Invantive Query Tool

Manual

invantive

**Solutions for
Real Estate and Finance**

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Contents

1 Invantive Query Tool

With the Invantive Query Tool working with your data via SQL becomes easy. Invantive Producer makes it possible to edit a real-time data warehouse using SQL. Maintaining integrity and maintaining information security according to ISO 27002. The Invantive Query Tool is an addition to Invantive Producer and derived products such as ${products.iv}, ${products.ie}, Invantive Control and Invantive Composition.

With the Invantive Query Tool you can:

- Execute SQL-queries and request the results in a table.

- Immediately group, filter and sort the results in the table on the screen.

- Print the results or export them to Adobe PDF, Microsoft Excel or Microsoft XPS.

- Automate processes with assistance from Oracle PL/SQL (only in combination with Oracle RDBMS).

- Retrieve old queries from a file or from the list in the tab "History".

- Connect directly through a native connection for the concerned type database (for example Oracle SQL*Net for Oracle) or connect through the Invantive Webservice so that you do not have to install database-specific software on a work location.

- Supply the database user with a connection or connect to an already installed Invantive product with associated user codes.

- Retrieve the structure of a table or view.

- Request the output of dbms_output, itgen_output and itgen_log of an Oracle PL/SQL block (only in combination with Oracle RDBMS).

- Retrieve an execution plan ("query plan" or "explain plan") of an Oracle SQL query. (only in combination with Oracle RDBMS)

- Request the trajectory ("Oracle Trace") of a SQL statement (only in combination with Oracle RDBMS).

1.1 Learn SQL

More information on what SQL is and how it can be used can be found at: http://en.wikipedia.org/wiki/SQL.

The manual at http://sqlzoo.net also provides a good insight and in addition allows for interactive learning of how you can use SQL to retrieve, edit and create data.
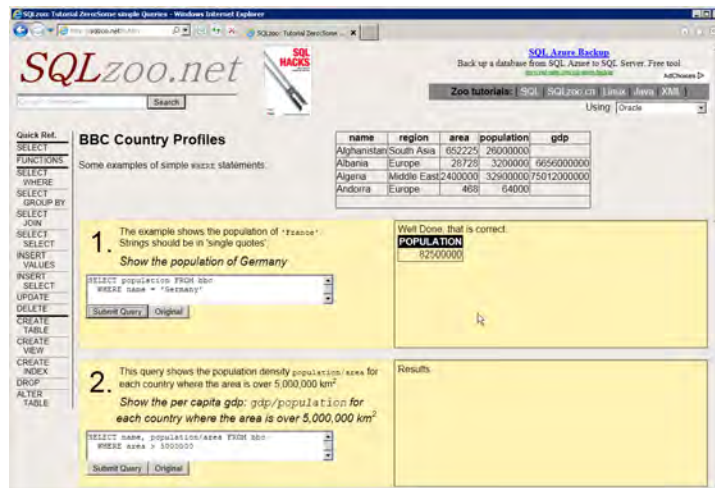
1.2 Functioning

This paragraph describes the functioning of the Query Tool.

The Query Tool consists of two parts:

- The editor section.

- The output section.

In the following paragraph there are several examples of what you can do with the Invantive Query Tool:

1.2.1 Query Tool Examples

- The figure below shows the request by means of a SQL query, of persons grouped by organization.

- Displaying the description of an object (using the F4 key). This corresponds to the Oracle function 'Describe'. The figure below shows the data in the business object persons (bubs_gebruikers_v).

- The result of the SQL query can be exported to Microsoft Excel, Adobe PDF, Microsoft XPS and can be printed on a printer.
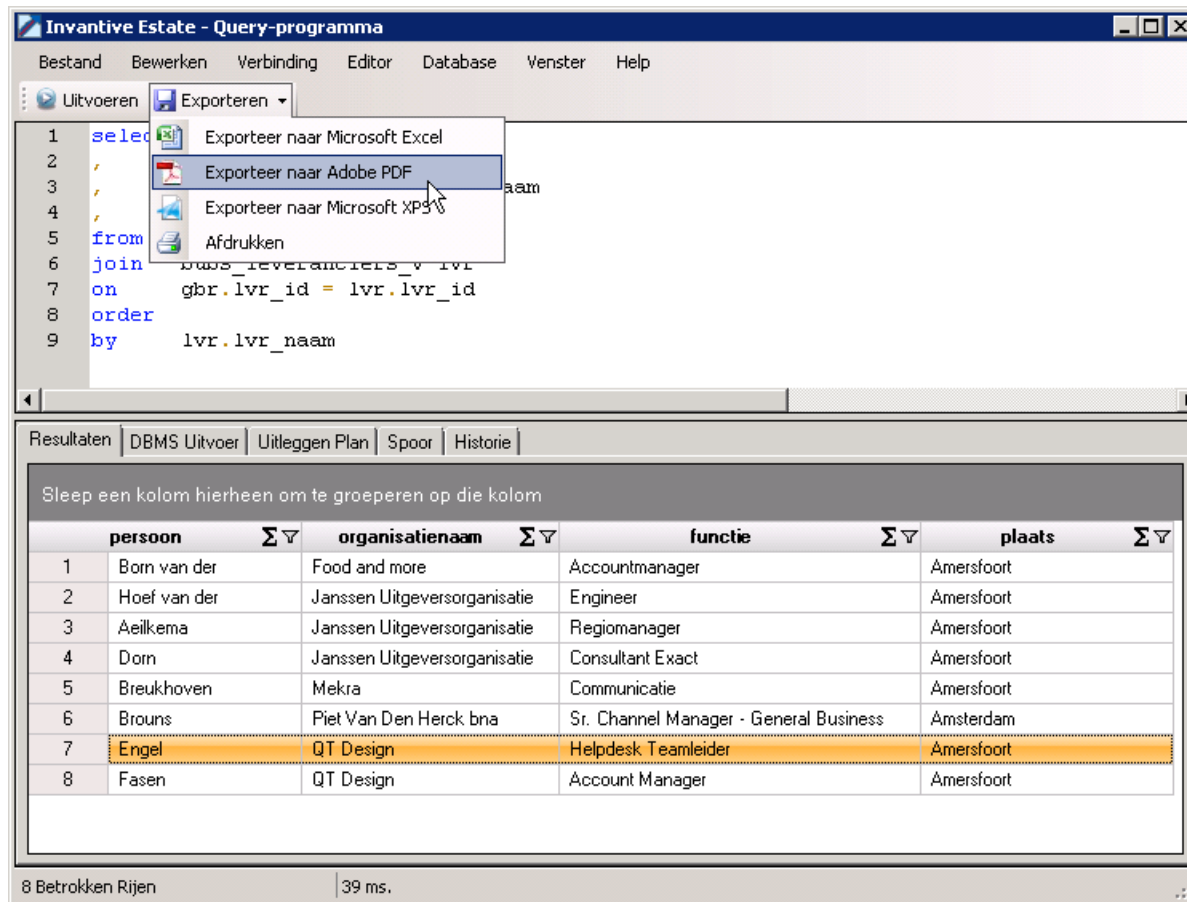
- The image shows the result of the SQL query in Microsoft Excel.

- The image shows the result of the SQL query in Adobe Acrobat.

1.2.2 Editor

In the editor you can execute queries. There are five types of SQL statements possible:

- Select.
- Insert.
- Update.
- Delete
- PL/SQL (Begin ... End, without line breaks and blank lines)

A possible transaction is immediately recorded at the end of the execution of the statement.

Menu File
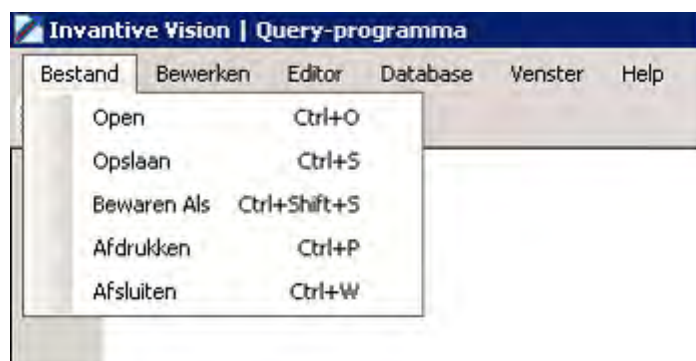
Here queries can be opened, saved, saved under a different name and printed.

In addition, via 'Exit' the Query Tool can be closed.

Menu Editor
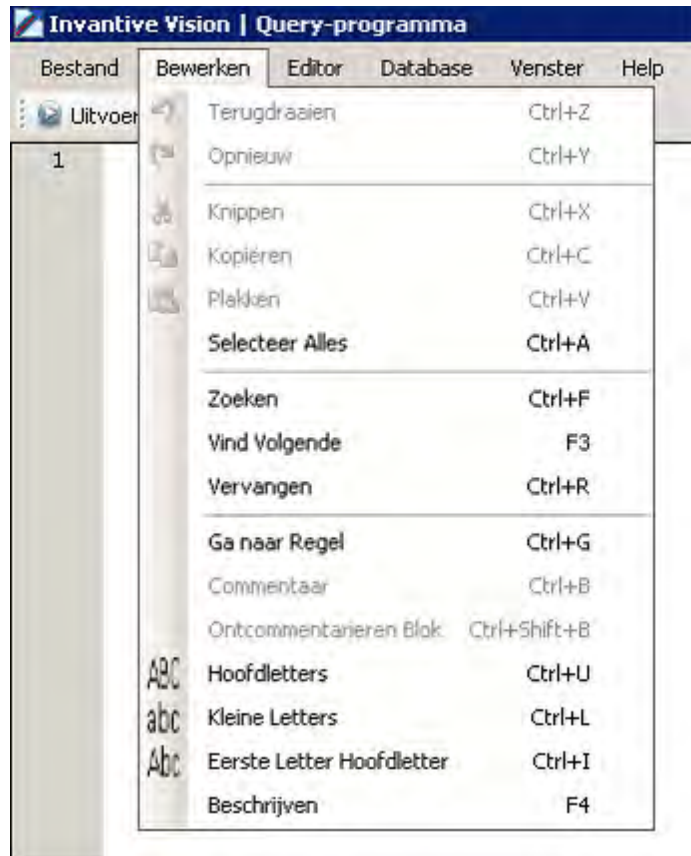
The 'Editor' menu contains all items with which you can edit the query text.

Menu Editor
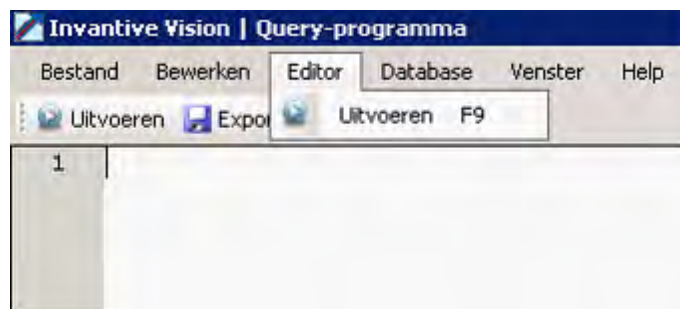
Via 'Run' you can run the query. The results of the query are displayed in the Query Results tab in Query Output.

Menu Database

This menu consists of three specific database menu items:

SQL area: This menu item places the following query in the editor:

> **select** *
>
> **from** itgen_db_sqlarea_r
>
> **where** 1=1
>
> **order**
>
> **by** elapsed_time desc

Sessions: ?

Database session: ?

Menu Help
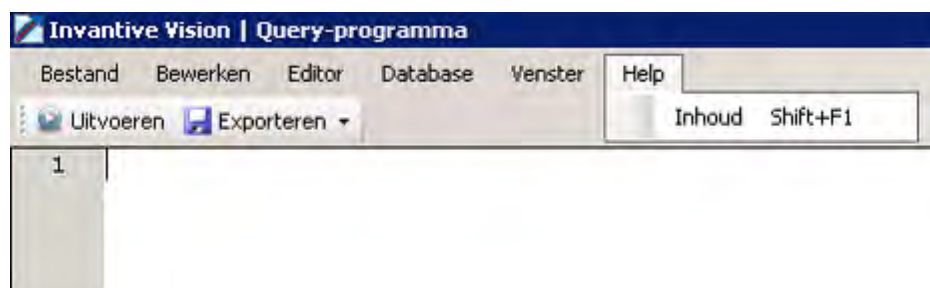
Using this menu the Help for the Query Tool can be requested as part of the Invantive Vision Help.

Export Menu

Using the Export tab, you can print the output of queries or export it to different formats.

1.2.3 Query-output

The query output can be started with the function key 'F9'.

If the editor contains a valid query this will lead to output in different tabs under the tab 'Output'.

1.2.3.1 Query-results

Executing a query results in filling the tab Output with the records delivered by the query.
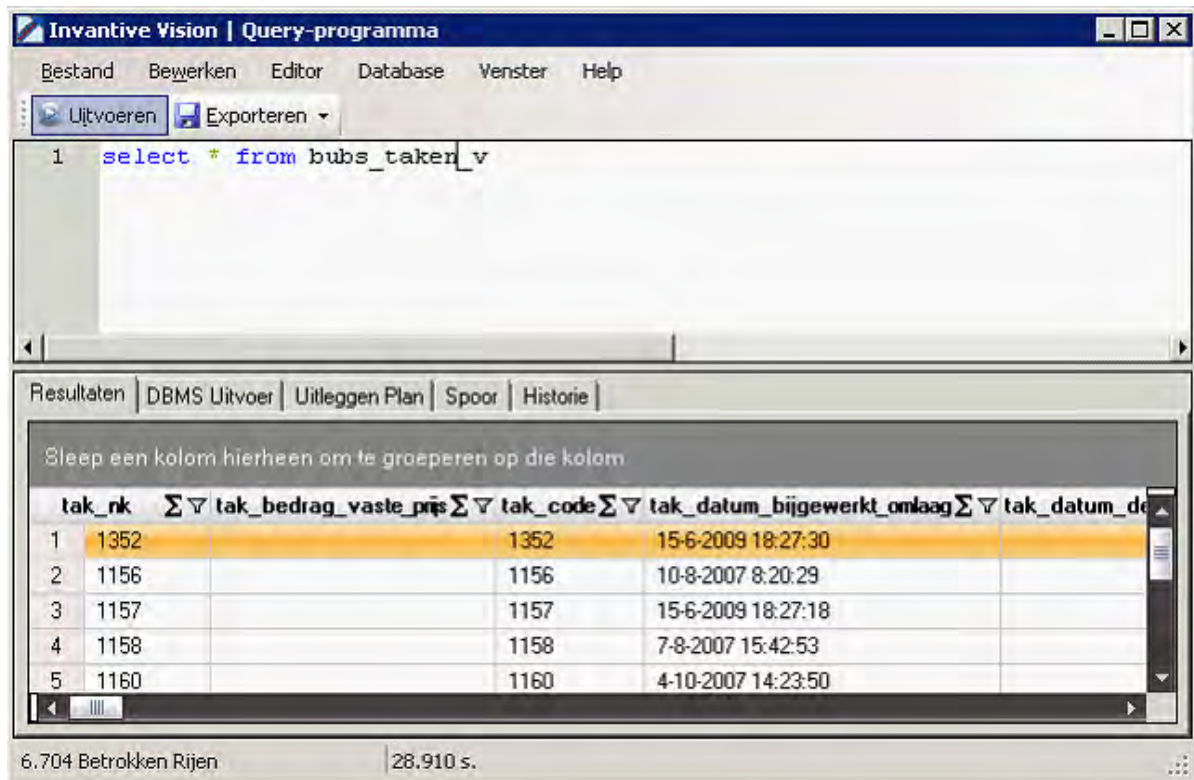
Also the number of rows and the execution time will be displayed.

1.2.3.2 DBMS-output

This tab includes the output of dbms_output.put_line statements (only in combination with Oracle RDBMS)

1.2.3.3 Explain Plan

The Explain Plan can be executed using the menu item 'Explain Plan' or using the key combination Ctrl+E:

The executing of 'Explain Plan' ensures the filling of the tab 'Explain Plan' with the rows which are completed by the 'Explain Plan' of Oracle:
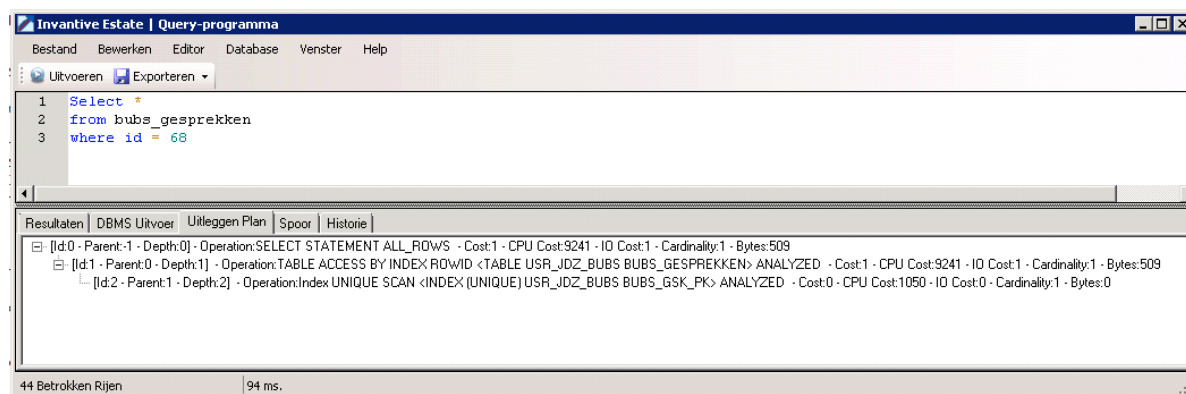
In the tab, the way the query will be executed by Oracle is shown in tree form.

With this the to be executed actions are in order of the ID, so from a branch with the deepest level back to the parent level and back to a related level; this is called 'Processing in Order'.

1.2.3.4 Trace

This tab contains the result of an Oracle trace (only in combination with Oracle RDBMS)

1.2.3.5 History executed queries

Executing a query ensures the filling of the tab history because the data of the last executed query is added.
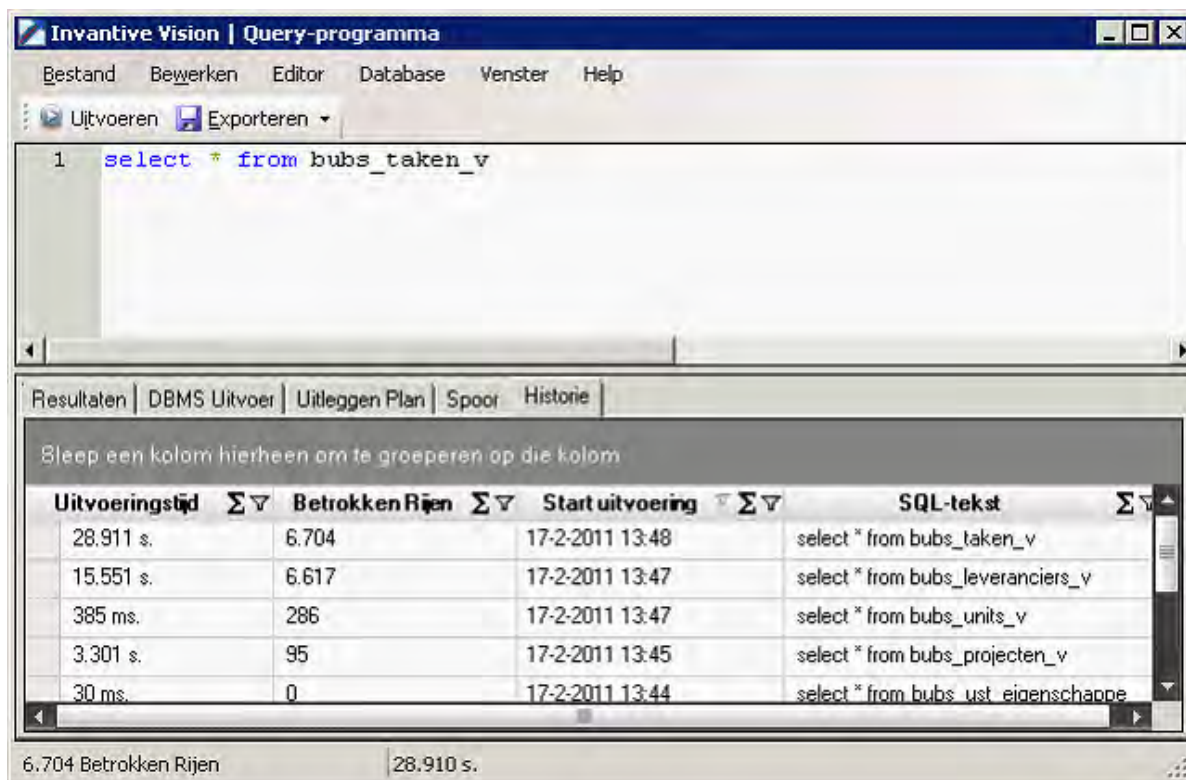
As long as the Query Tool is open a record is added after each output.

1.3 Availability

The following Invantive products provide a user license of Invantive Query Tool:
• ${products.iv} ${products.ola};

- Invantive Control;

- Invantive Composition.

The Invantive Query Tool is also separately available and can be downloaded via the link:http://webservice.invantive.com/qt/publish.htm

1.4 System Requirements

To use Invantive Query Tool on your PC or terminal server you will need the following software including licenses:

- Microsoft .NET 4.5.

- Minimum 2 GB of internal memory.

- Screen resolution of 1280 x 1024 or higher.

- Invantive Webservice or local drivers.

Use on Mac, tablet or smartphone is not possible.

1.5 Installation

Perform the next steps to install Invantive Query Tool:

- Use an Internet browser to go to the link: http://webservice.invantive.com/qt/publish.htm. Then click 'Install', next save the file and execute it.

Invantive B.V.
Invantive Producer Query tool

Name: Invantive Producer Query tool

Version: 50.0.1.1

Publisher: Invantive B.V.

The following prerequisites are required:

- Windows Installer 3.1

- Microsoft .NET Framework 4 (x86 and x64)

If these components are already installed, you can launch the application now. Otherwise, click the button below to install the prerequisites and run the application.

Install

- Click on the button 'Install' to install the Invantive Query Tool on the computer.

Application Install - Security Warning ☒

Do you want to install this application?

Name:
Invantive Producer Query tool

From (Hover over the string below to see the full domain):
webservice.invantive.com

Publisher:
Invantive B.V.

[Install]   [Don't Install]

While applications from the Internet can be useful, they can potentially harm your computer. If you do not trust the source, do not install this software. More Information...

- After installation, the following window will be shown. In this screen, you need to enter the location of the connection file. See Connections Settings 21 for an explanation of the connection file. Select 'OK' to save your changes.

Invantive | Configuration   _ ☐ ☒

| General | Advanced |

Retrieve settings from: Z:\pfile\settings.xml   [...]

Number of available connections: 23

[OK]   [Cancel]
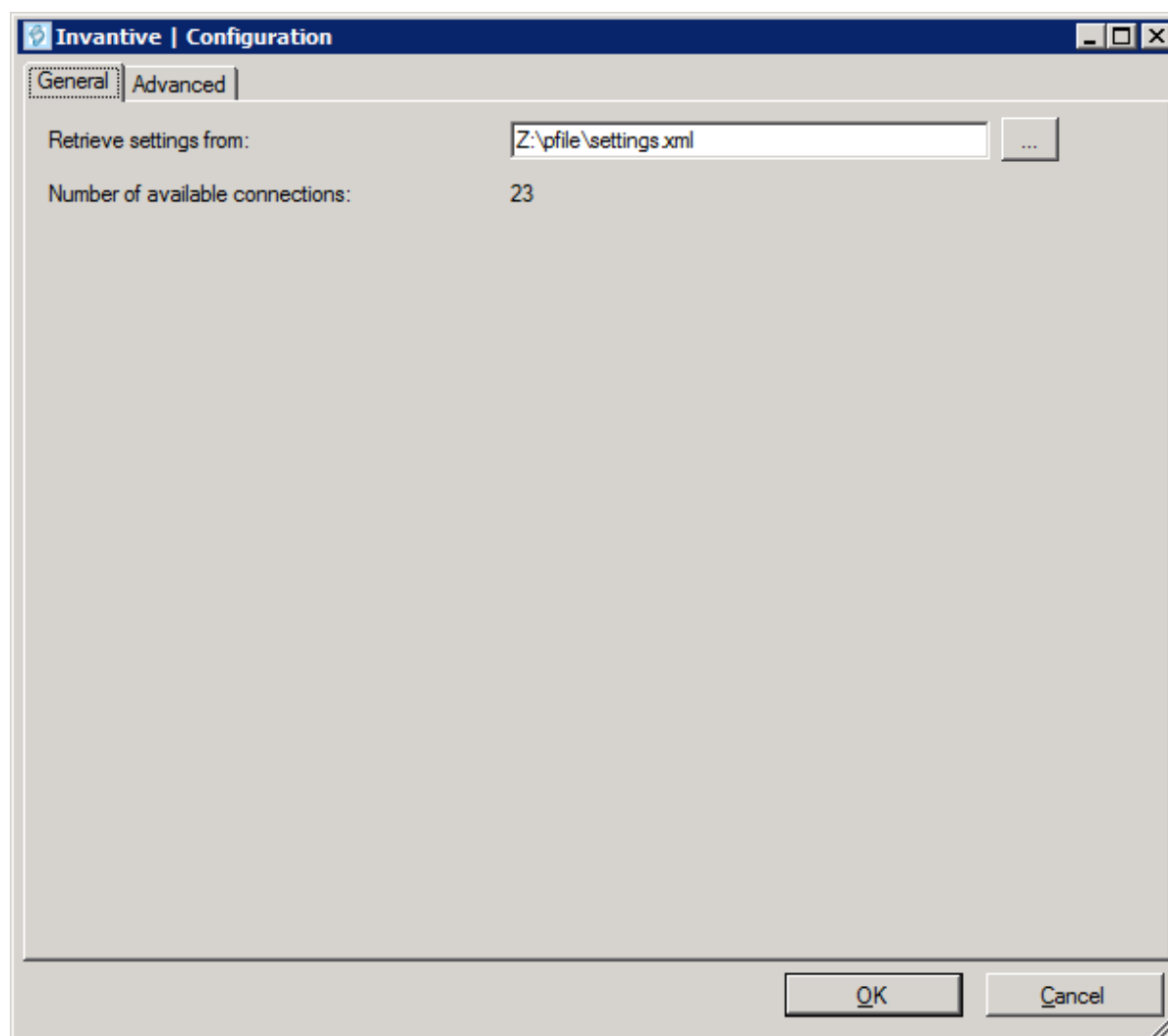
- Next comes the login screen. Next enter the username, password and connection and select 'OK'.

- In order to change the settings of Invantive Query Tool after installation, press 'Crtl' when starting up Invantive Query Tool.

1.6 Versions

This chapter describes the changes in the application per version.

1.6.1 Release 2014 R1
Released: XX-XX-2014.

Invantive Producer: bXX.

Changes and bug fixes:

Number	Type	Product	Description
12935	ER	Invantive Query Tool	dbms_output en explain plan in Query Tool
21718	PR	Invantive Query Tool	Describe werkt niet in Query Tool ondanks rechten op de functie itgen_querytool_describe.
1994	ER	Invantive Qu-	Lijst meest recente documenten (stuk of 10) tonen in Bestandsmenu.

Num-ber	Type	Product	Description
3		ery Tool	

Installation

- No specialties.

Implementation

- No specialties.

2 Invantive Webservice

This chapter describes the possibilities of the Invantive Webservice.

2.1 Web services

Because of the technological changes and the mobility of employees more and more traditional work spaces are disappearing. Employees work at home more often or make use of travel time work time. Work processes like the making of financial reports or the start-up of a new project take place more and more outside of the office. For companies this means that work processes are assigned differently and should be optimized. To allow for the work processes to run as efficient and effective as possible it is required to have quick and safe access to the company network through the Internet.

Webservices make it possible for companies to organize work processes through the Internet even smarter. By providing access to the company network and applications using webservices, it is possible to coordinate and optimize processes from each location.

2.2 Advantages

The Invantive Webservice offers various advantages:

- The Invantive Webservice makes it easy to quickly and safely exchange data through the internet between various databases and services. For companies this means that the execution of financial calculations and the manufacturing and recording of contracts is available from every location. the Invantive Webservice allows different companies to work together more effective and more efficient within a project.

- That is because the Invantive Webservice simplifies the exchange of information between different parties within a project. The Invantive Webserive makes it possible to give partners - through http(s) - authorized access to applications and databases. The advantage of this is that existing applications and applications based on Invantive Producer can easily exchange data. This means that partners can use óne application for the planning of projects, execution of complex calculation models and the registration of work hours. Using the Invantive Webservices the data can - depending on the security model - be retrieved and processed in the own administration. This makes it possible to provide multiple clients and/or relations quick and safe access to the company network with the Invantive Webservice.

- With the Invantive Webservice work processes can be organized even smarter and be optimized. The result is the more effective and efficient work on a project.

2.3 System Requirements

Client

To use Invantive Webservice on your PC or terminal server you will need the following soft-ware including licenses:

• Microsoft .NET 4.5.

• Minimum 2 GB of internal memory.

• Screen resolution of 1280 x 1024 or higher.

On-Premises

For the use of Invantive Webservice as server within the private network you will need (so-called "on-premises" use):

• Operating system: Windows 2008 R1 Service Pack 2, Windows 2008 R2 or Windows 2012.

• Minimum of 4 Gb internal memory.

• Screen resolution of 1280 x 1024 or higher.

• Minimal 1 central processing unit for server use not older than 2 years.

• Drivers for the supported databases or own specific drivers for business applications.

2.4 Concept

With the Invantive Webservice Invantive applications and applications based on Invantive Producer can exchange data with databases and other services using the internet or the company network.

It is also possible to use these applications without Invantive Webservice, but for installations with more than one user this is strongly discouraged. With the Invantive Webservice it will ta-ke no time outside of the client installation to allow an extra user or PC to make use of a da-tabase; without the Invantive Webservice this will take considerably more time for each PC and/or user.

The exchange of data happens through webservices that use the so-called http and/or https protocol. Depending on the chosen security model you can exchange data with databases in the company network using the Invantive webservice both within the company network as well as on the internet from Invantive applications and applications based on Invantive Produ-cer.

You can also - if authorized - exchange data with databases at various companies. With this you can easily collaborate with multiple clients and/or relations in an efficient manner, where-ver you are and whenever you feel the need to. Every client and/or relation also has an own installation of the Invantive Webservice.

The Invantive Webservice works as follows:

• A user starts an application based on Invantive technology.

• The application will know automatically or hear from the user which connection is to be used with which user name and password.

• The connection are is retrieved in a list with available connections and the related (possible redundant) channels.

• On the basis of the retrieved preferences and availability a channel is chosen for commu-nication.

• Through this channel a connection is established with the service provided by the webser-vice.

- Data and requests are exchanged.

If the connection drops, then the connection is automatically established again. A possible alternative channel for the connection is used if the desired channel is not available.

2.5 Database platforms

An installation of the Invantive Webservice consists of one or multiple installations of the Invantive Webservice programming. In addition to the programming you also need to indicate the connections to databases that can be used through this installation. These can at least be the following database platforms:

- Microsoft SQL Server

- Oracle RDBMS

- MySQL

- IBM DB2 UDB (Linux, Unix, Windows)

The actual choice of the database platform depends on which application you will be using. Some (company) applications only work on a portion of the database platforms.

The support of extra database platforms can be added by a system developer or ordered with Invantive.

Requests are routed to providers as soon as requests for data or actions arrive to the webserver. In the configuration file you can adjust in which order this happens (see image).

See also Providers Configuration 24.
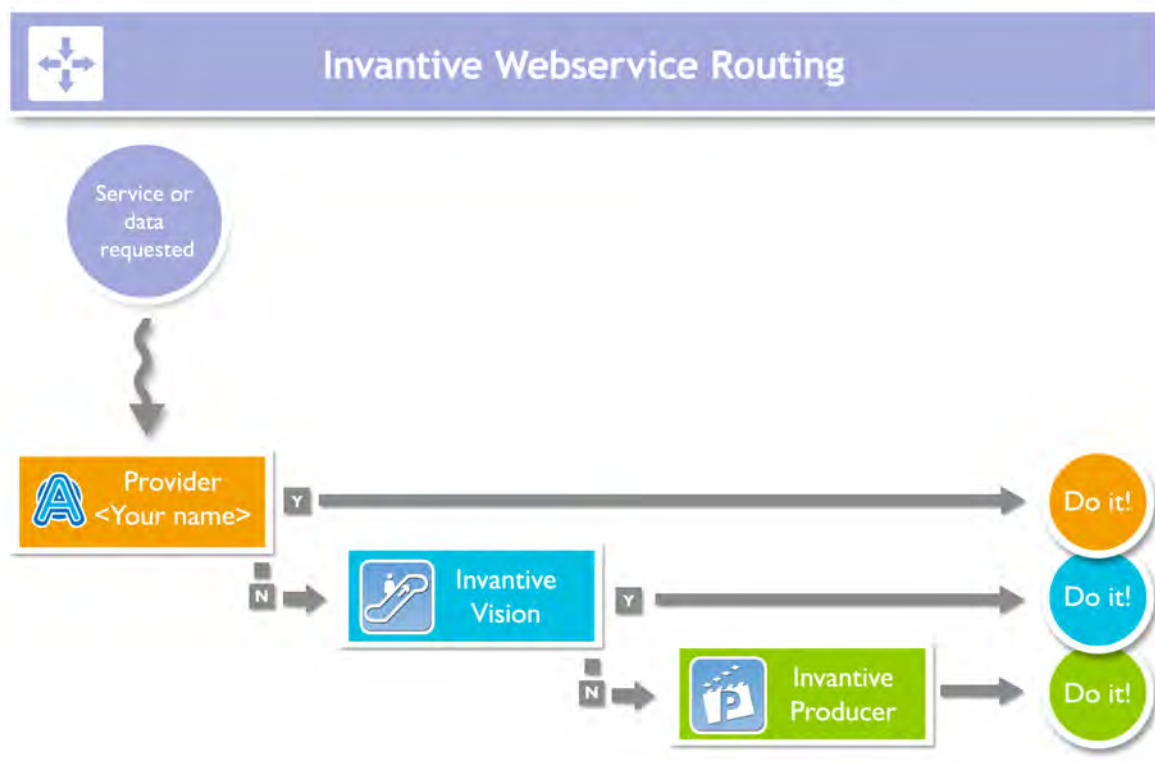
2.6 Redundance

For a higher availablity you can install multiple installations of the Invantive Webservice programming. These installations can be located on óne server or on multiple servers. With

multiple servers you ensure a better availability: even if a server breaks then the users can still keep on working (see image).
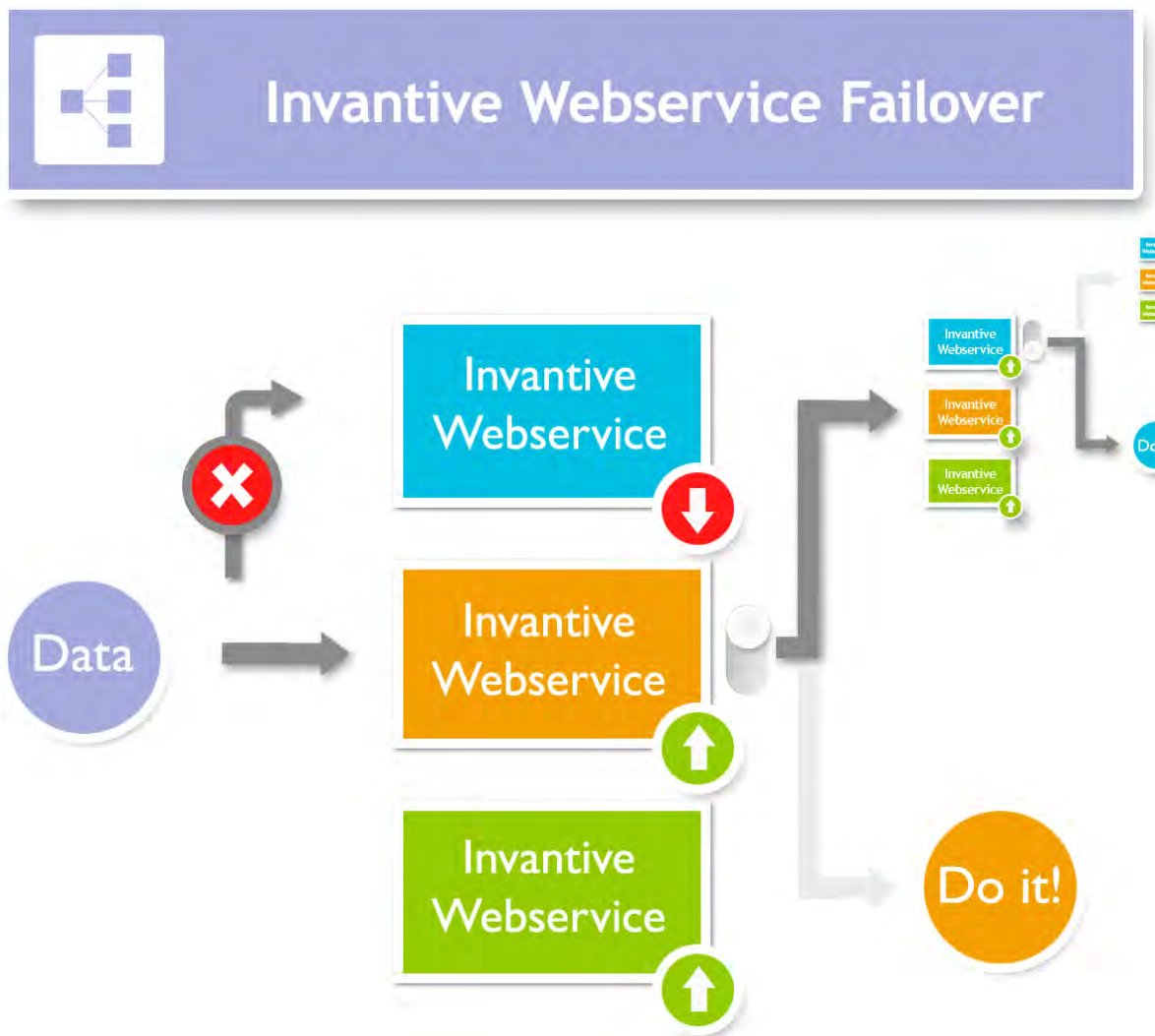
The redundance can be set in the settings.xml file. See also <u>Connection configuration</u> 21. As soon as a connection is no longer available the programming of your user will try to use a different available connection.

2.7 Installation

This element describes the installation of the Invantive Webservice and its components.

2.7.1 Invantive Webservice Programming

Execute following steps to make the Invantive Webservice available to the users.

- Install Microsoft IIS 7 or 8 including ASP.NET support.
- Install Microsoft .NET Framework version 4.5 or newer. In the Control Panel among the installed programs there will then be listed 'Microsoft .NET Framework 4.5'.
- Copy invantive-webservice in the distribution to the folder that is known within Microsoft IIS, preferably 'webservice' within the folder of the application or alternatively c:\inetpub \wwwroot\invantive-webservice, c:\inetpub\wwwroot\<OMGEVING>-ws or (preferably) ENVIRONMENTDIR\webservice.
- Adjust settings.xml in this folder as described in settings.xml.sample.

- Start Microsoft IIS with 'inetmgr' or through Control Panel.

- Select 'Properties' from the folder.

- Convert the folder to application with an own application pool:
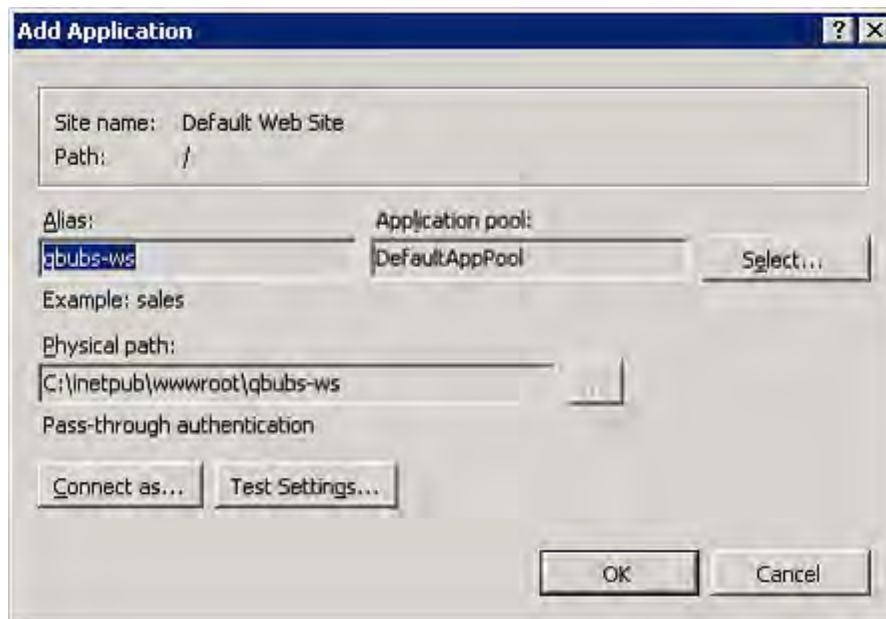
- Set the application in for use of the application pool 'ASP.NET v4.0':
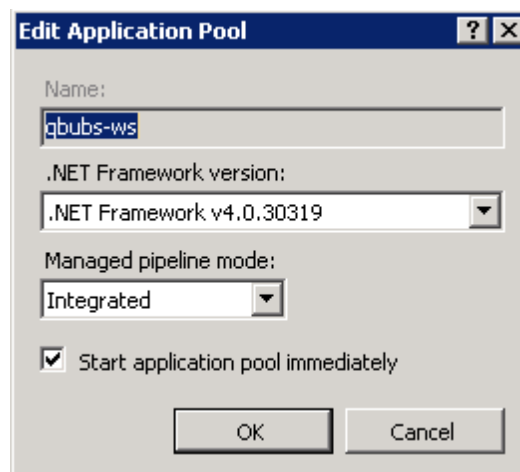
- Set the standard page Service.ashx:
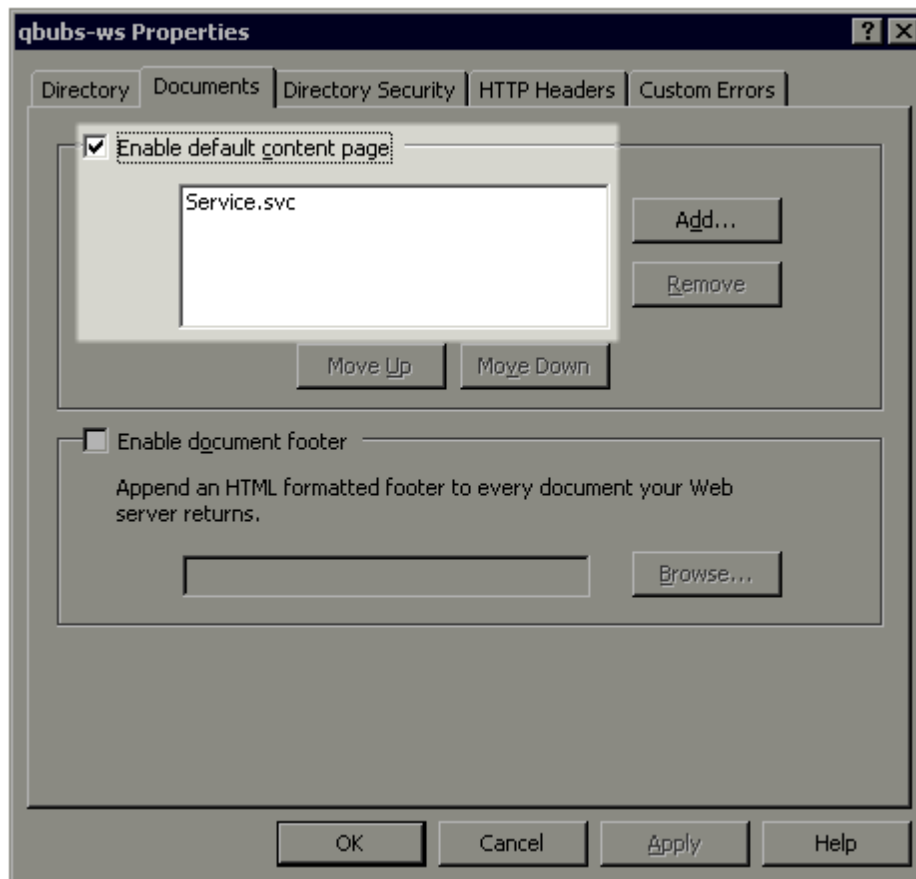
- You can now test the web service by opening the page. You will receive output such as (t23522):

```
← → C  🔒 _____/ws_ita_pbubs/
```

Service Service

You have created a service.

To test this service, you will need to create a client and use it to call the service. You can do this using the svcutil.exe tool from the command lir

```
svcutil.exe http://_____.local/ws_ita_pbubs/Service.svc?wsdl
```

This will generate a configuration file and a code file that contains the client class. Add the two files to your client application and use the genera

C#

```csharp
class Test
{
    static void Main()
    {
        ServiceClient client = new ServiceClient();

        // Use the 'client' variable to call operations on the service.

        // Always close the client.
        client.Close();
    }
}
```

Visual Basic

```vb
Class Test
    Shared Sub Main()
        Dim client As ServiceClient = New ServiceClient()
        ' Use the 'client' variable to call operations on the service.

        ' Always close the client.
        client.Close()
    End Sub
End Class
```

2.7.2 Certificate

If you make use of https, then you need to submit a certificate (see also http://www.iis.net/learn/manage/configuring-security):

- Start MMC with 'Run'.
- Go to the File menu and select 'Add/Remove Snap-in'.
- Click on Certifcates and click on 'Add'.
- Select 'Computer Account' and click on 'Next'.
- Select 'Local Computer' and click on 'Finish'.
- Select 'OK'.
- Click on 'Certificates (Local Computer)' in the middle part of the window.
- Click on the right on 'Personal'.
- Select 'All tasks' and then 'Import'.
- Set up the filter for 'Personal Information Exchange (*.pfx)'.
- Select the .pfx bestand as Personal Certificate.
- Enter the password.
- If desired you select the check box 'Mark this key as exportable.'.
- Allow automatic placement in the storage for the certificate based on the type.
- Select 'Finish'.
- Close the MMC.
- It is not necessary to save the settings of MMC.

- Start Microsoft IIS through 'inetmgr'.
- Click right on the website (usually 'Default Website').
- Go to 'Edit bindings'.
- Add a 'https' binding and choose the Friendly Name of the certificate that you have just imported.

2.7.3 Connection Configuration

To make a connection with an Invantive application or an application based on Invantive Producer there needs to be a file settings.xml with included within the configuration of the connection settings. This has to be an XML file with the same design as the example. The file can contain the configuration to connect with one or more servers.

If you start an Invantive-based application product for the first time the settings.xml file is searched for at multiple locations in succession:

- the installation folder containing setup.exe;
- from the installation folder a folder upwards;
- from the installation folder a folder up and the file folder in it;
- from the installation folder two folders up;
- from the installation folder two folders up and the file folder under it;
- from the installation folder three folders up;
- from the installation folder three folders up and the file folder under it;
- in the folder c:\ws.

If the settings.xml file can not be found, the user will be asked where the settings.xml file is located. The chosen location of the settings.xml file is remembered and used from that moment.

In the text below it is described how it works:

```
<?xml version="1.0" encoding="utf-8"?>
<!--
  (C) 2004-2013 Invantive BV, the Netherlands (www.invantive.com).

  $Header: http://svn.invantive.com/repos/p104/trunk/help/nl/manual/Topics/verbin-
dingsconfiguratie.xml 23549 2013-11-01 14:21:27Z smoke $

  Purpose:
  Configuration of the Invantive Webservice and direct database connections
  available to client and the Invantive Webservice acting as a database client.

  Explanation:
  Connections are used to retrieve data from a database and to update the contents
of databases.
  This settings file can accommodate all settings for database and web service
connections
  that are used by Invantive products.
  This file contains a number of structured elements, explained further on.

  Top level: the connection groups.
  This is the root level of the settings file. It only contains connections
groups.
```

Attributes:
 * "default": The default connection. The format is 'group\connection'.
   the first connection with the given name will be used when the group element
is omitted.
 * "forceDefault": If true, only the default connection can be used. No other
connection is
   eligible for selection based upon this settings.xml file. You can use for in-
stance when you
   add a new default connection and you want to make sure everyone switches to
the new connection,
   irrespective of what connection is currently used as default.

 The group level:
 This level defines a set of connections, logically grouped together. You are
 free to choose the way of grouping.
 Examples of logical manner of grouping: by customer, by environment (production,
test).

 Attributes:
 * "name": The name of the group.

 The connection level:
 This level defines an actual logical connection.
 For example: Production environment Acme site.
 Under this level, the actual transport mechanism and its settings can be defi-
ned.
 The connection and associated failovers are tried when initially establishing
the connection and when reconnecting
 after the provider detected a connection loss.
 The elements of this level can consist of two types:
 * physical connection (either an Invantive Webservice or direct database connec-
tion);
 * failovers.
 All physical connections listed will be brought online during application use.

 Attributes:
 * "name": The name of the logical connection.

 The webservice element:
 This element defines a connection using the Invantive.Providers.Webservice pro-
vider.
 This provider is capable of proxying database connections over HTTP/HTTPS. A
client
 can connect to a database directly through a webservice, but a webservice can
route
 this request also to another Invantive Webservice and so on.

 Attributes:
 * "url": the url of the Invantive Webservice.
 * "encoding": the encoding to use.
   This will be passed as header on the request.
   Allowed values are: "binary" or "text". Default: binary. Use text for debug-
ging purposes or with poor CPU.
 * "compression": the compression method to use.
   This will be passed as header on the request. Allowed values are: "auto",
"true" or "false". Default: "auto" (will set compression enabled)
   Within a fast LAN network and/or with slow servers, we recommend no compressi-
on. In all other situations, we recommend
   compression to be enabled.

 The database element:
 This element defines a connection to a database using a provider
 specific for that type of database.

Attributes:
* "connectionString": the ADO.NET connection string for the specified provider.
  You can specify Data Source, User Id and other settings.
* "provider": the name of the ADO.NET connection provider.
  For example: "Oracle.DataAccess.Client"

The failover level:
The failover level can define a list of database or webservice settings.
It supplements the webservice/database element.
Connection settings defined in a failover can be used to
have a failover connection when one connection cannot be established.
This can be useful when relying on a internet connection or presence of a VPN
tunnel.
Settings defined in this section will be evaluated one after another, starting
top down.
When any of the failovers can be established, no other failovers will be tried.

Attributes:
* (none)

Examples:

This example illustrates a single connection. The software will sequentially try
to:
* Connect to the 'authenticationServer' Active Directory server;
* Connect to one of the connections in the failover:
  - First the database connection (when connection from the internal network or
VPN);
  - The first webservice connection;
  - The second (or 'failover') webservice connection.

```
<connections default="Customer A\Production" forceDefault="false">
  <group name="Customer A">
    <connection name="Production">
      <database connectionString="Data Source=authenticationServer;User Id=user-
name;Password=thepublicpassword;Pooling=false" provider="Invantive.CustomerA.Acti-
veDirectory" />
      <failover>
        <database connectionString="Data Source=localhost;User Id=username;Pass-
word=thepublicpassword;Pooling=false" provider="Oracle.DataAccess.Client" />
        <webservice url="http://www.customer-a.com/ws/"      encoding="binary"
compression="true" />
        <webservice url="http://failover.customer-a.com/ws/" encoding="binary"
compression="true" />
      </failover>
    </connection>
  </group>
</connections>
```

This example illustrates connections to different database platforms. The soft-
ware will try to:
* Connect to the IBM DB2 UDB database when connection 'DB2' is selected;
* Connect to the Microsoft SQL Server database when connection 'SQLServer' is
selected;
* Connect to the Oracle MySQL server when connection 'MySQL' is selected;
* Connect to the Oracle RDBMS server when connection 'Oracle' is selected;

```
<connections default="Customer A\Production" forceDefault="false">
  <group name="Customer A">
    <connection name="DB2">
      <database connectionString="Server=localhost;Database=THE_DATABASE;UID=us-
ername;PWD=password;CurrentSchema=schema" provider="IBM.Data.DB2" />
    </connection>
    <connection name="SQLServer">
```

```
        <database connectionString="Server=localhost;Database=database;User Id=us-
ername;Password=password;" provider="System.Data.SqlClient" />
      </connection>
      <connection name="MySQL">
        <database connectionString="Server=localhost;Database=database;Uid=userna-
me;Pwd=password" provider="MySql.Data.MySqlClient" />
      </connection>
      <connection name="Oracle">
        <database connectionString="Data Source=localhost;User Id=username;Pass-
word=password" provider="Oracle.DataAccess.Client" />
      </connection>
    </group>
  </connections>

-->
  <connections default="Customer A\Production" forceDefault="false">
    <group name="Customer A">
      <connection name="Production">
        <database connectionString="Data Source=authenticationServer;User Id=user-
name;Password=thepublicpassword;Pooling=false" provider="Invantive.CustomerA.Acti-
veDirectory" />
        <failover>
          <database connectionString="Data Source=localhost;User Id=username;Pass-
word=thepublicpassword;Pooling=false" provider="Oracle.DataAccess.Client" />
          <webservice url="http://www.customer-a.com/ws/"      encoding="binary"
compression="true" />
          <webservice url="http://failover.customer-a.com/ws/" encoding="binary"
compression="true" />
        </failover>
      </connection>
    </group>
  </connections>
```

2.7.4 Providers Configuration

In the providers configuration file providers.xml you configure which requests are processed by which providers and how the requests are routed within the Invantive Webservice. The possibilities are described in the sample file providers.xml.sample:

```
<?xml version="1.0" encoding="utf-8"?>
<!--
  (C) 2004-2013 Invantive BV, the Netherlands (www.invantive.com).

  $Header: http://svn.invantive.com/repos/p104/trunk/help/nl/manual/Topics/bubs-
Providers_Configuratie.xml 23549 2013-11-01 14:21:27Z smoke $

  Configuration of providers for Invantive Webservice

  Purpose:
  You can configure providers here, sorted by order.
  Providers are tried to handle a request in decreasing order. So the provider
with order 500 is offered
  the request before the provider with order 400 is offered the request.
  Providers with order 70, 80, 90, 100 and 200 are reserved for Invantive internal
use (see the table below).

  Explanation:
  Providers are used to provide functionality that is not part of the webservice.
  A provider knows how to handle a specific action on a specific platform.
  Some providers are included in the installation, such as providers for database
or webservice connectivity or a file logging provider.
  The default providers are included in the software, so they are not listed here
between the <providers> tag.

  A provider does in general NOT define WHERE the action will be executed. That is
normally specified by the settings.xml.
```

But specific providers may contain the location WHERE the action will be execu-
ted as default value or specified as attributes
with the provider's configuration.

Default providers:
The default providers are always available.
A list of the default providers and there order (which cannot be used again):


```
 Order    Name                   Comments
 --------------------------------------------------------------------------------
 --------------------------------------------------------------------------------
 --------
   70     Oracle MySQL           Provider supporting the execution of actions on
Oracle MySQL.
                                 Built and tested with Connector/Net 6.7.4. See
http://dev.mysql.com/doc/refman/5.6/en/connector-net.html.
                                 File: Invantive.Data.Providers.MySql.dll
   80     Microsoft SQL Server   Provider supporting the execution of actions
onMicrosoft SQL server 7.0 and later.
                                 See http://msdn.microsoft.com/en-us/library/
kb9s9ks0.aspx.
                                 File: Invantive.Data.Providers.SqlServer.dll
   90     IBM DB2 UDB            Provider supporting the execution of actions
onIBM DB2 UDB  9.7 for Windows.
                                 Not tested on any other version.
                                 File: Invantive.Data.Providers.IbmDb2.dll
  100     Oracle RDBMS           Provider supporting the execution of actions
onOracle RDBMS 9i - 12c.
                                 Needs ODP.NET and OCI to be installed.
                                 File: Invantive.Data.Providers.Oracle.dll
  200     Invantive Webservice   Provider that is executing action by forwarding
it to another Invantive Webservice over HTTP/HTTPS.
                                 File: Invantive.Data.Providers.Webservice.dll
                                 Order 200 ensures that forwaring is preferred
instead of a database connection by default.
```


The providers tag contains a list of providers available, each one consisting of
the provider-tag.

Attributes of the <provider> tag:
 * "order": Sorting order of the provider. The higher the value, the sooner it is
called.
 * "file": The file name of the provider. This can be a path relative to the Pro-
viders directory, or an absolute path.
   Fully specify the path or use a path relative to the Invantive Webservice in-
stallation folder.
   Do not use the ASP.NET/IIS ~/-prefix to indicate the current folder.
 * "class": Optional. Full class name of the provider. You can specify the class
name to increase startup performance since
   it reduces the time needed querying the file.
   You need to specify the class if you want to load a single provider in a file
that contains multiple providers.

The elements of the <provider> tag:
 * All: you can specify elements within the provider tag. See for instance the
<templatesfolder> element
   in the example below.
   Their names and values will be passed as attributes to the provider during in-
stantiation.

Example:

```
<providers>
  <provider
  order="998"
```

```
       file="C:\ws\distribute\invantive-sdk\Invantive.XXX.Provider.dll"
       class="Invantive.XXX.Provider.Provider"
     >
       <templatesfolder>C:\temp\templates\</templatesfolder>
       <serviceurl>http://localhost/ThisIsAnExmaple/Service.svc</serviceurl>
     </provider>
   <providers>


-->
<providers>
  <!-- Custom logging. -->
  <!--
  <provider
   order="999"
   file="C:\ws\distribute\invantive-sdk\Invantive.Data.Providers.Logging.dll"
   class="Invantive.Data.LoggingProvider"
  >
     <log>C:\temp\invantive_logging.log</log>
  </provider>
  -->
  <!-- Most preferred provider due to order 400.
       Data access provider for Invantive Estate and/or Invantive Vision.
       Generates an Oracle SQL execute request. Invantive Estate and
       Invantive Vision currently only support the Oracle RDBMS.
  -->
  <!--
  <provider
   order="400"
   file="Invantive.Estate.Data.Provider.dll"
   class="Invantive.Estate.Data.InvantiveEstateDataProvider"
  />
  -->
  <!-- Less preferred provider due to order 300.
       Data access provider for Invantive Producer products.
       The following Invantive Producer products require the use of Oracle RDBMS:
       * Invantive Studio
       * Invantive Query Tool
       The following Invantive Producer products run with all supported database
platforms
       although this specific provider does not yet support it. Use a database
specific
       provider instead:
       * Invantive Composition
       * Invantive Control
  -->
  <!--
  <provider
   order="300"
   file="Invantive.Producer.Data.Provider.dll"
   class="Invantive.Producer.Data.InvantiveProducerDataProvider"
  />
  -->
</providers>
```

2.7.5 Providers

The Invantive Webservice can make use of various providers that record and retrieve data, but also offer other services. Here are the standard available providers.

2.7.5.1 Oracle Provider for Invantive Webservice

In this chapter the configuration of the provider is described.

In addition, some suggestions are provided to execute the installation of the Oracle programming. However, this is no replacement of the knowledge and experience with the local situation and trainings that an administrator or DBA has from his role and the results of the instal-
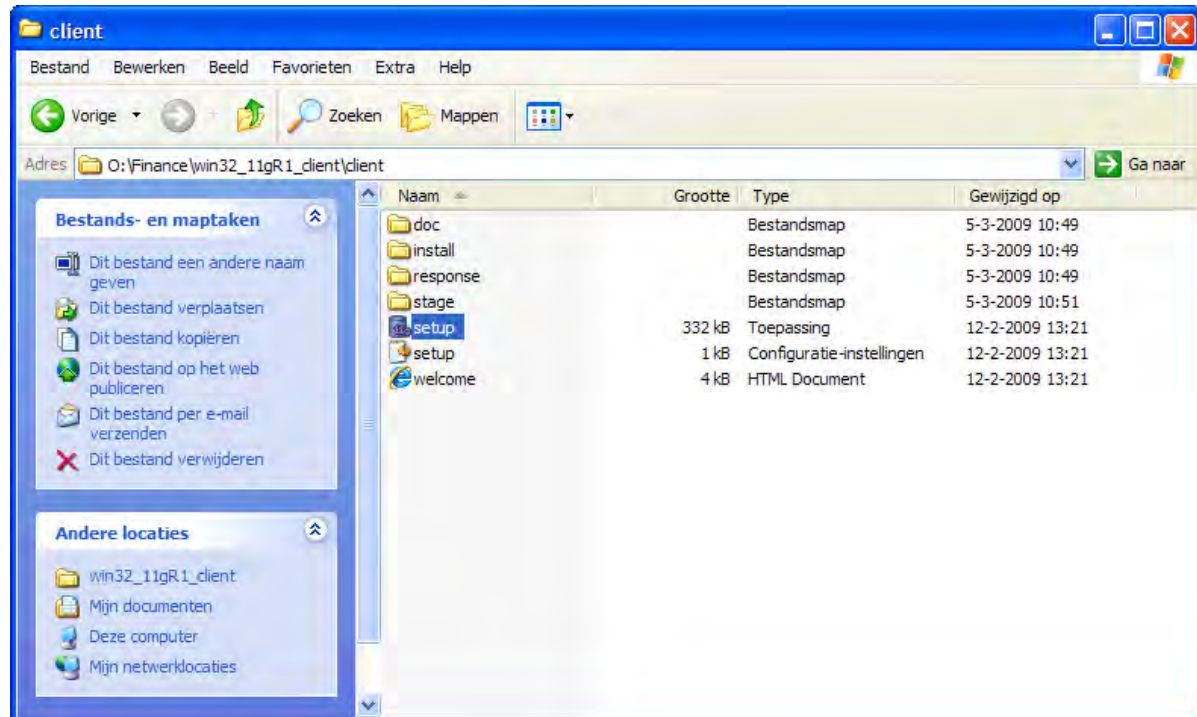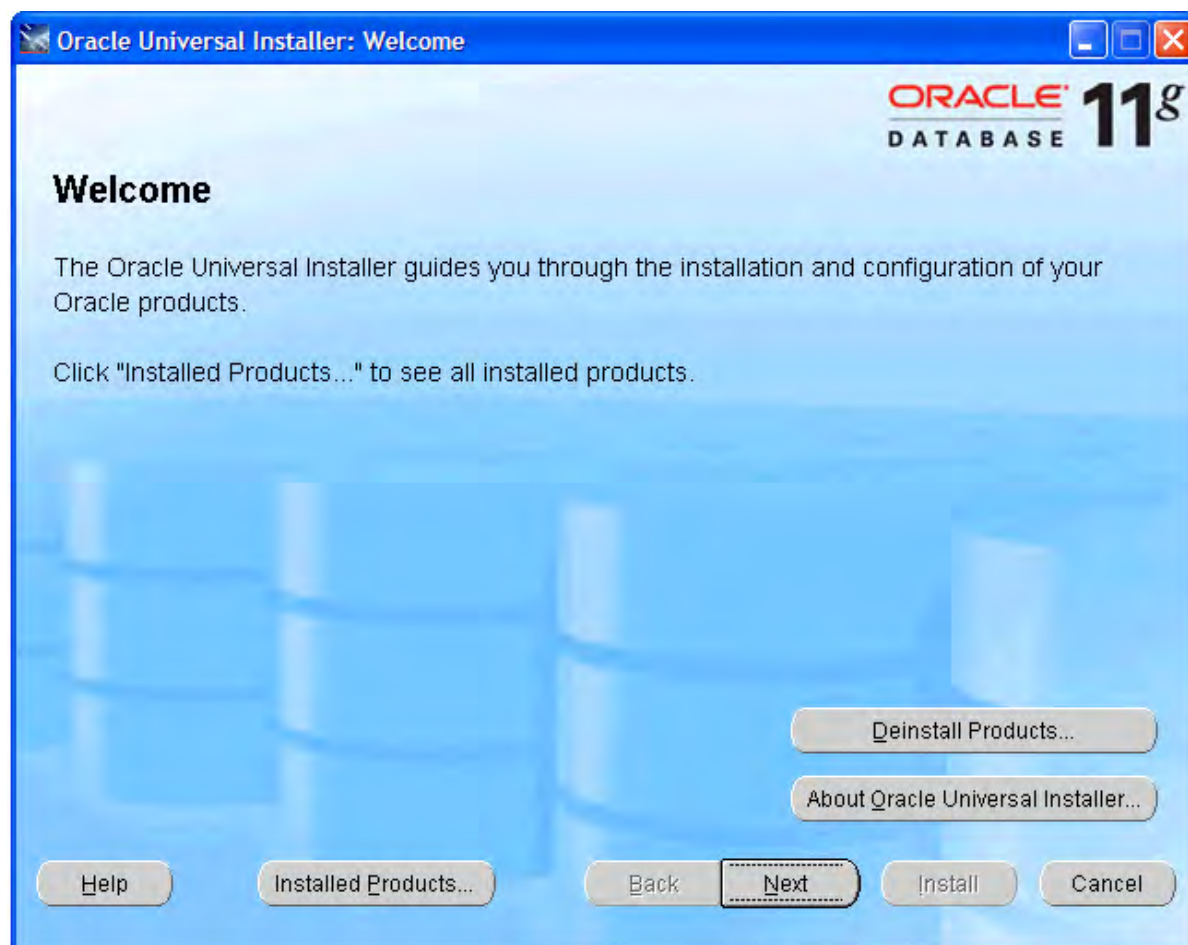
lation are therefore not guaranteed.

Oracle Client Installation

The installation of the Oracle client can be done following the next steps:

• Navigate to the folder containing the 'setup' program, for example:

• The Oracle installation program appears:

- We recommend to install the most comprehensive version within the license agreement, so that all devices are readily available if they should be needed later:

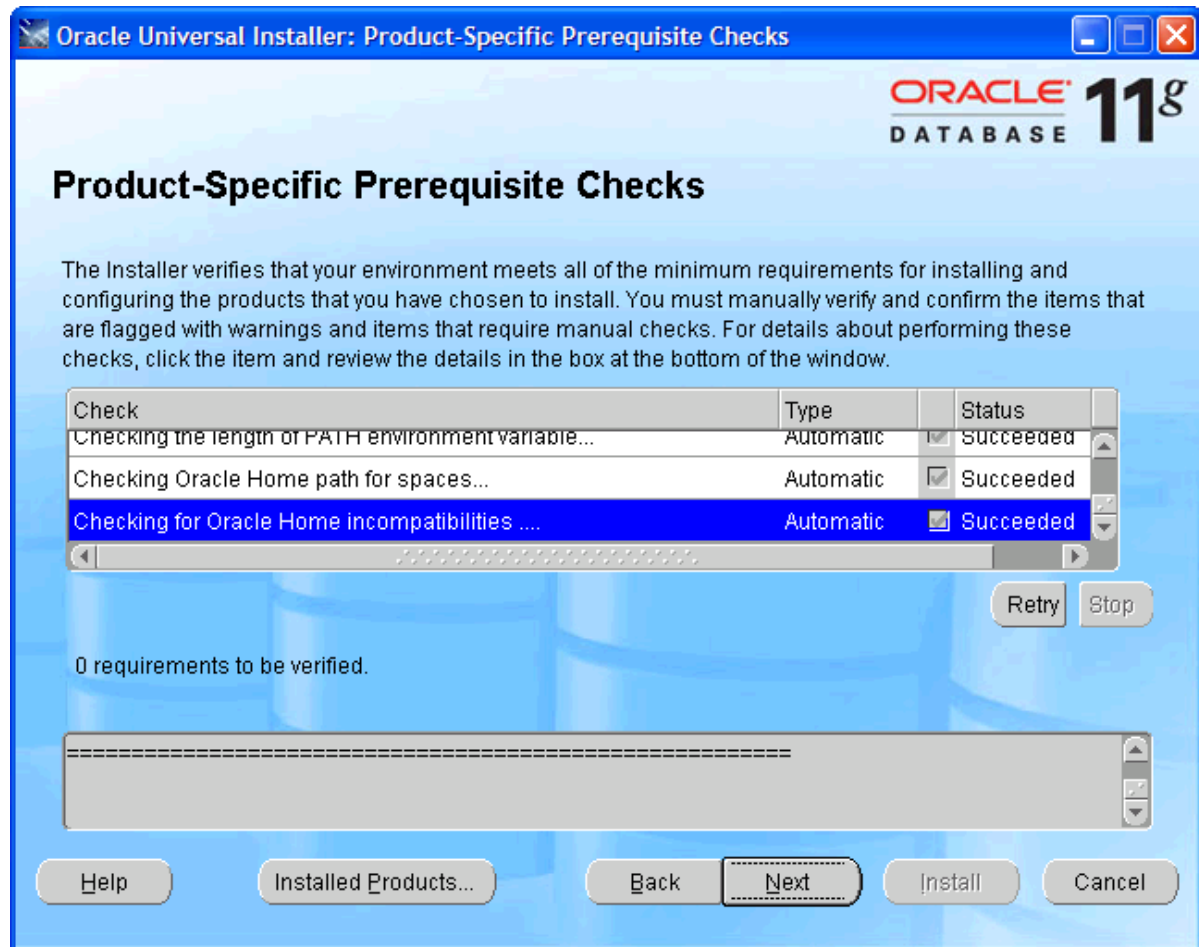- Select the required languages via 'Product Languages'. Here we recommend to choose all languages:
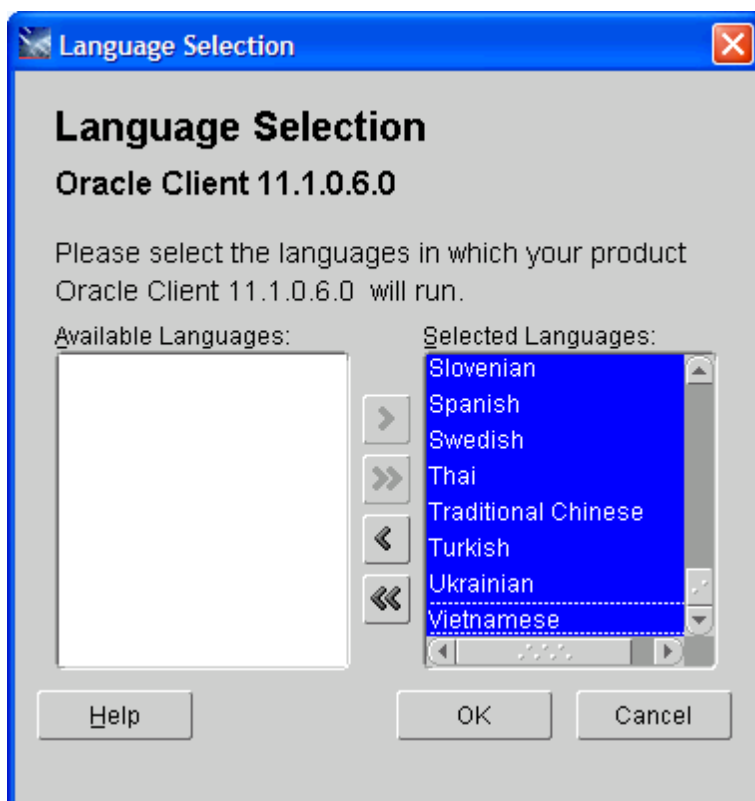
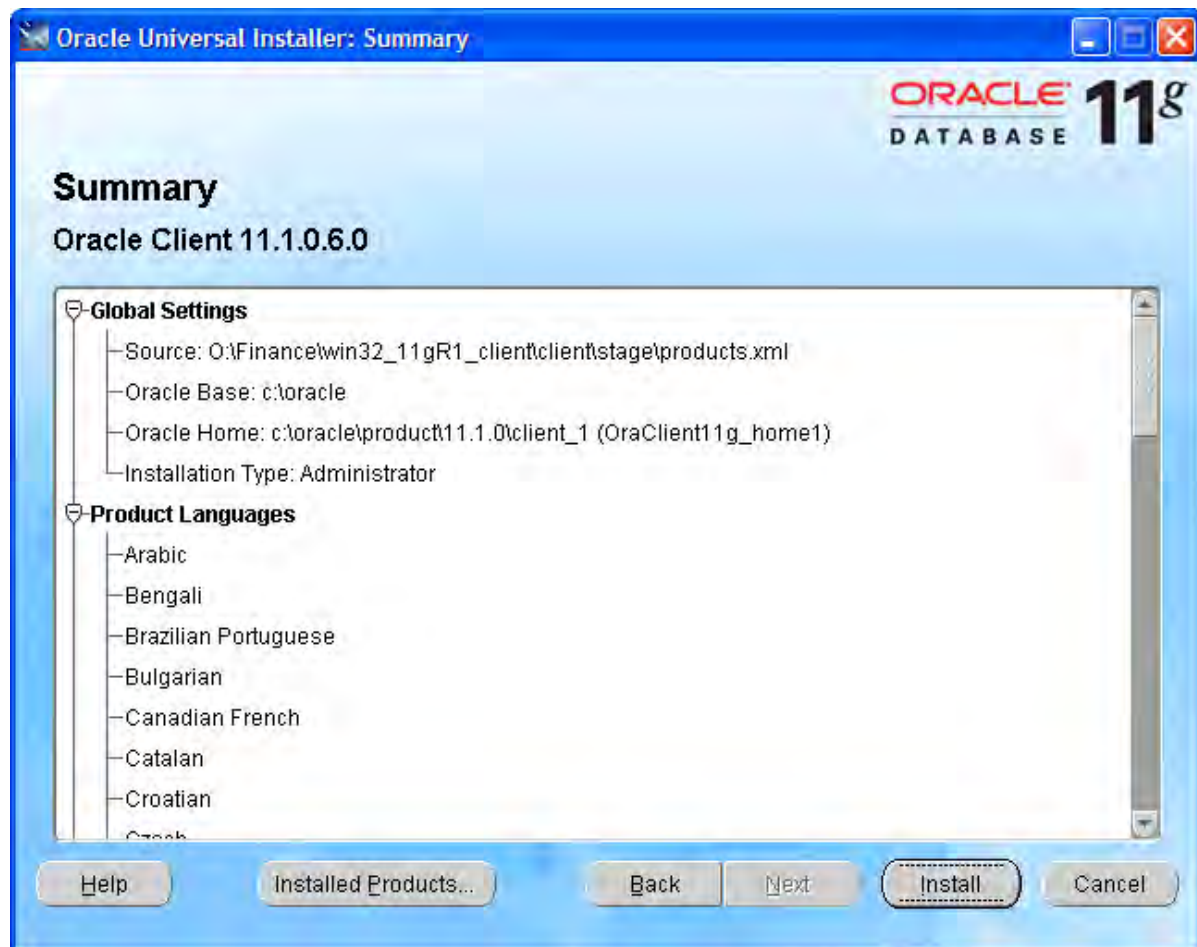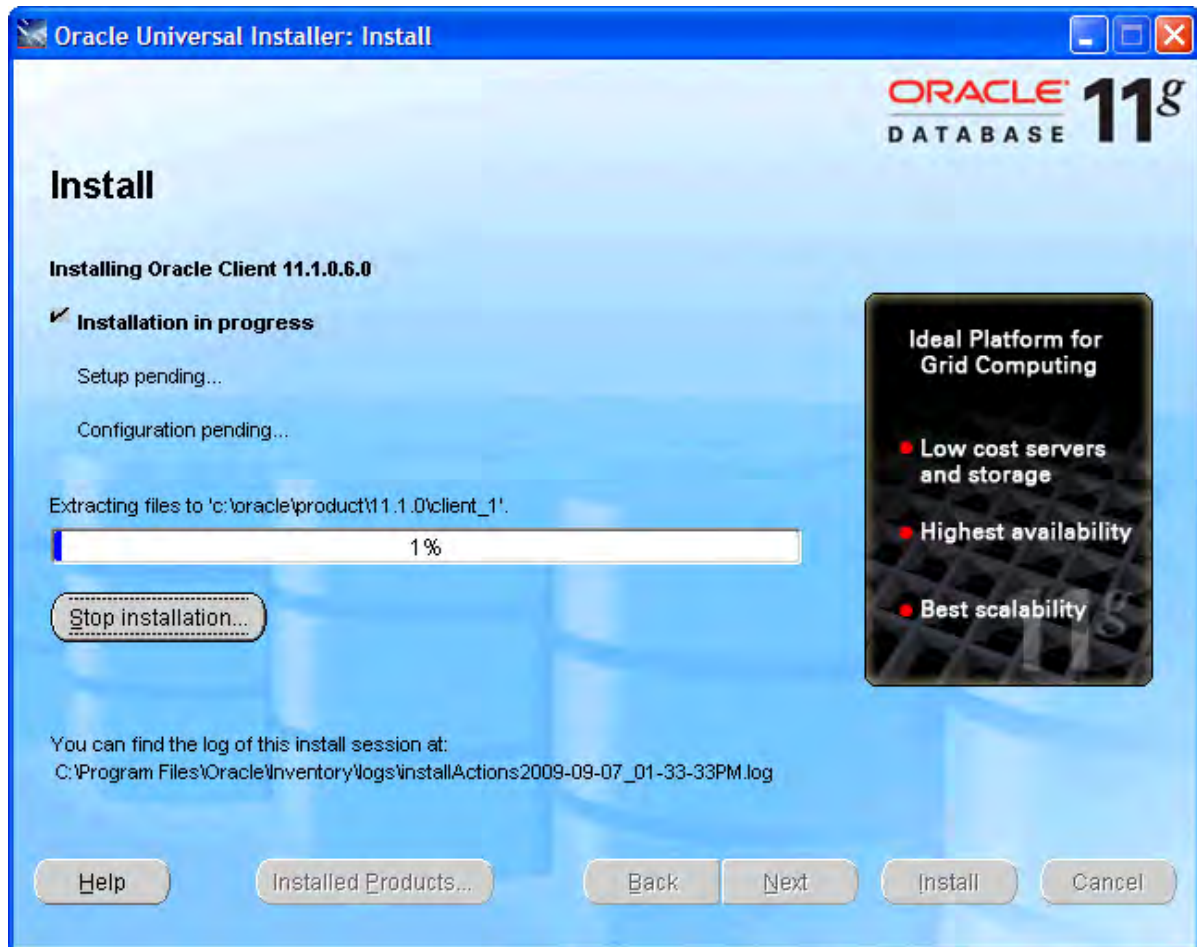- Select 'OK' and then 'Next'. We recommend to install the software under 'c:\oracle':

- Subsequently a number of checks will be performed. If problems are found, solve them first:

- Check the settings.

- Check if ODP.Net is listed between the products to be installed.
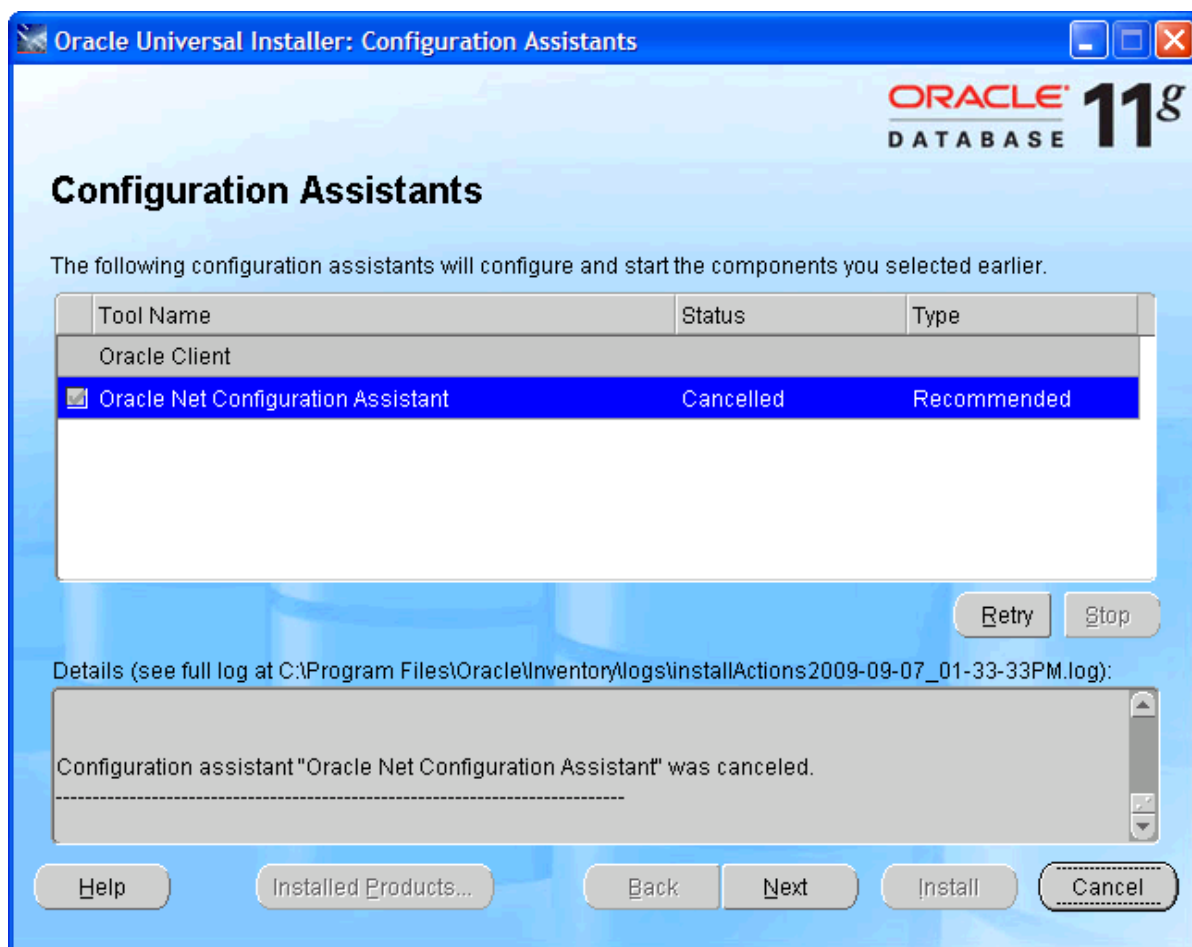
- Execute the installation by choosing 'Install':

- The progress is displayed:

- Afterwards a configuration program for the network configuration is started. Choose 'Cancel', we advise you to use the configuration file 'tnsnames.ora' as described in the next part of the instructions:
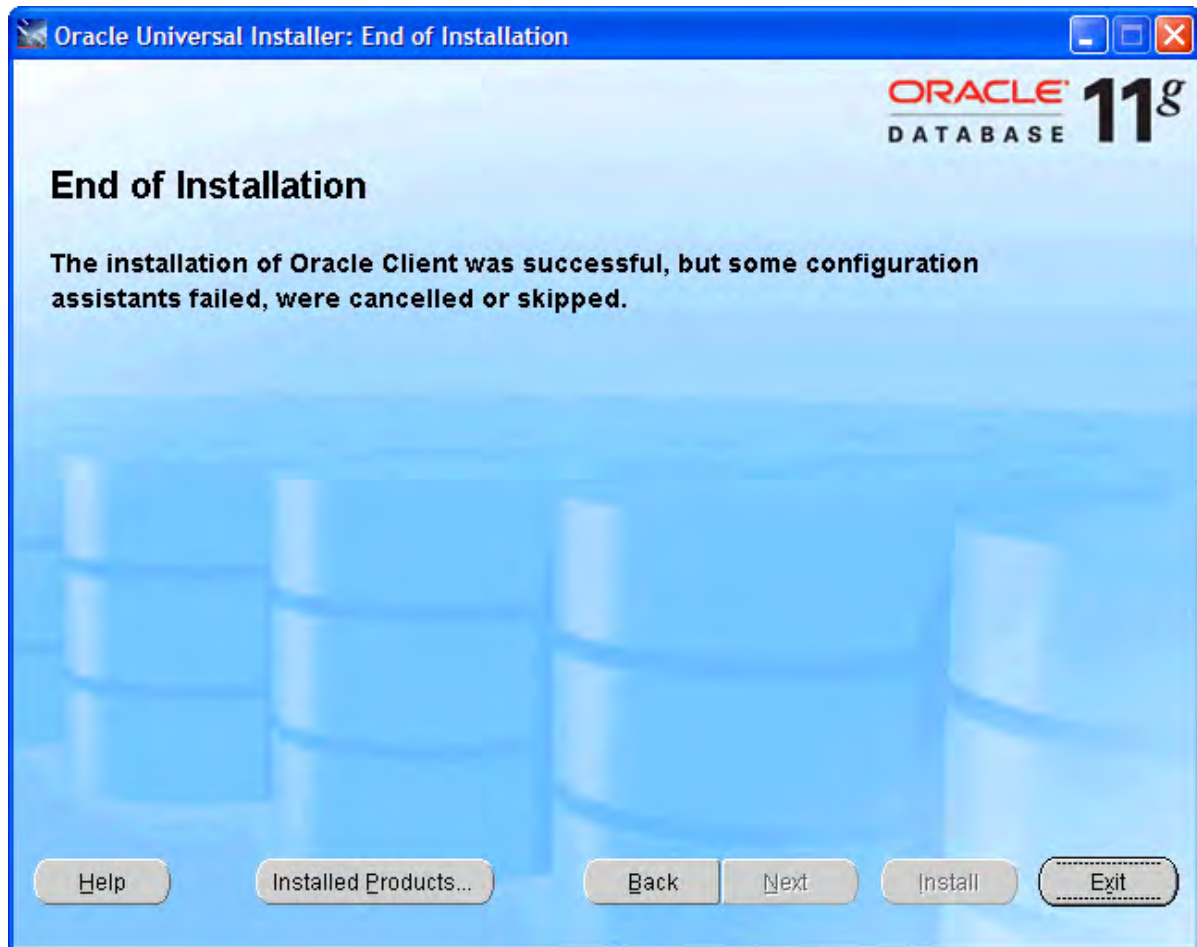
- Select 'Next':

- Close the error message about the failure of the Oracle Net Configuration Assistant.
- Select 'Exit':

Oracle Client Configuration

Follow these steps to configure the Oracle client:

- Construct (if not available yet) a tnsnames.ora configuration file.

- In a tnsnames.ora file ('tns' is the abbreviation for 'Transparant Network Substrate') all Oracle based databases ('services') and the route via the network to get there, are described.

- An example of a description of the service:

```
81   dvt11r2.invantive.local=
82   ( description =
83     ( address_list =
84       ( address = (protocol = tcp)(host = 192.168.172.16)(port = 1521)
85       )
86     )
87     ( connect_data =
88       (sid=dvt11r2)
89       (global_name = dvt11r2.invantive.local)
90     )
91   )
```

- This one describes that on the server with IP address 192.168.172.16 on port 1521 a program runs that knows how to make a connection with an Oracle database with the SID dv-

t11r2 and the global name dvt11r2.invantive.com.

- Full instructions on creating tnsnames.ora can be found in the Oracle documentation.

- Make sure that the tnsnames.ora file is located on the same place on all PC's, preferably in way to make it easy to add services from a central location. For fixed workplaces often a network drive is used, for example, as follows:
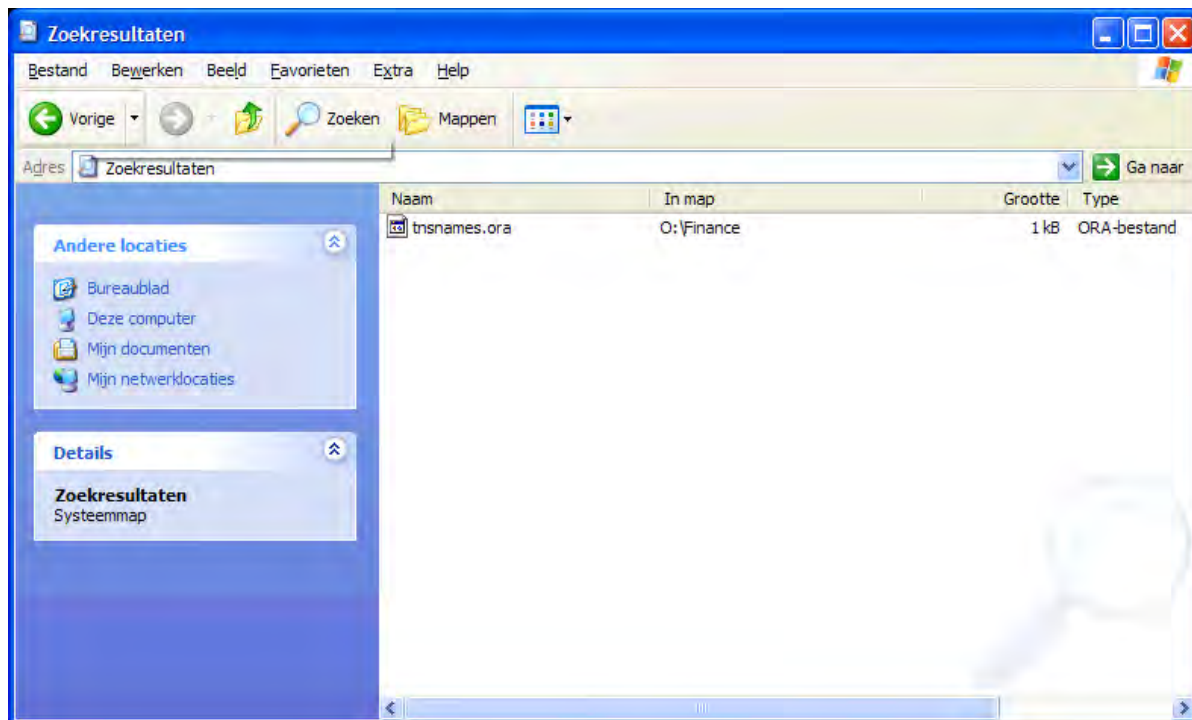

- Open the register with 'regedit' and go to the key HKLM\SOFTWARE\Oracle\KEY_OraClient11g_home1:
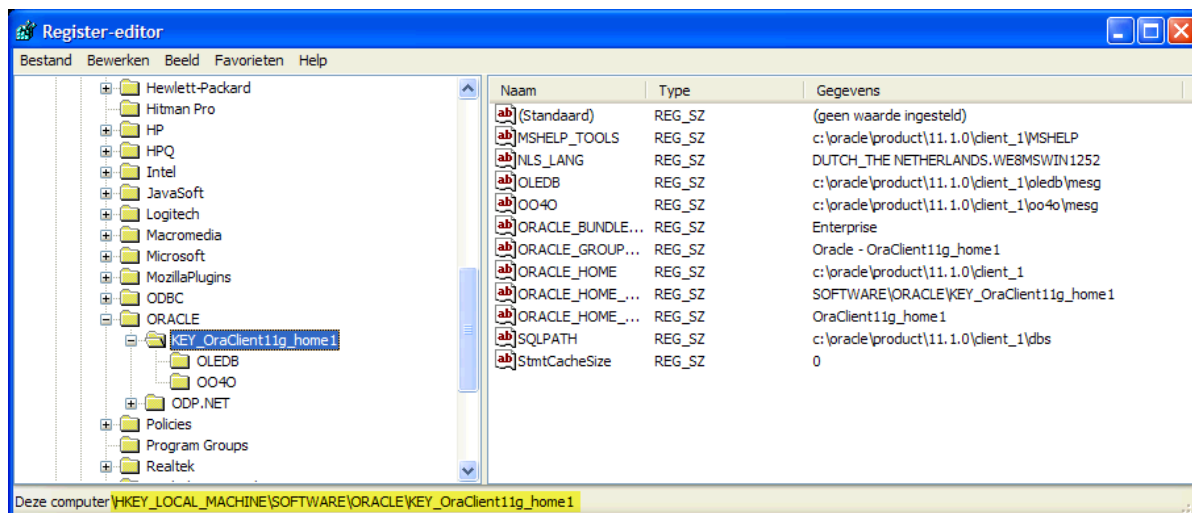

- Add a string with the name 'TNS_ADMIN' and make it point to the network location:
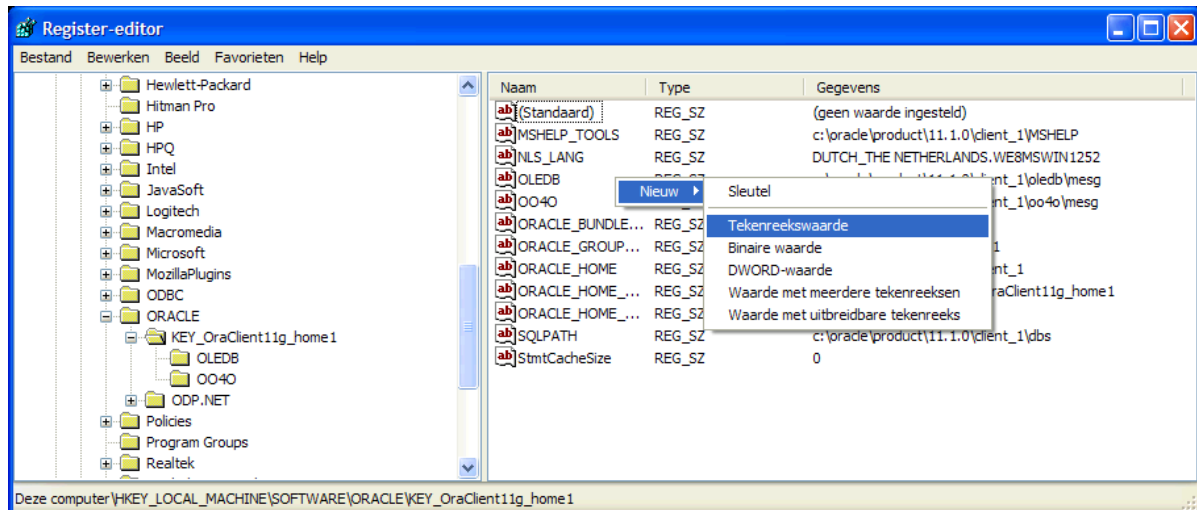
- Change also the NLS_LANG to 'DUTCH_THE NETHERLANDS.AL32UTF8' to make sure that messages appear in dutch and the Unicode character set is used. If you use Oracle Instant Client, then there is no NLS_LANG in the Windows registry; that's why you need to define the NLS_LANG environment variable in Windows.
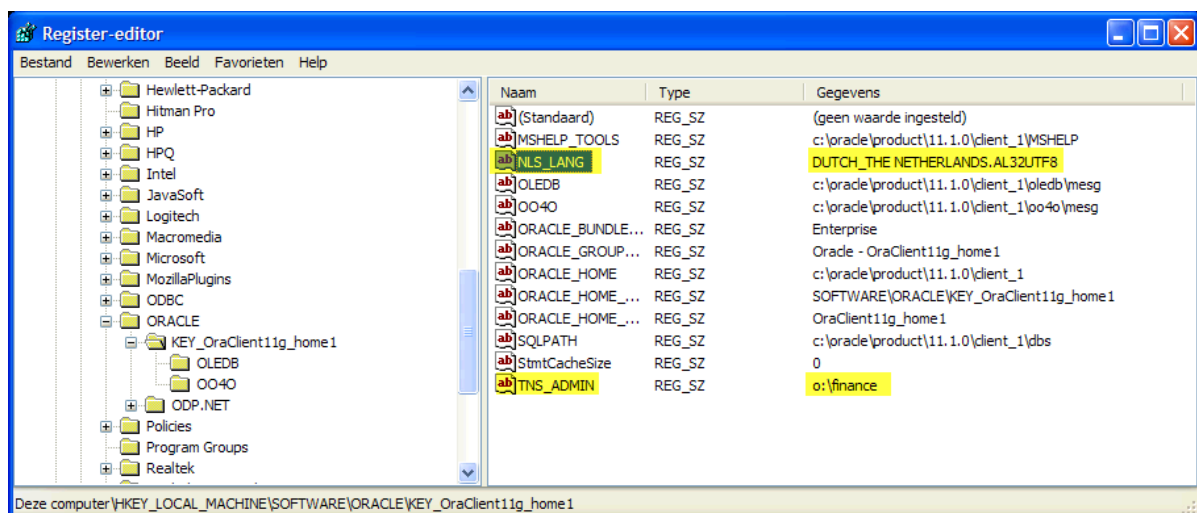
- If you use Oracle Instant Client, then there is no NLS_LANG in the Windows registry; that's why you need to define the NLS_LANG environment variable in Windows.

- Test the connection from a command prompt with 'tnsping':
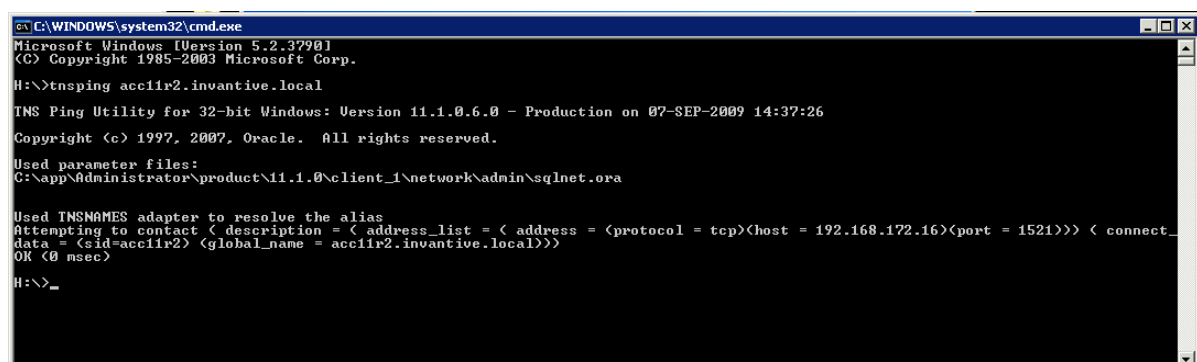
- It is still not certain if the user/password are correct, but it is certain that a network connection to the Oracle service can be built.

- Finally, check the connection by logging in with SQL*Plus.

2.7.5.2 Microsoft SQL Server Provider for Invantive Webservice

In this chapter the configuration of the provider is described.

In addition some suggestions are provided to execute the installation of the Microsoft programming. However, this is no replacement of the knowledge and experience with the local situation and trainings that an administrator or DBA has from his role and the results of the installation are therefore not guaranteed.

Installation Microsoft SQL Server Client

There are no installation steps for the Microsoft SQL Server Client. The Microsoft SQL Server Client is supplied with every .NET installation.

Configuration Microsoft SQL Server Client

There are no configuration settings for the Microsoft SQL Server Client.

2.7.5.3 MySQL Provider for Invantive Webservice

In this chapter the configuration of the provider is described.

In addition, some suggestions are provided to execute the installation of the MySQL programming. However, this is no replacement of the knowledge and experience with the local situation and trainings that an administrator or DBA has from his role and the results of the installation are therefore not guaranteed.

Installation MySQL Client

The MySQL Connector/Net client is available at http://dev.mysql.com/downloads/connector/net/. The installation of the MySQL client MySQL Connector/Net proceeds as follows:

- Double click the MSI installation file from the zip at above mentioned website.

- Choose the button 'Next'.

- Choose the button 'Typical'.

- Choose the button 'Install'.

- Choose the button 'Finish'.

Configuration MySQL Client

Specific settings for the MySQL Connector/Net client can be found at http://dev.mysql.com/doc/refman/5.6/en/connector-net-connection-options.html.

2.7.5.4 IBM DB2 Provider for Invantive Webservice

In this chapter the configuration of the provider is described.

Furthermore, some suggestions are given to execute the installation of the IBM DB2 programming. However, this is no replacement of the knowledge and experience with the local situation and trainings that an administrator or DBA has from his role and the results of the installation are therefore not guaranteed.

Installation IBM DB2 Client

Install the IBM DB2 Data Server Driver as described on http://pic.dhe.ibm.com/infocenter/db2luw/v9r7/index.jsp?topic=%2Fcom.ibm.swg.im.dbclient.install.doc%2Fdoc%2Ft0007315.html.

Configuration IBM DB2 Client

There are no configuration settings for the IBM DB2 Client.

2.8 Terminology

Hieronder beschreven we de gebruikte termen.

2.8.1 Channel

A channel is the medium on which data and requests are exchanged between an Invantive Producer client application and an Invantive Webservice server.

2.8.2 Connection

A connection is the definition of possibilities to establish a channel 39 between an Invantive Producer client application and an Invantive Webservice server.

2.9 Versions

This chapter describes the changes in the application per version.

2.9.1 Release 2014 R1
Released: XX-XX-2014.

Invantive Producer: bXX.

Changes and bug fixes:

Number	Type	Description
22414	ER	IBM DB2 data provider support.
23456	ER	IBM DB2 ook via ODBC mogelijk maken.
22594	ER	Ondersteuning voor redundante verbindingen (failover).
23279	PR	Onder specifieke condities treedt een Byte[] error op bij gebruik van de w ebservice.

Installation

- No specialties.

Implementation

- No specialties.

3 Contact Information

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