAMES.AUTO_REFRESH_RETRY

Purpose

Use the parameter NAMES.AUTO_REFRESH_RETRY to specify the interval, in seconds, that the Oracle Names server retries the other Oracle Names servers on its domain hint list.

Default

180

Minimum Value

60

Maximum Value

3600

Example

NAMES.AUTO_REFRESH_RETRY=180

NAMES.CACHE_CHECKPOINT_FILE

Purpose

Use the parameter NAMES.CACHE_CHECKPOINT_FILE to specify the name and directory path of the file to which the Oracle Names server writes its checkpoint file.

Default

The $ORACLE_HOME/network/names/ckpcch.ora file on UNIX operating systems and the ORACLE_HOME\network\names\ckpcch.ora file on Windows NT

Example

NAMES.CACHE_CHECKPOINT_FILE=c:\oracle\network\names\cacheck.ora
NAMES.CACHE_CHECKPOINT_INTERVAL

Purpose
Use the parameter NAMES.CACHE_CHECKPOINT_INTERVAL to specify the interval, in seconds, in which the Oracle Names server writes a checkpoint of its stored data to a checkpoint file. Each Oracle Names server can periodically write its cached data to a file to protect against startup failures.

Default
0 (disabled)

Minimum Value
10

Maximum Value
259200 (3 days)

Example
NAMES.CACHE_CHECKPOINT_INTERVAL=24

NAMES.CONFIG_CHECKPOINT_FILE

Purpose
Use the parameter NAMES.CONFIG_CHECKPOINT_FILE to specify the name and directory path of the file used to checkpoint Oracle Names server configuration settings.

Default
The $ORACLE_HOME/network/names/ckpcfg.ora file on UNIX operating systems and the ORACLE_HOME\network\names\ckpcfg.ora file on Windows NT

Example
NAMES.CONFIG_CHECKPOINT_FILE=c:\oracle\network\names\configck.ora
Purpose

Use the parameter NAMES.CONNECT_TIMEOUT to specify the time, in seconds, for the Oracle Names server to wait for a connection request from a client to complete.

Default

3

Minimum Value

1

Maximum Value

600

Example

NAMES.CONNECT_TIMEOUT=8
NAMES.DEFAULT_FORWARDERS

Purpose

Use the parameter NAMES.DEFAULT_FORWARDERS to provide an address list of other Oracle Names servers used to forward queries.

Syntax

NAMES.DEFAULT_FORWARDERS=
  (FORWARDER_LIST=
    (NAME=onames_server)
    (ADDRESS=...))

Subparameters

FORWARDER_LIST supports the following subparameters:

- NAME: Specify the Oracle Names server name to forward queries.
- ADDRESS: Specify the protocol address of the Oracle Names server.

See Also: "Protocol Parameters" on page 5-3 for descriptions of the correct parameters to use for each protocol

Example

NAMES.DEFAULT_FORWARDERS=
  (FORWARDER_LIST=
    (FORWARDER=
      (NAME=root.servl.com)
      (ADDRESS=(PROTOCOL=tcp)(HOST=root-server)(PORT=4200))))
NAMES.DEFAULT_FORWARDERS_ONLY

Purpose

Use the parameter NAMES.DEFAULT_FORWARDERS_ONLY to specify how the Oracle Names server forwards queries.

When you set the parameter to true, the Oracle Names server forwards queries only to those Oracle Names servers listed as default forwarders with the NAMES.DEFAULT_FORWARDERS parameter. When you set the parameter to false, the Oracle Names server calls the Oracle Names servers listed as default forwarders before other Oracle Names servers found in the cache.

Default

false

Example

NAMES.DEFAULT_FORWARDERS_ONLY=c:\oracle\network\names\domainck.ora

NAMES.DOMAIN_CHECKPOINT_FILE

Purpose

Use the parameter NAMES.DOMAIN_CHECKPOINT_FILE to specify the name and path of the file used for checkpoint authoritative domain data.

Default

The $ORACLE_HOME/network/names/ckpdom.ora file on UNIX operating systems and the ORACLE_HOME\network\names\ckpdom.ora file on Windows NT

Example

NAMES.DOMAIN_CHECKPOINT_FILE=c:\oracle\network\names\domainck.ora
**NAMES.DOMAINS**

**Purpose**

Use the parameter NAMES.DOMAINS to provide a list of domains in the local region of the Oracle Names server, as well as the default time to live (TTL) in seconds for data in those domains.

**Syntax**

```
NAMES.DOMAINS=
 (DOMAIN_LIST=
   (DOMAIN=
     (NAME=domain)
     (MIN_TTL=ttl))
```

**Subparameters**

NAMES.DOMAINS supports the following subparameters:

- **DOMAIN**: Specify the domain name.

  **Note**: Specify the root domain with a dot (.) or a null value.

- **MIN_TTL**: Specify the TTL for the domain data.
Example

In the following example, NAMES.DOMAINS contains a listing for the root (value of null), com, acme.com, and hq.oracle.com domains. All the domain precedent to hq.acme.com must be defined in order to define hq.acme.com.

NAMES.DOMAINS=
  (DOMAIN_LIST=
    (DOMAIN=
      (NAME=)
        (MIN_TTL=86400))
    (DOMAIN=
      (NAME=com)
        (MIN_TTL=86400))
    (DOMAIN=
      (NAME=acme.com)
        (MIN_TTL=86400))
    (DOMAIN=
      (NAME=hq.acme.com)
        (MIN_TTL=86400)))
NAMES.DOMAIN_HINTS

Purpose

Use the parameter NAMES.DOMAINS_HINTS in one of two ways:

- Identify the protocol address of an Oracle Names server in the root administrative region for delegated administrative regions
- Identify the name of the domain and at least one protocol address of an Oracle Names server in that domain for optimizing forwarded requests to remote administrative regions

Subparameters

NAMES.DOMAINS_HINTS supports the following subparameters:

HINT_LIST: Specify a list of hints. Each hint contains the name and address of Oracle Names server in a remote administrative region. HINT_LIST uses the following syntax:

(HINT_LIST=
 (HINT=(NAME=onames_server) (ADDRESS=...))))

DOMAIN_LIST: Specify the list of remote domains. DOMAIN_LIST uses the following syntax:

(DOMAIN_LIST=
 (DOMAIN=domain))

Usage Notes

See Also: Oracle9i Net Services Administrator’s Guide for usage notes
Examples

In the following example, NAMES.DOMAIN_HINTS contains a domain hint for Oracle Names server rootsvr.com that is located in the root domain of the remote administrative region. The DOMAIN parameter is left null, meaning that the hint is for the root domain.

```
NAMES.DOMAIN_HINTS=
  (HINT_DESC=
    (HINT_LIST=
      (HINT=
        (NAME=rootsvr.com)
        (ADDRESS=(PROTOCOL=tcp)(HOST=root-server)(PORT=1575)))
      (DOMAIN_LIST=
        (DOMAIN=)))
```

The following example shows a hint to query two domains, the root domain and the us.acme.com domain, for Oracle Names servers rootsvr.com and namesvr.us.acme.com.

```
NAMES.DOMAIN_HINTS=
  (HINT_DESC=
    (HINT_LIST=
      (HINT=
        (NAME=rootsvr.com)
        (ADDRESS=(PROTOCOL=tcp)(HOST=root-server)(PORT=1575)))
      (HINT=
        (NAME=namesrv.us.acme.com)
        (ADDRESS=(PROTOCOL=tcp)(HOST=hr-server)(PORT=1575)))
      (DOMAIN_LIST=
        (DOMAIN=)
        (DOMAIN=us.acme.com)))
```
NAMES.FORWARDING_AVAILABLE

Purpose

Use the parameter NAMES.FORWARDING_AVAILABLE to specify how the Oracle Names server forwards client requests.

When you set the parameter to on, the Oracle Names server forwards client requests to remote Oracle Names server. When you set the parameter to off, clients outside the local domain without access to the network are unable to resolve names.

Default

on

Values

on | off

Example

NAMES.FORWARDING_AVAILABLE=off

NAMES.FORWARDING_DESIRED

Purpose

Use the parameter NAMES.FORWARDING_DESIRE to specify how the Oracle Names server handles requests for remote Oracle Names servers.

When you set the parameter to true, the Oracle Names server provides protocol address of remote Oracle Names server to clients. This way, clients are redirected to the appropriate Oracle Names server. When you set the parameter to false, the Oracle Names server connects to the remote Oracle Names server on behalf of clients.

Default

true

Values

true | false
**NAMES.KEEP_DB_OPEN**

**Example**

```
NAMES.FORWARDING_DESIRED=true
```

**NAMES.KEEP_DB_OPEN**

**Purpose**

Use the parameter `NAMES.KEEP_DB_OPEN` to specify whether to attempt to keep the connection to the region database open between operations.

When you set the parameter to `true`, the connection is left open after each load, reload, or reload-check. When you set the parameter to `false`, the connection is closed after each load, reload, or reload-check.

**Default**

`true`

**Values**

`true | false`

**Example**

```
NAMES.KEEP_DB_OPEN=false
```

**NAMES.LOG_DIRECTORY**

**Purpose**

Use the parameter `NAMES.LOG_DIRECTORY` to specify the destination directory where the log file for Oracle Names server operational events are written.

**Default**

The `$ORACLE_HOME/network/log` directory on UNIX operating systems and the `ORACLE_HOME\network\log` directory on Windows NT.

**Example**

```
NAMES.LOG_DIRECTORY=c:\oracle\network\names
```
**NAMES.LOG_FILE**

**Purpose**

Use the parameter `NAMES.LOG_FILE` to indicate the name of the output file to which Oracle Names server operational events are written. The file name extension is always `.log`. Do not enter an extension for this parameter.

**Default**

`names`

**Example**

`NAMES.LOG_FILE=onames`

**NAMES.LOG_STATS_INTERVAL**

**Purpose**

Use the parameter `NAMES.LOG_STATS_INTERVAL` to specify the number of seconds between full statistical dumps in the log file.

**Default**

0 (disabled)

**Minimum Value**

10 seconds

**Maximum Value**

none

**Example**

`NAMES.LOG_STATS_INTERVAL=12`
NAMES.LOG_UNIQUE

Purpose

Use the parameter NAMES.LOG_UNIQUE to indicate whether or not log files are given unique names.

When you set the parameter to on, a process identifier is appended to the name of each log file generated, allowing multiple log files to coexist. For example, log files named namespid.log are created if the default log file name, names.log, is used.

Default

false

Values

true | false

Example

NAMES.LOG_UNIQUE=true

NAMES.MAX_OPEN_CONNECTIONS

Purpose

Use the parameter NAMES.MAX_OPEN_CONNECTIONS to specify the number of connections that the Oracle Names server can have open at any given time. The value is generated as the value 10 or the sum of one connection for listening, 5 for clients, plus one for each remote domain defined in the local administrative region, whichever is greater.

The calculated value is acceptable for most installations.

Default

Calculated based on entered data.

Minimum Value

2
Maximum Value
64

Example
NAMES.MAX_OPEN_CONNECTIONS=52

NAMES.MAX_REFORWARDS

Purpose
Use the parameter NAMES.MAX_REFORWARDS to specify the maximum number of times the Oracle Names server attempts to forward an operation.

Default
2

Minimum Value
1

Maximum Value
15

Example
NAMES.MAX_REFORWARDS=2

NAMES.MESSAGE_POOL_START_SIZE

Purpose
Use the parameter NAMES.MESSAGE_POOL_START_SIZE to specify the initial number of messages allocated in the Oracle Names server message pool that are used for incoming or outgoing forwarded messages.

Default
10
NAMES.NO_MODIFY_REQUESTS

Minimum Value

3

Maximum Value

256

Example

NAMES.MESSAGE_POOL_START_SIZE=10

NAMES.NO_MODIFY_REQUESTS

Purpose

Use the parameter NAMES.NO_MODIFY_REQUESTS to allow or disallow operations that modify data in the Oracle Names server region.

When the parameter NAMES.NO_MODIFY_REQUESTS is set to true, the Oracle Names server refuses any operations that modify data in its region. When the parameter NAMES.NO_MODIFY_REQUESTS is set to false, the Oracle Names server accepts operations that modify data in its region.

Default

false

Values

true | false

Example

NAMES.NO_MODIFY_REQUESTS=true
**NAMES.NO_REGION_DATABASE**

**Purpose**

Use the parameter NAMES.NO_REGION_DATABASE to enable or disable the Oracle Names server from loading data from a region database.

When you set the parameter to `true`, the Oracle Names server does not load data from a region database. Instead, it loads data from its checkpoint files. When you set the parameter to `false`, the Oracle Names server loads data from a region database.

**Default**

`false`

**Values**

`true` | `false`

**Example**

```
NAMES.NO_REGION_DATABASE=true
```

**NAMES.PASSWORD**

**Purpose**

Use the parameter NAMES.PASSWORD to set an encrypted password for an Oracle Names server, so that certain privileged operations, such as `STOP`, `RESTART` and `RELOAD`, used from the Oracle Names Control utility are secure.

If this parameter is set with Oracle Net Manager, then the password is encrypted. A clear-text password can be made manually. If the password is clear-text, ensure that the `NAMESCTL.INTERNAL_ENCRYPT_PASSWORD` parameter in the `sqlnet.ora` file is set to `false`.

**Default**

None
Example

NAMES.PASSWORD=625926683431aa55

**NAMES.RESET_STATS_INTERVAL**

**Purpose**

Use the parameter `NAMES.RESET_STATS_INTERVAL` to specify the number of seconds during which the statistics collected by the Oracle Names servers should accumulate. At the frequency specified, they are reset to 0. The default value of 0 means never reset statistics.

**Default**

0 (never reset)

**Minimum Value**

10

**Maximum Value**

None

**Example**

NAMES.RESET_STATS_INTERVAL=15

**NAMES.SAVE_CONFIG_ON_STOP**

**Purpose**

Use the parameter `NAMES.SAVE_CONFIG_ON_STOP` to specify whether or not runtime configuration changes are saved into the `names.ora` file.

When you set the parameter to `true`, the Oracle Names Control utility saves runtime configuration changes to `names.ora` file. Any parameters which were modified through Oracle Names Control utility `SET` operations replace prior `names.ora` settings. When you set the parameter to `false`, the Oracle Names Control utility does not save runtime configuration changes to the `names.ora` file.
Oracle Names Parameters

Default

false

Example

NAMES.SAVE_CONFIG_ON_STOP=false

**NAMES.SERVER_NAME**

Use the NAMES.SERVER_NAME parameter to uniquely identify an Oracle Names server by a name. All configuration references to a particular Oracle Names server use this name.

Default

ONAMES_onames_server

Example

NAMES.SERVER_NAME=namesrv1.us.acme.com
NAMES.TOPOLOGY_CHECKPOINT_FILE

Purpose

Use the parameter NAMES.TOPOLOGY_CHECKPOINT_FILE to specify the name and path of the file used for checkpoint topology data. This file defines the domains in the administrative region and the Oracle Names servers authoritative for each domain. Specifically, topology data consists of:

- Domains, defined as a list of Oracle Names servers names with NS.SMD record types that are authoritative for the domain
- Oracle Names servers, specified with a A.SMD record type and listening protocol addresses

Default

The $ORACLE_HOME/network/names/ckptop.ora file on UNIX operating systems and the ORACLE_HOME\network\names\ckptop.ora on Windows NT

Example

NAMES.TOPOLOGY_CHECKPOINT_FILE=c:\oracle\network\names\topck.ora

NAMES.TRACE_DIRECTORY

Purpose

Use the parameter NAMES.TRACE_DIRECTORY to specify the destination directory of the output trace files from Oracle Names trace sessions.

Default

The $ORACLE_HOME/network/trace directory on UNIX operating systems and the ORACLE_HOME/network/trace directory on Windows NT

Example

NAMES.TRACE_DIRECTORY=/oracle/network/admin/trace
**NAMES.TRACE_FILE**

**Purpose**
Use the parameter NAMES.TRACE_FILE to specify the name of the output trace files for Oracle Names trace sessions. The file name extension is always .trc.

**Default**
names

**Example**
NAMES.TRACE_FILE=onames

**NAMES.TRACE_FUNC**

**Purpose**
Use the parameter NAMES.TRACE_FUNC to enable the internal mechanism to control tracing by a function name.

**Default**
false

**Example**
NAMES.TRACE_FUNC=false
NAMES.TRACE_LEVEL

Purpose

Use the parameter NAMES.TRACE_LEVEL to turn Oracle Names tracing on, at a specific level, or off.

Default

off

Values

- off for no trace output
- user for user trace information
- admin for administration trace information
- support for Oracle Support Services trace information

Example

NAMES.TRACE_LEVEL=admin

NAMES.TRACE_TIMESTAMP

Purpose

When NAMES.TRACE_LEVEL is set to a specific tracing level, you can use the parameter NAMES.TRACE_TIMESTAMP to add a time stamp in the form of dd-mon-yyyy hh:mm:ss:mil to every trace event in the trace file for Oracle Names.

Default

true

Values

yes or true | no or false

Example

NAMES.TRACE_TIMESTAMP=true
**NAMES.TRACE_UNIQUE**

**Purpose**

Use the parameter NAMES.TRACE_UNIQUE to specify whether or not a unique trace file is created for each Oracle Names trace session. When the value is set to **on**, a process identifier is appended to the name of each trace file, enabling several files to coexist. For example, trace files named *namespid.trc* are created if default trace file name *names.trc* is used. When the value is set to **off**, data from a new trace session overwrites the existing file.

**Default**

**on**

**Values**

**on | off**

**Example**

```
NAMES.TRACE_UNIQUE=on
```
This chapter provides a complete listing of the ldap.ora file configuration parameters.

This chapter contains these topics:
- Overview of Directory Server Usage File
- Directory Usage Parameters
Overview of Directory Server Usage File

The `ldap.ora` file contains directory usage configuration parameters created by Oracle Net Configuration Assistant. Do not modify these parameters or their settings.

By default, `ldap.ora` is located in the `$ORACLE_HOME/network/admin` directory on UNIX operating systems and the `ORACLE_HOME\network\admin` directory on Windows operating systems. `ldap.ora` can also be stored in the directory specified by the `TNSADMIN` environment variable.

Directory Usage Parameters

This section lists and describes the `ldap.ora` file configuration parameters.

DIRECTORY SERVERS

Purpose

Use the parameter `DIRECTORY_SERVERS` to list the host names and port number of the primary and alternate LDAP directory servers.

Values

`host:port[:sslport]`

Example

`DIRECTORY_SERVERS=ldap-server:389, raffles:400:636`
DIRECTORY_SERVER_TYPE

Purpose
Use the parameter DIRECTORY_SERVER_TYPE to specify the type of directory server that is being used.

Values
- oid for Oracle Internet Directory
- ad for Microsoft Active Directory

Example
DIRECTORY_SERVER_TYPE=oid

DEFAULT_ADMIN_CONTEXT

Purpose
Use the parameter DEFAULT_ADMIN_CONTEXT to specify the default directory entry that contains an Oracle Context from which connect identifiers can be created, modified, or looked up.

Values
Valid distinguished name (DN)

Example
DEFAULT_ADMIN_CONTEXT="o=OracleSoftware,c=US"
Part III
Appendixes

This part contains the following appendixes:

- Appendix A, "LDAP Schema for Oracle Net Services"
- Appendix B, "Commands and Parameters Not Supported in This Release"
This appendix describes the Oracle schema object classes and attributes defined in the directory server for Oracle Net Services objects. It does not describe object classes and attributes reserved for future functionality or used by other Oracle products.

This appendix contains these topics:

- Structural Object Classes
- Attributes
Structural Object Classes

The Oracle schema supports the following structural object classes for Oracle Net directory naming lookups:

- orclDBServer
- orclNetService
- orclNetServiceAlias
- orclNetDescription
- orclNetDescriptionList
- orclNetAddress
- orclNetAddressList

**orclDBServer**

*Description*
Defines the attributes for database service entries

*Attributes*
- orclNetDescName
- orclVersion

**orclNetService**

*Description*
Defines the attributes for net service name entries

*Attributes*
- orclNetDescName
- orclVersion
orclNetServiceAlias

**Description**
Defines the attributes for net service alias entries

**Attributes**
- orclNetDescName
- orclVersion

orclNetDescription

**Description**
Specifies a connect descriptor containing the protocol address of the listener and the connect information to the service

**Attributes**
- orclNetAddrList
- orclNetInstanceName
- orclNetConnParamList
- orclNetFailover
- orclNetLoadBalance
- orclNetSdu
- orclNetServiceName
- orclNetSourceRoute
- orclSid
- orclVersion
Structural Object Classes

**orclNetDescriptionList**

**Description**
Specifies a list of connect descriptors

**Attributes**
- orclNetDescList
- orclVersion

**orclNetAddress**

**Description**
Specifies a listener protocol address

**Attributes**
- orclNetAddressString
- orclNetProtocol
- orclVersion

**orclNetAddressList**

**Description**
Specifies a list of protocol addresses

**Attributes**
- orclNetAddrList
- orclNetFailover
- orclNetLoadBalance
- orclNetSourceRoute
- orclVersion
Attributes

Table A–1 lists the attributes used for the object classes. This list is subject to change.

Table A–1  LDAP Schema Attributes for Oracle Net Services

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>orclNetAddrList</td>
<td>Identifies one or more listener protocol addresses</td>
</tr>
<tr>
<td>orclNetAddressString</td>
<td>Defines a listener protocol address</td>
</tr>
<tr>
<td>orclNetConnParamList</td>
<td>Placeholder for future connect data parameters</td>
</tr>
<tr>
<td>orclNetDescList</td>
<td>Identifies one or more connect descriptors</td>
</tr>
<tr>
<td>orclNetDescName</td>
<td>Identifies a connect descriptor or a list of connect descriptors</td>
</tr>
<tr>
<td>orclNetFailover</td>
<td>Turns connect-time failover on for a protocol address list</td>
</tr>
<tr>
<td>orclNetInstanceName</td>
<td>Specifies the instance name to access</td>
</tr>
<tr>
<td>orclNetLoadBalance</td>
<td>Turns client load balancing on for a protocol address list</td>
</tr>
<tr>
<td>orclNetProtocol</td>
<td>Identifies the protocol used in the orclAddressString attribute</td>
</tr>
<tr>
<td>orclNetSdu</td>
<td>Specifies the session data unit (SDU) size</td>
</tr>
<tr>
<td>orclNetServiceName</td>
<td>Specifies the Oracle9i or Oracle8i database service name in the CONNECT_DATA portion</td>
</tr>
<tr>
<td>orclNetSourceRoute</td>
<td>Instructs Oracle Net to use each address in order until the destination is reached</td>
</tr>
<tr>
<td>orclSid</td>
<td>Specifies the Oracle System Identifier (SID) in the CONNECT_DATA portion of a connection descriptor</td>
</tr>
<tr>
<td>orclVersion</td>
<td>Specifies the version of software used to create the entry</td>
</tr>
</tbody>
</table>
This appendix describes features no longer supported by Oracle Net Services.

This appendix contains these topics:

- Overview of Unsupported Features
- Unsupported Parameters
- Unsupported Control Utility Commands
Overview of Unsupported Features

In an effort to streamline configuration decisions for the Internet, the following subsections describe the features and the configuration file that are no longer being supported:

- Identix and SecurID Authentication Methods
- Novell Directory Services (NDS) External Naming and NDS Authentication
- Net8 OPEN
- protocol.ora File
- Prespawned Dedicated Servers
- Protocols

Identix and SecurID Authentication Methods
If you are using Identix or SecurID authentication methods, provided by Oracle Advanced Security, Oracle Corporation recommends migrating to one of the following authentication methods:

- CyberSafe
- RADIUS
- Kerberos
- SSL

See Also: Oracle Advanced Security Administrator’s Guide

Novell Directory Services (NDS) External Naming and NDS Authentication
Support for NDS as an authentication method and as an external naming method is no longer supported. If you are using NDS as an external naming method, Oracle Corporation recommends using directory naming instead.

Net8 OPEN
Net8 OPEN, which provided an application program interface (API) that enabled programmers to develop both database and non-database applications, is no longer supported.
protocol.ora File
The protocol.ora file is no longer supported.
Parameters in the protocol.ora file have been merged into the sqlnet.ora file. These parameters enable you to configure access control to the database, as well as no delays in TCP/IP buffer flushing. These parameters include:

- TCP.EXCLUDED_NODES
- TCP.INVITED_NODES
- TCP.NODERELAY
- TCP.VALIDNODE_CHECKING

See Also: Chapter 6, "Profile Parameters (sqlnet.ora)" for a description of these parameters

If you have a protocol.ora file in the $ORACLE_HOME/network/admin directory on UNIX, and the ORACLE_HOME\network\admin directory on Windows operating systems, Oracle Net Manager, when first started, automatically merges the protocol.ora parameters into the sqlnet.ora file.

There may be operating system-specific parameters in protocol.ora that are node specific. For this reason, Oracle Corporation recommends not sharing sqlnet.ora with other nodes after merging or adding these parameters.

Prespawned Dedicated Servers
Prespawned dedicated server processes are no longer supported. Instead, configure shared server to improve scalability and system resource usage.

Protocols
Protocol addresses using the SPX or LU6.2 protocol must be replaced. Oracle Net provides support for the following network protocols:

- TCP/IP
- TCP/IP with SSL
- Named Pipes

See Also: "Protocol Parameters" on page 5-3 for protocol parameter configuration
Unsupported Parameters

Table B–1 describes the networking parameters no longer supported.

Table B–1 Unsupported Networking Parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>File</th>
<th>Description</th>
<th>Last Supported Release</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMMUNITY</td>
<td>tnsnames.ora</td>
<td>The parameter was a required part of all network service addresses. Thus, it appears anywhere you might find an address (for example, local naming and listener configuration files).</td>
<td>8.0</td>
</tr>
<tr>
<td>AUTOMATIC_IPC</td>
<td>sqlnet.ora</td>
<td>This parameter was used to force sessions through IPC addresses. Due to performance issues, this parameter has been removed. Configure an IPC address instead.</td>
<td>8.0</td>
</tr>
<tr>
<td>NAMES.DEFAULT_ZONE</td>
<td>sqlnet.ora</td>
<td>This parameter was used to be included in profiles as slight variants of the NAMES.DEFAULT_DOMAIN and NAMES.PREFERRED_SERVERS parameters.</td>
<td>8.0</td>
</tr>
<tr>
<td>NAMES.NDS.NAMECONTEXT</td>
<td>sqlnet.ora</td>
<td>This parameter was used to configure naming contexts for NDS external naming.</td>
<td>8.1</td>
</tr>
<tr>
<td>OSS SOURCE_MY_WALLET</td>
<td>sqlnet.ora</td>
<td>This parameter’s name has changed to WALLET_LOCATION.</td>
<td>8.1</td>
</tr>
<tr>
<td>SQLNET.IDENTIX_FINGERPRINT_DATABASE</td>
<td>sqlnet.ora</td>
<td>These parameters supported the Identix authentication method.</td>
<td>8.1</td>
</tr>
<tr>
<td>SQLNET.IDENTIX_FINGERPRINT_DATABASE_USER</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SQLNET.IDENTIX_FINGERPRINT_DATABASE_PASSWORD</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SQLNET.IDENTIX_FINGERPRINT_METHOD</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CONNECT_TIMEOUT</td>
<td>listener.ora</td>
<td>This parameter specified the amount of time that the listener waited for a client’s request after the transport connection had been established.</td>
<td>8.1</td>
</tr>
</tbody>
</table>
### Table B–1  (Cont.) Unsupported Networking Parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>File</th>
<th>Description</th>
<th>Last Supported Release</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRESPAWN_DESC</td>
<td>listener.ora</td>
<td>These parameters were used for prespawned dedicated server configuration. Prespawned dedicated servers are no longer supported. Use shared server instead.</td>
<td>8.1</td>
</tr>
<tr>
<td>PRESPAWN_LIST</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PRESPAWN_MAX</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>USE_PLUG_AND_PLAY_</td>
<td>listener.ora</td>
<td>This parameter instructed the listener to register database information with an Oracle Names server during startup. Use the Oracle Names Control utility <code>REGISTER</code> command to register this information.</td>
<td>8.1</td>
</tr>
<tr>
<td>listener_name</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NAMES_USE_PLUG_AND_PLAY</td>
<td>names.ora</td>
<td>This parameter enabled/disabled the Dynamic Discovery Option. Use the Oracle Names Control utility <code>REORDER_NS</code> command to discover other Oracle Names servers.</td>
<td>2.3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Unsupported Control Utility Commands

Table B–2 describes the control utility commands not supported in release 9.0.

**Table B–2 Unsupported Network Control Utility Commands**

<table>
<thead>
<tr>
<th>Commands</th>
<th>Control Utility</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DOMAIN_HINT</td>
<td>Oracle Names Control Utility</td>
<td>This command created a domain hint. Configure the NAMES.DOMAIN_HINTS parameter in the names.ora file instead.</td>
</tr>
<tr>
<td>DBSNMP_START</td>
<td>Listener Control Utility</td>
<td>These commands controlled the Oracle Intelligent Agent for use with Oracle Enterprise Manager. You can now control the Oracle Intelligent Agent through the Oracle Enterprise Manager Console.</td>
</tr>
<tr>
<td>DBSNMPL Status</td>
<td>Listener Control Utility</td>
<td>These commands specified the amount of time that the listener waited for a client’s request after the transport connection had been established.</td>
</tr>
<tr>
<td>DBSNMP_STOP</td>
<td>Listener Control Utility</td>
<td>These commands instructed the listener to register database information with an Oracle Names server. Use the Oracle Names Control utility REGISTER command to register this information.</td>
</tr>
</tbody>
</table>
access control list (ACL)
The group of access directives that you define. The directives grant levels of access to specific data for specific clients or groups of clients.

ACL
See access control list (ACL).

access control
A feature of Oracle Connection Manager that sets rules for denying or allowing certain clients to access designated servers.

address
See protocol address.

administrative region
An organizational entity for administering Oracle Network Services’ components. Each administrative region includes:

- One or more domains
- One or more Oracle Names servers
- One or more databases and listeners
**alias**

An alternative name for a network object in an Oracle Names server. An alias stores the name of the object it is referencing. When a client requests a lookup of an alias, Oracle Names completes the lookup as if it is the referenced object.

**application gateway**

A host computer that runs the Oracle Net Firewall Proxy. An application gateway looks and acts like a real server from the client’s point of view, and a real client from the server’s point of view. An application gateway sits between the Internet and company’s internal network and provides middleman services (or proxy services) to users on either side.

**ASCII character set**

American Standard Code for Information Interchange character set, a convention for representing alphanumeric information using digital data. The collation sequence used by most computers with the exception of IBM and IBM-compatible computers.

**attribute**

A piece of information that describes some aspect of a directory entry. An entry comprises a set of attributes, each of which belongs to an object class. Moreover, each attribute has both a type—which describes the kind of information in the attribute—and a value—which contains the actual data.

**authentication method**

A security method that enables you to have high confidence in the identity of users, clients, and servers in distributed environments. Network authentication methods can also provide the benefit of single sign-on for users. The following authentication methods are supported in Oracle9i, depending on whether or not Oracle Advanced Security is installed:

- CyberSafe
- RADIUS
- Kerberos
- SSL
- Windows NT native authentication
cache
Memory that stores recently-accessed data so that subsequent requests to access the same data can be processed quickly.

CDS
See Cell Directory Services (CDS).

Cell Directory Services (CDS)
An external naming method that enables users to use Oracle tools transparently and applications to access Oracle databases in a Distributed Computing Environment (DCE) environment.

central administration
An Oracle Names network where network management consists of one administrative region for the entire network. All Oracle Names servers know about one another and about all the services in the network. Contrast with delegated administration.

client
A user, software application, or computer that requests the services, data, or processing of another application or computer. The client is the user process. In a network environment, the client is the local user process and the server may be local or remote.

client load balancing
Load balancing, whereby if more than one listener services a single database, a client can randomly choose between the listeners for its connect requests. This randomization enables all listeners to share the burden of servicing incoming connect requests.

client profile
The properties of a client, which may include the preferred order of naming methods, client and server logging and tracing, the domain from which to request names, and other client options for Oracle Names and Oracle Advanced Security.
**client/server architecture**
Software architecture based on a separation of processing between two CPUs. One CPU acts as the client in the transaction, requesting and receiving services. The other acts as the server that provides the requests.

**cman.ora file**
A configuration file that specifies protocol addresses for incoming requests and administrative commands, as well as Oracle Connection Manager parameters and access control rules.

**CMADMIN process**
An Oracle Connection Manager administrative process responsible for all administrative functions of Oracle Connection Manager.

**CMGW process**
An Oracle Connection Manager gateway process that receives client connections and evaluates against a set of rules whether to deny or allow access. If access is allowed, the gateway process forwards the requests to the next hop, typically the database server. In addition to allowing or denying access, the CMGW process can also multiplex or funnel multiple client connections through a single protocol connection.

**configuration files**
Files that are used to identify and characterize the components of a network. Configuration is largely a process of naming network components and identifying relationships among those components.

**connect data**
A portion of the connect descriptor that defines the destination database service name or Oracle System Identifier (SID). In the following example, SERVICE_NAME defines a database service called sales.us.acme.com:

```
(DESCRIPTION=
 (ADDRESS=(PROTOCOL=tcp)(HOST=sales-server)(PORT=1521)
 (CONNECT_DATA=
   (SERVICE_NAME=sales.us.acme.com))
```

**connect descriptor**
A specially formatted description of the destination for a network connection. A connect descriptor contains destination service and network route information.
The destination service is indicated by using its service name for Oracle9i or Oracle8i databases or its Oracle System Identifier (SID) for Oracle release 8.0 databases. The network route provides, at a minimum, the location of the listener through use of a network address.

**connect identifier**

A connect descriptor or a name that maps to a connect descriptor. A connect identifier can be a net service name, database service name, alias, or net service alias. Users initiate a connect request by passing a username and password along with a connect identifier in a connect string for the service to which they wish to connect:

```
CONNECT username/password@connect_identifier
```

**connect string**

Information the user passes to a service to connect, such as username, password, and connect identifier:

```
CONNECT username/password@net_service_name
```

**connect-time failover**

A client connect request is forwarded to another listener if the first listener is not responding. Connect-time failover is enabled by service registration, because the listener knows if an instance is running to attempt a connection.

**connection**

An interaction between two processes on a network. Connections are originated by an initiator (client) that requests a connection with a destination (server).

**connection load balancing**

Load balancing, whereby the number of active connections among various instances and dispatchers for the same service are balanced. This enables listeners to make their routing decisions based on how many connections each dispatcher has and on how loaded the nodes that the instances run.

**connection pooling**

A resource utilization and user scalability feature that enables you to maximize the number of sessions over a limited number of protocol connections to a shared server.

**connection request**

A notification sent by an initiator and received by a listener that indicates that the initiator wants to start a connection.
data packet
See packet.

database administrator (DBA)
(1) A person responsible for operating and maintaining an Oracle Server or a database application. (2) An Oracle username that has been given DBA privileges and can perform database administration functions. Usually the two meanings coincide. Many sites have multiple DBAs.

Database Configuration Assistant
A tool that enables you to create, delete, and modify a database.

database link
A pointer that defines a one-way communication path from an Oracle database server to another database server. The link pointer is actually defined as an entry in a data dictionary table. To access the link, you must be connected to the local database that contains the data dictionary entry.

A database link connection is one-way in the sense that a client connected to local database A can use a link stored in database A to access information in remote database B, but users connected to database B cannot use the same link to access data in database A. If local users on database B want to access data on database A, then they must define a link that is stored in the data dictionary of database B.

The following database links types are supported:

- A private database link in a specific schema of a database. Only the owner of a private database link can use it.
- A public database link for a database. All users in the database can use it.
- A global database link defined in an Oracle Names server. Anyone in the network can use it.

decentralized administration
See delegated administration.

dedicated server
A server process that is dedicated to one client connection. Contrast with shared server process.
default domain
The **domain** within which most client requests take place. It could be the domain where the client resides, or it could be a domain from which the client requests network services often. Default domain is also the client configuration parameter that determines what domain should be appended to unqualified network name requests. A name request is unqualified if it does not have a "." character within it.

dele gated administration
A network where network management is delegated to one or more administrative regions under the **root administrative region**. Also referred to as distributed or decentralized administration. Contrast with **central administration**.

dele gated administrative region
A region hierarchically under the **root administrative region**. Any region other than the root administrative region.

destination
The client that is the endpoint of a connection. The initiator of the connection requires some data or service of the destination.

directory information tree (DIT)
A hierarchical tree-like structure in a **directory server** of the **distinguished names** (DNs) of the entries.

directory naming
A **naming method** that resolves a database service, **net service name**, or **net service alias** to a **connect descriptor** stored in a central directory server. A directory server provides central administration of directory naming objects, reducing the work effort associated with adding or relocating services.

directory server
A directory server that is accessed with the **Lightweight Directory Access Protocol (LDAP)**. Support of LDAP-compliant directory servers provides a centralized vehicle for managing and configuring a distributed Oracle network. The directory server can replace clientside and serverside localized **tnsnames.ora** files.
dispatcher
A process that enables many clients to connect to the same server without the need for a dedicated server process for each client. A dispatcher handles and directs multiple incoming network session requests to shared server processes. See also shared server.

distinguished name (DN)
Name of entry in a directory server. The DN specifies where the entry resides in the LDAP directory hierarchy, much the way a directory path specifies the exact location of a file.

distributed administration
See delegated administration.

distributed processing
Division of front-end and back-end processing to different computers. Oracle Network Services support distributed processing by transparently connecting applications to remote databases.

domain
Any tree or subtree within the Domain Name System (DNS) namespace. Domain most commonly refers to a group of computers whose host names share a common suffix, the domain name.

domain hint
A NAMES.DOMAIN_HINTS parameter in the names.ora file that contains the name of the domain and at least one address of an Oracle Names server in that domain. This enables an Oracle Names server to forward the client requests to a specific address, reducing network traffic.

Domain Name System (DNS)
A system for naming computers and network services that is organized into a hierarchy of domains. DNS is used in TCP/IP networks to locate computers through user-friendly names. DNS resolves a friendly name into an IP address, which is understood by computers.

For Oracle Network Services, DNS translates the host name in a TCP/IP address into an IP address.
domestic domains
The set of domains that are managed within a given administrative region. Domains are domestic only in relation to a region; they are never domestic in any absolute sense. Also referred to as local domains.

DNS
Domain Name System. See Domain Name System (DNS).

error message
A message from a computer program informing you of a potential problem or condition preventing program or command execution.

enterprise role
An enterprise role is analogous to a regular database role, except that it spans authorization on multiple databases. An enterprise role is a category of roles that define privileges on a particular database. An enterprise role is created by the database administrator of a particular database. An enterprise role can be granted to or revoked to one or more enterprise users. The information for granting and revoking these roles is stored in the directory server.

enterprise user
A user that has a unique identity across an enterprise. Enterprise users connect to individual databases through a schema. Enterprise users are assigned enterprise roles that determine their access privileges on databases.

entry
The building block of a directory server, it contains information about an object of interest to directory users.

external naming
A naming method that uses a third-party naming service, such as NIS or CDS.

external procedure
A function or procedure written in a third-generation language (3GL) that can be called from PL/SQL code. Only C is supported for external procedures.
failover
See connect-time failover.

firewall support
See access control.

flat naming model
An Oracle Names infrastructure in which there is only one domain. All names must be unique within that domain.

foreign domains
The set of domains not managed within a given administrative region. Domains are foreign only in relation to a region; they are not foreign in any absolute sense. A network administrator typically defines foreign domains relative to a particular region to optimize Names Server caching performance.

global database link
A database link that is registered with an Oracle Names server. A global database link that is the same as the global database name is automatically registered with an Oracle Names server. You can use a global database link to access an object in the database. For example, if the global database name is sales.us.acme.com, a global database link of sales.us.acme.com is created and registered with an Oracle Names server. You can then use sales.us.acme.com to perform a SELECT statement on a table, for example:

SQL> SELECT * FROM emp@sales.us.acme.com
**global database name**

The full name of the database which uniquely identifies it from any other database. The global database name is of the form "database_name.database_domain," for example, sales.us.acme.com.

The database name portion, sales, is a simple name you wish to call your database. The database domain portion, us.acme.com, specifies the database domain in which the database is located, making the global database name unique. When possible, Oracle Corporation recommends that your database domain mirror the network domain.

The global database name is the default service name of the database, as specified by the SERVICE_NAMES parameter in the initialization parameter file.

**Heterogeneous Services**

An integrated component that provides the generic technology for accessing non-Oracle systems from the Oracle database server. Heterogeneous Services enables you to:

- Use Oracle SQL to transparently access data stored in non-Oracle systems as if the data resides within an Oracle server.

- Use Oracle procedure calls to transparently access non-Oracle systems, services, or application programming interfaces (APIs), from your Oracle distributed environment.

**hierarchical naming model**

An infrastructure in which names are divided into multiple hierarchically-related domains. For Oracle Names, hierarchical naming model can be used with either central or delegated administration.

**host naming**

A naming method resolution that enables users in a TCP/IP environment to resolve names through their existing name resolution service. This name resolution service might be Domain Name System (DNS), Network Information Service (NIS), or simply a centrally-maintained set of /etc/hosts files. Host Naming enables users to connect to an Oracle database server by simply providing the server computer’s host name or host name alias. No client configuration is required to take advantage of this feature. This method is recommended for simple TCP/IP environments.
HTTP protocol
Hypertext transfer protocol. A protocol that provides the language that enables Web browsers and application Web servers to communicate.

initialization parameter file
File that contains information to initialize the database and instances.

instance
The combination of the System Global Area (SGA) and the Oracle background processes. When a database is started on a database server (regardless of the type of computer), Oracle allocates a memory area called the SGA and starts one or more Oracle processes. The memory and processes of an instance efficiently manage the associated database's data and serve the database users. You can connect to any instance to access information within a cluster database.

instance name
A name of an Oracle database instance. The instance name is identified by the INSTANCE_NAME parameter in the database initialization parameter file. INSTANCE_NAME corresponds to the Oracle System Identifier (SID) of the instance. Clients can connect to a specific instance by specifying the INSTANCE_NAME parameter in the connect descriptor.

The instance name is included in the connect data part of the connect descriptor.

Interprocess Communication
A protocol used by client applications that resides on the same node as the listener to communicate with the database. IPC can provide a faster local connection than TCP/IP.

IP address
Used to identify a node on a network. Each computer on the network is assigned a unique IP address, which is made up of the network ID, and a unique host ID. This address is typically represented in dotted-decimal notation, with the decimal value of each octet separated by a period, for example 144.45.9.22.

IPC
See Interprocess Communication.
Java Database Connectivity (JDBC) Driver
A driver that provides Java applications and applets access to an Oracle database.

Keyword-value pair
The combination of a keyword and a value, used as the standard unit of information in connect descriptors and many configuration files. Keyword-value pairs may be nested; that is, a keyword may have another keyword-value pair as its value.

Latency
Networking round-trip time.

Lightweight Directory Access Protocol (LDAP)
A standard, extensible directory access protocol. It is a common language that LDAP clients and servers use to communicate. The framework of design conventions supporting industry-standard directory servers.

LDAP Data Interchange Format (LDIF)
The set of standards for formatting an input file for any of the LDAP command line utilities.

Ldap.ora file
A file created by Oracle Net Configuration Assistant that contains the following directory server access information:
- Type of directory server
- Location of the directory server
- Default directory entry that the client or server will use to look up or configure connect identifiers for connections to database services

The ldap.ora file resides in $ORACLE_HOME/network/admin on UNIX and ORACLE_HOME\network\admin on Windows operating systems.
**link qualifier**

A qualifier appended to a global database link to provide alternate settings for the database username and password credentials. For example, a link qualifier of `fieldrep` can be appended to a global database link of `sales.us.acme.com`.

```
SQL> SELECT * FROM emp@sales.us.acme.com@fieldrep
```

**listener**

A process that resides on the database server whose responsibility is to listen for incoming client connection requests and manage the traffic to the server.

When a client requests a network session with a server, a listener receives the actual request. If the client information matches the listener information, then the listener grants a connection to the database server.

**listener.ora file**

A configuration file for the listener that identifies the following for a **listener**:

- Unique name
- Protocol addresses that it is accepting connection requests on
- Services it is listening for

The **listener.ora** file typically resides in `$ORACLE_HOME/network/admin` on UNIX and `ORACLE_HOME\network\admin` on Windows NT.

Oracle9i does not require identification of the database service because of **service registration**. However, static service configuration is required for if you plan to use Oracle Enterprise Manager.

**Listener Control utility**

A utility included with Oracle Network Services to control various listener functions, such as to starting, stopping, and getting the status of the listener.

**load balancing**

A feature by which client connections are distributed evenly among multiple listeners, dispatchers, instances, and nodes so that no single component is overloaded.

Oracle Network Services support **client load balancing** and **connection load balancing**.
local naming

A naming method that locates network addresses by using information configured and stored on each individual client’s tnsnames.ora file. Local naming is most appropriate for simple distributed networks with a small number of services that change infrequently.

location transparency

A distributed database characteristic that enables applications to access data tables without knowing where they reside. All data tables appear to be in a single database, and the system determines the actual data location based on the table name. The user can reference data on multiple nodes in a single statement, and the system automatically and transparently routes (parts of) SQL statements to remote nodes for execution if needed. The data can move among nodes with no impact on the user or application.

logging

A feature in which errors, service activity, and statistics are written to a log file. The log file provides additional information for an administrator when the error message on the screen is inadequate to understand the failure. The log file, by way of the error stack, shows the state of the software at various layers.

See also tracing.

loopback test

A connection from the server back to itself. Performing a successful loopback verifies that Oracle Net is functioning on the database server.

map

Files used by the Network Information Service (NIS) ypserv program to handle name requests.

Microsoft Active Directory

An LDAP-compliant directory server included with the Windows 2000 Server. It stores information about objects on the network, and makes this information available to users and network administrators. Active Directory also provides access to resources on the network using a single logon process.
Active Directory can be configured as a directory naming method to store service information that clients can access.

Names.ora file
A configuration file that contains parameter settings for an Oracle Names server.

Named Pipes protocol
A high-level interface protocol providing interprocess communications between clients and servers (distributed applications). Named Pipes enables client/server conversation over a network using Named Pipes.

Naming context
A subtree that resides entirely on one directory server. It is a contiguous subtree, that is, it must begin at an entry that serves as the top of the subtree, and extend downward to either leaf entries or references to subordinate naming contexts. It can range in size from a single entry to the entire directory information tree (DIT).

An Oracle Context can be created under a naming context.

Naming method
The resolution method used by a client application to resolve a connect identifier to a connect descriptor when attempting to connect to a database service. Oracle Net provides five naming methods:

- local naming
- directory naming
- Oracle Names
- host naming
- external naming

Naming model
The set and structure of domains within which names can be allocated.

In a flat naming model, there is a single domain.

In a hierarchical naming model, the highest level is the root domain, and all other domains are hierarchically related.
**net service alias**

An alternative name for a directory naming object in a directory server. A directory server stores net service aliases for any defined net service name or database service. A net service alias entry does not have connect descriptor information. Instead, it only references the location of the object for which it is an alias. When a client requests a directory lookup of a net service alias, the directory determines that the entry is a net service alias and completes the lookup as if it was actually the entry it is referencing.

**net service name**

A simple name for a service that resolves to a connect descriptor. Users initiate a connect request by passing a username and password along with a net service name in a connect string for the service to which they wish to connect:

\[\text{CONNECT \ username/password@net\_service\_name}\]

Depending on your needs, net service names can be stored in a variety of places, including:

- Local configuration file, `tnsnames.ora`, on each client
- Directory server
- Oracle Names server
- External naming service, such as NIS or CDS

**network**

A group of two or more computers linked together through hardware and software to allow the sharing of data or peripherals.

**network administrator**

The person who performs network management tasks such as installing, configuring, and testing network components. The administrator typically maintains the configuration files, connect descriptors and service names, aliases, and public and global database links.

**network character set**

As defined by Oracle, the set of characters acceptable for use as values in keyword-value pairs (that is, in connect descriptors and configuration files). The set includes alphanumeric upper- and lowercase, and some special characters.
Network Information Service (NIS)
Sun Microsystems' Yellow Pages (yp) client/server protocol for distributing system configuration data such as user and host names between computers on a network.

Network Interface (NI)
A network layer that provides a generic interface for Oracle clients, servers, or external processes to access Oracle Net functions. The NI layer handles the "break" and "reset" requests for a connection.

network listener
See listener.

network object
Any service that can be directly addressed on a network; for example, a listener or a Oracle Names server.

network protocol
See Oracle protocol support.

Network Program Interface (NPI)
An interface for server-to-server interactions that performs all of the functions that the OCI does for clients, allowing a coordinating server to construct SQL requests for additional servers.

Network Session (NS)
A session layer that is used in typical Oracle Net connections to establish and maintain the connection between a client application and a database server.

NI
Network Interface

NIS
See Network Information Service (NIS).

NN
Network Naming (Oracle Names)

node
A computer or terminal that is part of a network
NPI
See Network Program Interface (NPI).

NR
Network Routing

NS
Network Session. See Network Session (NS).

NT
Network Transport. See transport.

object class
In a directory server, a named group of attributes. When you want to assign attributes to an entry, you do so by assigning to that entry the object classes that hold those attributes.

All objects associated with the same object class share the attributes of that object class.

OCI
Oracle Call Interface. See Oracle Call Interface (OCI).

OPI
See Oracle Program Interface (OPI).
Open Systems Interconnection (OSI)

A model of network architecture developed by ISO as a framework for international standards in heterogeneous computer network architecture.

The OSI architecture is split between seven layers, from lowest to highest:

1. Physical layer
2. Data link layer
3. Network layer
4. Transport layer
5. Session layer
6. Presentation layer
7. Application layer

Each layer uses the layer immediately following it and provides a service to the layer preceding.

Oracle Advanced Security

A product that provides a comprehensive suite of security features to protect enterprise networks and securely extends corporate networks to the Internet. Oracle Advanced Security provides a single source of integration with network encryption and authentication solutions, single sign-on services, and security protocols. By integrating industry standards, it delivers unparalleled security to the network.

Oracle Call Interface (OCI)

An application programming interface (API) that enables you to create applications that use the native procedures or function calls of a third-generation language to access an Oracle database server and control all phases of SQL statement execution. OCI supports the datatypes, calling conventions, syntax, and semantics of a number of third-generation languages including C, C++, COBOL, and FORTRAN.

Oracle Connection Manager

A router through which a client connection request may be sent either to its next hop or directly to the database server. Clients who route their connection requests through an Oracle Connection Manager can then take advantage of the session multiplexing, access control, or protocol conversion features configured on that Oracle Connection Manager.
Oracle Connection Manager Control utility
A utility included with Oracle Network Services to control various functions, such as starting, stopping, and getting the status of the Oracle Connection Manager.

Oracle Context
A RDN of cn=OracleContext in a directory information tree (DIT) that is located under a naming context or an unpublished directory entry. An Oracle Context contains entries for use with Oracle features, such as Oracle Net directory naming and Oracle Advanced Security enterprise user security. There can be one or more Oracle Contexts in a directory server. Oracle Internet Directory automatically creates an Oracle Context at the root of the DIT structure. This root Oracle Context has a DN of dn:cn=OracleContext.

Oracle Internet Directory
A directory server implemented as an application on the Oracle database. It enables retrieval of information about dispersed users and network resources. It combines Lightweight Directory Access Protocol (LDAP) Version 3, the open Internet standard directory server access protocol, with the high performance, scalability, robustness, and availability of the Oracle database.

Oracle Names
An Oracle directory service made up of a system of Oracle Names servers that provide name-to-address resolution for each service on the network.

Oracle Names Control utility
A utility included with Oracle Names to control various functions for Oracle Names servers, such as starting, stopping, and getting the status of an Oracle Names server.

Oracle Names LDAP Proxy server
Oracle Names servers that have been configured to proxy for directory servers. Upon startup, Oracle Names LDAP Proxy servers obtain network object information from a directory server. This provides a single point of definition for all data in a directory server and does not require that both Oracle Names servers and directory servers be maintained separately and simultaneously.

Oracle Names server
A computer that uses Oracle Names software to store network address information for a service along with its simple name so that client applications can request connections with simple names rather than lengthy addresses.
Oracle Net
Communication software that enables a network session from a client application to an Oracle database server. Once a network session is established, Oracle Net acts as a data courier for the client application and the database server. It is responsible for establishing and maintaining the connection between the client application and database server, as well as exchanging messages between them. Oracle Net is able to perform these jobs because it is located on each computer in the network.

Oracle Net Configuration Assistant
A post-installation tool that configures basic network components after installation, including:
- Listener names and protocol addresses
- Naming methods the client will use to resolve connect identifiers
- Net service names in a tnsnames.ora file
- Directory server usage

Oracle Net Firewall Proxy
Product offered by some firewall vendors that supplies Oracle Connection Manager functionality.

Oracle Net foundation layer
A networking communication layer that is responsible for establishing and maintaining the connection between the client application and server, as well as exchanging messages between them.

Oracle Net listener
See listener.
Oracle Net Manager
A tool that combines configuration abilities with component control to provide an integrated environment for configuring and managing Oracle Net Services. It can be used on either the client or server.

You can use Oracle Net Manager to configure the following network components:

- **Naming**
  Define connect identifiers and map them to connect descriptors to identify the network location and identification of a service. Oracle Net Manager supports configuration of connect descriptors in a local tnsnames.ora file, centralized LDAP-compliant directory server, or an Oracle Names server.

- **Naming Methods**
  Configure the different ways in which connect identifiers are resolved into connect descriptors.

- **Listeners**
  Create and configure listeners to receive client connections.

Oracle Net Services
A suite of networking components that provide enterprise-wide connectivity solutions in distributed, heterogeneous computing environments. Oracle Net Services is comprised of Oracle Net, listener, Oracle Connection Manager, Oracle Net Configuration Assistant, and Oracle Net Manager.

Oracle Program Interface (OPI)
A networking layer responsible for responding to each of the possible messages sent by OCI. For example, an OCI request to fetch 25 rows would have an OPI response to return the 25 rows once they have been fetched.

Oracle protocol support
A software layer responsible for mapping Transparent Network Substrate (TNS) functionality to industry-standard protocols used in the client/server connection.

Oracle Rdb
A database for Digital’s 64-bit platforms. Because Oracle Rdb has its own listener, the client interacts with Rdb in the same manner as it does with an Oracle database.
Oracle schema
A set of rules that determine what can be stored in a directory server. Oracle has its own schema that is applied to many types of Oracle entries, including Oracle Net Services entries. The Oracle schema for Oracle Net Services’ entries includes the attributes the entries may contain.

Oracle System Identifier (SID)
A name that identifies a specific instance of a running pre-release 8.1 Oracle database. For any database, there is at least one instance referencing the database. For pre-release 8.1 databases, SID is used to identify the database. The SID is included in the connect descriptor of a tnsnames.ora file and in the definition of the listener in the listener.ora file.

ORACLE_HOME
An alternate name for the top directory in the Oracle directory hierarchy on some directory-based operating systems.

OSI
See Open Systems Interconnection (OSI).

packet
A block of information sent over the network each time a connection or data transfer is requested. The information contained in packets depends on the type of packet: connect, accept, redirect, data, and so on. Packet information can be useful in troubleshooting.

PMON process
A process monitor database process that performs process recovery when a user process fails. PMON is responsible for cleaning up the cache and freeing resources that the process was using. PMON also checks on dispatcher and server processes and restarts them if they have failed. As a part of service registration, PMON registers instance information with the listener.

preferred Oracle Names server
The Oracle Names servers preferred by a client for names resolution; usually the Oracle Names Server that is physically closest to the client, or available over the least expensive network link.
**presentation layer**
A networking communication layer that manages the representation of information that application layer entities either communicate or reference in their communication. Two-Task Common (TTC) is an example of presentation layer.

**private database link**
A database link created by one user for his or her exclusive use. See also database link, global database link, and public database link.

**profile**
A collection of parameters that specifies preferences for enabling and configuring Oracle Net Services’ features on the client or server. A profile is stored and implemented through the sqlnet.ora file.

**protocol**
A set of rules that defines how data is transported across the network.

**protocol address**
An address that identifies the network address of a network object.

When a connection is made, the client and the receiver of the request, such as the listener, Oracle Connection Manager, or Oracle Names server, are configured with identical protocol addresses. The client uses this address to send the connection request to a particular network object location, and the recipient “listens” for requests on this address. It is important to install the same protocols for the client and the connection recipient, as well as to configure the same addresses.

**protocol conversion**
A feature of Oracle Connection Manager that enables a client and server with different networking protocols to communicate with each other. This feature replaces functionality previously provided by the Oracle Multi-Protocol Interchange with SQL*Net version 2.

**protocol stack**
Designates a particular presentation layer and session layer combination.

**proxy server**
A server that substitutes for the real server, forwarding client connection requests to the real server or to other proxy servers. Proxy servers provide access control, data and system security, monitoring, and caching.
**public database link**
A database link created by a DBA on a local database that is accessible to all users on that database.

See also database link, global database link, and private database link.

**R**

**RDBMS**
Relational Database Management System

**RDN**
See relative distinguished name (RDN).

**relative distinguished name (RDN)**
The local, most granular level entry name. It has no other qualifying entry names that would serve to address the entry uniquely. In the example, `cn=sales,dc=us,dc=acme,dc=com,cn=sales` is the RDN.

**region**
See administrative region.

**region database**
Tables in an Oracle database that store Oracle Names information.

**root administrative region**
The highest level administrative region in a distributed installation. The root administrative region contains the root domain.

**root domain**
The highest level domain in a hierarchical naming model.

**RPC**
Remote Procedure Call
Secure Sockets Layer (SSL)
An industry standard protocol designed by Netscape Communications Corporation for securing network connections. SSL provides authentication, encryption, and data integrity using public key infrastructure (PKI).

server process
Database processes that handle a client request on behalf of a database.

service
Work done for others. The database is a service that stores and retrieves data for clients.

service handler
A process that acts a connection point from the listener to the database server. A service handler can be a dispatcher or dedicated server.

service name
A logical representation of a database, which is the way a database is presented to clients. A database can be presented as multiple services and a service can be implemented as multiple database instances. The service name is a string that is the global database name, that is, a name comprising the database name and domain name, entered during installation or database creation. If you are not sure what the global database name is, you can obtain it from the value of the SERVICE_NAMES parameter in the initialization parameter file.

The service name is included in the connect data part of the connect descriptor.

service registration
A feature by which the PMON process automatically registers information with a listener. Because this information is registered with the listener, the listener.ora file does not need to be configured with this static information.

Service registration provides the listener with information about:

- Service names for each running instance of the database
- Instance names of the database
- Service handlers (dispatcher or dedicated server) available for each instance

These enable the listener to direct a client request appropriately.
Dispatcher, instance, and node load information
This load information enables the listener to determine which dispatcher can best handle a client connection request. If all dispatchers are blocked, the listener can spawn a dedicated server for the connection.

service replication
A process that fully replicates a directory system on the network. New services need to register with only one Oracle Names server. The service replication process automatically distributes the new registration to all other active Oracle Names servers on the network.

session data unit (SDU)
A buffer that Oracle Net uses to place data before transmitting it across the network. Oracle Net sends the data in the buffer either when requested or when it is full.

session layer
A network layer that provides the services needed by the protocol address entities that enable them to organize and synchronize their dialogue and manage their data exchange. This layer establishes, manages, and terminates network sessions between the client and server. An example of a session layer is Network Session (NS).

session multiplexing
Combining multiple sessions for transmission over a single network connection in order to conserve the operating system’s resources.

shared server
A database server that is configured to allow many user processes to share very few server processes, so the number of users that can be supported is increased. With shared server configuration, many user processes connect to a dispatcher. The dispatcher directs multiple incoming network session requests to a common queue. An idle shared server process from a shared pool of server processes picks up a request from the queue. This means that a small pool of server processes can serve a large number of clients. Contrast with dedicated server.

shared server process
A process type used with shared server configuration.
**SID**
See *Oracle System Identifier (SID)*.

**SID_LIST_listener_name**
A section of the `listener.ora` file that defines the *Oracle System Identifier (SID)* of the database served by the listener. This section is valid only for version 8.0 Oracle databases, as Oracle9i and Oracle8i instance information is automatically registered with the listener. Static configuration is also required for other services, such as *external procedure* calls and *Heterogeneous Services*, and some management tools, including Oracle Enterprise Manager.

**single sign-on**
The ability for a user to log in to different servers using a single password. This permits the user to authenticate to all servers the user is authorized to access.

**sqlnet.ora file**
A configuration file for the client or server that specifies:
- Client domain to append to unqualified service names or net service names
- Order of naming methods the client should use when resolving a name
- Logging and tracing features to use
- Route of connections
- Preferred Oracle Names servers
- External naming parameters
- Oracle Advanced Security parameters

The `sqlnet.ora` file typically resides in `$ORACLE_HOME/network/admin` on UNIX and `ORACLE_HOME\network\admin` on Windows operating systems.

**SSL**
See *Secure Sockets Layer (SSL)*.

**System Global Area (SGA)**
A group of shared memory structures that contain data and control information for an Oracle *instance*.
system or topology data
Data used by the Oracle Names server to control regular functioning or communicate with other Oracle Names servers. Includes interchanges, Oracle Names servers in a root region, and Oracle Names servers in any delegated region.

TCP/IP protocol
Transmission Control Protocol/Internet Protocol. The de facto standard communication protocol used for client/server conversation over a network.

TCP/IP with SSL protocol
A protocol that enables an Oracle application on a client to communicate with remote Oracle databases through the TCP/IP protocol and Secure Sockets Layer (SSL).

tick
The amount of time it takes for a message to be sent and processed from the client to the server or from the server to the client

Thin JDBC Driver
Thin JDBC driver is Oracle's Type 4 driver designed for Java applet and Java application developers. The JDBC driver establishes a direct connection to the Oracle database server over Java sockets. Access to the database is assisted with a lightweight implementation of Oracle Net and Two-Task Common (TTC).

TNS
See Transparent Network Substrate (TNS).

tnsnames.ora file
A configuration file that contains maps net service names to connect descriptors. This file is used for the local naming method. The tnsnames.ora file typically resides in $ORACLE_HOME/network/admin on UNIX and ORACLE_HOME\network\admin.

tracing
A facility that writes detailed information about an operation to an output file. The trace facility produces a detailed sequence of statements that describe the events of
an operation as they are executed. Administrators use the trace facility for diagnosing an abnormal condition; it is not normally turned on.

See also logging.

**Transparent Application Failover (TAF)**

A runtime failover for high-availability environments, such as Oracle9i Real Application Clusters and Oracle Fail Safe, that refers to the failover and re-establishment of application-to-service connections. It enables client applications to automatically reconnect to the database if the connection fails, and, optionally, resume a SELECT statement that was in progress. This reconnect happens automatically from within the Oracle Call Interface (OCI) library.

**Transparent Network Substrate (TNS)**

A foundation technology, built into the Oracle Net foundation layer that works with any standard network transport protocol.

**transport**

A networking layer that maintains end-to-end reliability through data flow control and error recovery methods. The Oracle Net foundation layer uses Oracle protocol support for the transport layer.

**TTC**

See Two-Task Common (TTC).

**Two-Task Common (TTC)**

A presentation layer type that is used in a typical Oracle Net connection to provide character set and data type conversion between different character sets or formats on the client and server.

**UPI**

User Program Interface
**virtual circuit**
A piece of shared memory used by the **dispatcher** for client database connection requests and replies. The dispatcher places a virtual circuit on a common queue when a request arrives. An idle shared server picks up the virtual circuit from the common queue, services the request, and relinquishes the virtual circuit before attempting to retrieve another virtual circuit from the common queue.

**well-known Oracle Names server**
Addresses for one or more Oracle Names servers hard coded into both the Oracle Names server and its clients. Oracle Names servers then become available at these well known addresses, so that clients do not need to be told, by way of configuration files, where to find the server.

**Windows NT native authentication**
An **authentication method** that enables a client single login access to a Windows NT server and a database running on the server.
### Symbols

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
<th>Page Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;</td>
<td>(quotation mark) symbol</td>
<td>4-4</td>
</tr>
<tr>
<td>#</td>
<td>(quotation mark) symbol</td>
<td>4-4</td>
</tr>
<tr>
<td>(</td>
<td>(parenthesis) symbol</td>
<td>4-4</td>
</tr>
<tr>
<td>=</td>
<td>(equals sign) symbol</td>
<td>4-4</td>
</tr>
<tr>
<td>'</td>
<td>(single quote) symbol</td>
<td>4-4</td>
</tr>
<tr>
<td>/</td>
<td>(slash) symbol</td>
<td>4-4</td>
</tr>
</tbody>
</table>

### Numerics

<table>
<thead>
<tr>
<th>Numeric</th>
<th>Page Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>1024 port</td>
<td>5-5</td>
</tr>
<tr>
<td>1521 port</td>
<td>5-4</td>
</tr>
<tr>
<td>1575 port</td>
<td>5-4, 10-3</td>
</tr>
<tr>
<td>1630 port</td>
<td>5-4</td>
</tr>
<tr>
<td>1646 port</td>
<td>6-37</td>
</tr>
<tr>
<td>1830 port</td>
<td>5-4</td>
</tr>
<tr>
<td>2482 port</td>
<td>5-4</td>
</tr>
<tr>
<td>2484 port</td>
<td>5-4</td>
</tr>
</tbody>
</table>

### A

<table>
<thead>
<tr>
<th>Networking Parameter</th>
<th>Page Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACT</td>
<td>9-5</td>
</tr>
<tr>
<td>ADDRESS</td>
<td>5-2, 7-8, 8-4</td>
</tr>
<tr>
<td>ADDRESS_LIST</td>
<td>5-2, 7-9</td>
</tr>
<tr>
<td>ADMIN_RESTRICTIONS</td>
<td>8-12</td>
</tr>
<tr>
<td>ANSWER_TIMEOUT</td>
<td>9-8</td>
</tr>
<tr>
<td>orclDescList</td>
<td>A-5</td>
</tr>
<tr>
<td>orclDescName</td>
<td>A-5</td>
</tr>
<tr>
<td>orclLoadBalance</td>
<td>A-5</td>
</tr>
<tr>
<td>orclNetAddrList</td>
<td>A-5</td>
</tr>
<tr>
<td>orclNetAddrString</td>
<td>A-5</td>
</tr>
<tr>
<td>orclNetConnParamList</td>
<td>A-5</td>
</tr>
<tr>
<td>orclNetFailover</td>
<td>A-5</td>
</tr>
<tr>
<td>orclNetInstanceName</td>
<td>A-5</td>
</tr>
<tr>
<td>orclNetProtocol</td>
<td>A-5</td>
</tr>
<tr>
<td>orclNetSdu</td>
<td>A-5</td>
</tr>
<tr>
<td>orclNetServiceName</td>
<td>A-5</td>
</tr>
<tr>
<td>orclNetSourceRoute</td>
<td>A-5</td>
</tr>
<tr>
<td>orclSid</td>
<td>A-5</td>
</tr>
<tr>
<td>orclVersion</td>
<td>A-5</td>
</tr>
</tbody>
</table>

### B

<table>
<thead>
<tr>
<th>Networking Parameter</th>
<th>Page Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>AUTHENTICATION_LEVEL</td>
<td>9-8</td>
</tr>
<tr>
<td>AUTOMATIC_IPC</td>
<td>B-4</td>
</tr>
<tr>
<td>BACKUP</td>
<td>7-16</td>
</tr>
<tr>
<td>BASE</td>
<td>10-6</td>
</tr>
<tr>
<td>BEQUEATH_DETACH</td>
<td>6-3</td>
</tr>
</tbody>
</table>

### C

<table>
<thead>
<tr>
<th>Networking Parameter</th>
<th>Page Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>CDS</td>
<td>6-8</td>
</tr>
<tr>
<td>Cell Directory Services (CDS) external naming configuring</td>
<td>6-8</td>
</tr>
<tr>
<td>CHANGE_PASSWORD command</td>
<td>1-4, 1-5</td>
</tr>
</tbody>
</table>
character sets
   for net service name,  4-4
   network, for keyword values,  4-4
client load balancing
   configuring,  7-11
   with Oracle Connection Manager,  7-5
CLOSE_RELAY command,  2-6
CMAN networking parameter,  9-3
CMAN_ADMIN networking parameter,  9-4
CMAN_PROFILE networking parameter,  9-6
CMAN_RULES networking parameter,  9-4
cman.ora file
   allowed values of parameters,  9-7
   configuration parameter reference,  9-3 to 9-12
   default values of parameters,  9-6
parameters
   ACT,  9-5
   ANSWER_TIMEOUT,  9-8
   AUTHENTICATION_LEVEL,  9-8
   CMAN,  9-3
   CMAN_ADMIN,  9-4
   CMAN_PROFILE,  9-6
   CMAN_RULES,  9-4
   DST,  9-5
   LOG_LEVEL,  9-8
   MAX_FREELIST_BUFFERS,  9-8
   MAXIMUM_CONNECT_DATA,  9-9
   MAXIMUM_RELAYS,  9-9
   RELAY_STATISTICS,  9-9
   REMOTE_ADMIN,  9-10
   SHOW_TNS_INFO,  9-10
   SRC,  9-5
   SRV,  9-5
   TRACE_DIRECTORY,  9-11
   TRACE_FILELEN,  9-11
   TRACE_TIMESTAMP,  9-11
   TRACING,  9-10
   USE_ASYNC_CALL,  9-12
CNAME.SMD Oracle Names record,  3-31, 3-42
   comments in configuration files,  4-3
COMMUNITY networking parameter,  B-4
   connect descriptors,  7-2
CONNECT_DATA networking parameter,  7-15
CONNECT_TIMEOUT_listener_name networking parameter,  B-4
connections
   adjusting listener queue size to avoid errors,  8-5
   connect-time failover
   configuring,  7-10
   with Oracle Connection Manager,  7-5
control utilities
   Listener Control utility,  1-5 to 1-36
   Oracle Connection Manager Control utility,  2-5 to 2-33
   Oracle Names Control utility,  3-2 to 3-95
D
   DBSNMP_START command,  B-6
   DBSNMP_STATUS command,  B-6
   DBSNMP_STOP command,  B-6
   DEFAULT_ADMIN_CONTEXT networking parameter,  11-3
   DELAY networking parameter,  7-17
   DELEGATE_DOMAIN command,  3-6
   DESCRIPTION networking parameter,  7-7, 8-4, 10-5
   DESCRIPTION_LIST networking parameter,  7-8
directory naming
   configuring,  6-8
   exporting
      aliases from Oracle Names to net service
      aliases in a directory,  3-9
      objects from Oracle Names,  3-13
   migrating
      aliases from Oracle Names to net service
      aliases in a directory,  3-9
      objects from Oracle Names,  3-13
   DIRECTORY_SERVER_TYPE networking parameter,  11-3
   DIRECTORY_SERVERS networking parameter,  11-2
   DISCONNECTumbing parameter,  6-4
DLRDBMS.OMD Oracle Names record,  3-31, 3-42
DLRDBMS.OMD Oracle Names record,  3-31, 3-42
DOMAIN networking parameter,  10-13
DOMAIN_HINT command,  3-7, B-6
DOMAIN_LIST networking parameter,  10-15
DST networking parameter,  9-5
DUMP_ALIAS command, 3-9
DUMP_LDAP command, 3-13
DUMP_TNSNAMES command, 3-17

E
ENVS networking parameter, 8-7
error messages
  NNL-00005, 3-4
  NNL-00406, 3-4
  ORA-12170, 6-28
  ORA-12525, 8-13
EXIT command
  of Listener Control utility, 1-7
  of Oracle Connection Manager Control
  utility, 2-7
  of Oracle Names Control utility, 3-18
EXPRESS networking parameter, 10-5
exporting
  aliases from Oracle Names to net service aliases
  in a directory, 3-9
  objects from Oracle Names to a directory
  server, 3-13
external naming
  Cell Directory Services (CDS), 6-8
  Network Information Service (NIS), 6-8

F
failover
  connect-time, 7-10
    Transparent Application Failover, 7-16
FAILOVER networking parameter, 7-10, 7-11,
  10-17, 10-18, 10-20, 10-23
FAILOVER_MODE networking parameter, 7-16
FLUSH command, 3-19
FLUSH_NAME command, 3-20

G
GLOBAL_DBNAME networking parameter, 8-9
GLOBAL_NAME networking parameter, 7-17

H
HELP command
  of Listener Control utility, 1-8
  of Oracle Connection Manager Control
  utility, 2-8
  of Oracle Names Control utility, 3-21
HINT_LIST networking parameter, 10-11, 10-15
host naming
  configuring, 6-8
HOST networking parameter, 5-3, 5-4, 10-5
HS networking parameter, 7-18

I
Identix authentication, B-2
INBOUND_CONNECT_TIMEPUT_listener_name
  networking parameter, 8-13
INSTANCE_NAME networking parameter, 7-18
IPC protocol
  KEY parameter, 5-3
  PROTOCOL parameter, 5-3
IPC, parameters for addresses, 5-3

K
KEY networking parameter, 5-3
keyword syntax rules, for configuration files, 4-3
keyword values, network character sets for, 4-4

L
LDAP schema
  attributes, A-1 to A-5
  object classes, A-1 to A-5
ldap.ora file
  configuration parameter reference, 11-2 to 11-3
  DEFAULT_ADMIN_CONTEXT
  parameter, 11-3
  DIRECTORY_SERVER_TYPE parameter, 11-3
  DIRECTORY_SERVERS parameter, 11-2
LIST_DELEGATED command, 3-23
LIST_DOMAINS command, 3-24
LIST_OBJECTS command, 3-25
Listener Control utility, 1-4
command reference, 1-5 to 1-36
commands
  CHANGE_PASSWORD, 1-5
  EXIT, 1-7
  HELP, 1-8
  QUIT, 1-9
  RELOAD, 1-10
  SAVE_CONFIG, 1-11
  SERVICES, 1-12
  SET, 1-14
  SET CONNECT_TIMEOUT, 1-16
  SET CURRENT_LISTENER, 1-16
  SET DISPLAYMODE, 1-17
  SET LOG_DIRECTORY, 1-18
  SET LOG_FILE, 1-19
  SET LOG_STATUS, 1-20
  SET PASSWORD, 1-21
  SET STARTUP_WAITTIME, 1-23
  SET TRC_DIRECTORY, 1-24
  SET TRC_FILE, 1-25
  SET TRC_LEVEL, 1-26
  SET USE_PLUGANDPLAY, 1-27
  SHOW, 1-27
  SHOW CURRENT_LISTENER, 1-28
  SHOW DISPLAYMODE, 1-28
  SHOW LOG_DIRECTORY, 1-28
  SHOW LOG_FILE, 1-28
  SHOW LOG_STATUS, 1-28
  SHOW RAWMODE, 1-28
  SHOW SAVE_CONFIG_ON_STOP, 1-28
  SHOW STARTUP_WAITTIME, 1-28
  SHOW TRC_DIRECTORY, 1-28
  SHOW TRC_FILE, 1-28
  SHOW TRC_LEVEL, 1-28
  SPAWN, 1-29
  START, 1-30
  STATUS, 1-32
  STOP, 1-34
  TRACE, 1-35
  VERSION, 1-36
distributed operation, 1-4
function of and syntax format, 1-2
remote administration, 1-4
SET commands, 1-3
SET CONNECT_TIMEOUT, B-6
SHOW commands, 1-3
SHOW CONNECT_TIMEOUT, B-6
unsupported commands
  DBSNMP_START, B-6
  DBSNMP_STATUS, B-6
  DBSNMP_STOP, B-6
  SET USE_PLUGANDPLAY, B-6
  SHOW USE_PLUGANDPLAY, B-6
listener.ora file
configuration parameter reference, 8-3 to 8-23
parameters
  ADDRESS, 8-4
  ADMIN_RESTRICTIONS_listener_name, 8-12
  DESCRIPTION, 8-4
  ENVS, 8-7
  GLOBAL_DBNAME, 8-9
  INBOUND_CONNECT_TIMEOUT_listener_name, 8-13
  LOG_DIRECTORY_listener_name, 8-14
  LOG_FILE_listener_name, 8-14
  LOGGING_listener_name, 8-15
  NAMES.TRACE_TIMESTAMP, 10-28
  ORACLE_HOME, 8-10
  PASSWORDS_listener_name, 1-4, 8-15
  PRESPAWN_DESC, 8-11
  PRESPAWN_MAX, 8-11
  PROGRAM, 8-10
  QUEUESIZE, 8-5
  SAVE_CONFIG_ON_STOP_listener_name, 8-16
  SID_DESC, 8-7
  SID_LIST_listener_name, 8-6, 8-11
  SID_NAME, 8-11
  SQLNET.CLIENT_AUTHENTICATION, 8-16
  STARTUP_WAITTIME_listener_name, 8-18
  TRACE_DIRECTORY_listener_name, 8-18
  TRACE_FILE_listener_name, 8-18
  TRACE_FILEN_listener_name, 8-19
  TRACE_Filen(listener_name), 8-19
  TRACE_LEVEL_listener_name, 8-20
  TRACE_TIMESTAMP_listener_name, 8-20
  WALLET_LOCATION, 8-21
unsupported parameters
  CONNECT_TIMEOUT_listener_name, B-4
  PRESPAWN_DESC, B-5
  PRESPAWN_LIST, B-5
  PRESPAWN_MAX, B-5
  USE_PLUG_AND_PLAY_listener_name, B-5

listeners
  adjusting queue size for, 8-5
  connect-request timeouts, 8-13
  multiple, 8-2

load balancing
  client, 7-11
  LOAD_BALANCE networking parameter, 7-11
  LOAD_TNSNAMES command, 3-26

local naming
  configuring, 6-8
  LOG_DIRECTORY_CLIENT networking parameter, 6-4
  LOG_DIRECTORY_listener_name networking parameter, 8-14
  LOG_DIRECTORY_SERVER networking parameter, 6-5
  LOG_FILE_CLIENT networking parameter, 6-5
  LOG_FILE_listener_name networking parameter, 8-14
  LOG_FILE_SERVER networking parameter, 6-5
  LOG_LEVEL networking parameter, 9-8
  LOG_STATS command, 3-28
  LOGGING_listener_name networking parameter, 8-15
  LU6.2 protocol, B-3

MIN_TTL networking parameter, 10-13
multiple listeners, 8-2

N

Named Pipes protocol
  parameters for addresses, 5-3
  PIPE parameter, 5-3
  PROTOCOL parameter, 5-3
  SERVER parameter, 5-3

 NAMES.ADDRESSES networking parameter, 10-3
 NAMES.ADMIN_REGION networking parameter, 10-3, 10-11
 NAMES.AUTHORITY_REQUIRED networking parameter, 10-7
 NAMES.AUTO_REFRESH_EXPIRE networking parameter, 10-7
 NAMES.AUTO_REFRESH_RETRY networking parameter, 10-8
 NAMES.CACHE_CHECKPOINT_FILE networking parameter, 10-8
 NAMES.CACHE_CHECKPOINT_INTERVAL networking parameter, 10-9
 NAMES.CONFIG_CHECKPOINT_FILE networking parameter, 10-9
 NAMES.CONNECT_TIMEOUT networking parameter, 6-6, 10-10
 NAMESCTL.ECHO networking parameter, 6-12
 NAMESCTL.INTERNAL_ENCRYPT_PASSWORD networking parameter, 6-13
 NAMESCTL.INTERNAL_USE networking parameter, 6-13
 NAMESCTL.NO_INITIAL_SERVER networking parameter, 6-14
 NAMESCTL.NOCONFIRM networking parameter, 6-14
 NAMESCTL.SERVER_PASSWORD networking parameter, 6-15
 NAMESCTL.TRACE_DIRECTORY networking parameter, 6-15
 NAMESCTL.TRACE_FILE networking parameter, 6-15
 NAMESCTL.TRACE_LEVEL networking parameter, 6-16

Index-5
NAMESCTL.TRACE_TIMESTAMP networking parameter, 6-17
NAMESCTL.TRACE_UNIQUE networking parameter, 6-17
NAMES.DCE.PREFIX networking parameter, 6-6
NAMES.DEFAULT_DOMAIN networking parameter, B-4
NAMES.DEFAULT_FORWARDERS networking parameter, 10-11
NAMES.DEFAULT_FORWARDERS_ONLY networking parameter, 10-12
NAMES.DEFAULT_ZONE networking parameter, B-4
NAMES.DEFAULT.DOMAIN networking parameter, 6-7
NAMES.DEFAULT.DOMAIN networking parameter, 6-7
NAMES.DIRECTORY_PATH networking parameter, 6-7
cds, 6-8
hostname, 6-8
ldap, 6-8
nis, 6-8
onames, 6-8
tnsnames, 6-8
NAMES.DOMAIN_CHECKPOINT_FILE networking parameter, 10-24
NAMES.DOMAIN_HINTS networking parameter, 10-15
NAMES.DOMAINS networking parameter, 10-13
NAMES.FORWARDING_AVAILABLE networking parameter, 10-17
NAMES.FORWARDING_DESIRED networking parameter, 10-17
NAMES.INITIAL_RETRY_TIMEOUT networking parameter, 6-9
NAMES.KEEP_DB_OPEN networking parameter, 10-18
NAMES.LOG_DIRECTORY networking parameter, 10-18
NAMES.LOG_FILE networking parameter, 10-19
NAMES.LOG_STATS_INTERVAL networking parameter, 10-19
NAMES.MAX_OPEN_CONNECTIONS networking parameter, 6-9, 10-20
NAMES.MAX_REFORWARDS networking parameter, 10-21
NAMES.MESSAGE_POOL_START_SIZE networking parameter, 6-10, 10-21
NAMES.NDS.NAME CONTEXT networking parameter, B-4
NAMES.NIS.META_MAP networking parameter, 6-10
NAMES.NO_MODIFY_RESPONSE networking parameter, 10-22
NAMES.NO_REGION_DATABASE networking parameter, 10-23
names.ora file configuration parameter reference, 10-3 to 10-29 parameters
BASE, 10-6
DESCRIPTION, 10-5
DOMAIN, 10-13
DOMAIN_LIST, 10-15
EXPIRE, 10-5
HINT_LIST, 10-11, 10-15
HOST, 10-5
MIN_TTL, 10-13
NAMES.ADDRESSES, 10-3
NAMES.ADMIN_REGION, 10-3, 10-11
NAMES.AUTHORITY_REQUIRED, 10-7
NAMES.AUTO_REFRESH_EXPIRE, 10-7
NAMES.AUTO_REFRESH_RETRY, 10-8
NAMES.CACHE_CHECKPOINT_FILE, 10-8
NAMES.CACHE_CHECKPOINT_INTERVAL, 10-9
NAMES.CONFIG_CHECKPOINT_FILE, 10-9
NAMES.CONNECT_TIMEOUT, 10-10
NAMES.DEFAULT_FORWARDERS, 10-11
NAMES.DEFAULT_FORWARDERS_ONLY, 10-12
NAMES.DOMAIN_CHECKPOINT_FILE, 10-24
NAMES.DOMAIN_HINTS, 10-15
NAMES.DOMAINS, 10-13
NAMES.FORWARDING_AVAILABLE, 10-17
NAMES.FORWARDING_DESIRED, 10-17
NAMES.KEEP_DB_OPEN, 10-18
NAMES.LOG_DIRECTORY, 10-18
NAMES.LOG_FILE, 10-19
NAMES.LOG_STATS_INTERVAL, 10-19
NAMES.MAX_OPEN_CONNECTIONS, 10-20
NAMES.MAX_REFORWARDS, 10-21
NAMES.MESSAGE_POOL_START_SIZE, 10-21
NAMES.NO_MODIFY_REQUESTS, 10-22
NAMES.NO_REGION_DATABASE, 10-23
NAMES.PASSWORD, 10-23
NAMES.RESET_STATS_INTERVAL, 10-24
NAMES.SAVE_CONFIG_ON_STOP, 10-24
NAMES.SERVER_NAME, 10-25
NAMES.TOPOLOGY_CHECKPOINT_FILE, 10-26
NAMES.TRACE_DIRECTORY networking parameter, 10-26
NAMES.TRACE_FILE networking parameter, 10-27
NAMES.TRACE_FUNC networking parameter, 10-27
NAMES.TRACE_LEVEL networking parameter, 10-28
NAMES.TRACE_TIMESTAMPE networking parameter, 10-28
NAMES.TRACE_UNIQUE networking parameter, 10-29
NAMES.USE_PLUG_AND_PLAY networking parameter, B-5
NAMES.PASSWORDS networking parameter, 10-23
NAMES.PREFERRED_SERVERS networking parameter, 6-11
NAMES.REQUEST_RETRIES networking parameter, 6-11
NAMES.RESET_STATS_INTERVAL networking parameter, 10-24
NAMES.SAVE_CONFIG_ON_STOP networking parameter, 10-24
NAMES.SERVER_NAMES networking parameter, 10-25
NAMES.TOPOLOGY_CHECKPOINT_FILE networking parameter, 10-26
NAMES.TRACE_DIRECTORY networking parameter, 10-26
NAMES.TRACE_FILE networking parameter, 10-27
NAMES.TRACE_FUNC networking parameter, 10-27
NAMES.TRACE_LEVEL networking parameter, 10-28
NAMES.TRACE_TIMESTAMPE networking parameter, 10-28
NAMES.TRACE_UNIQUE networking parameter, 10-29
NAMES.USE_PLUG_AND_PLAY networking parameter, B-5
NDS. See Novell Directory Services (NDS)
net service aliases
exporting aliases from Oracle Names, 3-9
migrating aliases from Oracle Names, 3-9
Net8 OPEN, B-2
network character sets, keyword values, 4-4
network configuration files
cman.ora, 9-3 to 9-12
ldap.ora, 11-2 to 11-3
listener.ora, 8-3 to 8-23
names.ora, 10-3 to 10-29
protocol addresses, 5-1
sqlnet.ora, 6-3 to 6-54
syntax rules, 4-2
tnsnames.ora, 7-7 to 7-24
Network Information Service external naming
configuring, 6-8
network performance, improving
client load balancing, 7-11
networking parameters
cman.ora configuration reference, 9-3 to 9-12
ldap.ora configuration reference, 11-2 to 11-3
listener.ora configuration reference, 8-3 to 8-23
names.ora configuration reference, 10-3 to 10-29
sqlnet.ora configuration reference, 6-3 to 6-54
tnsnames.ora configuration reference, 7-7 to 7-24
NNL-00005 error message, 3-4
NNL-00406 error message, 3-4
Novell Directory Services (NDS)
authentication, B-2
Novell Directory Services (NDS) external naming, B-2
NS.SMD Oracle Names record, 3-31, 3-42

O

object classes
  orclDBServer, A-2
  orclNetAddress, A-4
  orclNetAddressList, A-4
  orclNetDescription, A-3
  orclNetDescriptionList, A-4
  orclNetService, A-2
  orclNetServiceAlias, A-3

obsolete parameters, B-4
ORA-12170 error message, 6-28
ORA-12525 error message, 8-13

Oracle Connection Manager
  client load balancing, 7-5
  connect-time failover, 7-5
  SOURCE_ROUTE networking parameter, 7-13

Oracle Connection Manager Control utility
  command reference, 2-5 to 2-33

commands
  CLOSE_RELAY, 2-6
  EXIT, 2-7
  HELP, 2-8
  QUIT, 2-9
  SET, 2-10
  SET AUTHENTICATION_LEVEL, 2-11
  SET DISPLAYMODE, 2-12
  SET LOG_LEVEL, 2-13
  SET RELAY_STATISTICS, 2-14
  SHOW, 2-15
  SHOW ADDRESS, 2-16
  SHOW ALL, 2-17
  SHOW DISPLAYMODE, 2-19
  SHOW PROFILE, 2-20
  SHOW RELAY, 2-21
  SHOW RULES, 2-23
  SHUTDOWN, 2-24
  START, 2-25
  STATS, 2-27
  STATUS, 2-29
  STOP, 2-31
  STOPNOW, 2-32
  VERSION, 2-33
  distributed operation, 2-4
  remote administration, 2-4
  SET commands, 2-3

Oracle Names
  configuring, 6-8
  exporting
    aliases to net service aliases in a directory server, 3-9
    objects to a directory server, 3-13
  migrating
    aliases to net service aliases in a directory server, 3-9
    objects to a directory server, 3-13
  .sdns.ora file, 3-2
  sdns.ora file, 3-2

Oracle Names Control utility
  command reference, 2-3 to 2-95

commands
  DELEGATE_DOMAIN, 3-6
  DOMAIN_HINT, 3-7
  DUMP_ALIAS, 3-9
  DUMP_LDAP, 3-13
  DUMP_TNSNAMES, 3-17
  EXIT, 3-18
  FLUSH, 3-19
  FLUSH_NAME, 3-20
  HELP, 3-21
  LIST_DELEGATED, 3-23
  LIST_DOMAINS, 3-24
  LIST_OBJECTS, 3-25
  LOAD_TNSNAMES, 3-26
  LOG_STATS, 3-28
  PASSWORD, 3-29
  PING, 3-30
  QUERY, 3-31
  QUIT, 3-33
  REGISTER, 3-34
  REGISTER_NS, 3-37
  RELOAD, 3-39
  REORDER_NS, 3-40
  REPEAT, 3-42
  RESET_STATS, 3-44
  RESTART, 3-45

Index-8
SAVE_CONFIG, 3-46
SET, 3-47
SET CACHE_CHECKPOINT_INTERVAL, 3-48
SET DEFAULT_DOMAIN, 3-49
SET FORWARDING_AVAILABLE, 3-50
SET LOG_FILE_NAME, 3-52
SET LOG_STATS_INTERVAL, 3-53
SET NAMESCTL_TRACE_LEVEL, 3-54
SET PASSWORD, 3-56
SET REQUESTS_ENABLED, 3-57
SET RESSET_STATS_INTERVAL, 3-58
SET SAVE_CONFIG_INTERVAL, 3-59
SET SAVE_CONFIG_ON_STOP, 3-60
SET SERVER, 3-61
SET TRACE_FILE_NAME, 3-62
SET TRACE_LEVEL, 3-63
SHOW, 3-64
SHOW CACHE_CHECKPOINT_INTERVAL, 3-66
SHOW DEFAULT_DOMAIN, 3-67
SHOW FORWARDING_AVAILABLE, 3-68
SHOW LOG_FILE_NAME, 3-69
SHOW LOG_STATS_INTERVAL, 3-70
SHOW NAMESCTL_TRACE_LEVEL, 3-71
SHOW REQUEST_ENABLED, 3-72
SHOW RESSET_STATS_INTERVAL, 3-73
SHOW SAVE_CONFIG_INTERVAL, 3-74
SHOW SAVE_CONFIG_ON_STOP, 3-75
SHOW SERVER, 3-76
SHOW STATS, 3-77
SHOW SYSTEM_QUERIES, 3-78
SHOW TRACE_FILE_NAME, 3-79
SHOW TRACE_LEVEL, 3-80
SHOW VERSION, 3-81
SHUTDOWN, 3-82
START, 3-83
START_CLIENT_CACHE, 3-85
STARTUP, 3-86
STATUS, 3-87
STOP, 3-88
TIMED_QUERY, 3-89
UNREGISTER, 3-91
UNREGISTER_NS command, 3-93
VERSION, 3-95

confirmation mode, 3-6
distributed operation, 3-3
function of and syntax format, 3-2
remote administration, 3-3
security, 3-5
SET commands, 3-3
SHOW commands, 3-3
unsupported commands
DOMAIN_HINT, B-6
Oracle protocol support
configuring addresses, 5-3
IPC, 5-3
Named Pipes, 5-3
TCP/IP, 5-3
TCP/IP with SSL, 5-4
Oracle schema
attributes, A-1 to A-5
object classes, A-1 to A-5
ORACLE_HOME networking parameter, 8-10
Oracle9i Real Application Clusters
connect-time failover, 7-10, 7-11, 10-17, 10-18, 10-20, 10-23
FAILOVER networking parameter, 7-10, 7-11, 10-17, 10-18, 10-20, 10-23
FAILOVER_MODE networking parameter, 7-16
INSTANCE_NAME networking parameter, 7-19
LOAD_BALANCE networking parameter, 7-11
orclDBServer object class, A-2
orclDescList attribute, A-5
orclDescName attribute, A-5
orclLoadBalance attribute, A-5
orclNetAddress object class, A-4
orclNetAddressList object class, A-4
orclNetAddrList attribute, A-5
orclNetAddrString attribute, A-5
orclNetConnParamList attribute, A-5
orclNetDescription object class, A-3
orclNetDescriptionList object class, A-4
orclNetFailover attribute, A-5
orclNetInstanceName attribute, A-5
orclNetSdu attribute, A-5
orclNetService object class, A-2
orclNetServiceAlias object class, A-3
orclNetServiceName attribute, A-5

Index-9
orclNetSourceRoute attribute, A-5
orclProtocol attribute, A-5
orclSid attribute, A-5
orclVersion attribute, A-5
OSS.MY.WALLET networking parameter, B-4

P

PASSWORD command, 3-29
PASSWORD networking parameter, 10-5
passwords
  Listener Control utility access, 1-4
  Oracle Names Control utility access, 3-5
PASSWORDS_listener_name networking parameter, 8-15
PIPE networking parameter, 5-3
port 1024, 5-5
port 1521, 5-4
port 1575, 5-4, 10-3
port 1630, 5-4
port 1646, 6-37
port 1830, 5-4
port 2483, 5-4
port 2484, 5-4
PORT networking parameter, 5-3, 5-4, 10-5
port numbers, allowed, 5-5
ports
  privileged, 5-5
PRESPOWN_DESC networking parameter, 8-11, B-5
PRESPOWN_LIST networking parameter, B-5
PRESPOWN_MAX networking parameter, 8-11, B-5
prespawned dedicated servers, B-3
privileged ports, 5-5
PROGRAM networking parameter, 8-10
PROTOCOL networking parameter, 5-3, 5-4
protocol.ora file, B-3
protocols, 5-3
  configuring addresses, 5-3
    IPC, 5-3
    Named Pipes, 5-3
    TCP/IP, 5-3
    TCP/IP with SSL, 5-4

Q

QUERY command
  A.SMD Oracle Names record, 3-31, 3-42
  CNAME.SMD Oracle Names record, 3-31, 3-42
  DLCR.TDBMS.OMD Oracle Names record, 3-31, 3-42
  DL.RDBMS.OMD Oracle Names record, 3-31, 3-42
  NS.SMD Oracle Names record, 3-31, 3-42
  of Oracle Names Control utility, reference, 3-31
  V1ADD.NPO.OMD Oracle Names record, 3-31, 3-42
  QUEUESIZE networking parameter, 8-5
  QUEUESIZE parameter
    for adjusting listener queue size, 8-5
QUIT command
  of Listener Control utility, 1-9
  of Oracle Connection Manager Control utility, 2-9
  of Oracle Names Control utility, 3-33

R

randomizing requests among listeners, 7-11
RDB_DATABASE networking parameter, 7-19
reference
  for cman.ora, 9-3 to 9-12
  for ldap.ora, 11-2 to 11-3
  for Listener Control utility commands, 1-5 to 1-36
  for listener.ora, 8-3 to 8-23
  for names.ora, 10-3 to 10-29
  for Oracle Connection Manager Control utility commands, 2-5 to 2-33
  for Oracle Names Control utility commands, 3-2 to 3-95
  for sqlnet.ora, 6-3 to 6-54
  for tnsnames.ora, 7-7 to 7-24
REFRESH networking parameter, 10-5
REGISTER command, 3-34
REGISTER_NS command, 3-37
RELAY_STATISTICS networking parameter, 9-9
RELOAD command
  of Listener Control utility, 1-10
  of Oracle Names Control utility, 3-39
REMOTE_ADMIN networking parameter, 9-10
REORDER_NS command, 3-40
REPEAT command, 3-42
RESET_STATS command, 3-44
RESTART command, 3-45
RETRIES networking parameter, 7-17
RETRY networking parameter, 10-5
rules, syntax for network configuration files, 4-2

S

SAVE_CONFIG command
of Listener Control utility, 1-11
of Oracle Names Control utility, 3-46
SAVE_CONFIG_ON_STOP_listener_name
networking parameter, 8-16
SCOPE networking parameter, 10-6
.sdns.ora file, 3-2
.sdns.ora file, 3-2
SDU networking parameter, 7-12
SecurID authentication, B-2
security, 1-4
database server
connect-request timeouts, 6-28
listeners
connect-request timeouts, 8-13
password usage, 1-4
restricting runtime administration, 8-12
Oracle Names servers
connect-request timeouts, 10-10
password usage, 3-5
SECURITY networking parameter, 7-23
SERVER networking parameter, 5-3, 7-20
service name
character set keyword values, 4-4
SERVICE_NAME networking parameter, 7-21
SERVICES command, 1-12
SET AUTHENTICATION_LEVEL command, 2-11
SET CACHE_CHECKPOINT_INTERVAL
command, 3-48
SET command
of Listener Control utility, 1-14
of Oracle Connection Manager Control utility, 2-10
of Oracle Names Control utility, 3-47
SET CONNECT_TIMEOUT command, 1-16, B-6
SET CURRENT_LISTENER command, 1-16
SET DEFAULT_DOMAIN command, 3-49
SET DISPLAYMODE command
of Listener Control utility, 1-17
of Oracle Connection Manager Control utility, 2-12
SET FORWARDING_AVAILABLE command, 3-50
SET LOG_DIRECTORY command
of Listener Control utility, 1-18
of Oracle Names Control utility, 3-47
SET FORWARDING_AVAILABLE command, 3-50
SET LOG_DIRECTORY command
of Listener Control utility, 1-18
of Oracle Names Control utility, 3-47
SET PASSWORD command
of Listener Control utility, 1-21
of Oracle Names Control utility, 3-56
SET RELAY_STATISTICS command, 2-14
SET REQUESTS_ENABLED command, 3-57
SET RESET_STATS_INTERVAL command, 3-58
SET SAVE_CONFIG_INTERVAL command, 3-59
SET SAVE_CONFIG_ON_STOP command, 1-22
of Listener Control utility, 1-22
of Oracle Names Control utility, 3-60
SET SERVER command, 3-61
SET STARTUP_WAITTIME command, 1-23
SET TRACE_FILE_NAME command, 3-62
SET TRACE_LEVEL command, 3-63
SET TRC_DIRECTORY command, 1-24
SET TRC_FILE command, 1-25
SET TRC_LEVEL command, 1-26
SET USE_PLUGANDPLAY command, 1-27, B-6
SHOW ADDRESS command, 2-16
SHOW ALL command, 2-17
SHOW CACHE_CHECKPOINT_INTERVAL
command, 3-66
SHOW command
of Listener Control utility, 1-27
of Oracle Connection Manager Control utility, 2-15
of Oracle Names Control utility, 3-64
SHOW CONNECT_TIMEOUT command, B-6
SHOW CURRENT_LISTENER command, 1-28
SHOW DEFAULT_DOMAIN command, 3-67
SHOW DISPLAYMODE command
of Listener Control utility, 1-28
of Oracle Connection Manager Control
utility, 2-19
SHOW FORWARDING_AVAILABLE
command, 3-68
SHOW LOG_DIRECTORY command, 1-28
SHOW LOG_FILE command, 1-28
SHOW LOG_FILE_NAME command, 3-69
SHOW LOG_STATS_INTERVAL command, 3-70
SHOW LOG_STATUS command, 1-28
SHOW NAMESCTL_TRACE_LEVEL
command, 3-71
SHOW PROFILE command, 2-20
SHOW RAWMODE command, 1-28
SHOW Relay command, 2-21
SHOW REQUESTS_ENABLED command, 3-72
SHOW RESETS_STATS_INTERVAL
command, 3-73
SHOW RULES command, 2-23
SHOW SAVE_CONFIG_INTERVAL
command, 3-74
SHOW SAVE_CONFIG_ON_STOP
command, 1-28, 3-75
SHOW SERVER command, 3-76
SHOW STARTUP_WAITTIME command, 1-28
SHOW STATUS command, 3-77
SHOW SYSTEM QUERIES command, 3-78
SHOW TRACE_FILE_NAME command, 3-79
SHOW TRACE_LEVEL command, 3-80
SHOW TRC_DIRECTORY command, 1-28
SHOW TRC_FILE command, 1-28
SHOW TRC_LEVEL command, 1-28
SHOW VERSION command, 3-81
SHOW TNS_INFO networking parameter, 9-10
SHUTDOWN command
of Oracle Connection Manager Control
utility, 2-24
of Oracle Names Control utility, 3-82
SID networking parameter, 7-22
SID_DESC networking parameter, 8-7
SID_LIST_listener_name networking
parameter, 8-11
Oracle Enterprise Manager requirements, 8-6
SID_NAME networking parameter, 8-11
SOURCE_ROUTE networking parameter, 7-13
SPAWN command, 1-29
SPX protocol, B-3
SQLNET.ALTERNATE_PORT networking
parameter, 6-32
SQLNET.AUTHENTICATION_GSSAPI_SERVICE
networking parameter, 6-18
SQLNET.AUTHENTICATION_KERBEROS_SERVICE
networking parameter, 6-18
SQLNET.AUTHENTICATION_SERVICES
networking parameter, 6-19
SQLNET.CLIENT_AUTHENTICATION networking
parameter, 8-16
SQLNET.CLIENT_REGISTRATION networking
parameter, 6-20
SQLNET.CRYPTO_CHECKSUM_CLIENT networking parameter, 6-20
SQLNET.CRYPTO_CHECKSUM_SERVER networking parameter, 6-21
SQLNET.CRYPTO_CHECKSUM_TYPE_CLIENT networking parameter, 6-22
SQLNET.CRYPTO_CHECKSUM_TYPE_SERVER networking parameter, 6-22
SQLNET.CRYPTO_SEED networking parameter, 6-23
SQLNET.ENCRYPTION_CLIENT networking parameter, 6-23
SQLNET.ENCRYPTION_SERVER networking parameter, 6-24
SQLNET.ENCRYPTION_TYPES_CLIENT networking parameter, 6-25
SQLNET.ENCRYPTION_TYPES_SERVER networking parameter, 6-26
SQLNET.EXPIRE_TIME networking parameter, 6-27
SQLNET.IDENTIX_FINGERPRINT_DATABASE networking parameter, B-4
SQLNET.IDENTIX_FINGERPRINT_DATABASE_PASSWORD networking parameter, B-4
SQLNET.IDENTIX_FINGERPRINT_DATABASE_USER networking parameter, B-4
SQLNET.IDENTIX_FINGERPRINT_METHOD networking parameter, B-4
SQLNET.INBOUND_CONNECT_TIMEOUT  
networking parameter,  6-28
SQLNET.KERBEROS5_CC_NAME networking  
parameter,  6-29
SQLNET.KERBEROS5_CLOCKSKEW networking  
parameter,  6-29
SQLNET.KERBEROS5_CONF networking  
parameter,  6-30
SQLNET.KERBEROS5_KEYTAB networking  
parameter,  6-30
SQLNET.KERBEROS5_REALMS networking  
parameter,  6-31
sqlnet.ora file  
configuration parameter reference,  6-3  
to 6-54
parameters  
BEQUEATH_DETACH,  6-3
DISABLE_OOB,  6-4
LOGDIRECTORY_CLIENT,  6-4
LOGDIRECTORY_SERVER,  6-5
LOGFILE_CLIENT,  6-5
LOGFILE_SERVER,  6-5
NAMES_DIRECTORY_PATH,  6-7
NAMES.CONNECT_TIMEOUT,  6-6
NAMESCTL.ECHO,  6-12
NAMESCTL.INTERNAL_ENCRYPT_PASSWORD,  6-13
NAMESCTL.INTERNAL_USE,  6-13
NAMESCTL.NO_INITIAL_SERVER,  6-14
NAMESCTL.NOCONFIRM,  6-14
NAMESCTL.SERVER_PASSWORD,  6-15
NAMESCTL.TRACE_DIRECTORY,  6-15
NAMESCTL.TRACE_FILE,  6-15
NAMESCTL.TRACE_LEVEL,  6-16
NAMESCTL.TRACE_TIMESTAMP,  6-17
NAMESCTL.TRACE_UNIQUE,  6-17
NAMES.DCE_PREFIX,  6-6
NAMES.DEFAULT_DOMAIN,  6-7, B-4
NAMES.INITIAL_RETRY_TIMEOUT,  6-9
NAMES.MAX_OPEN_CONNECTIONS,  6-9
NAMES.MESSAGE_POOL_START_SIZE,  6-10
NAMES.NISMETA_MAP,  6-10
NAMES.PREFERRED_SERVERS,  6-11
NAMES.REQUEST_RETRIES,  6-11
SQLNET.ALTERNATE_PORT,  6-32

SQLNET.AUTHENTICATION_GSSAPI SERVICE,  6-18
SQLNET.AUTHENTICATION_KERBEROS5 SERVICE,  6-18
SQLNET.AUTHENTICATION_SERVICES,  6-19
SQLNET.CLIENT_REGISTRATION,  6-20
SQLNET.CRYPTO_CHECKSUM_CLIENT,  6-20
SQLNET.CRYPTO_CHECKSUM_SERVER,  6-21
SQLNET.CRYPTO_CHECKSUM_TYPE_CLIENT,  6-22
SQLNET.CRYPTO_CHECKSUM_TYPE_SERVER,  6-22
SQLNET.CRYPTO_SEED,  6-23
SQLNET.ENCRYPTION_SERVER,  6-24
SQLNET.ENCRYPTION_TYPES_CLIENT,  6-25
SQLNET.ENCRYPTION_TYPES_SERVER,  6-26
SQLNET.ENCRYPTION_CLIENT,  6-27
SQLNET.EXPIRE_TIME,  6-27
SQLNET.IDENTITY_FINGERPRINT_DATABASE_PASSWORD,  B-4
SQLNET.INBOUND_CONNECT_TIMEOUT,  6-28
SQLNET.KERBEROS5_CC_NAME,  6-29
SQLNET.KERBEROS5_CLOCKSKEW,  6-29
SQLNET.KERBEROS5_CONF,  6-30
SQLNET.KERBEROS5_KEYTAB,  6-30
SQLNET.KERBEROS5_REALMS,  6-31
SQLNET.RADIUS_ALTERNATE,  6-32
SQLNET.RADIUS_ALTERNATE_RETRIES,  6-33
SQLNET.RADIUS_AUTHENTICATION,  6-33
SQLNET.RADIUS_AUTHENTICATION_INTERFACE,  6-34
SQLNET.RADIUS_AUTHENTICATION_PORT,  6-34
SQLNET.RADIUS_AUTHENTICATION_RETRIES,  6-35
SQLNET.RADIUS_AUTHENTICATION_TIMEOUT,  6-35
SQLNET.RADIUS_CHALLENGE_ RESPONSE, 6-36
SQLNET.RADIUS_SECRET, 6-36
SQLNET.RADIUS_SEND_ ACCOUNTING, 6-36
SSL_CIPHER_SUITES, 6-37
SSL_SERVER_DN_MATCH, 6-38
SSL_VERSION, 6-39
SSL_CLIENT_AUTHENTICATION, 6-38
TCP.EXCLUDED NODES, 6-40
TCP.INVITED NODES, 6-40
TCP.NODelay, 6-41
TCP.VALIDNODE_CHECKING, 6-41
TNSPING.TRACE_DIRECTORY, 6-42
TNSPING.TRACE_LEVEL, 6-42
TRACE_DIRECTORY_CLIENT, 6-43
TRACE_DIRECTORY_SERVER, 6-43
TRACE_FILE_CLIENT, 6-44
TRACE_FILE_SERVER, 6-44
TRACE_FILEN_CLIENT, 6-45
TRACE_FILEN_SERVER, 6-46
TRACE_LEVEL_CLIENT, 6-47
TRACE_LEVEL_SERVER, 6-48
TRACE_TIMESTAMP_CLIENT, 6-48
TRACE_TIMESTAMP_SERVER, 6-49
TRACE_UNIQUE_CLIENT, 6-49
USE_CMAN, 6-50
USEDEDICATED_SERVER, 6-51
WALLET_LOCATION, 6-52, B-4
unsupported parameters
AUTOMATIC_IPC, B-4
NAMES.DEFAULT_ZONE, B-4
NAMES.NDS.NAME.CONTEXT, B-4
OSS.MY.WALLET, B-4
SQL.NET.IDENTIX_FINGERPRINT_ DATABASE, B-4
SQL.NET.IDENTIX_FINGERPRINT_ DATABASE_PASSWORD, B-4
SQL.NET.IDENTIX_FINGERPRINT_ DATABASE_USER, B-4
SQL.NET.IDENTIX_FINGERPRINT_ METHOD, B-4
SQLNET.RADIUS_ALTERNATE networking parameter, 6-32
SQLNET.RADIUS_ALTERNATE_RETRIES networking parameter, 6-33
SQLNET.RADIUS_AUTHENTICATION networking parameter, 6-33
SQLNET.RADIUS_AUTHENTICATION_ INTERFACE networking parameter, 6-34
SQLNET.RADIUS_AUTHENTICATION_PORT networking parameter, 6-34
SQLNET.RADIUS_AUTHENTICATION_RETRIES networking parameter, 6-35
SQLNET.RADIUS_AUTHENTICATION_TIMEOUT networking parameter, 6-35
SQLNET.RADIUS_CHALLENGE_RESPONSE networking parameter, 6-36
SQLNET.RADIUS_SECRET networking parameter, 6-36
SQLNET.RADIUS_SEND_ACCOUNTING networking parameter, 6-37
SRC networking parameter, 9-5
SRV networking parameter, 9-5
SSL_CIPHER_SUITES networking parameter, 6-37
SSL_SERVER_CERT_DN networking parameter, 7-24
SSL_SERVER_DN_MATCH networking parameter, 6-38
SSL_SERVER_DN_MATCH networking parameter, 6-38
SSL_VERSION networking parameter, 6-39
SSL_CLIENT_AUTHENTICATION networking parameter, 6-39
START command of Listenet Control utility, 1-30
START command of Oracle Connection Manager Control utility, 2-25
START command of Oracle Names Control utility, 3-83
START_CLIENT_CACHE command, 3-85
STARTUP command of Oracle Names Control utility, 3-86
STARTUP_WAITTIME_listener_name networking parameter, 8-18
STATS command, 2-27
ACTIVE_DELAYS, 2-27
MOST_RELAYS, 2-28
OUT_OF_RELAYS, 2-28
TOTAL_REFUSED, 2-28
TOTAL_RELAYS, 2-27
STATUS command
  of Listener Control utility, 1-32
  of Oracle Connection Manager Control
  utility, 2-29
  of Oracle Names Control utility, 3-87
STOP command
  of Listener Control utility, 1-34
  of Oracle Connection Manager Control
  utility, 2-31
  of Oracle Names Control utility, 3-88
STOPNOW command
  of Oracle Connection Manager Control
  utility, 2-32
SUBTREE parameter, 10-6
SUBTREE_LIST networking parameter, 10-6
syntax
  rules for network configuration files, 4-2
time-stamping
  client trace files, 6-48
  database server trace files, 6-49
  listener trace files, 8-20
  Oracle Names Control utility trace files, 6-17
  Oracle Names server trace files, 10-28
tnsnames.ora file
  configuration parameter reference, 7-7 to 7-24
parameters
  ADDRESS, 7-8
  ADDRESS_LIST, 7-9
  BACKUP, 7-16
  CONNECT_DATA, 7-15
  DELAY, 7-17
  DESCRIPTION, 7-7
  DESCRIPTION_LIST, 7-8
  FAILOVER, 7-10, 7-11, 10-17, 10-18, 10-20, 10-23
  FAILOVER_MODE, 7-16
  GLOBAL_NAME, 7-17
  HS, 7-18
  INSTANCE_NAME, 7-18
  LOAD_BALANCE, 7-11
  METHOD, 7-17
  RDB_DATABASE, 7-19
  RETRIES, 7-17
  SDU, 7-12
  SECURITY, 7-23
  SERVER, 7-20
  SERVICE_NAME, 7-21
  SID, 7-22
  SOURCE_ROUTE, 7-13
  SSL_SERVER_CERT_DN, 7-24
  TYPE, 7-16
  TYPE_OF_SERVICE, 7-14
unsupported parameters
  COMMUNITY, B-4
TNSPING.TRACE_DIRECTORY networking
  parameter, 6-42
TNSPING.TRACE_DIRECTORY networking
  parameter, 6-42
TNSPING.TRACE_LEVEL networking
  parameter, 6-42
TRACE command, 1-35
trace files

cycling
client, 6-46
database server, 6-46
listener, 8-19
time-stamping
client, 6-48
database server, 6-49
listener, 8-20
Oracle Names, 10-28
Oracle Names Control utility, 6-17
TRACE_DIRECTORY networking parameter, 9-11
TRACE_DIRECTORY_CLIENT networking parameter, 6-43
TRACE_DIRECTORY_listener_name networking parameter, 8-18
TRACE_DIRECTORY_SERVER networking parameter, 6-43
TRACE_FILE_CLIENT networking parameter, 6-44
TRACE_FILE_listener_name networking parameter, 8-18
TRACE_FILE_SERVER networking parameter, 6-44
TRACE_FILELEN networking parameter, 9-11
TRACE_FILELEN_CLIENT networking parameter, 6-45
TRACE_FILEN_listener_name networking parameter, 8-19
TRACE_FILENO_CLIENT networking parameter, 6-46
TRACE_FILENO_listener_name networking parameter, 8-19
TRACE_FILENO_SERVER networking parameter, 6-46
TRACE_LEVEL_CLIENT networking parameter, 6-47
TRACE_LEVEL_listener_name networking parameter, 8-20
TRACE_LEVEL_SERVER networking parameter, 6-48
TRACE_TIMESTAMP networking parameter, 9-11
TRACE_TIMESTAMP_CLIENT networking parameter, 6-48
TRACE_TIMESTAMP_listener_name networking parameter, 8-20

TRACE_TIMESTAMP_SERVER networking parameter, 6-49
TRACE_UNIQUE_CLIENT networking parameter, 6-49

tracing

cycling files
client, 6-46
database server, 6-46
listener, 8-19
time-stamping
client trace files, 6-48
database server trace files, 6-49
listener trace files, 8-20
Oracle Names Control utility trace files, 6-17
Oracle Names trace files, 10-28
TRACING networking parameter, 9-10
Transparent Application Failover (TAF) parameters, 7-16
TYPE networking parameter, 7-16, 10-5
TYPE_OF_SERVICE networking parameter, 7-14

U

UNREGISTER command, 3-91
UNREGISTER_NS command, 3-93
USE_ASYNC_CALL networking parameter, 9-12
USE_CMAN networking parameter, 6-50
USE_DEDICATED_SERVER networking parameter, 6-51
USE_PLUG_AND_PLAY_listener_name parameter, B-5
USERID networking parameter, 10-5

V

V1ADD.NPO.OMD Oracle Names record, 3-31, 3-42
VERSION command
of Listener Control utility, 1-36
of Oracle Connection Manager Control utility, 2-33
of Oracle Names Control utility, 3-95
VERSION networking parameter, 10-5

W

WALLET_LOCATION networking parameter, 6-52, 8-21, B-4