Intermittent TNS-12520 or TNS-12519 or TNS-12516 Connecting via Oracle Net Listener (Doc ID 240710.1)

In this Document

[Symptoms](#)

[Changes](#)

[Cause](#)

[Solution](#)

APPLIES TO:

Oracle Net Services - Version 10.1.0.5 and later
Oracle Database - Enterprise Edition - Version 10.1.0.5 and later
Information in this document applies to any platform.

SYMPTOMS

Client connections may fail intermittently with any of the following errors:

TNS-12516 TNS: listener could not find instance with matching protocol stack
ORA-12516 TNS: listener could not find instance with matching protocol stack

TNS-12519 TNS: no appropriate service handler found
ORA-12519 TNS: no appropriate service handler found

Any or all of these errors might appear in the listener.log and may accompany an ORA-12520:

ORA-12520 TNS:listener could not find available handler for requested type of server

The output of the lsnrctl services command may show that the service handler
is in a "blocked" state.

e.g. '"DEDICATED" established:1 refused:0 state:blocked'

If the errors are fleeting and appear to 'self correct', it is likely a resource depletion issue
at the instance. In particular, the PROCESSES setting can be too low.

Log in to the instance and issue the following:

select * from v$resource_limit;

Check the values for PROCESSES. If MAX_UTILIZATION is equal to OR has approached the LIMIT_VALUE, that
could signal a need for an increase in PROCESSES.

SELECT *
FROM V$RESOURCE_LIMIT
WHERE resource_name in ('sessions','processes');

RESOURCE_NAME	CURRENT_UTILIZATION	MAX_UTILIZATION	INITIAL_ALLOCATION	LIMIT_VALUE
processes	288	**296**	300	**300**
sessions	296	319	335	335

Note that the MAX util is at or approaching the LIMIT. We would expect these errors to occur
under this circumstance when PMON sets the handler to block additional connections to a database

that is overloaded.

See the following:

CURRENT_UTILIZATION NUMBER Number of (resources, locks, or processes) currently being used
MAX_UTILIZATION NUMBER Maximum consumption of this resource since the last instance start-up
INITIAL_ALLOCATION VARCHAR2(10) Initial allocation. This will be equal to the value specified for the resource in the initialization parameter file (UNLIMITED for infinite allocation).
LIMIT_VALUE VARCHAR2(10) Unlimited for resources and locks. This can be greater than the initial allocation value (UNLIMITED for infinite limit).

CHANGES

It is likely a significant increase in load has occurred.

CAUSE

By way of instance registration, PMON is responsible for updating the listener with information about a particular instance such as load and dispatcher information. Maximum load for dedicated connections is determined by the PROCESSES parameter. The frequency at which PMON provides SERVICE_UPDATE information varies according to the workload of the instance. The maximum interval between these service updates is 10 minutes.

The listener counts the number of connections it has established to the instance but does not immediately get information about connections that have terminated. Only when PMON updates the listener via SERVICE_UPDATE is the listener informed of current load. Since this can take as long as 10 minutes, there can be a difference between the current instance load according to the listener and the actual instance load.

When the listener believes the current number of connections has reached maximum load, it may set the state of the service handler for an instance to "blocked" and begin refusing incoming client connections with either of the following errors:

TNS-12516 TNS:listener could not find instance with matching protocol stack
TNS-12519 TNS:no appropriate service handler found

Additionally, an ORA-12520 error may appear in the listener log.

The output of the LSNRCTL services command will likely show that the service handler is "blocked".

e.g. '"DEDICATED" established:1 refused:0 state:blocked'

SOLUTION

Increase the pfile or spfile setting for PROCESSES. Note that any change to PROCESSES will require an instance restart.

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