6

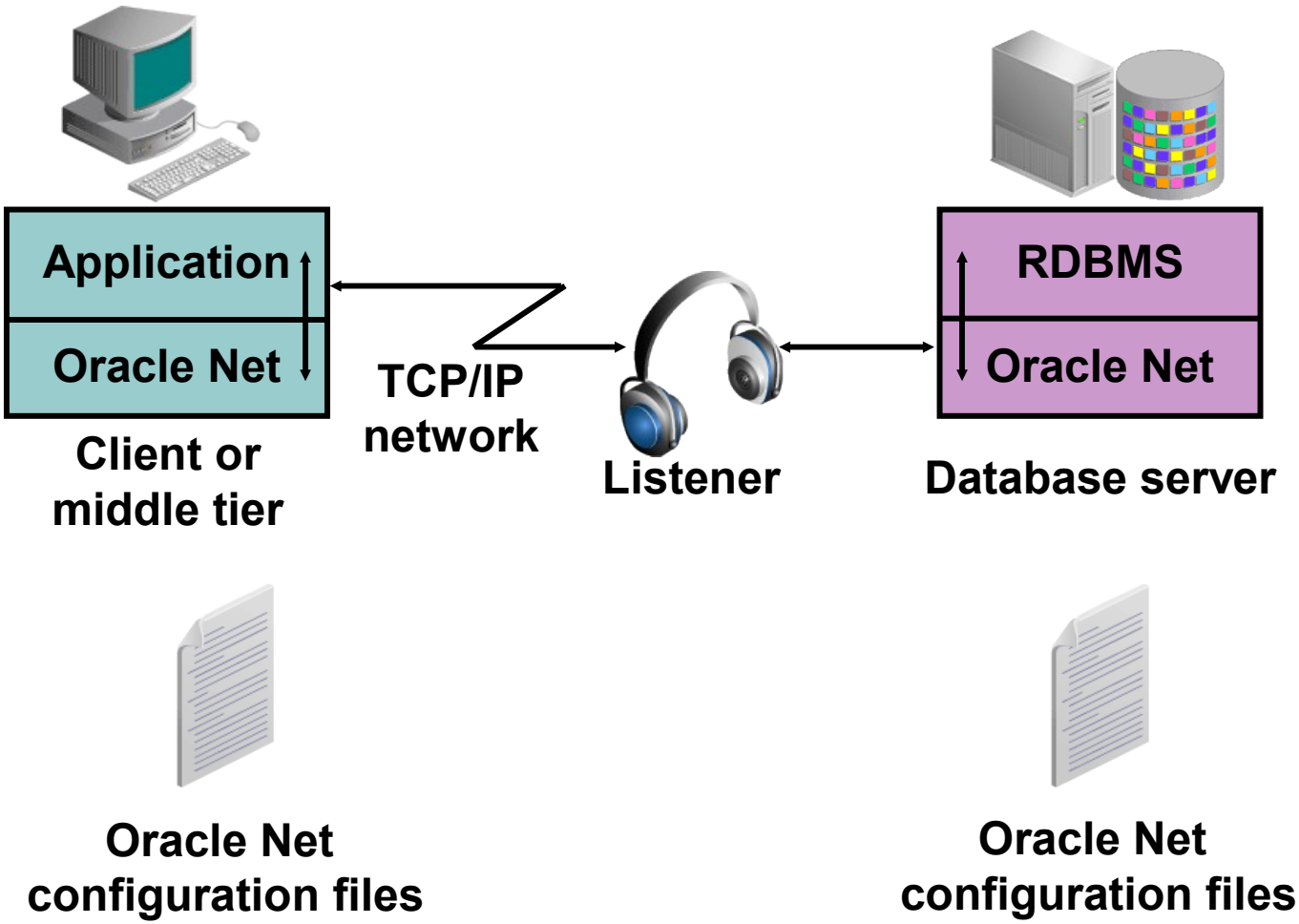
Configuring the Oracle Network Environment

Objectives

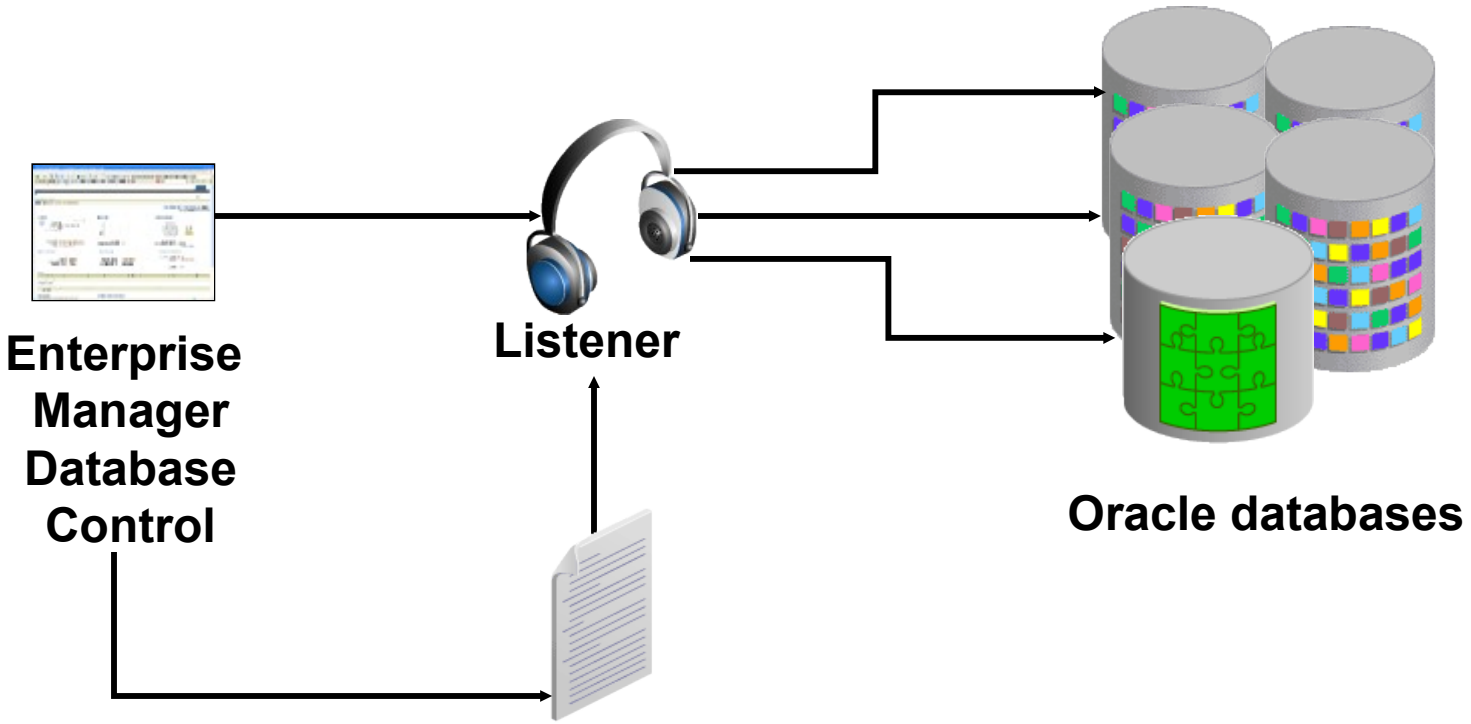
After completing this lesson, you should be able to:

- Use Enterprise Manager to:
  - Create additional listeners
  - Create Oracle Net Service aliases
  - Configure connect-time failover
  - Control the Oracle Net Listener
- Use `tnsping` to test Oracle Net connectivity
- Identify when to use shared servers and when to use dedicated servers

Oracle Net Services



Oracle Net Listener

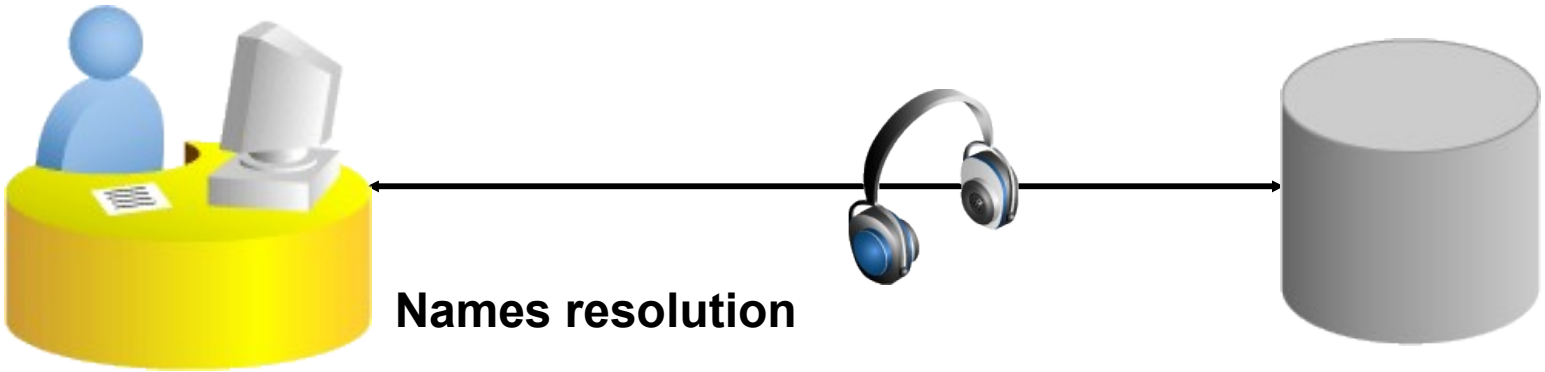


`<Grid_home>/network/admin/listener.ora`
`./sqlnet.ora`

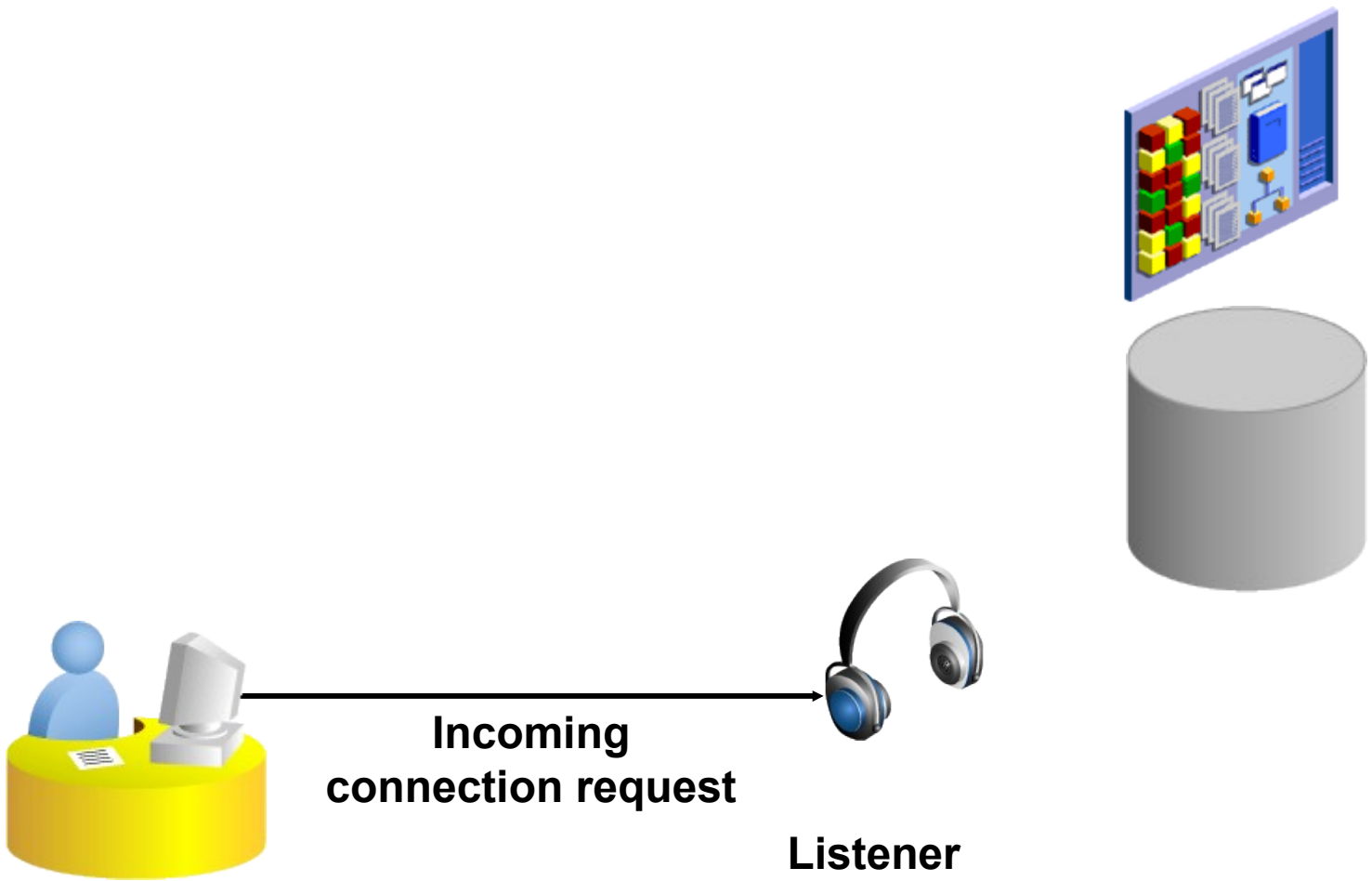
Establishing Net Connections

To make a client or middle-tier connection, Oracle Net requires the client to know the:

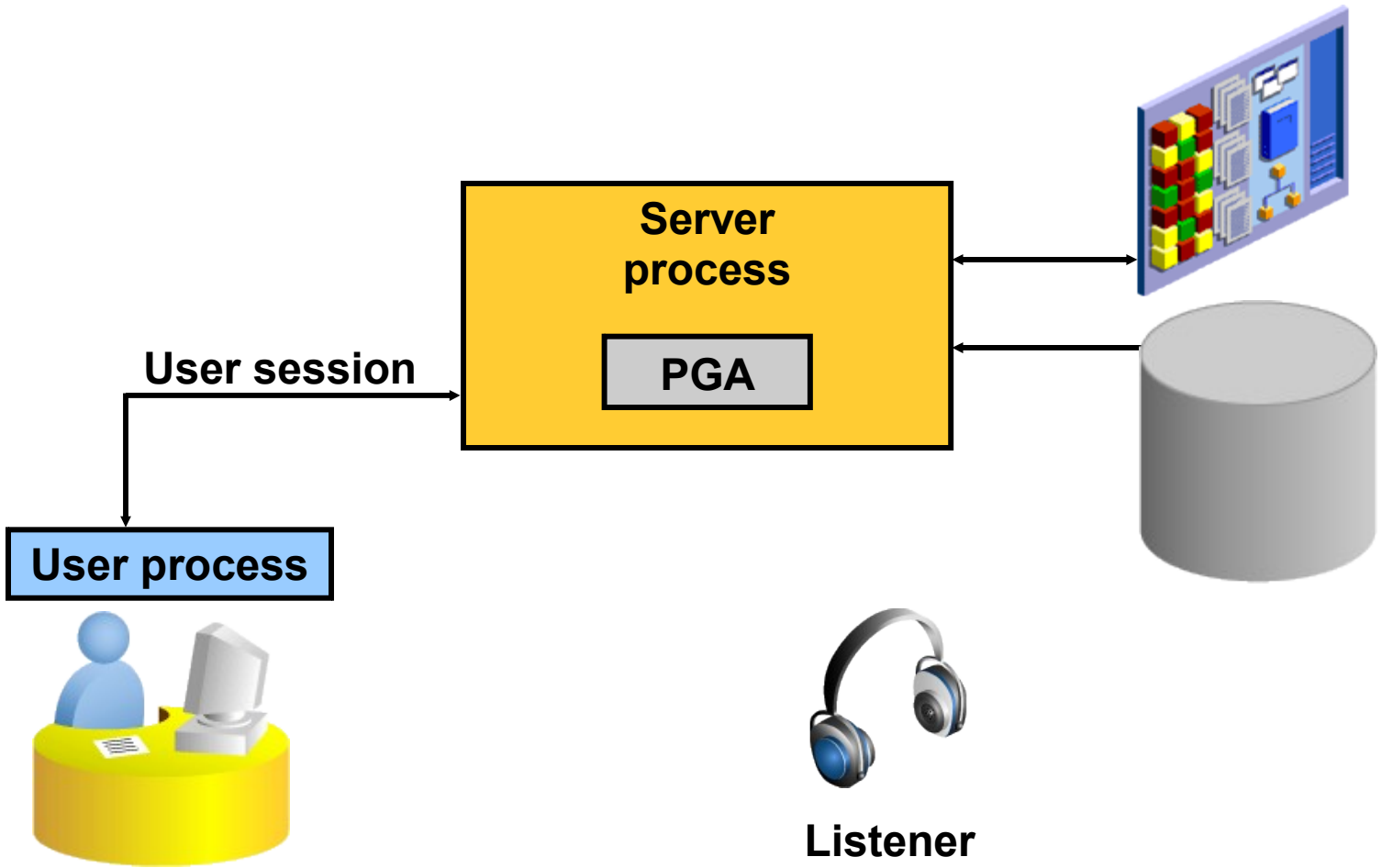
- Host where the listener is running
- Port that the listener is monitoring
- Protocol that the listener is using
- Name of the service that the listener is handling



Establishing a Connection



User Sessions



Tools for Configuring and Managing the Oracle Network

- Enterprise Manager Net Services Administration page
- Oracle Net Manager
- Oracle Net Configuration Assistant
- Command line

Listener Control Utility

Oracle Net listeners can be controlled with the `lsnrctl` command-line utility (or from EM).

```
$ . oraenv
ORACLE_SID = [orcl] ? +ASM
$ lsnrctl
LSNRCTL for Linux: Version 11.2.0.1.0 - Production on 30-JUN-2009 00:47:01
Copyright (c) 1991, 2009, Oracle.  All rights reserved.
Welcome to LSNRCTL, type "help" for information.

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

Listener Control Utility Syntax

Commands from the listener control utility can be issued from the command line or from the LSNRCTL prompt.

- Command-line syntax:

```
$ lsnrctl <command name>
$ lsnrctl start
$ lsnrctl status
```

- Prompt syntax:

```
LSNRCTL> <command name>
LSNRCTL> start
LSNRCTL> status
```

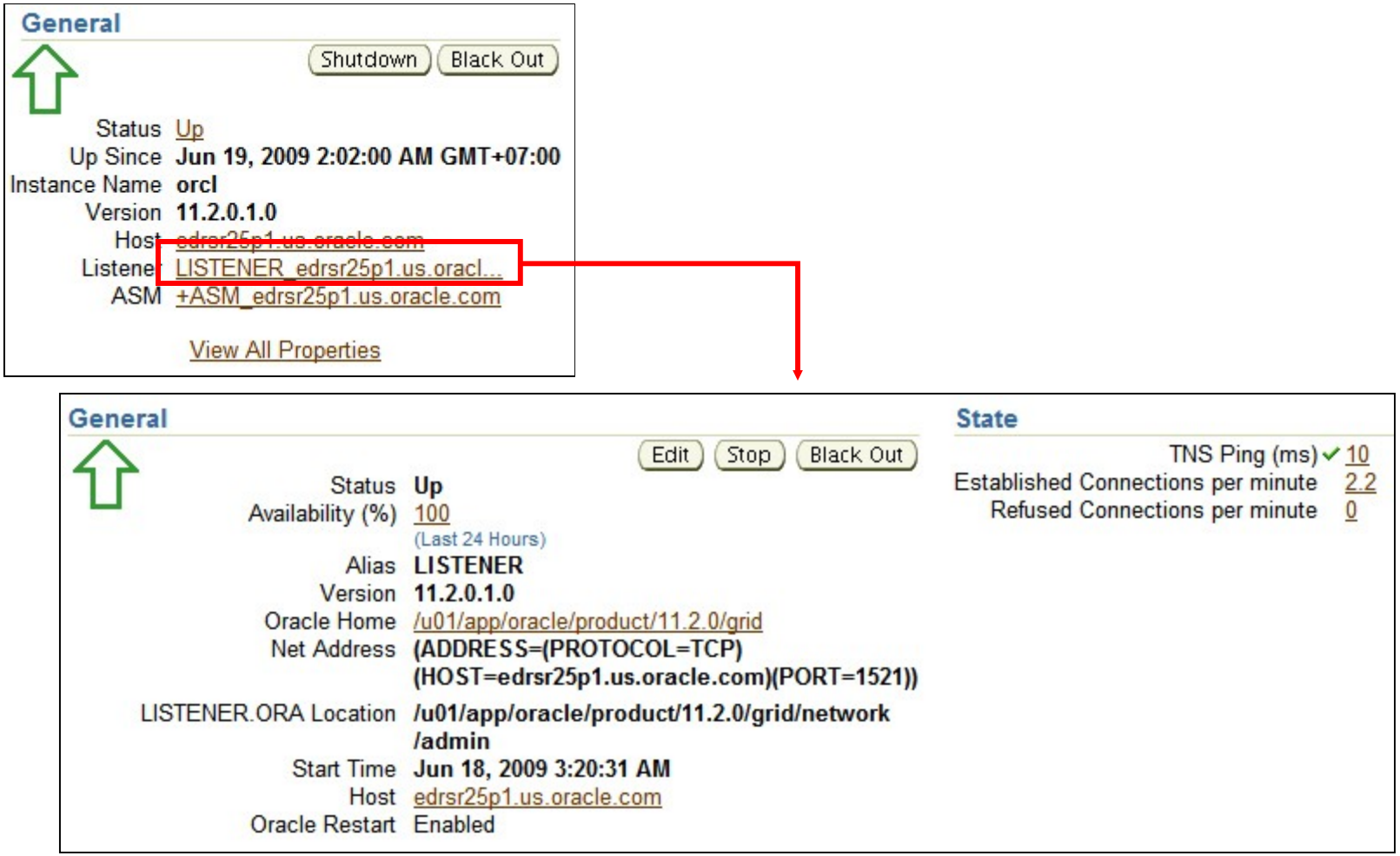
Using SRVCTL to Start and Stop the Listener

If Oracle Restart is configured to monitor your listener, you should use SRVCTL to manage that listener.

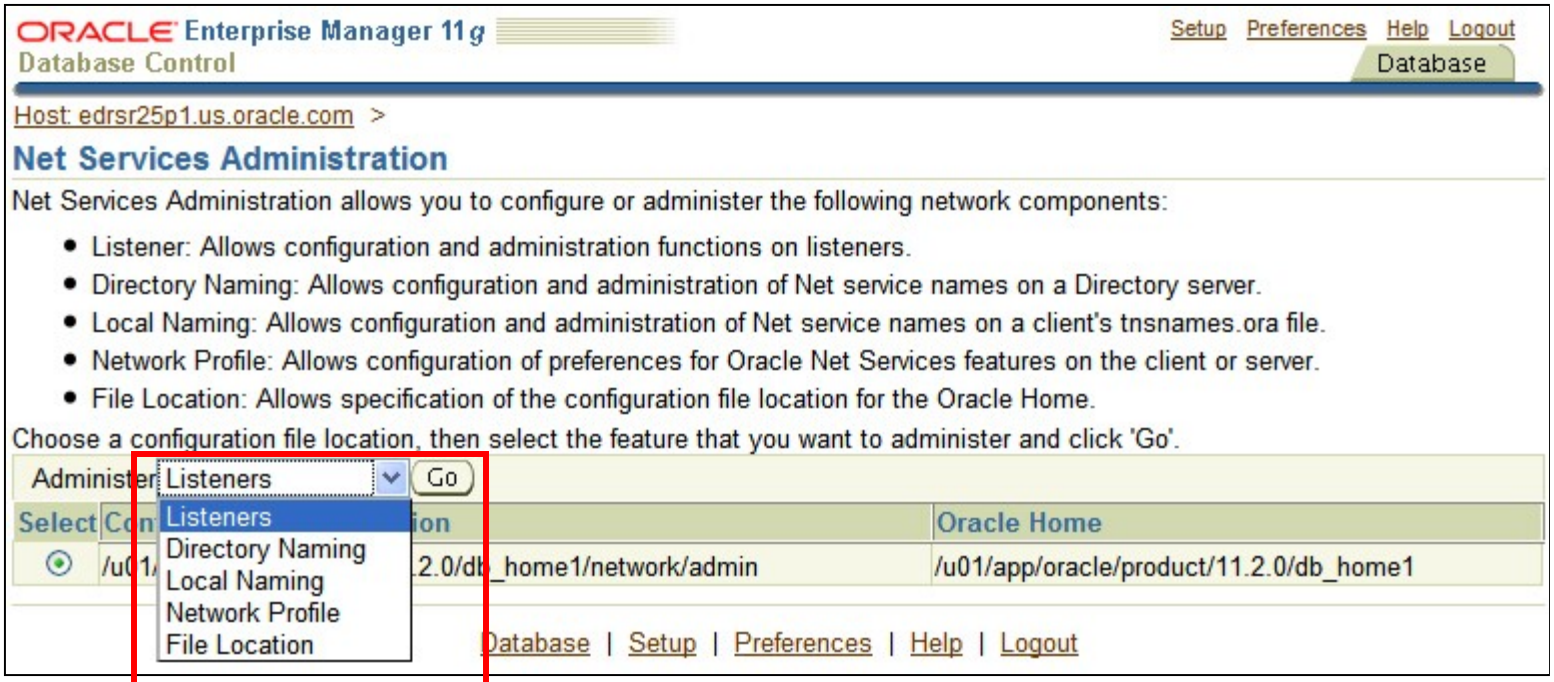
- Example syntax:

```
$ srvctl -h
$ srvctl start listener
$ srvctl stop listener
$ srvctl start listener -l mylistener
$ srvctl status listener
```

Listener Home Page

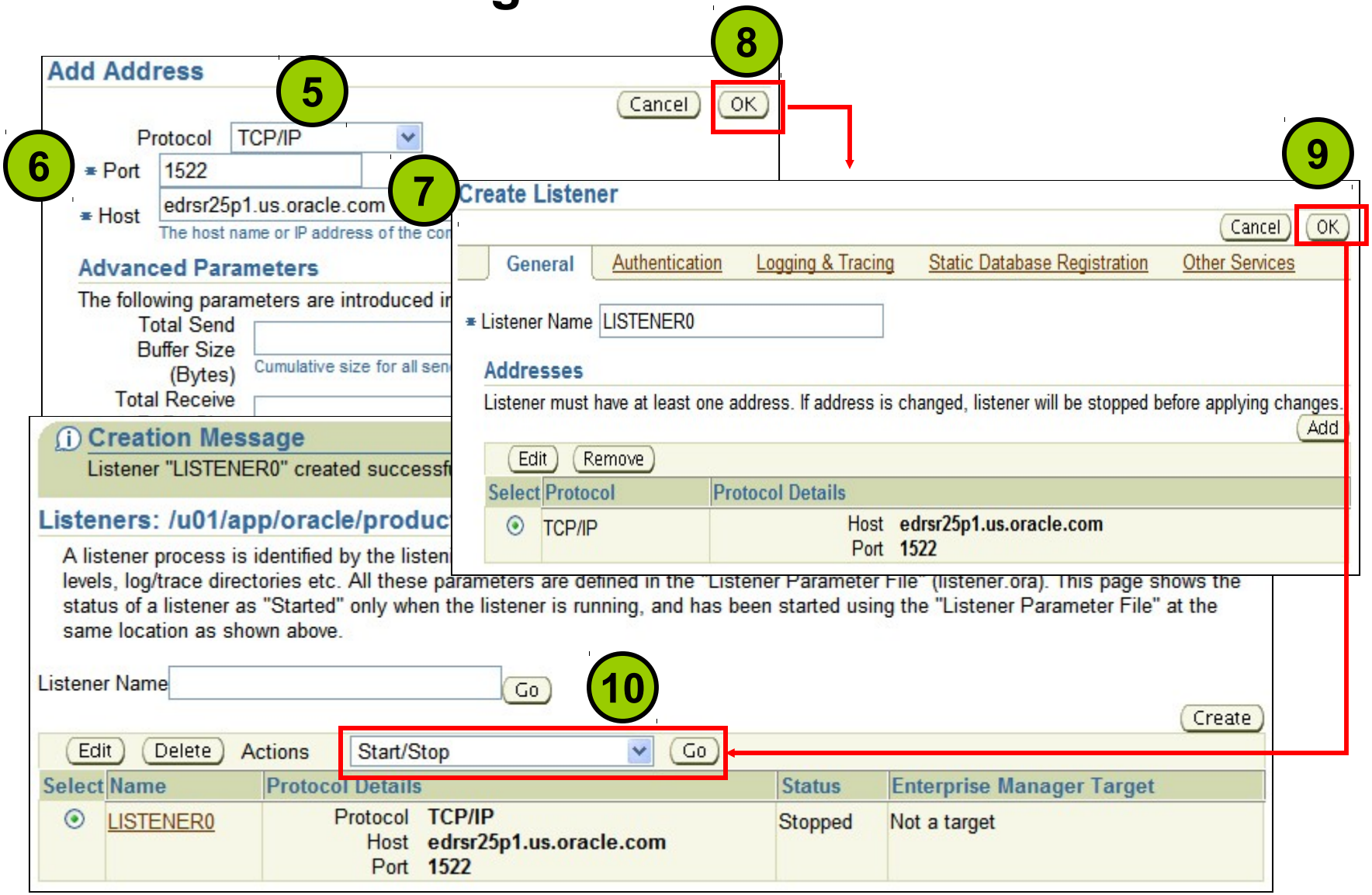


Net Services Administration Page

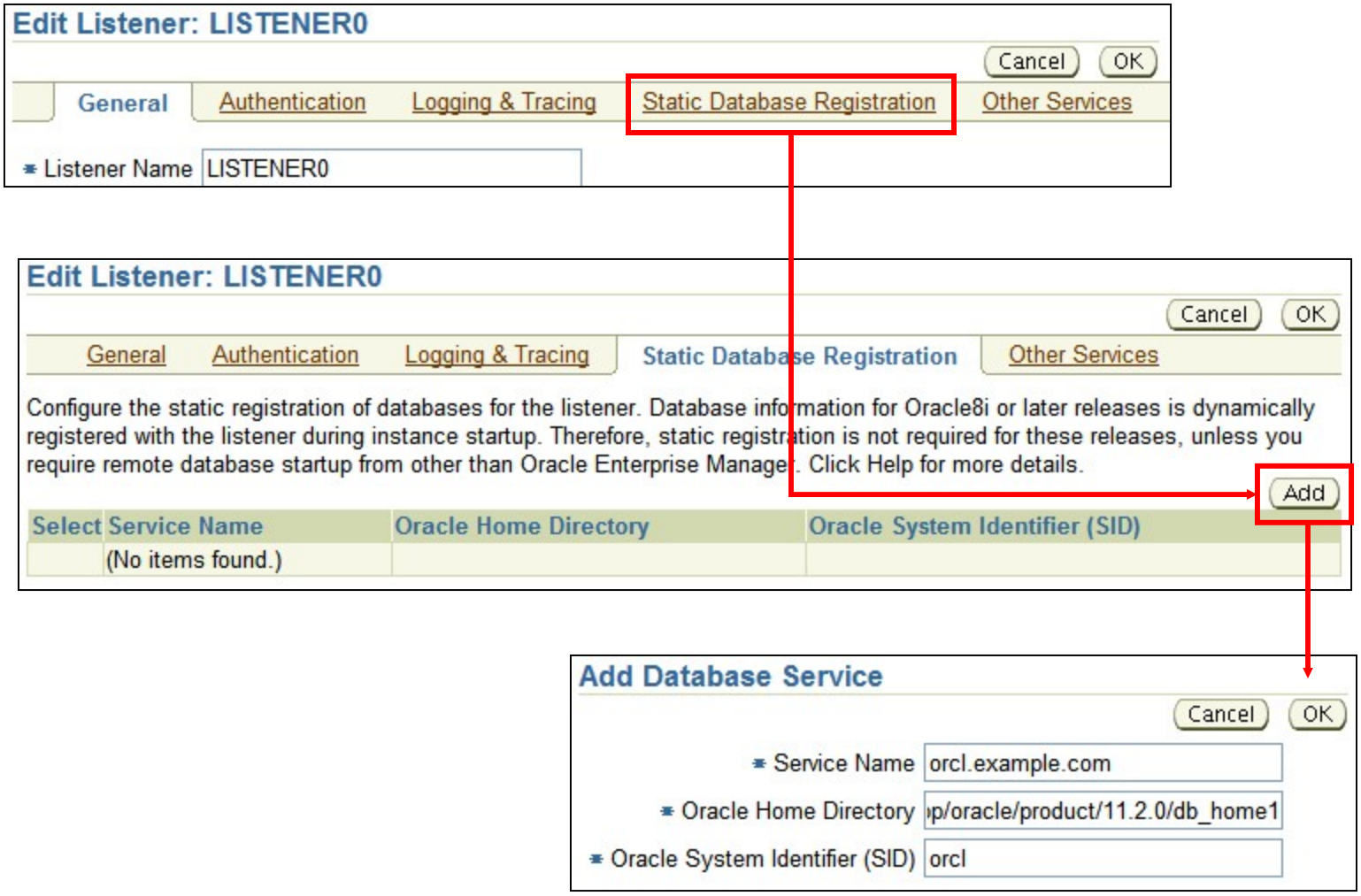


Creating a Listener

Adding Listener Addresses



Database Service Registration



Naming Methods

Oracle Net supports several methods of resolving connection information:

- Easy connect naming: Uses a TCP/IP connect string
- Local naming: Uses a local configuration file
- Directory naming: Uses a centralized LDAP-compliant directory server
- External naming: Uses a supported non-Oracle naming service

Easy Connect

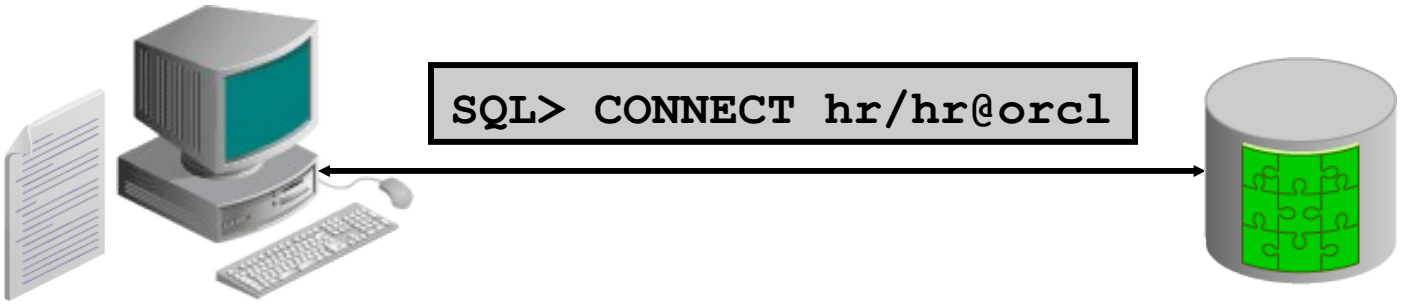
- Is enabled by default
- Requires no client-side configuration
- Supports only TCP/IP (no SSL)
- Offers no support for advanced connection options such as:
  - Connect-time failover
  - Source routing
  - Load balancing

```
SQL> CONNECT hr/hr@db.us.oracle.com:1521/dba11g
```

No Oracle Net configuration files

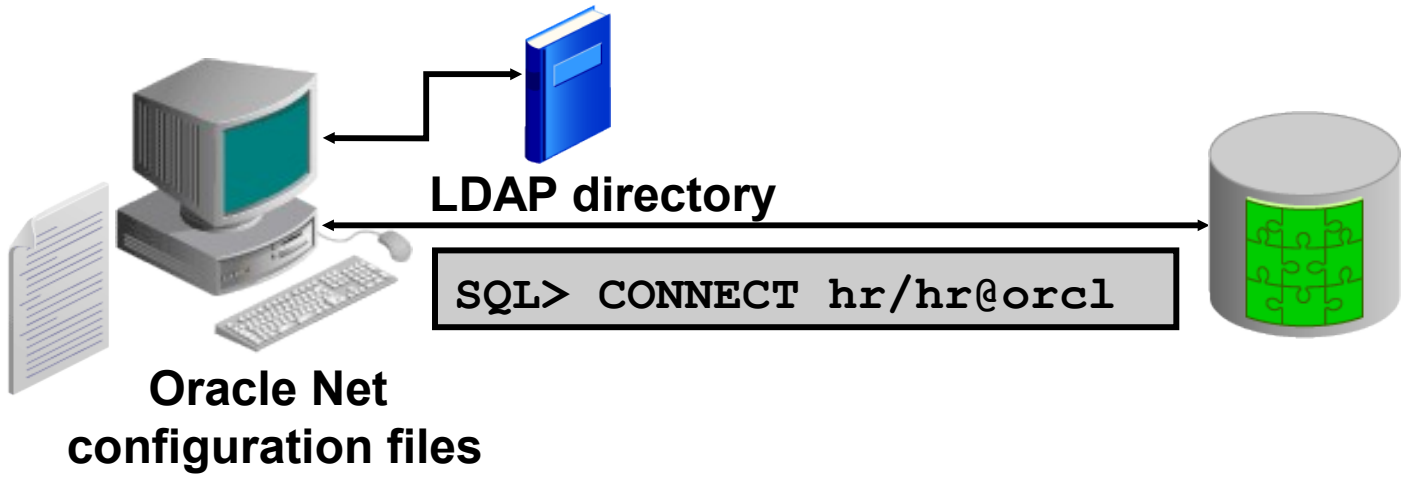
Local Naming

- Requires a client-side Names Resolution file
- Supports all Oracle Net protocols
- Supports advanced connection options such as:
  - Connect-time failover
  - Source routing
  - Load balancing



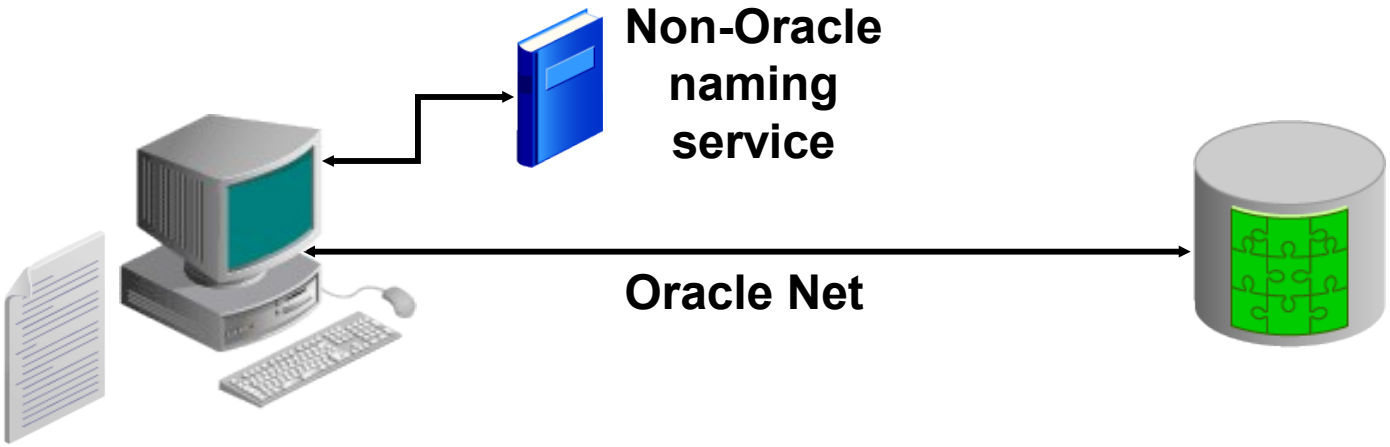
Directory Naming

- Requires LDAP with Oracle Net Names Resolution information loaded:
  - Oracle Internet Directory
  - Microsoft Active Directory Services
- Supports all Oracle Net protocols
- Supports advanced connection options

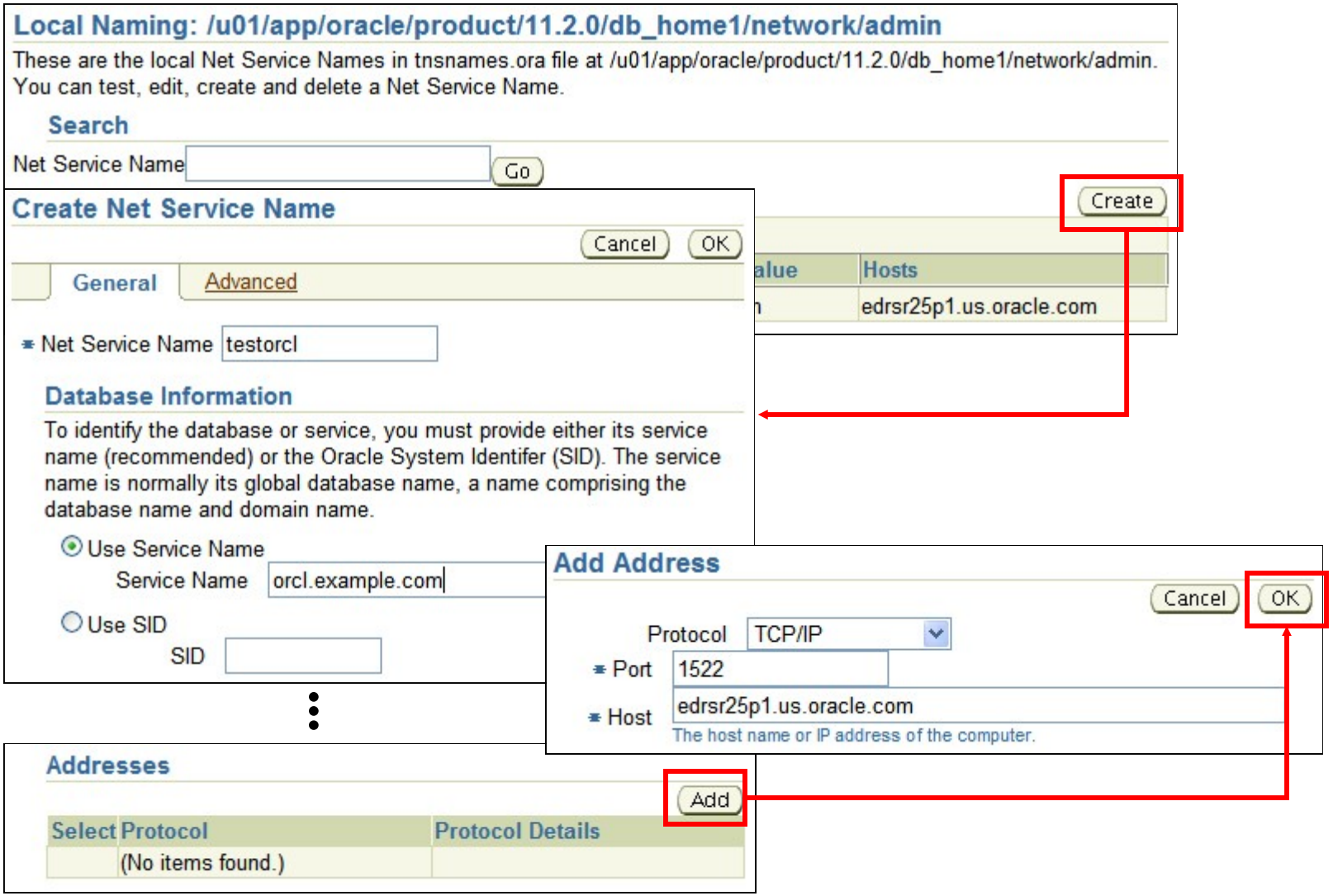


External Naming Method

- Uses a supported non-Oracle naming service
- Includes:
  - Network Information Service (NIS) External Naming
  - Distributed Computing Environment (DCE) Cell Directory Services (CDS)



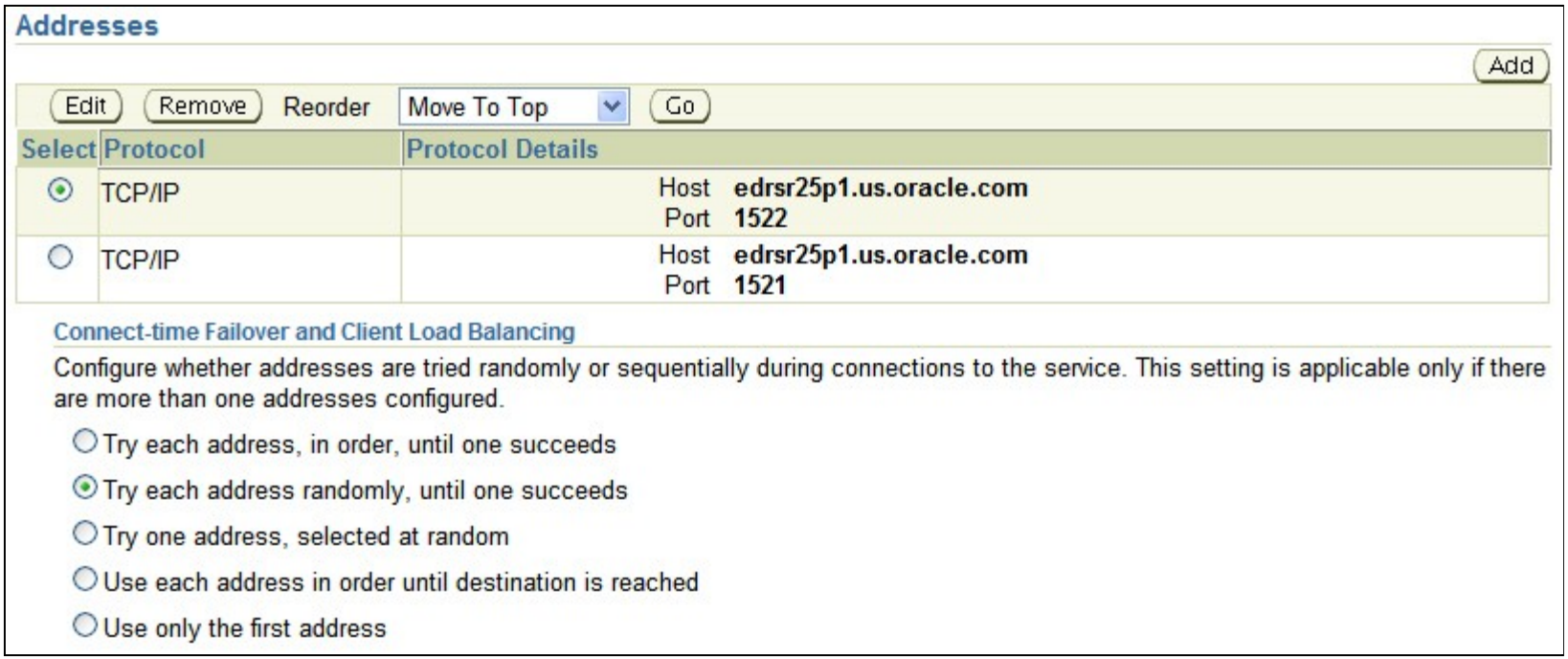
Configuring Service Aliases



Advanced Connection Options

Oracle Net supports the following advanced connection options with local and directory naming:

- Connect-time failover
- Load balancing
- Source routing



Testing Oracle Net Connectivity

The `tnsping` utility that tests Oracle Net service aliases:

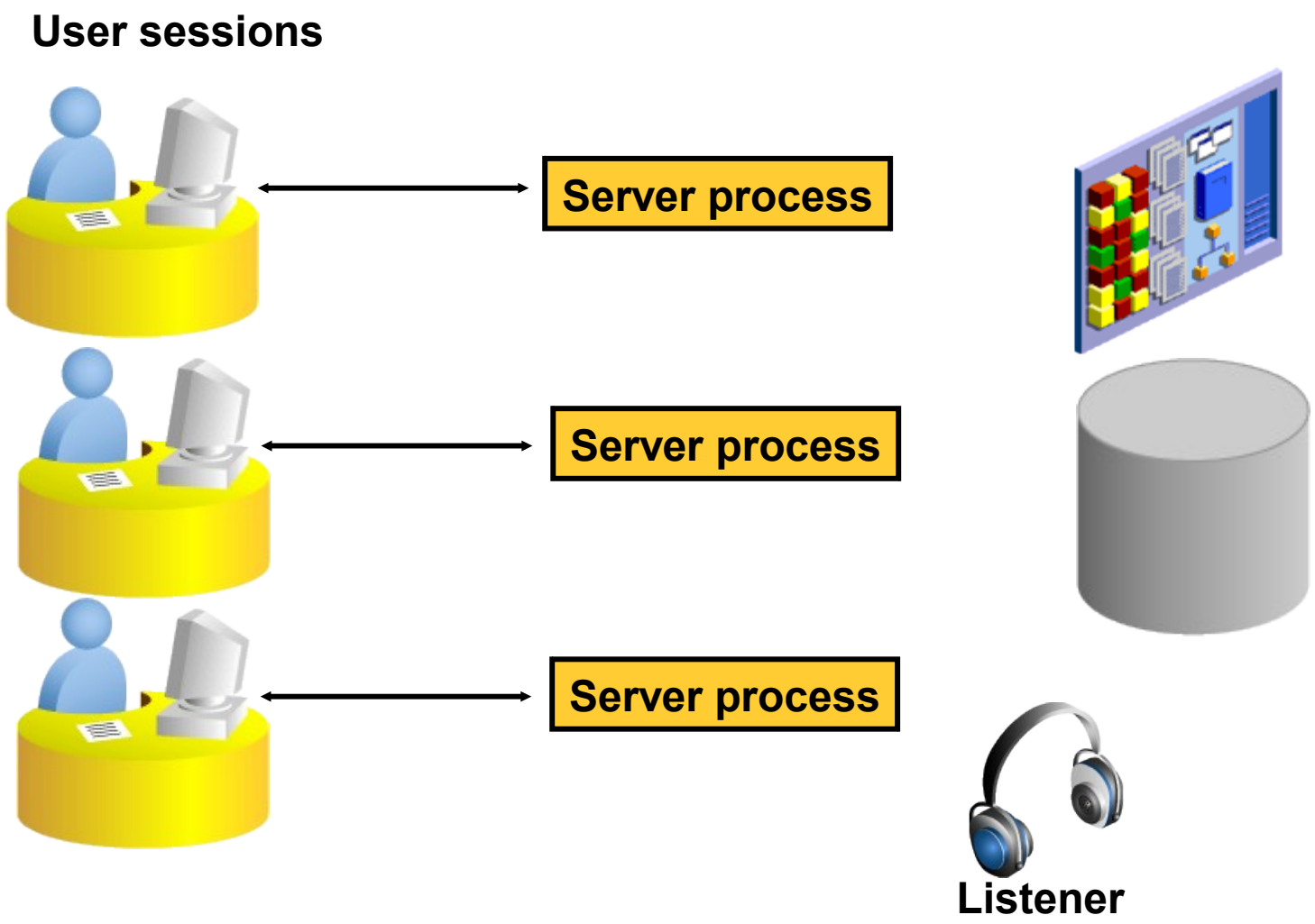
- Ensures connectivity between the client and the Oracle Net Listener
- Does not verify that the requested service is available
- Supports Easy Connect Names Resolution:

```
tnsping host01.example.com:1521/orcl
```

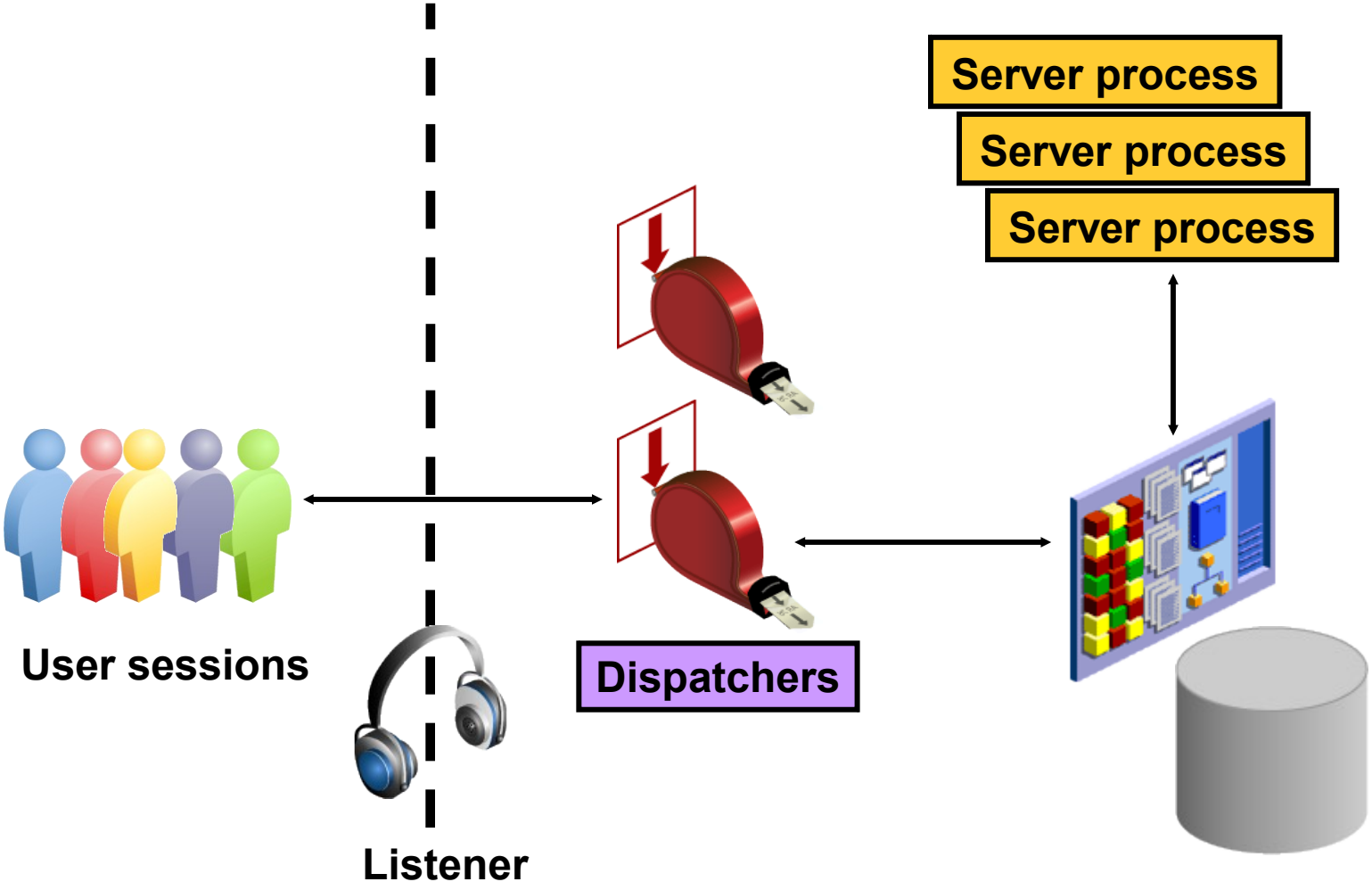
- Supports local and directory naming:

```
tnsping orcl
```

User Sessions: Dedicated Server Process

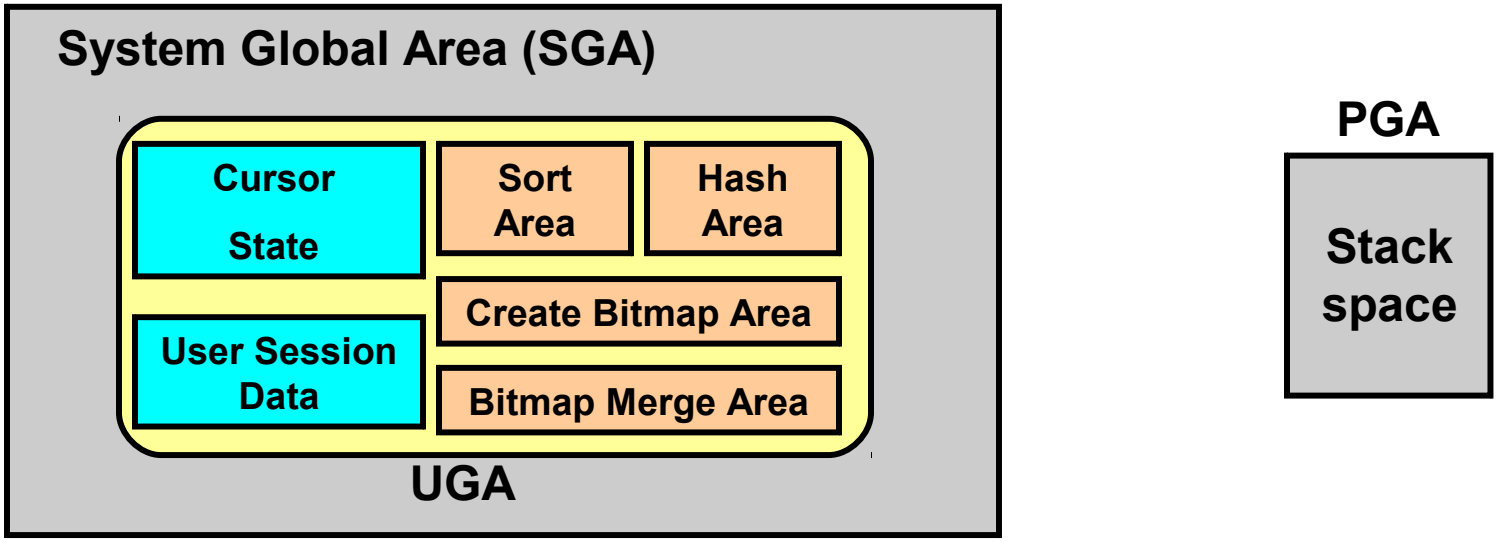


User Sessions: Shared Server Processes



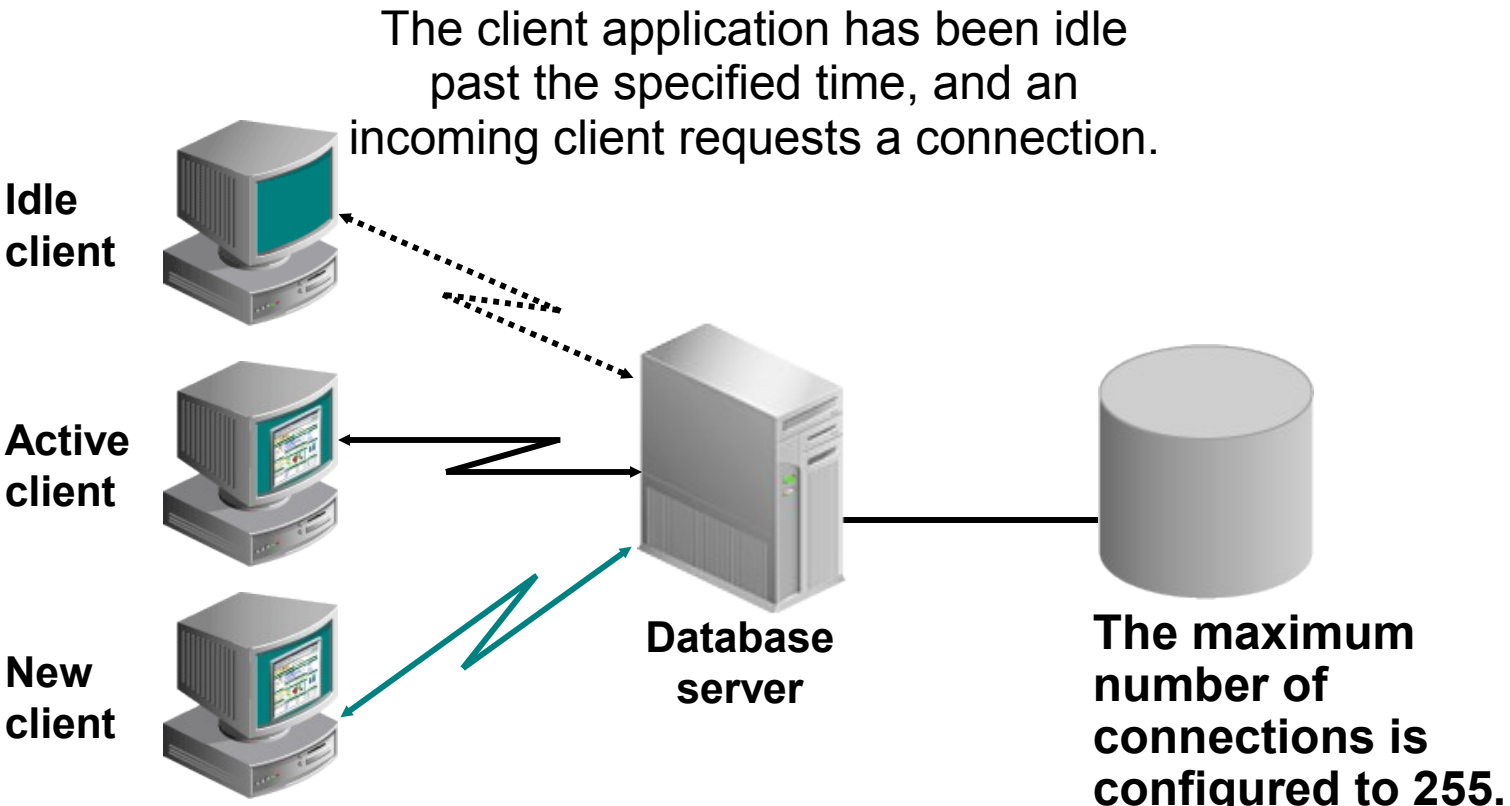
SGA and PGA

Oracle Shared Server: User session data is held in the SGA.



Remember to consider shared server memory requirements when sizing the SGA.

Shared Server: Connection Pooling



When Not to Use a Shared Server

Certain types of database work must not be performed using shared servers:

- Database administration
- Backup and recovery operations
- Batch processing and bulk load operations
- Data warehouse operations

Dispatcher

Dedicated server process

Configuring Communication Between Databases

- Sending data or messages between sites requires network configuration on both sites.
- You must configure the following:
  - Network connectivity (for example, TNSNAMES.ora)
  - Database links

```
CREATE DATABASE LINK <remote_global_name>
CONNECT TO <user> IDENTIFIED BY <pwd>
USING '<connect_string_for_remote_db>';
```

Connecting to Another Database

tnsnames.ora

```
REMOTE_ORCL =
  (DESCRIPTION =
    (ADDRESS = (PROTOCOL = TCP)
(HOST = host02.example.com)
(PORT = 1521))
    (CONNECT_DATA =
      (SERVER = DEDICATED)
      (SERVICE_NAME = orcl.example.com)
    )
  )
```

SQL*Plus

```
CONNECT hr/hr@orcl;

CREATE DATABASE LINK remote
CONNECT TO HR IDENTIFIED BY HR
USING 'REMOTE_ORCL';

SELECT * FROM employees@remote
```

Quiz

Which configuration files are used to configure the listener?

1. listener.ora
2. listener.conf
3. tnsnames.ora
4. tnsnames.conf
5. sqlnet.ora
6. sqlnet.conf

Quiz

When using the shared server process architecture, the PGA is relocated into the SGA.

1. True
2. False

Summary

In this lesson, you should have learned how to:

- Use Enterprise Manager to:
  - Create additional listeners
  - Create Oracle Net Service aliases
  - Configure connect-time failover
  - Control the Oracle Net Listener
- Use `tnsping` to test Oracle Net connectivity
- Identify when to use shared servers and when to use dedicated servers

Practice 6 Overview: Working with Oracle Network Components

This practice covers the following topics:

- Configuring local Names Resolution to connect to another database
- Creating a second listener for connect-time failover