One solution is to install both x86 (32-bit) and x64 Oracle Clients on your machine, then it does not matter on which architecture your application is running.
Here an instruction to install x86 and x64 Oracle client on one machine:
Assumptions: *Oracle Home is called* `OraClient11g_home1` *, Client Version is 11gR2*

- Optionally remove any installed Oracle client (see How to uninstall / completely remove Oracle 11g (client)? if you face problems)
- Download and install Oracle x86 Client, for example into `C:\Oracle\11.2\Client_x86`
- Download and install Oracle x64 Client **into different folder**, for example to `C:\Oracle\11.2\Client_x64`
- Open command line tool, go to folder %WINDIR%\System32, typically `C:\Windows\System32` and create a symbolic link `ora112` to folder `C:\Oracle\11.2\Client_x64` (see commands section below)
- Change to folder %WINDIR%\SysWOW64, typically `C:\Windows\SysWOW64` and create a symbolic link `ora112` to folder `C:\Oracle\11.2\Client_x86` , (see below)
- Modify the `PATH` environment variable, replace all entries like `C:\Oracle\11.2\Client_x86` and `C:\Oracle\11.2\Client_x64` by `C:\Windows\System32\ora112` , respective their `\bin` subfolder. Note: `C:\Windows\SysWOW64\ora112` must not be in PATH environment.
- If needed set your `ORACLE_HOME` environment variable to `C:\Windows\System32\ora112`
- Open your Registry Editor. Set Registry value `HKLM\Software\ORACLE\KEY_OraClient11g_home1\ORACLE_HOME` to `C:\Windows\System32\ora112`
- Set Registry value `HKLM\Software\Wow6432Node\ORACLE\KEY_OraClient11g_home1\ORACLE_HOME` to `C:\Windows\System32\ora112` (not `C:\Windows\SysWOW64\ora112`)
- You are done! Now you can use x86 and x64 Oracle client seamless together, i.e. an x86 application will load the x86 libraries, an x64 application loads the x64 libraries without any further modification on your system.
- Probably it is a wise option to set your `TNS_ADMIN` environment variable (resp. `TNS_ADMIN` entries in Registry) to a common location, for example `TNS_ADMIN=C:\Oracle\Common\network` .

Commands to create symbolic links:

```
cd C:\Windows\System32
mklink /d ora112 C:\Oracle\11.2\Client_x64
cd C:\Windows\SysWOW64
mklink /d ora112 C:\Oracle\11.2\Client_x86
```

Notes:
Both symbolic links must have the same name, e.g. `ora112` .
Despite of their names folder `C:\Windows\System32` contains the x64 libraries,
whereas `C:\Windows\SysWOW64` contains the x86 (32-bit) libraries. Don't be confused.