

Configuring NET8

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General Electric

Paper #177

What is NET8?

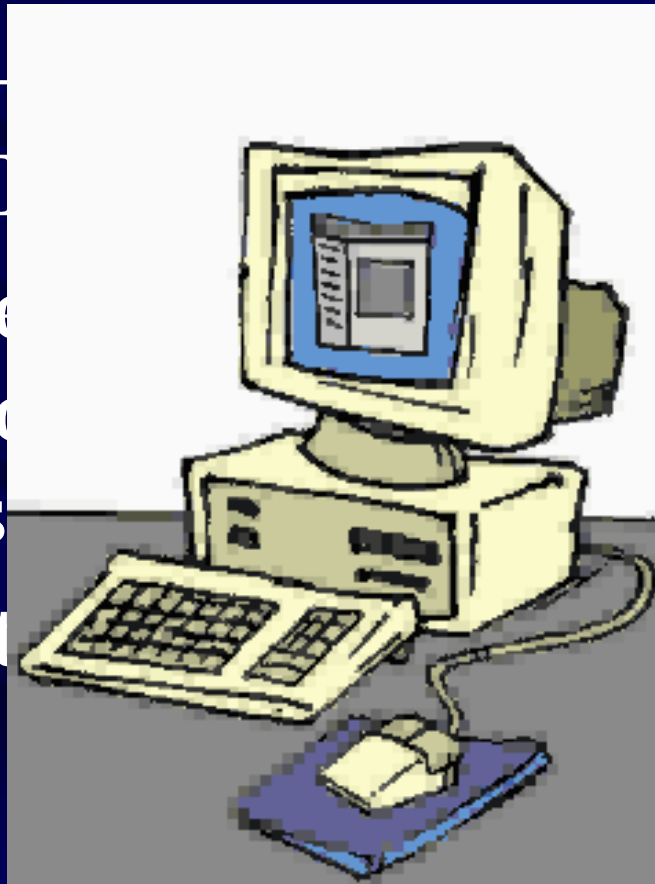
- Allows clients/databases to talk to databases
- Uses some underlying protocol (tcp/ip, SPX, decnet, etc)
- Configure by text files on client and server

What files are needed (most commonly)

- tnsnames.ora - on client to configure connection alias
- listener.ora - on server to receive connection requests (optional)
- sqlnet.ora - configures general parameters on both (optional)
- protocol.ora - on server, configures protocol specific parameters (optional)

Configuring the text files

- \$ORACLE_HOME/bin/tnscmd1010.pl as admin or
\$TNS_ADMIN/bin/tnscmd1010.pl as sysdba
- use Java based net8wiz.sh or edit text files
- careful with tnsnames.ora



8asst.sh,
r hand

sqlnet.ora file

This file is used for general NET8 parameters
(logging, tracing, encryption)

```
sqlnet.expire_time = 10
names.default_domain=world
log_directory_client =?/network/log
log_file_client =sqlnet.log
trace_level_client = off
trace_directory_client = ?/network/log
sqlnet.encryption_client = required
sqlnet.encryption_server = requested
```

Listener.ora file

Configures the listener process on the server.

```
LISTENER=
  (ADDRESS_LIST=
    (ADDRESS=
      (PROTOCOL=tcp)
      (HOST=mach1)
      (PORT=1521)
    )
  )
SID_LIST_LISTENER=
  (SID_LIST=
    (SID_DESC=
      (SID_NAME=prod1)
      (ORACLE_HOME=/oracle/app/oracle/product/8.1.6)
    )
  )
LOG_DIRECTORY_LISTENER=$ORACLE_HOME/network/log
```

Listening on multiple Ports

```
LISTENER=
  (ADDRESS_LIST=
    (ADDRESS=
      (PROTOCOL=tcp)
      (HOST=mach1)
      (PORT=1525)
    )
    (ADDRESS=
      (PROTOCOL=tcp)
      (HOST=mach1)
      (PORT=1521)
    )
  )
SID_LIST_LISTENER=
  (SID_LIST=
    (SID_DESC=
      (SID_NAME=prod1)
      (ORACLE_HOME=/oracle/app/oracle/product/8.1.6)
    )
  )
)
```

Simple entry in tnsnames.ora

```
prod1 =  
  (DESCRIPTION =  
    (ADDRESS =  
      (PROTOCOL = TCP)  
      (HOST = mach1)  
      (PORT = 1521)  
    )  
    (CONNECT_DATA =  
      (SID = prod1)  
    )  
  )
```

Change between 8.0 and 8.1

- SID has been optionally replaced by SERVICE_NAME
- new SERVICE_NAMES init.ora parameter (defaults to db_name.db_domain) - not dynamic
- old syntax continues to work fine

Alternate entry in tnsnames.ora

```
prod1 =  
    (DESCRIPTION =  
        (ADDRESS =  
            (PROTOCOL = TCP)  
            (HOST = mach1)  
            (PORT = 1521)  
        )  
        (CONNECT_DATA =  
            (SERVICE_NAME = name1)  
        )  
    )
```

Connect time failover using multiple address in tnsnames.ora

Failover to a different port

```
prod1=
  (DESCRIPTION =
    (ADDRESS_LIST=
      (ADDRESS =
        (PROTOCOL = tcp)
        (Host = mach1)
        (Port = 1523)
      )
      (ADDRESS =
        (PROTOCOL = tcp)
        (Host = mach1)
        (Port = 1521)
      )
    )
  )
  (CONNECT_DATA =
    (SID = prod1)
  )
)
```

Failover to a different machine

```
prod1=
  (DESCRIPTION =
    (ADDRESS_LIST=
      (ADDRESS =
        (PROTOCOL = tcp)
        (Host = mach1)
        (Port = 1521)
      )
      (ADDRESS =
        (PROTOCOL = tcp)
        (Host = mach2)
        (Port = 1521)
      )
    )
  )
  (CONNECT_DATA =
    (SID = prod1)
  )
)
```

Load Balancing (8.0)

Picks one description at random

```
prod1=  
  (description_list=  
    (description=  
      (address=  
        (protocol=tcp)  
        (host=mach1)  
        (port=1521))  
      (connect_data=(sid=prod1)))  
    (description=  
      (address=  
        (protocol=tcp)  
        (host=mach2)  
        (port=1521))  
      (connect_data=(sid=prod1))))
```

Load Balancing (8.1)

Picks an address at random from the address_list

```
prod1=  
  (DESCRIPTION =  
    (ADDRESS_LIST=  
      (LOAD_BALANCE=yes)  
      (ADDRESS =  
        (PROTOCOL = tcp)  
        (Host = mach1)  
        (Port = 1521))  
      (ADDRESS =  
        (PROTOCOL = tcp)  
        (Host = mach2)  
        (Port = 1521)))  
    (CONNECT_DATA =  
      (SID = prod1)))
```

Transparent Application Failover (TAF)

```
(FAILOVER_MODE=  
    (BACKUP= xxx)  
    (TYPE= xxx )  
    (METHOD = xxx )  
    (RETRIES = xxx )  
    (DELAY = xxx )  
)
```

- **BACKUP** - specifies connection alias to use for backup connection. Used for pre-established backup connections
- **TYPE** – can be **SESSION**, **SELECT**, or **NONE**. **SESSION** causes a failed session to reconnect. **SELECT** causes a failed session to reconnect and attempt to rerun the statement in process at time of failure. This has significant additional overhead to track statements being issued. **NONE** explicitly disables TAF.
- **METHOD** – can be **BASIC** or **PRECONNECT** – specifies how failover occurs. If set to pre-connect, an unused connection to the backup server is established at the same time the primary connection is established
- **RETRIES** – specifies the number of attempts to reconnect. Defaults to five if **DELAY** is set.
- **DELAY** – specifies the number of seconds to wait between connection attempts. Defaults to 1 second if **RETRIES** is set.

Using Connect Time Failover with TAF

```
prod1=  
  (DESCRIPTION=  
    (LOAD_BALANCE=on)  
    (FAILOVER=on)  
    (ADDRESS=  
      (PROTOCOL=tcP)  
      (HOST=mach1)  
      (PORT=1521))  
    (ADDRESS=  
      (PROTOCOL=tcP)  
      (HOST=mach2)  
      (PORT=1521))  
    (CONNECT_DATA =  
      (SID=prod1)  
      (FAILOVER_MODE=  
        (TYPE=select)  
        (METHOD=basic)))
```

Retrying a Failed Connection

```
prod1=  
  (DESCRIPTION =  
    (ADDRESS =  
      (PROTOCOL = TCP)  
      (Host = mach1)  
      (Port = 1521))  
    (CONNECT_DATA =  
      (SID = prod1)  
      (FAILOVER_MODE=  
        (TYPE=select)  
        (METHOD=basic)  
        (RETRIES=20)  
        (DELAY=10)))
```

Pre-establishing Backup Connections

```
prod1=  
  (DESCRIPTION =  
    (ADDRESS =  
      (PROTOCOL = TCP)  
      (Host = mach1)(Port = 1521))  
    (CONNECT_DATA =  
      (SID = prod1)  
      (FAILOVER_MODE=  
        (BACKUP=backup_alias)  
        (METHOD=preconnect)  
        (TYPE=select)(METHOD=basic))))  
backup_alias=  
  (DESCRIPTION =  
    (ADDRESS =  
      (PROTOCOL = TCP)(Host = mach2)  
      (Port = 1521))  
    (CONNECT_DATA =(SID = prod1)))
```

protocol.ora file

- Protocol specific configuration
 - **tcp.excluded_nodes** - lists addresses of machines not allowed to connect
 - **tcp.invited_nodes** - lists addresses of machines allowed to connect. This parameter will take precedence over the tcp.excluded_node parameter if both are present
 - **tcp.validnode_checking** – YES/NO - (defaults to NO) indicates whether address checking should be enabled
 - **tcp.nodelay** – YES/NO – (defaults to NO) Specifies no delay in buffer flushing within the TCP/IP stack

Example protocol.ora file

```
TCP.VALIDNODE_CHECKING=YES
```

```
TCP.INVITED_NODES=(10.10.10.11, 10.10.10.12)
```

```
TCP.NODELAY=YES
```

Other Net8 configuration files

- `names.ora` - Oracle Names
- `cman.ora` - Connection Manager
- `ldap.ora` - Oracle Internet Directory

Performance considerations

- Using arrays fetches rather than individual fetches when returning multiple rows can dramatically reduce NET8 traffic.
- Moving database manipulations from the application to the database server using stored procedures, packages and triggers
- When using TCP/IP, try setting the tcp.nodelay flag equal true in the protocol.ora file, especially for large streams of data.
- Session Data Unit (SDU) parameter in the tnsnames.ora file - untested

```
prod1 =  
  (DESCRIPTION =  
    (SDU=3000)  
    (ADDRESS =  
      (PROTOCOL = TCP)  
      (HOST = mach1)  
      (PORT = 1521)  
    )  
    (CONNECT_DATA =  
      (SID = prod1)  
    )  
  )
```

What's coming in 9i?

- netasst renamed to netmgr (Net8 Manager)
- New improved Connection Manager
- Oracle Names LDAP Proxy Servers
- Virtual Interface (VI) protocol for supporting Apps Server/Database Connections

What's leaving with 9i?

- NDS External naming and authentication
- protocol.ora file
 - moved to sqlnet.ora file
- SPX protocol
- Identix & SecurID authentication methods
- Net8 OPEN

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Please fill out your evaluation cards!!

**Questions/comments/suggestions/criticisms
are welcomed at the following e-mail
addresses**

(in order of preference, please just use one!)

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