



Pertemuan 11

Yunia Ikawati

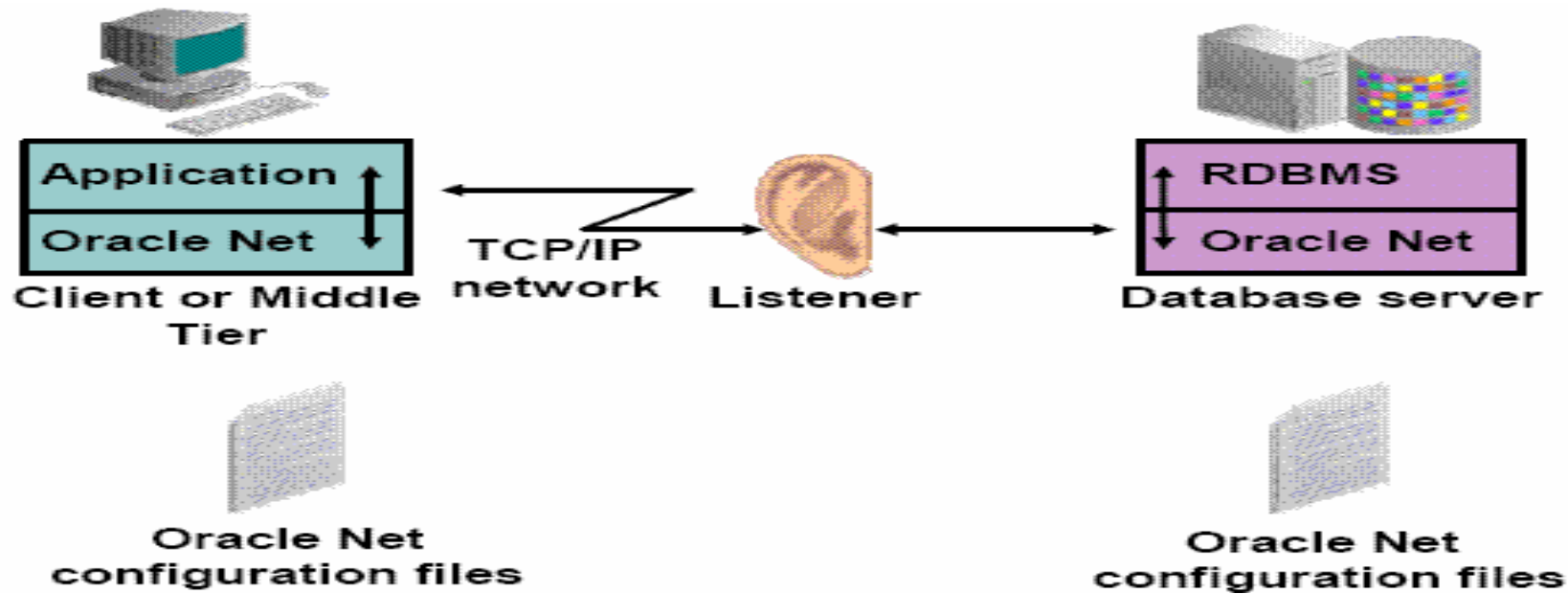
Oracle Net Services

**Workshop Administrasi
Basis Data**

Objective

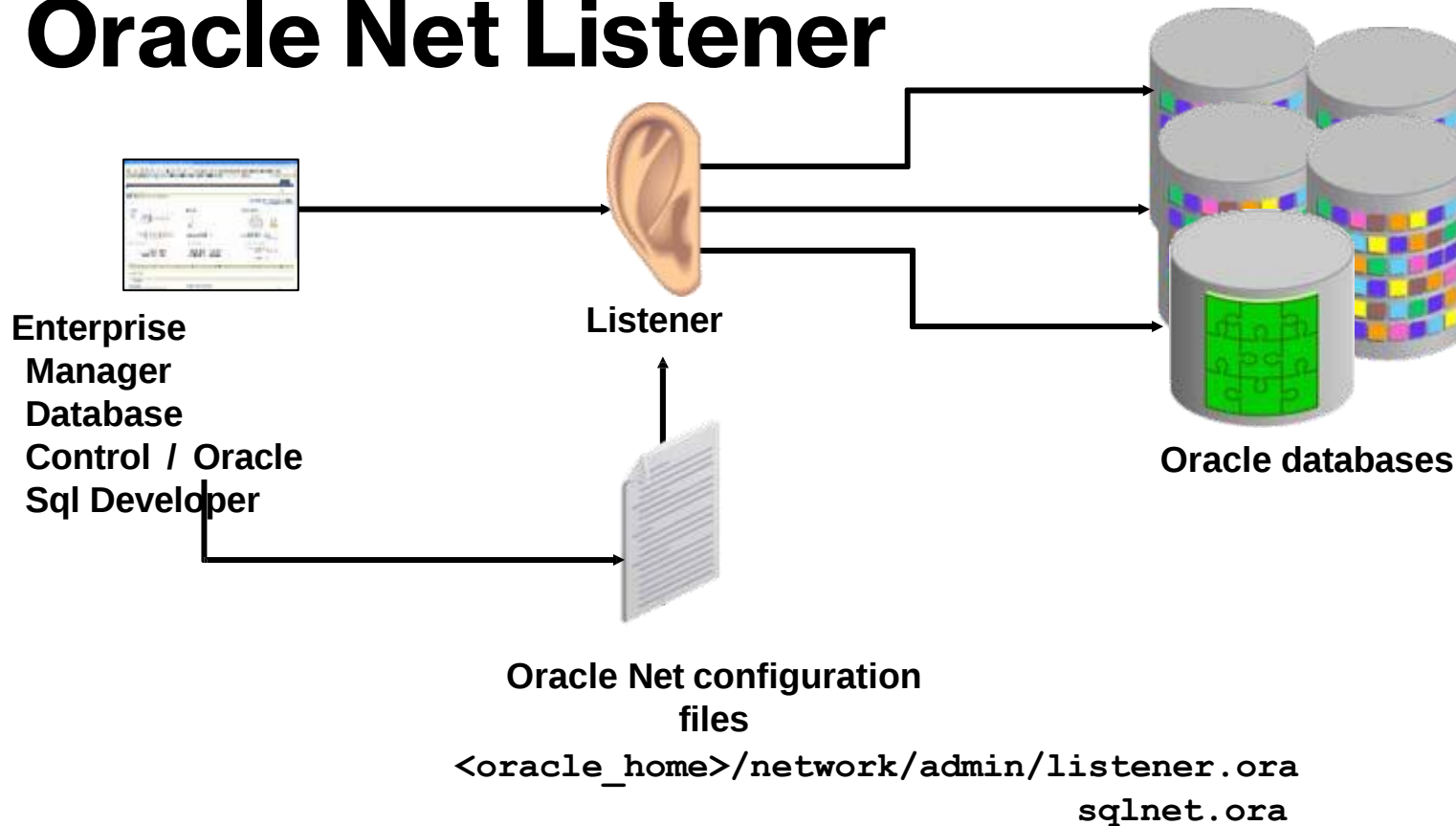
- Menggunakan Database Control untuk
 - Membuat *listener* tambahan
 - Membuat alias-alias service Oracle Net
 - Mengkonfigurasi *connect time failover*
 - Mengontrol *listener* Oracle Net
- Menggunakan *Oracle Net Manager* untuk mengkonfigurasi *client* dan koneksi-koneksi *middle-tier*.
- Menggunakan TNSPING untuk menguji koneksitas *Oracle Net*.

Oracle Net Services (1)



- **Oracle Net services** bertanggungjawab utk membentuk dan memelihara koneksi antara aplikasi client dan server Database Oracle.
- Contoh **Oracle Net** spt **Java DataBase Connectivity (JDBC)** ada di setiap komputer yang memungkinkan aplikasi Java berinteraksi dengan server database.
- **Di sisi client:** Oracle Net sbg komponen background utk koneksi aplikasi ke database server.
- **Di sisi server:** Oracle Net mencakup proses aktif yg disebut **listener**, yg bertanggungjawab dlm koordinasi/perantara antara database & aplikasi external.

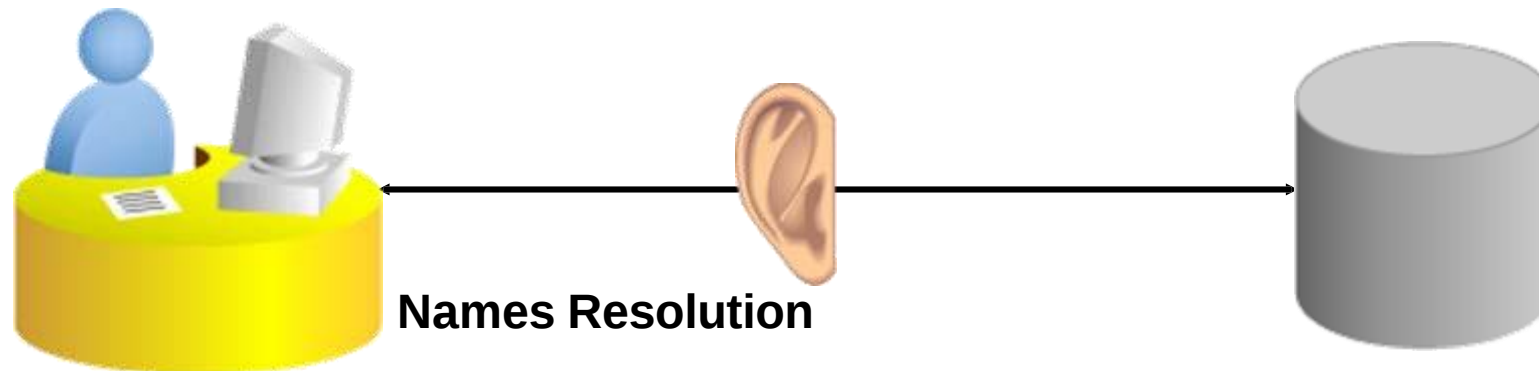
Oracle Net Listener



- **Oracle Net listener** sebagai gateway/perantara komunikasi antara klien dan database Oracle
- Single **listener** dpt melayani multiple database instance & ribuan koneksi client.
- Untuk mengontrol listener dapat melalui : **Listener Control Utility (lsnrctl)**, - **Oracle Net Manager**, **Oracle Enterprise Manager (OEM)**, - **Manual Editing listener.ora**

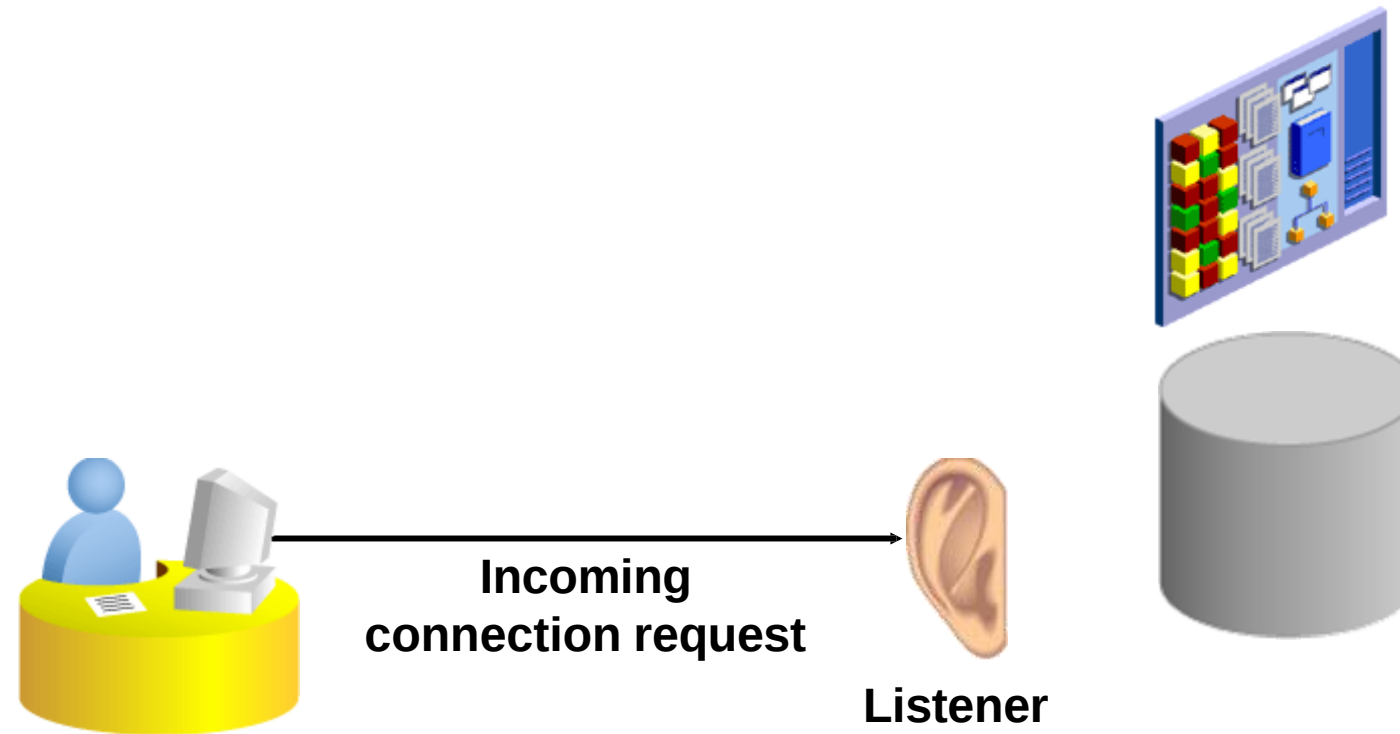
Membangun Net Connections (1)

- Untuk membuat koneksi client atau middle-tier, Oracle Net mengharapakan client mengetahui:
 - **Host** dimana listener sedang running
 - **Port** yg dimonitor listener
 - **Protocol** yang digunakan listener
 - **Nama service** yang ditangani listener
- Proses yg menentukan informasi koneksi ini disebut **Names Resolution**.



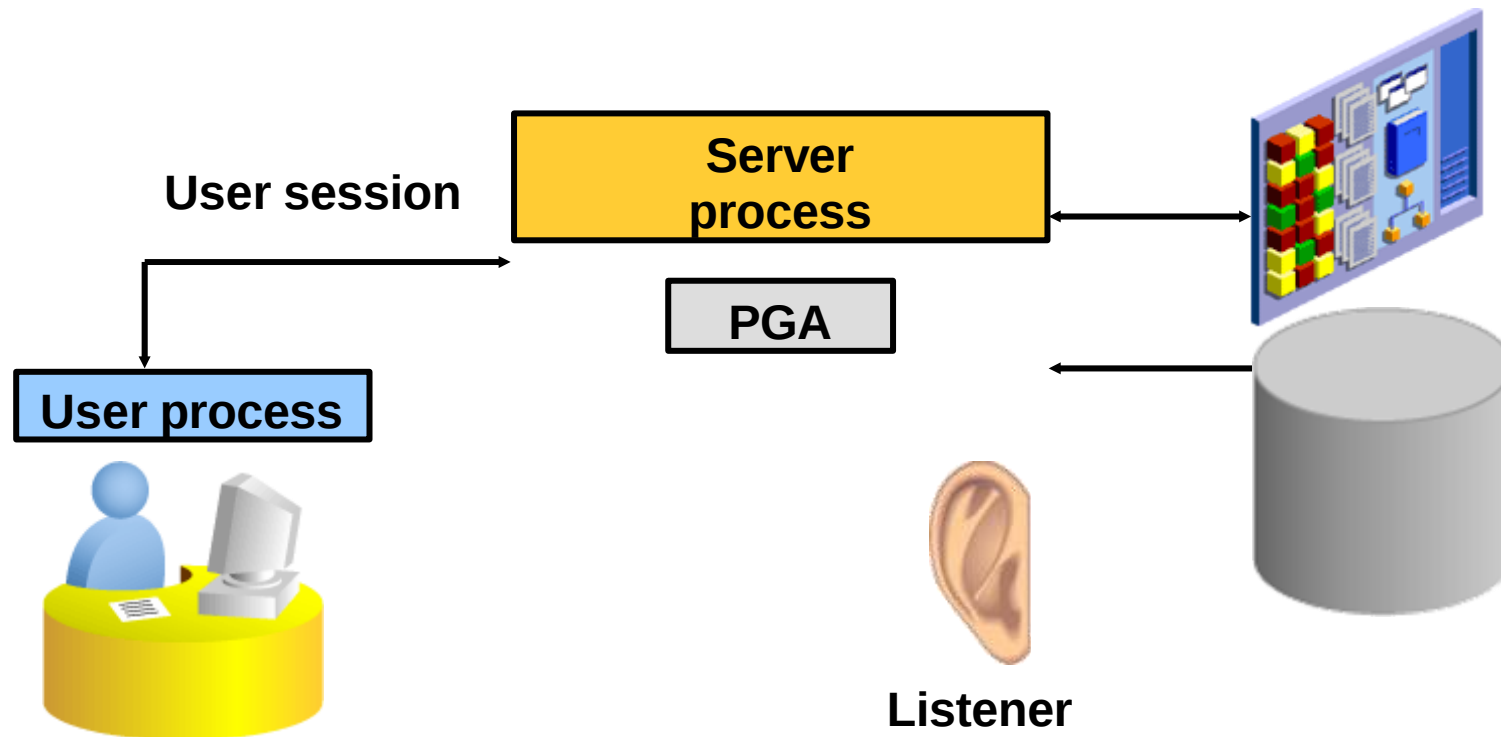
Membangun Net Connections (2)

- Setelah Net Names Resolution komplit, request koneksi **dilewatkan** dari **user** atau aplikasi middle-tier ke **Oracle Net Listener**.
- Listener menerima paket CONNECT dan mengecek apakah valid / tidak.



User Sessions

- Jika paket request CONNECT valid, listener membuat “server process” (krn adanya request koneksi dr user).
- Dalam server process, listener melewatkan informasi inisialisasi, alamat, dll, termasuk didalamnya server process mengecek otentikasi user (password) dan jika valid maka akan dibuatkan **user session**.

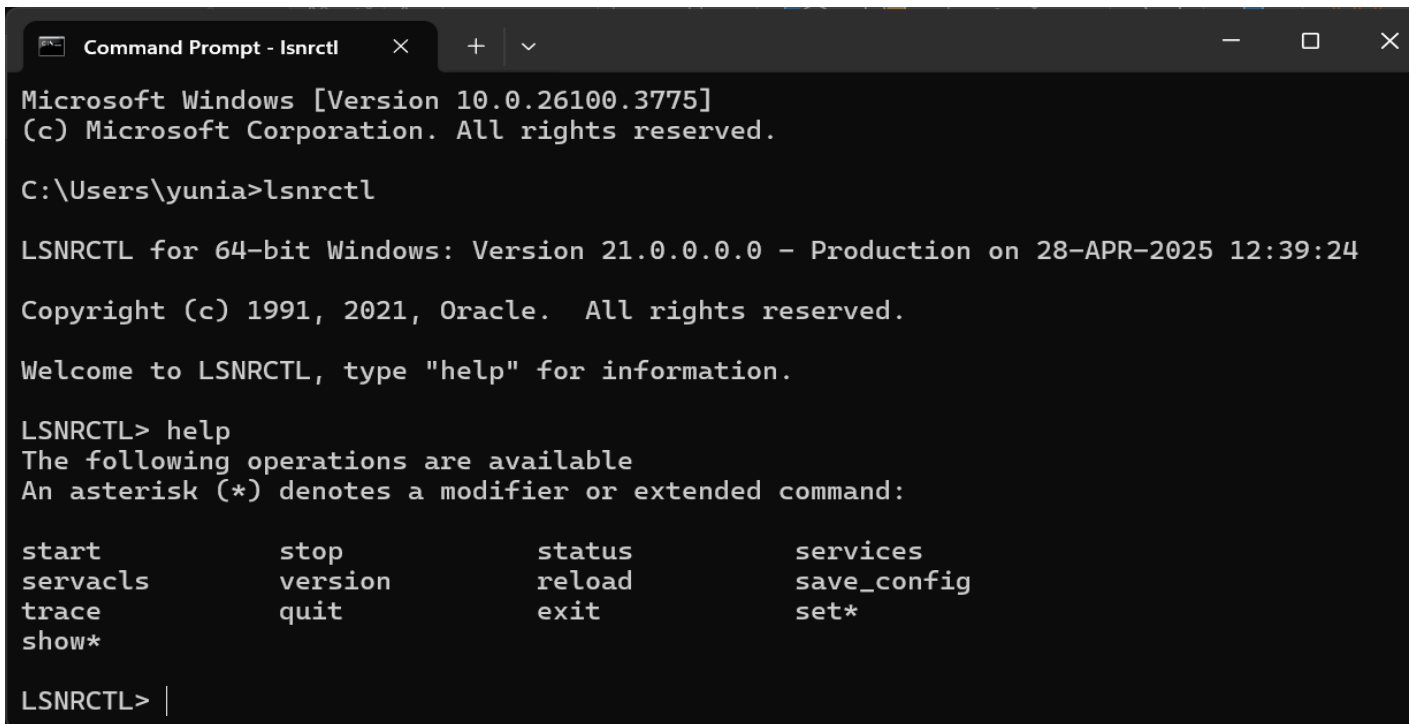


Tools untuk Configuring dan Managing Oracle Network

- **Oracle Net Configuration Assistant (NETCA)**
- **Oracle Net Manager**
- **Command line**
- **Oracle Enterprise Manager (OEM) Cloud Control**

Listener Control Utility

- **Oracle Net listeners** dapat dikontrol menggunakan command-line **lsnrctl** (atau dari **EOM**).
- Dgn command-line, dpt melakukan: start/stop listener, check status listener, reinisialisasi listener dari konfigurasi file parameter, mengkonfigurasi scr dinamis dan mengubah password listener,
- Syntax: **LSNRCTL> *command [listener_name]***



```
Command Prompt - lsnrctl
Microsoft Windows [Version 10.0.26100.3775]
(c) Microsoft Corporation. All rights reserved.

C:\Users\yunia>lsnrctl

LSNRCTL for 64-bit Windows: Version 21.0.0.0.0 - Production on 28-APR-2025 12:39:24

Copyright (c) 1991, 2021, 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
servacfs       version      reload        save_config
trace          quit         exit          set*
show*

LSNRCTL> |
```

Listener Control Utility Syntax

- Perintah dalam mengontrol listener, melalui perintah **LSNRCTL**.

- Syntax prompt di **UNIX** atau **Linux**:

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

- Sysntax prompt di DOS:

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

Memonitor Listener dengan Kontrol Listener (Listener Control Utility (lsnrctl))

Listener control menyediakan dua pilihan pemantauan: services dan status.

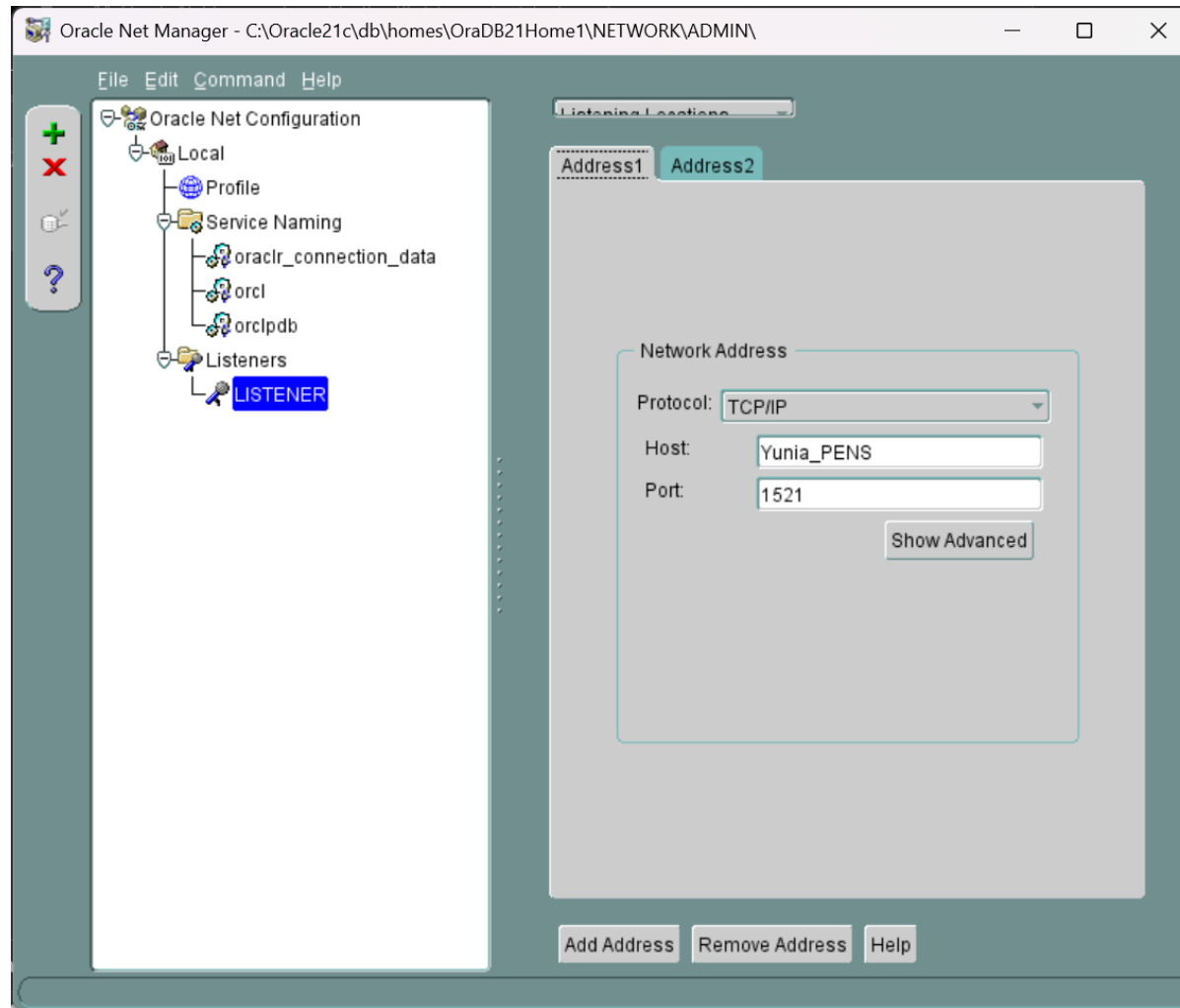
```
Command Prompt - lsnrctl x + v - □ ×

LSNRCTL> SERVICES
Connecting to (DESCRIPTION=(ADDRESS=(PROTOCOL=TCP)(HOST=Yunia_PENS)(PORT=1521)))
Services Summary...
Service "CLRExtProc" has 1 instance(s).
  Instance "CLRExtProc", status UNKNOWN, has 1 handler(s) for this service...
    Handler(s):
      "DEDICATED" established:0 refused:0
      LOCAL SERVER
Service "bc74b627f47a416ab26784e660b5c7b2" has 1 instance(s).
  Instance "orcl", status READY, has 2 handler(s) for this service...
    Handler(s):
      "N000:dedicated" established:0 refused:0 state:ready
      CMON <machine: YUNIA_PENS, pid: 5840_11916>
      (ADDRESS=(PROTOCOL=tcp)(HOST=127.0.0.1)(PORT=52959))
      "DEDICATED" established:0 refused:0 state:ready
      LOCAL SERVER
Service "e9a1a409c79c4b9bbc41b12f89f84ca5" has 1 instance(s).
  Instance "orcl", status READY, has 2 handler(s) for this service...
    Handler(s):
      "N000:dedicated" established:0 refused:0 state:ready
```

```
Command Prompt - lsnrctl x + v - □ ×

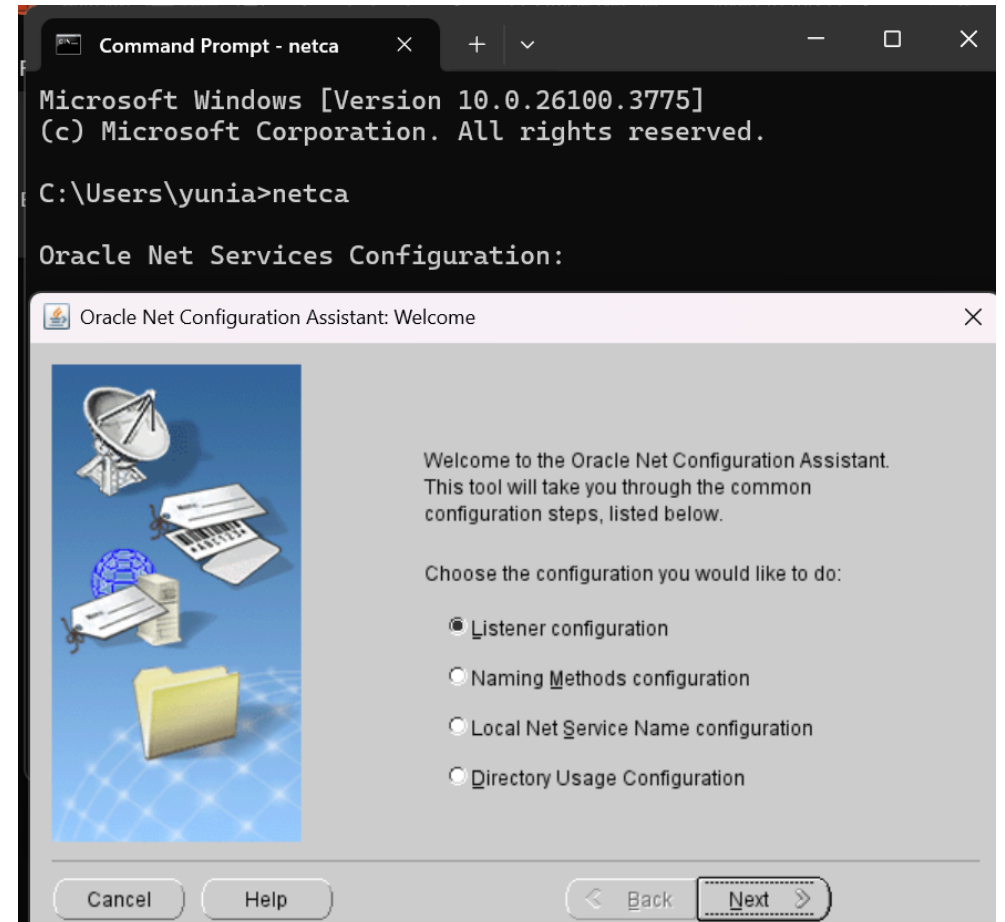
LSNRCTL> STATUS
Connecting to (DESCRIPTION=(ADDRESS=(PROTOCOL=TCP)(HOST=Yunia_PENS)(PORT=1521)))
STATUS of the LISTENER
-----
Alias                LISTENER
Version              TNSLSNR for 64-bit Windows: Version 21.0.0.0.0 - Produ
ction
Start Date           21-APR-2025 10:19:30
Uptime               7 days 2 hr. 24 min. 23 sec
Trace Level           off
Security              ON: Local OS Authentication
SNMP                 OFF
Listener Parameter File C:\Oracle21c\db\homes\OraDB21Home1\network\admin\liste
ner.ora
Listener Log File     C:\Oracle21c\db\diag\tnslsnr\Yunia_PENS\listener\alert
\log.xml
Listening Endpoints Summary...
  (DESCRIPTION=(ADDRESS=(PROTOCOL=tcp)(HOST=Yunia_PENS)(PORT=1521)))
  (DESCRIPTION=(ADDRESS=(PROTOCOL=ipc)(PIPENAME=\\.\pipe\EXTPROC1521ipc)))
  (DESCRIPTION=(ADDRESS=(PROTOCOL=tcps)(HOST=Yunia_PENS)(PORT=5500))(Security=(m
y_wallet_directory=C:\ORACLE21C\DB\admin\orcl\xdb_wallet))(Presentation=HTTP)(Se
```

Memonitor Listener dengan Oracle Net Manager



Membuat Listener menggunakan Oracle Network Configuration Assistant (NETCA)

1. Jalankan NETCA dengan perintah:
2. Pilih "Listener Configuration", lalu klik Next.
3. Pilih "Add" untuk membuat listener baru.
4. Beri nama listener (misalnya LISTENER1).
5. Pilih protocol yang digunakan (biasanya TCP).
6. Tentukan port (defaultnya 1521).
7. Selesaikan konfigurasi dan simpan perubahan



Edit Listener

Untuk mengedit Oracle Listener, kamu bisa mengikuti langkah-langkah berikut:

1. Mengedit File listener.ora Secara Manual

File konfigurasi listener biasanya berada di

C:\Oracle21c\db\homes\OraDB21Home1\NETWORK\ADMIN\listener.ora

2. Buka file dengan editor teks.
3. Ubah konfigurasi sesuai kebutuhan, misalnya mengubah port atau alamat host
4. Setelah mengedit file listener.ora, restart listener dengan

```
lsnrctl stop  
lsnrctl start
```

5. Periksa apakah perubahan sudah diterapkan dengan:

```
lsnrctl status
```

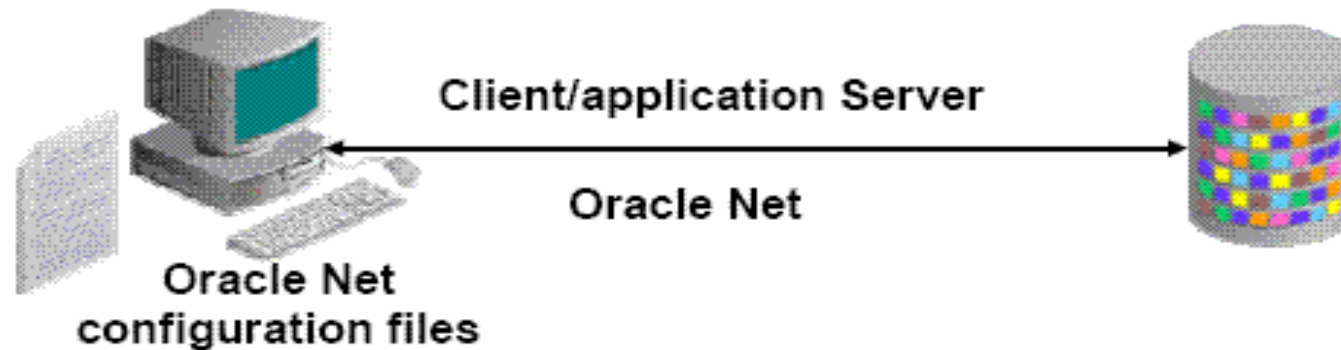
```
# Listener.ora Network Configuration File: C:\Oracle21c\db\homes\OraDB21Home1\NETWORK\ADMIN\Listener.ora  
# Generated by Oracle configuration tools.
```

```
SID_LIST_LISTENER =  
(SID_LIST =  
  (SID_DESC =  
    (SID_NAME = CLRExtProc)  
    (ORACLE_HOME = C:\Oracle21c)  
    (PROGRAM = extproc)  
    (ENVS = "EXTPROC_DLLS=ONLY:C:\Oracle21c\bin\oraclr.dll")  
  )  
)  
  
LISTENER =  
(DESCRIPTION_LIST =  
  (DESCRIPTION =  
    (ADDRESS = (PROTOCOL = TCP)(HOST = Yunia_PENS)(PORT = 1521))  
    (ADDRESS = (PROTOCOL = IPC)(KEY = EXTPROC1521))  
  )  
)
```

Names Methods

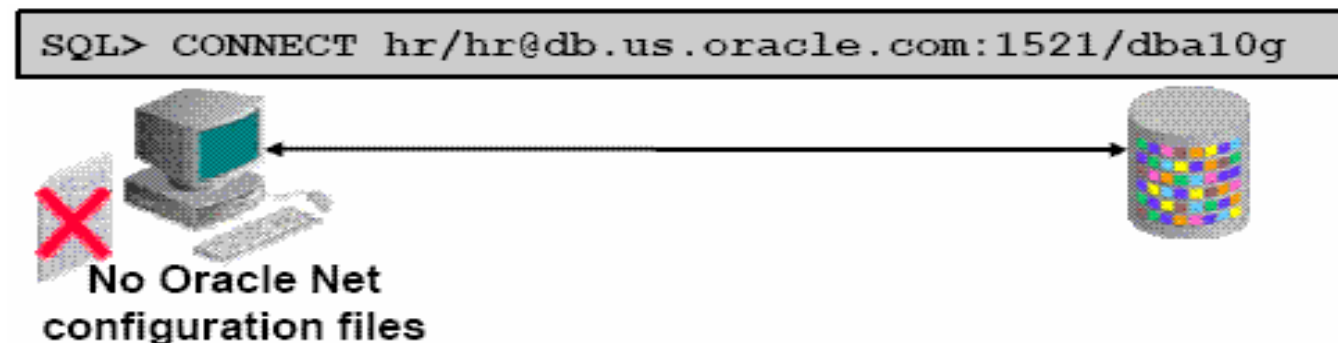
Oracle Net mendukung beberapa metode dari informasi pemecahan **koneksi** :

- **Easy Connect naming**: menggunakan connect string TCP/IP
- **Local naming**: menggunakan file konfigurasi lokal
- **Directory naming**: menggunakan direktory server LDAP yg terpusat
- **External naming**: menggunakan penamaan servis yg didukung non-oracle.



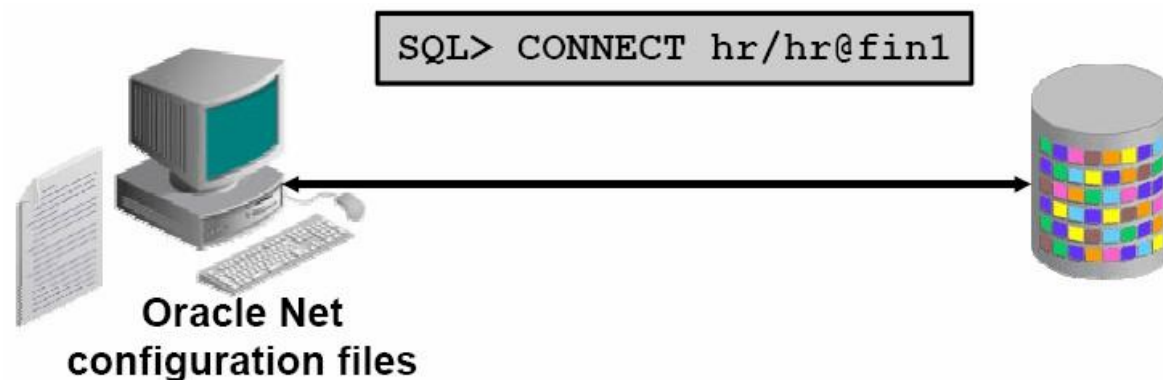
Easy Connect

- Secara default dijalankan (enabled)
- Tidak meminta konfigurasi client-side
- Hanya mendukung protocol TCP/IP (tanpa SSL)
- Tidak mendukung untuk *advanced connection option* seperti:
 - Connect-time failover
 - Source routing
 - Load balancing
- **Syntax Connection string:**
<username>/<password>@<hostname>[:<listener port>/<service name>]



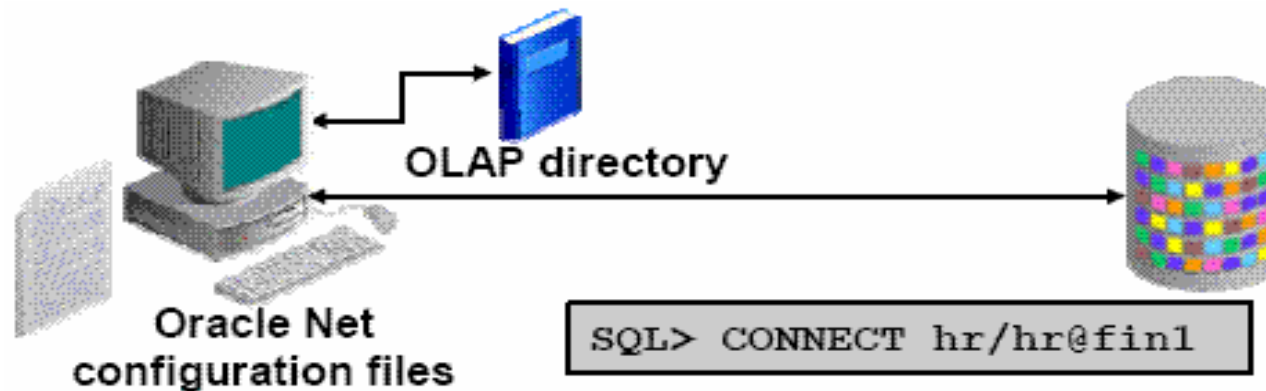
Local Naming

- Membutuhkan sebuah file *names resolution client-side*
- Mendukung semua protocol-protocol Oracle Net
- Mendukung *advanced connection options* seperti :
 - Connect-time failover
 - Source routing
 - Load balancing
- Daftar lokal yang dikenali service-service disimpan dalam teks file konfigurasi: **ORACLE_HOME/network/admin/tnsname.ora.**



Directory Naming

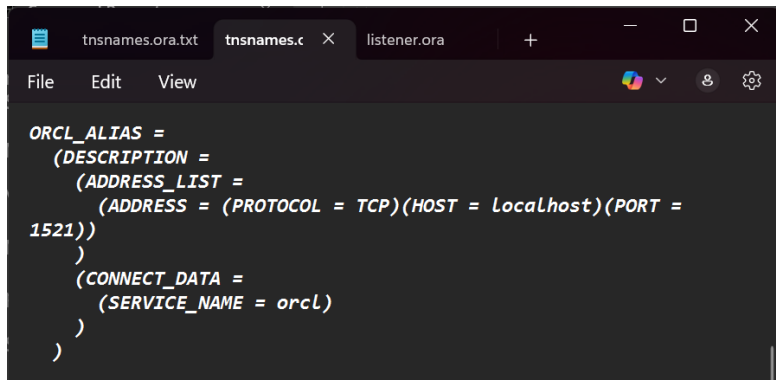
- Meminta suatu ***Lightweight Directory Access Protocol (LDAP)*** dgn informasi Oracle Net Names Resolution yang dijalankan:
 - Oracle Internet Directory
 - Microsoft Active Directory Services
- Mendukung semua protocol-protocol Oracle Net
- Mendukung *advanced connection options*



Mengkonfigurasi Alias-Alias Service

Untuk mengkonfigurasi alias-alias service di Oracle, bisa menggunakan TNS Aliases dalam file tnsnames.ora.

1. Mengedit File tnsnames.ora
File konfigurasi listener biasanya berada di
\$ORACLE_HOME/network/admin/tnsnames.ora
C:\Oracle21c\db\homes\OraDB21Home1\NETWORK\ADMIN\tnsnames.ora
2. Buka file dengan editor teks.
3. Menambahkan Alias Service



```
tnsnames.ora.txt  tnsnames.c  listener.ora
File Edit View
ORCL_ALIAS =
  (DESCRIPTION =
    (ADDRESS_LIST =
      (ADDRESS = (PROTOCOL = TCP)(HOST = localhost)(PORT = 1521))
    )
    (CONNECT_DATA =
      (SERVICE_NAME = orcl)
    )
  )
```

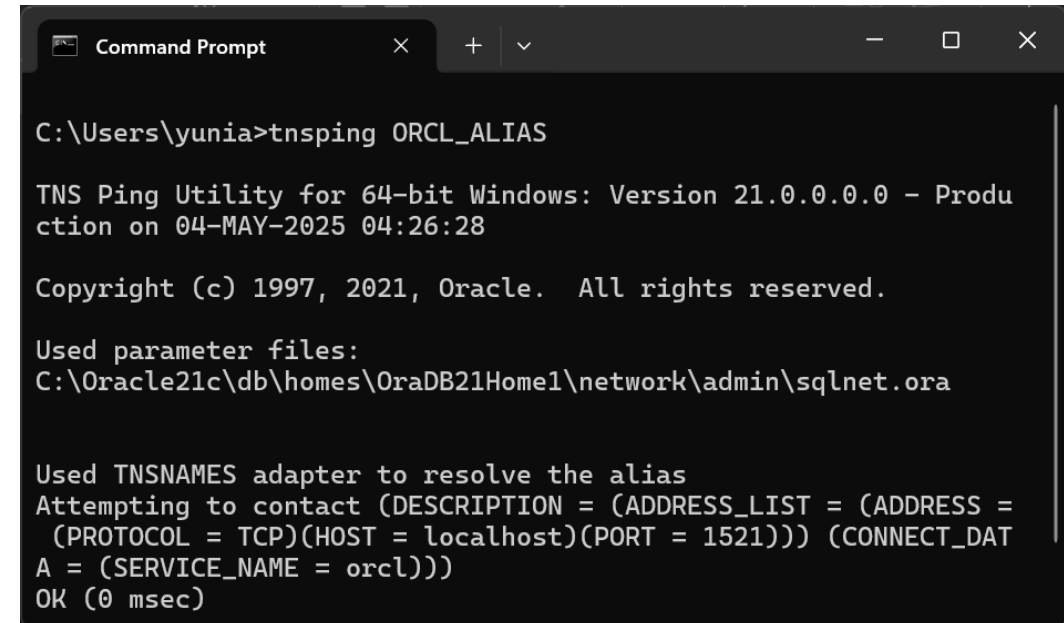
```
C:\Users\yunia>sqlplus C##YUNIA/YUNIA@ORCL_ALIAS

SQL*Plus: Release 21.0.0.0.0 - Production on Sun May 4 04:24:47 2025
Version 21.3.0.0.0

Copyright (c) 1982, 2021, Oracle. All rights reserved.

Last Successful login time: Sun May 04 2025 04:09:08 +07:00

Connected to:
Oracle Database 21c Enterprise Edition Release 21.0.0.0.0 - Production
Version 21.3.0.0.0
```



```
Command Prompt
C:\Users\yunia>tnsping ORCL_ALIAS

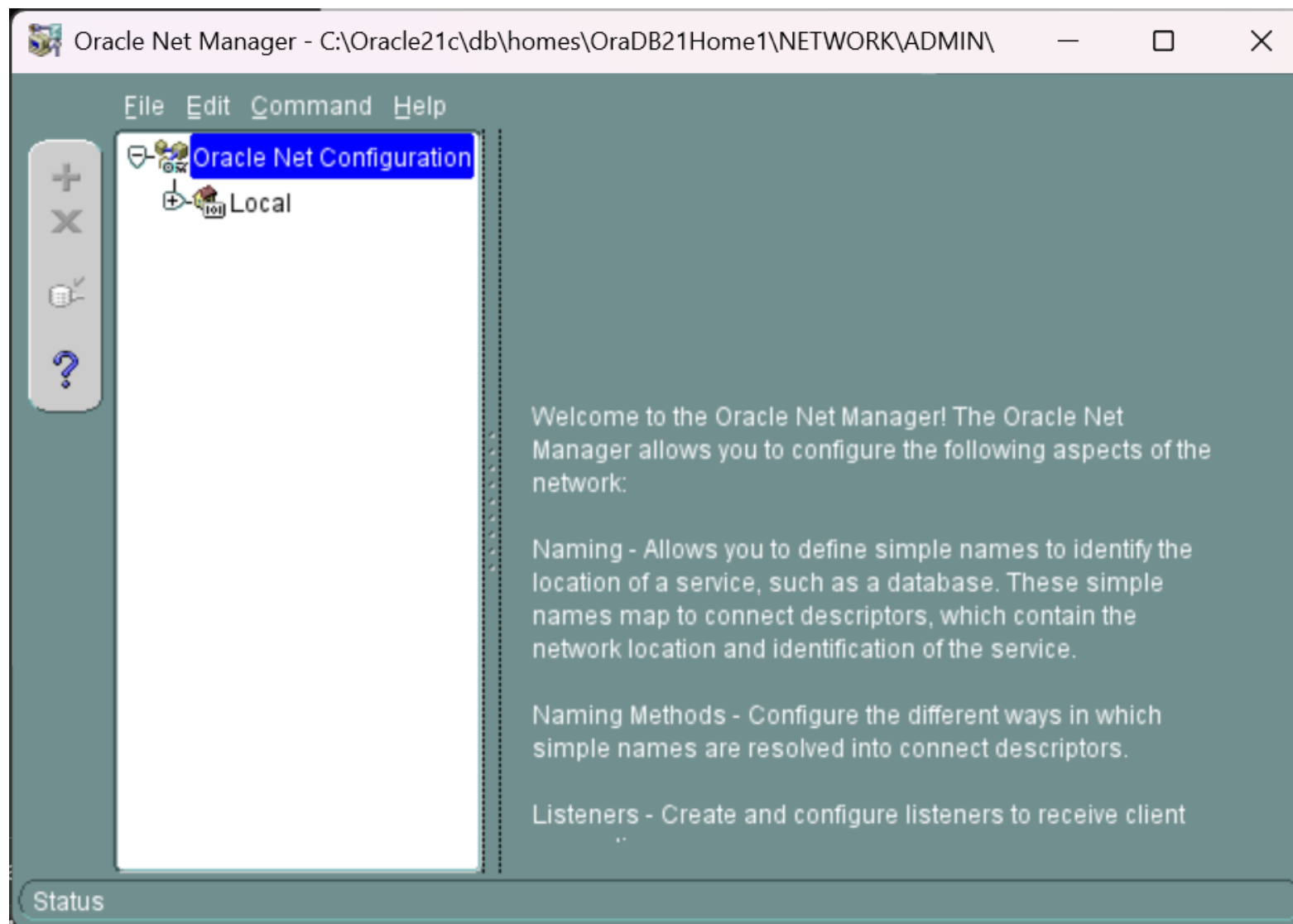
TNS Ping Utility for 64-bit Windows: Version 21.0.0.0.0 - Production on 04-MAY-2025 04:26:28

Copyright (c) 1997, 2021, Oracle. All rights reserved.

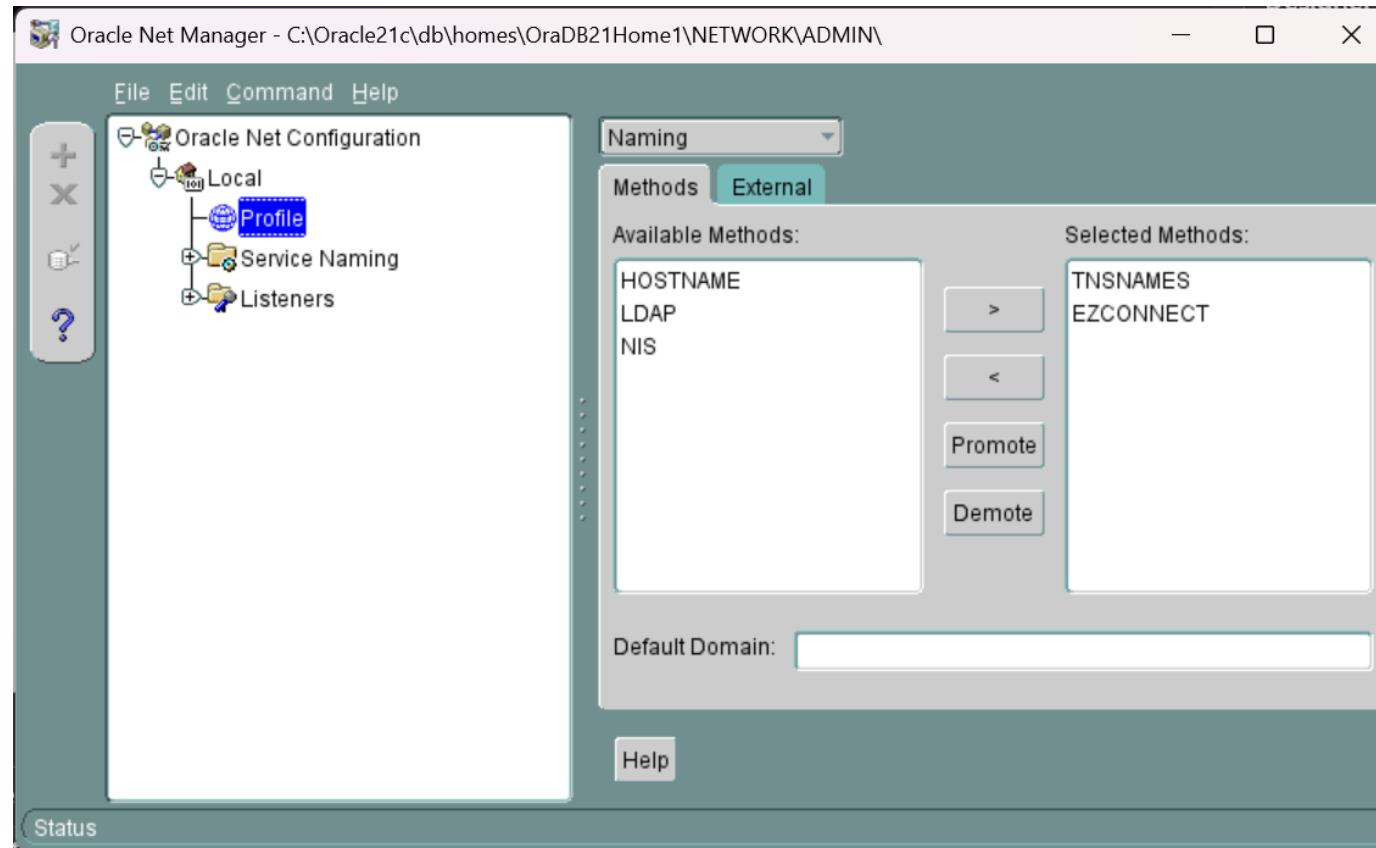
Used parameter files:
C:\Oracle21c\db\homes\OraDB21Home1\network\admin\sqlnet.ora

Used TNSNAMES adapter to resolve the alias
Attempting to contact (DESCRIPTION = (ADDRESS_LIST = (ADDRESS = (PROTOCOL = TCP)(HOST = localhost)(PORT = 1521))) (CONNECT_DATA = (SERVICE_NAME = orcl)))
OK (0 msec)
```

Oracle Net Manager

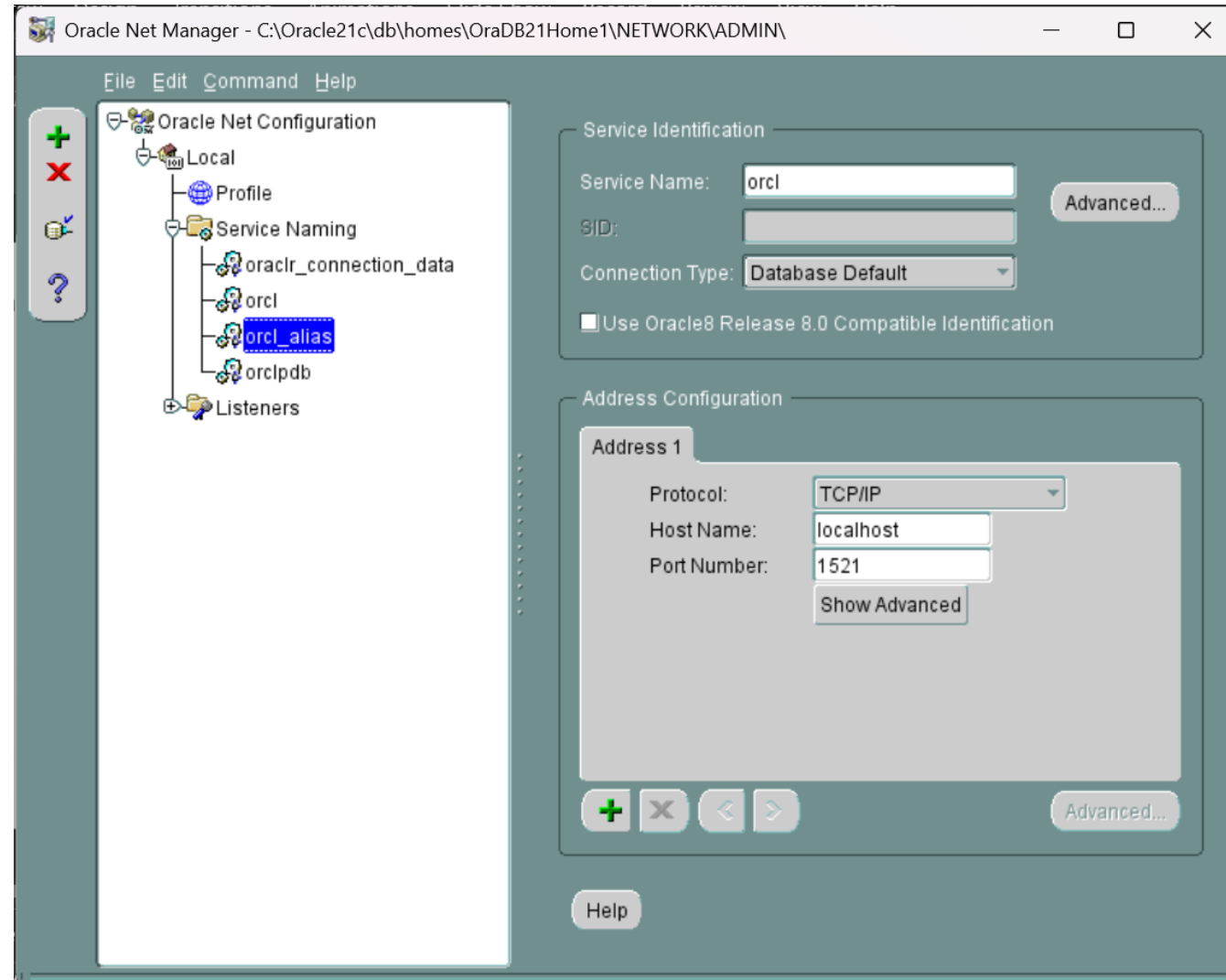


Memilih Penamaan *Methods*



Oracle Net Manager mengkonfigurasi method-method names resolution suatu client atau middle-tier yang akan digunakan dan urutan dimana method-method ditandai.

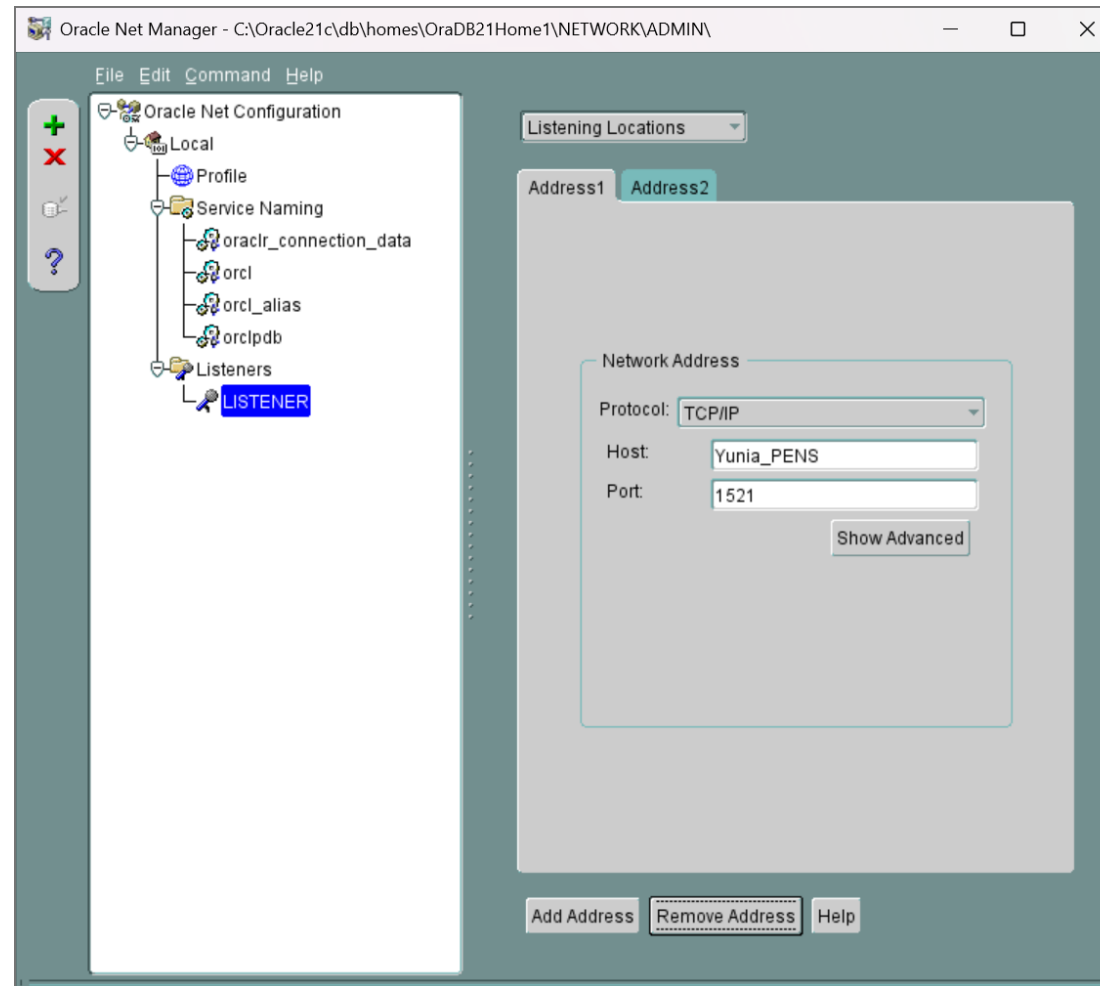
Mengkonfigurasi Alias-Alias Service pada Net Manager



Advanced Connection Options Menggunakan Oracle Net Manager

Oracle Net mendukung *advanced connection options* pada *local* dan *directory naming*

- *Connect-time failover*
- *Load balancing*



Menguji Koneksitas Oracle Net

Utility tnsping menguji alias-alias service Oracle Net.

- Memastikan koneksitas antara client dan listener Oracle Net
- Tidak memeriksa bahwa service yang diminta tersedia
- Mendukung nama-nama pemecahan Easy Connect

```
C:\Users\yunia>tnsping localhost:1521/orcl
```

```
TNS Ping Utility for 64-bit Windows: Version 21.0.0.0.0 - Production  
on 04-MAY-2025 04:44:40
```

- Mendukung penamaan local dan directory

```
C:\Users\yunia>tnsping ORCL_ALIAS
```

```
TNS Ping Utility for 64-bit Windows: Version 21.0.0.0.0 - Production  
on 04-MAY-2025 04:45:59
```

Ringkasan

- Menggunakan Database Control untuk:
 - Membuat listener-listener tambahan
 - Password-protect listener
 - Membuat alias-alias service Oracle Net
- Mengontrol listener Oracle Net
- Menggunakan Oracle Net Manager untuk mengkonfigurasi koneksi-koneksi client atau middle- tier
- Menggunakan TNSPING untuk menguji koneksitas Oracle Net

LATIHAN

- Buatlah listener baru dan alias service lalu kalian uji apakah sudah berhasil terkoneksi atau belum