

Microsoft Dynamics™ NAV

Business Analytics Technical White Paper

Technical White Paper

This technical white paper provides a conceptual overview of Business Analytics for Microsoft Dynamics NAV 5.0, Basic and Advanced. Furthermore, it contains instructions for installing, configuring and using Business Analytics.

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Introduction, Overview and Architecture

Business Analytics for Microsoft Dynamics NAV provides an interface between Microsoft Dynamics NAV and Microsoft SQL Server Analysis Services. You must use Microsoft SQL Server 2005 for the Business Analytics part, while Microsoft Dynamics NAV itself can be either the SQL Option or the Native database server version.

What Business Analytics does, put simply:

- Business Analytics makes it possible to populate cubes in Microsoft SQL Server Analysis Services automatically with data from Microsoft Dynamics NAV. Any OLAP client that can access Analysis Services can then be used to analyze the data on Analysis Services, create reports, and so forth.

In order to understand how this works, some further explanation is required:

There are two versions of Business Analytics: Basic and Advanced.

The *Basic* version is the starting point, and must always be installed in order to run Business Analytics. It has these features:

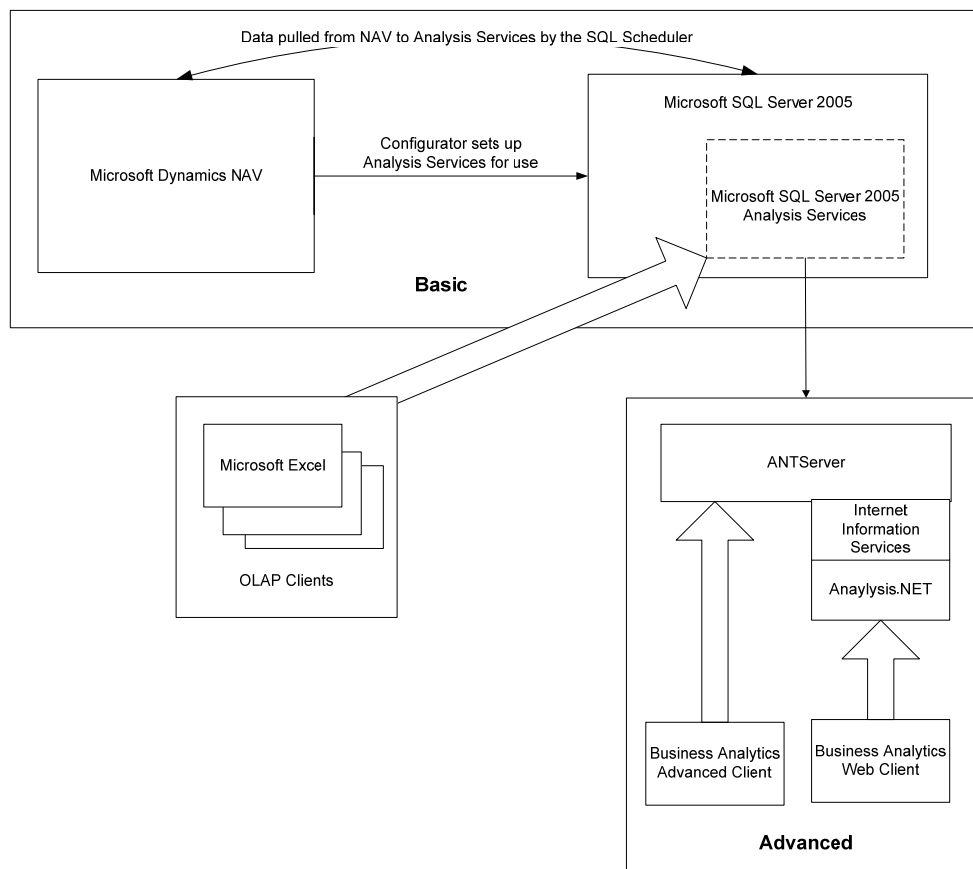
- It contains a tool called the *configurator*. This tool sets up Analysis Services, based on a set of definitions created inside Microsoft Dynamics NAV. This means that the configurator creates cubes dimensions and measures. It also performs other essential tasks that are required to use Analysis Services, such as setting up a Role. And, finally, it creates a SQL Agent job to pull data from Microsoft Dynamics NAV automatically. In short: the configurator creates a *data mart* on Analysis Services.
- It contains a set of predefined cubes, dimensions and measures that can be used out-of-the-box to get started with business intelligence.
- It has a set of tools in Microsoft Dynamics NAV for changing the predefined cubes, creating new ones, and so forth.

The *Advanced* version adds:

- A client that has views and reports already defined, working with the predefined cubes that are installed with the Basic version.
- The client makes setting up access to the data in the data mart easy and intuitive.
- A server component (the *ANTServer*) that gives possibilities for setting up security in an easy way, so that access to the data mart can be controlled (who can see what, and so forth.)
- The ANTSERVER can also work with other data marts, so that a fully-fledged data warehouse can be created, where the Microsoft Dynamics NAV data marts is one component – and the Advanced client gives uniform access to all these data marts.

Other OLAP clients than the one coming with the Advanced option can be used to access the data mart. Microsoft Excel is an example (this paper gives some instructions on how to do this), as well as the tools that will be integrated in future version of Microsoft Office.

The following diagram shows these components, and how they interact:



The important points to remember are:

- The *configurator* sets up the necessary structures on the Microsoft SQL Server and the Microsoft SQL Server Analysis Services, based on the design made in Microsoft Dynamics NAV. The configurator uses the Microsoft SQL Server Integration Services for this.
- Once the configurator has been run, data will be pulled from the Microsoft Dynamics NAV server by the SQL Agent and to Analysis Servers. The configurator sets up a default schedule for this; this schedule can, however, be changed to suit a specific installation (for example, this process can be set to run outside normal operating hours, and so forth.)
- The configurator needs only to be run again if the layout of cubes and so forth is changed in Microsoft Dynamics NAV. Changes to "first order data" do not require the configurator to be run.

- The “Basic” installation always needs to be performed. If you want to use the “Advance” solution, you must perform the Basic installation first.
- Any “OLAP client” can be used to access the data that has been copied to Analysis Services.

The *Advanced* version adds the following to what is offered by the *Basic* version:

- When using the Advanced solution, data is accessed through the ANTServer. This provides the possibility of setting more fine-grained security than is possible when using the Basic solution.
- The ANTServer provides a Web-based interface, making it possible to perform analyses from a Web browser.
- When the Advanced solution has been setup on the server, no further setup is necessary for the Business Analytics Advanced client. There is a default setup that is immediately useful. When using the Basic version and, for example, Microsoft Excel, some further setup is necessary (this will be explained later on in this document.)
- When using the Business Analytics client that comes with the Advanced solution, as well as when accessing the ANTServer through a Web browser and the Analysis.NET application, a dedicated query language is used.
- The ANTServer can acquire data from other OLAP solutions than Microsoft SQL Server Analysis Services. Using the ANTServer adds a layer of abstraction that makes access to data from a variety of sources uniform (albeit only when using the dedicated clients, as described.)

Some notes about this paper

This paper provides an overview of what Business Analytics, Basic and Advanced, is used for. It also provides a set of instructions for installing Business Analytics in various scenarios. It does *not*, however, contain the following:

- General descriptions of Microsoft SQL Server Analysis Services. The documentation for Microsoft SQL Server will provide any information you need. This means that information about best practices for installing, maintaining and using Microsoft SQL Server and Microsoft SQL Server Analysis Services must be found in that documentation.
- It also does not describe how to create and modify cubes in Microsoft Dynamics NAV. There is online help associated with the tools inside Microsoft Dynamics NAV.
- It describes how to install the Business Analytics Advanced client, but does not go into detail about using these clients. There is online help available in the client itself.
- It provides an example of how to create a connection from a Microsoft Excel Pivot Table to a cube on Microsoft SQL Server Analysis Services. The focus of that description is to explain how to get the data into Microsoft Excel: how it is best used once there will depend on your exact purposes, and help will have to be found in the Microsoft Excel documentation.

- Finally, there are no descriptions of how to connect to Analysis Services from other OLAP clients than Microsoft Excel. The example of how to connect from Microsoft Excel can, however, be used as a starting point, as the set up of the connection is quite generic.

Installation and Setup

This section describes how to install and setup Business Analytics. It is divided into four separate subsections:

1. The requirements and the preconditions that must be fulfilled before you go on and install Business Analytics.
2. How to install and setup Business Analytics Basic when using Microsoft Dynamics NAV SQL option.
3. How to install setup Business Analytics Basic when using Microsoft Dynamics NAV with a Navision Database Server.
4. How to install Business Analytics Advanced. This subsections includes how to install the ANTServer, the Analysis.NET application, and the Business Analytics Advanced client.

Requirements and Preconditions

The following are the requirements for installing Business Analytics:

- Microsoft SQL Server 2005, Standard edition or better, with latest service pack at the time of installation.
 - The following options must be installed:
 - Analysis Services
 - Integration Services
- A Microsoft Dynamics NAV server, either SQL Option or Native database.
 - NODBC must be installed when using a Navision Database Server.
- A Microsoft Dynamics NAV *client* must be installed on the machine where Analysis Services is installed.
- The user performing the installation must be a member of the SUPER role in Microsoft Dynamics NAV.

Note that you need to install a Microsoft SQL Server for Business Analytics no matter what database you are using for Microsoft Dynamic NAV.

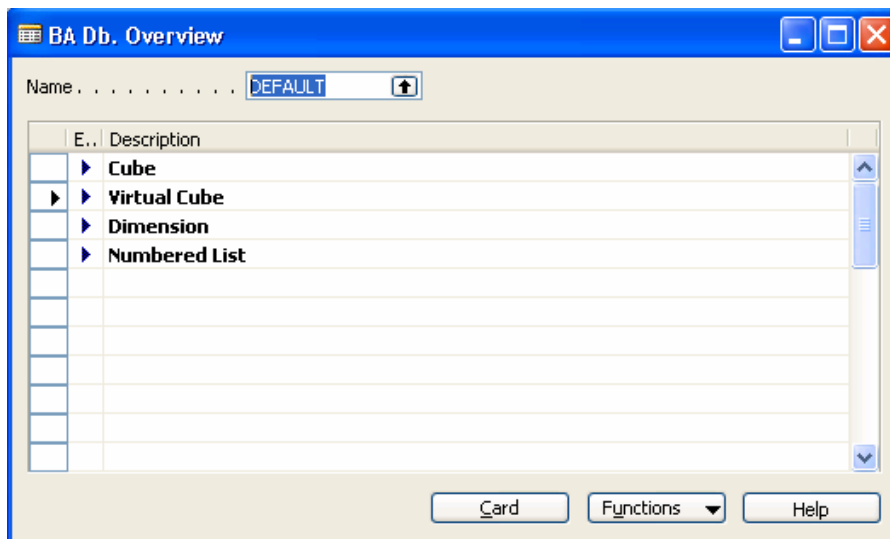
You should carefully read the requirements – hardware and other—that apply to the version of Microsoft SQL Server that you will be using.

Installing BA Basic on SQL option

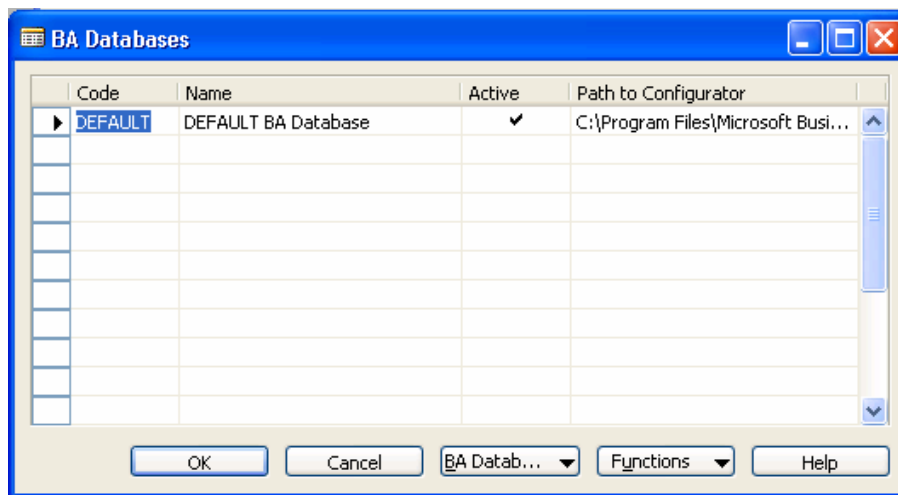
The instructions in this subsection are to be used when you are running Microsoft Dynamics NAV SQL Option.

Installing Business Analytics on Microsoft SQL Server 2005

1. Find the folder \Additional Interfaces\Business Analytics\MSSQL2005 on Disk 1 of the Microsoft Dynamics NAV installation CDs.
2. The folder contains two items: a file called "Configurator.exe" and a subfolder called "Common". Copy *both* of these items to the file system of the machine where you installing Business Analytics. Note that this should be a *final*, not a *temporary* location. A good choice could be to create a subfolder called "BA" in the folder where the Microsoft Dynamics NAV client is installed, and copy the file and the folder here.
3. Open the Microsoft Dynamics NAV client, and open Administration, Application Setup, General, Business Analytics Setup from the navigation panel. The following form will open:



4. Click on the AssistButton for the Name field (where the value is "DEFAULT"). The following form will open:

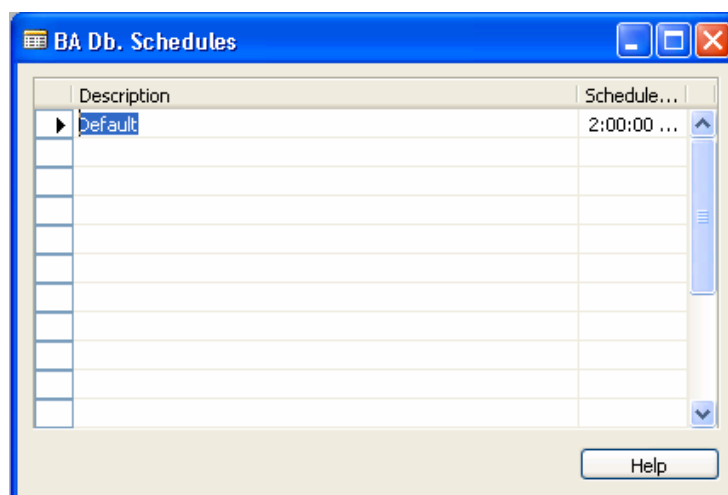


5. Enter the path to the Configurator.exe file that you copied to the local file system in step 2. When the "Path to Configurator" field gets focus (click in it) an AssistButton appear. When you click this AssistButton, you can navigate to the file by using a normal Windows file dialog. Click the OK button in the "BA Databases" form when you have selected the path.

6. Open the "BA Databases" form once again. Make sure that the "Path to Configurator" has been filled out with the correct value.

At this point you should consider how often Analysis Services should pull data from the Microsoft Dynamics NAV database.

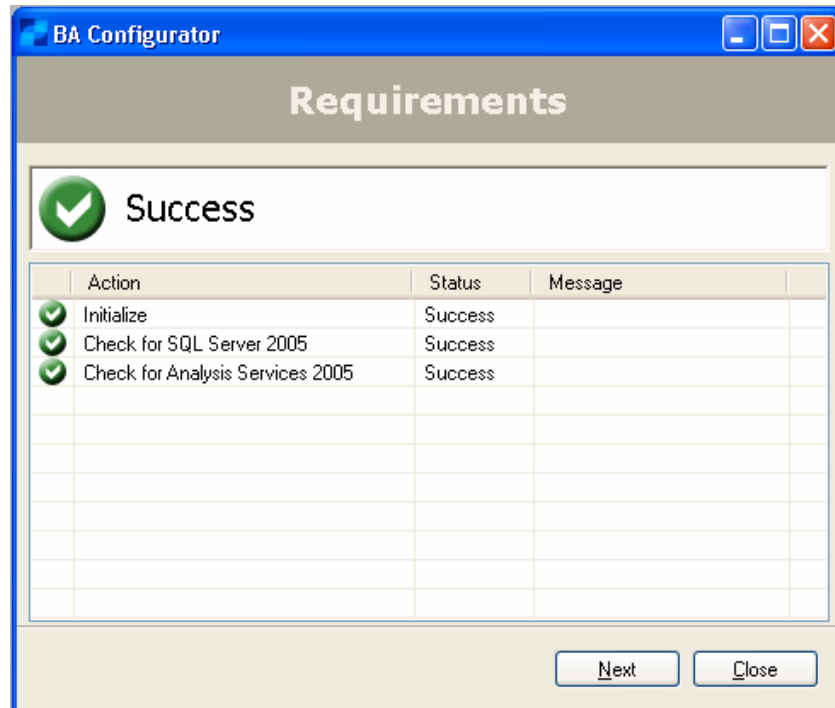
7. Click BA Database, Schedules in the BA Databases form shown above. This form will open:



You can set the job to start at a given time in a day. If the jobs needs to run several times a day, you can add more lines.

8. Click the Functions menu button, and click Update XML.

- Click the Functions menu button once again, and click Start Configurator. The Business Analytics Configurator opens. It looks like this:



The configurator does not require much interaction: every time a set of actions has completed (that is: all check marks have turned green, as in the screen shot above), you click Next.:

Some of the actions are very time consuming. You may want to do this outside normal operating hours, as some of the actions will impact performance of the Microsoft Dynamics NAV installation in a negative way. If possible, you could run a trial on a test setup to see how long the job will run. The actual time depends on the complexity of the setup and the amount of data.

It is very important that you do not interrupt the process, and that you wait until the last set of actions have completed before you close the configurator.

Once the configurator has finished, the following has happened:

- Analysis Services have been configured with the cubes, measures and dimensions that are defined in the default setup in Microsoft Dynamics NAV.
- Data for the setup has been copied from Microsoft Dynamics NAV.
- A Role has been defined on Analysis Services for Business Analytics (it is called "BA".)

You can see the setup on Analysis Services by using the Microsoft SQL Server Management Studio, and connection to the Analysis Server. If this role has not been setup in Analysis Services, you have to run the configurator again.

If, for some reason, you need to change the schedule, and this is the *only* setup change you need to make, you can avoid running the configurator again this way:

1. In the SQL Server Management Studio, connect to the Database Engine (not Analysis Services.)
2. Expand SQL Server Agent, Jobs.
3. You will see a job called "BA for MBS Navision". Double-click this job to view and change properties, including the schedule.

Remember that a value you enter this way will be *overwritten* the next time you run the configurator. You should also enter this schedule in the BA Setup in Microsoft Dynamics NAV so it will be picked up if and when the configurator is run again. Or you can save the job in the SQL Agent under a different name.

This concludes the setup of Business Analytics Basic on Microsoft SQL server 2005 for Microsoft Dynamics NAV SQL Option. Now you can connect to the Analysis Services from, for example, Microsoft Excel, or you can install Business Analytics Advanced.

Installing BA Basic on a Navision Database Server

These instructions are for installing Business Analytics in a scenario where Microsoft Dynamics NAV is running on a Microsoft Dynamics NAV Native database server. The procedure is the same as when installing for Microsoft Dynamics NAV SQL Option, except for the following extra requirement:

- NODBC must be installed.
- CFRONT DLL – this file is in the same folder as the configurator on the products CD, and must be copied to the same local folder as the configurator.

When this requirement has been fulfilled, the procedures for installing Business Analytics Basic are the same as when installing using Microsoft Dynamics NAV SQL option.

Installing BA Advanced

In order to install the Business Analytics Advanced version, you must first download two files from the area for Microsoft Dynamics NAV items on PartnerSource

These two files are:

- BusinessAnalyticsSuite.msi
This file is the installation file for the Business Analytics Advance client and the Business Analytics Enterprise Manager

- BusinessAnalyticsNET.msi
This file is the installation file for the Business Analytics NET application

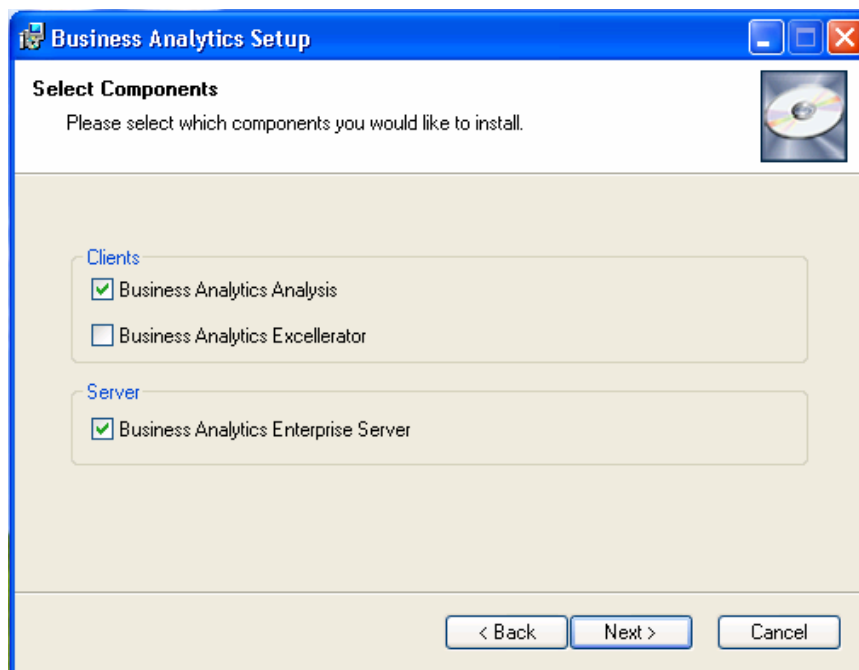
There are the following requirements and preconditions for installing Business Analytics Advanced:

- Business Analytics Basic must have been setup as described earlier in this document.
- For Business Analytics NET you must have installed:
 - Microsoft Internet Information Services, version 5.1 or higher
 - The Microsoft .NET Framework, version 1.1

Installing the Business Analytics Suite

Follow this procedure:

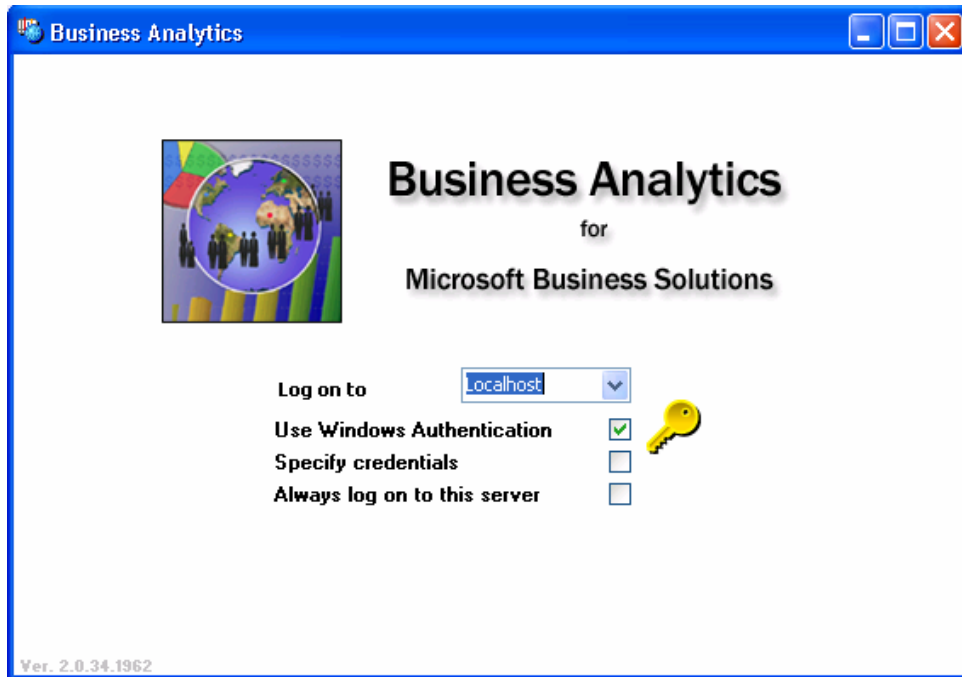
1. Double-click the BusinessAnalyticsSuite.msi that you have downloaded.
2. Select a Typical installation. You will see this form after clicking Next:



The choices above are appropriate for installation on the machine the Analysis Services are running. For other machines you will only need to install the Business Analytics Analysis client. (The Excellerator is a Microsoft Excel plug-in that makes it possible to access the ANTServer from Microsoft Excel. It is described in this white paper, but there is documentation for it in the online help for the Business Analytics Advance client.)

3. Click Next in the next few screen, and the installation will finish (no further interaction is needed with the installer).

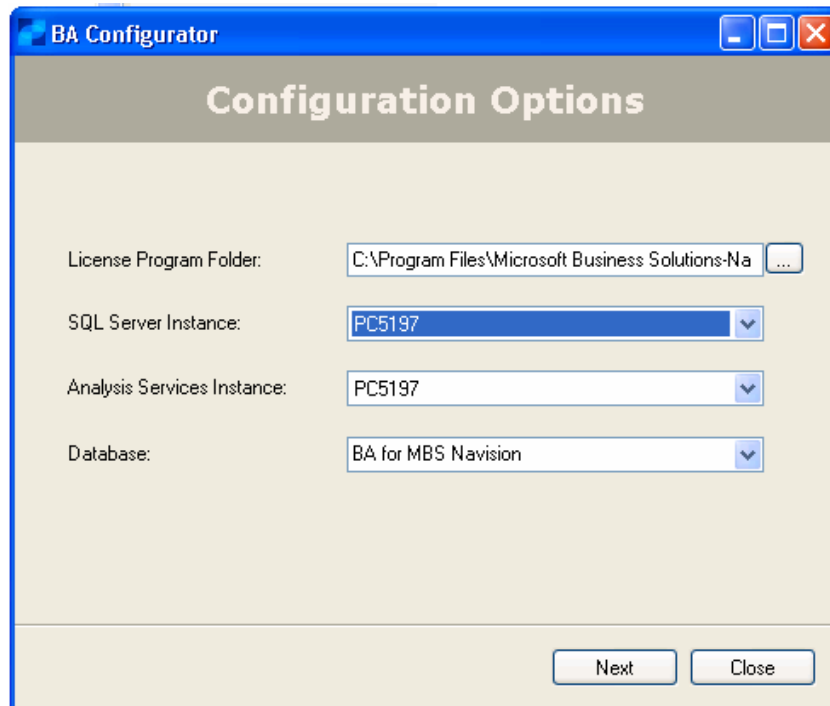
As part of the installation, the ANTServer will be installed and started. After this, the Business Analytics Advance client is started. The login screen looks like this:



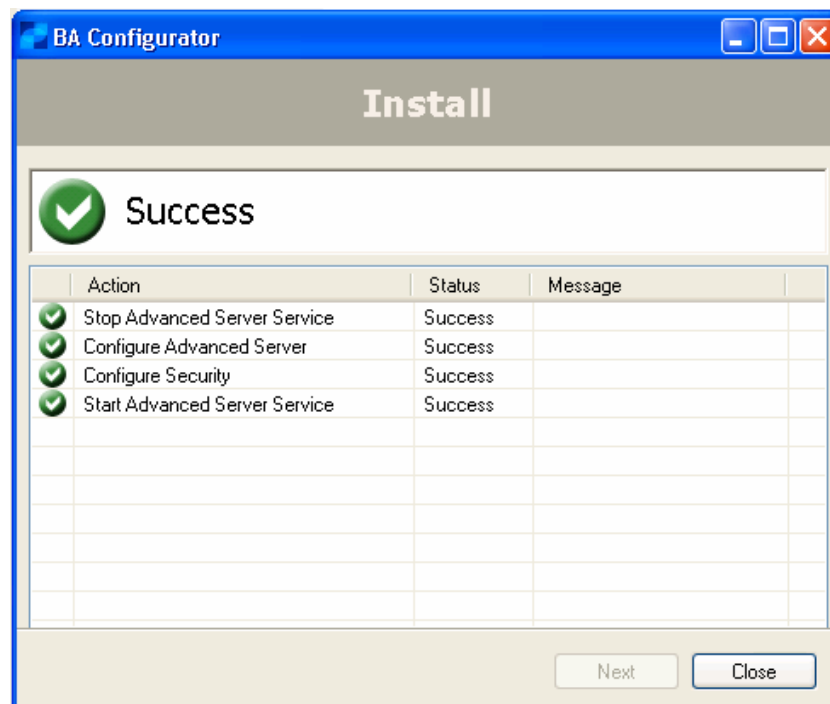
Click the key icon to log in.

At this point you are running on a temporary demo license. It will expire 30 days after installation. In order to use your Microsoft Business Solutions Dynamics license file, follow this procedure:

1. Close the Business Analytics Advance client.
2. Open the configurator from the Windows Explorer by double-clicking. This is the file you copied to the local file system as described on page 7 (when running SQL Option), or as described on page 11 (when running the Navision Database server.) Remember that the file is called either Configurator.exe or BAConfigurator40.exe, depending on the version of Navision you are using.
3. Click Next in the first screen in the configurator. The second screen looks like this:



4. Click the button next to the License Program Folder field, and browse to the folder where your Navision license file is located. Select this folder, and click OK. When the folder browse dialog has closed, you must select the database to use – the drop-down will have been populated with the available choices.
5. Click Next. You will see the following screen:

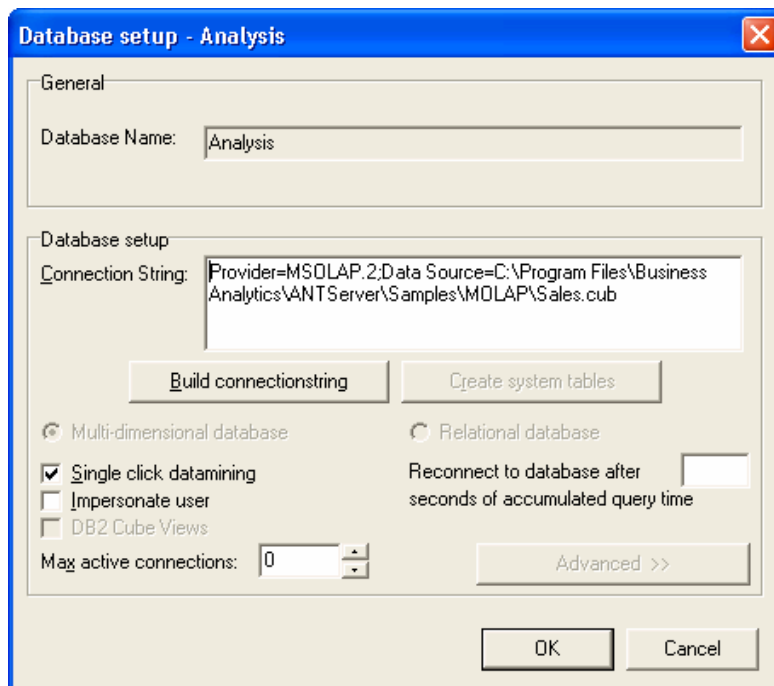


6. Wait until this screen looks like the one in the screen shot above (that is: all tasks have the status Success.) Then click Close.

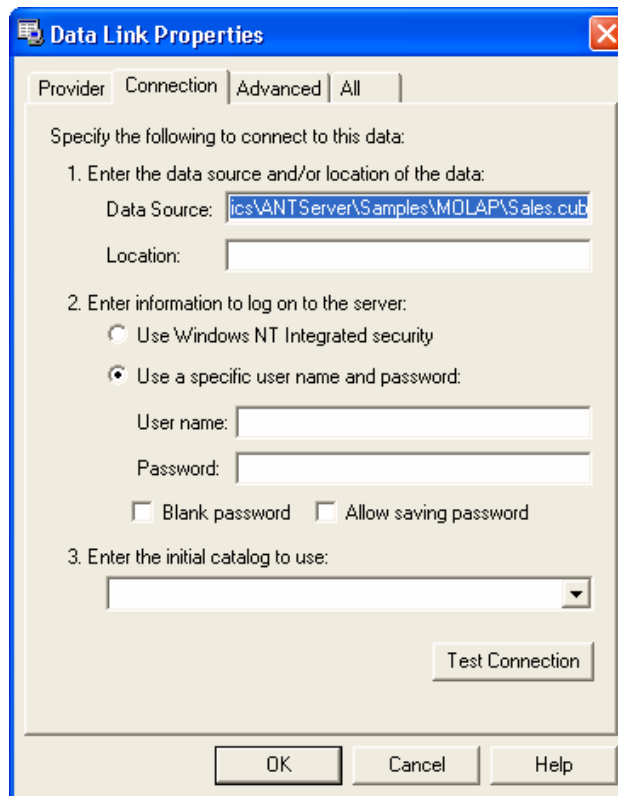
The ANTServer is now using your Navision license instead of the demo license.

You also need to set up a connection to the Analysis Services instance you have setup and configured when installing Business Analytics Basic. Follow this procedure:

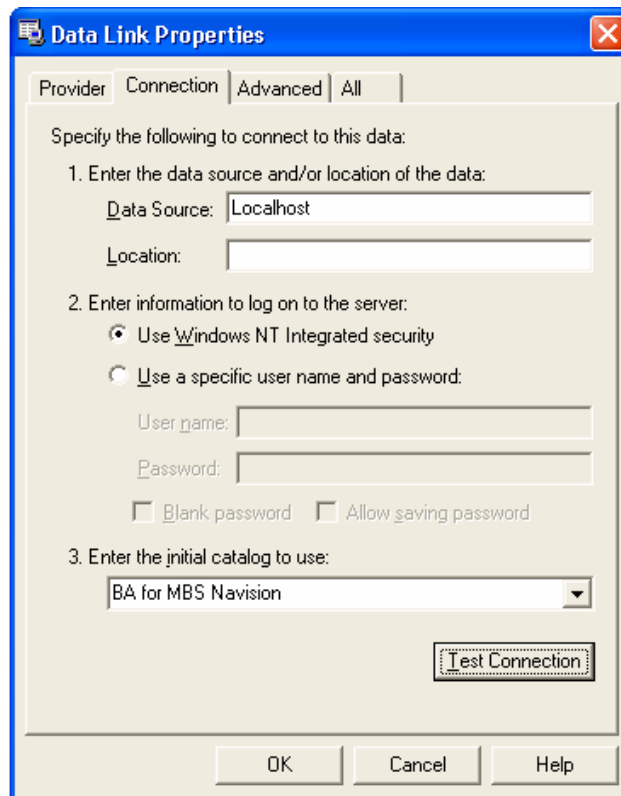
1. Close the Business Analytics client.
2. Open Start, Business Analytics, Business Analytics Enterprise Manager.
3. Expand the Console Root until you can see the path Business Analytics, Localhost, ANTServer, Databases, and click on Databases.
4. Double-click the database called Analysis in the Databases window on the right side,. The following form will open:



5. Click Build connectionstring. The following form will open:



6. Click the Provider tab, and then select "Microsoft OLE DB Provider for Analysis Service 9.0" from the list.
7. Click Next while still on the Provider tab. The following form will open:



8. Enter Localhost in Data source. After this, select "BA for MBS Navision" from catalog list (the list only gets populated after you selected a data source.) Test the connection – it should succeed.
9. Click OK twice to save your changes. You will be informed that you need to restart the ANTSERVER. You can Stop and Start the ANTSERVER from the Business Analytics Enterprise Manager. Sometimes the server refuses to restart. If this happens, close the Enterprise Manager, and open Control Panel, Administrative Tools, Services. Locate the ANTSERVER in the list of services, and start it.

When you open the Business Analytics Advanced client again, you now have access to the cubes from Microsoft Dynamics NAV that were setup as part of the basic installation.

Installing Business Analytics NET

After you have installed and configured the Business Analytics Suite, you can install Business Analytics NET. This is the second installer file you can download from PartnerSource, called BusinessAnalyticsNET.msi. Install by double-clicking.

The installer requires no interaction, so you should just let it run until it finishes.

The installation of Business Analytics NET does the following:

- It installs .NET application on Internet Information Services on the machine where the installer is run, and sets the relevant properties for this application.
- It creates a virtual directory, called /AnalysisNET to point to the application.

Once the Business Analytics NET application has been installed successfully, it can thus be accessed at the URL http://<name_of_your_server/AnalysisNET.

Examples of Using Business Analytics

This section gives a couple of examples of how to access the cubes on Analysis Server from various clients.

Using Business Analytics Advanced

Business Analytics Advanced is very easy to access once it has been installed. It can be accessed by using either the Business Analytics Advanced client (Start Menu, Business Analytics, Business Analytics), or it can be accessed from the Microsoft Internet Explorer at http://<name_of_your_server/AnalysisNET, provided you have also installed the Business Analysis NET application.

The Business Analytics Advanced client (and the Business Analytics NET application) both get their data not from Analysis Services directly, but through the ANTServer. This means that both clients already know where to find data and et cetera, and you can start analyzing right away.

Using Microsoft Excel

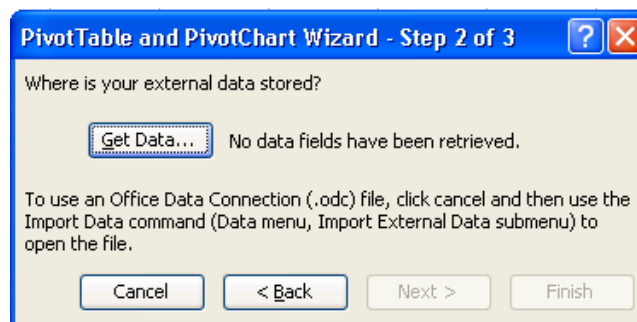
You can use many other OLAP clients to analyze the data in the cubes on Analysis Services. In order to give you an idea about how to do this, we will show you how to create a Pivot Table in Microsoft Excel 2003, based on data from a cube on Analysis Services.

Follow this procedure:

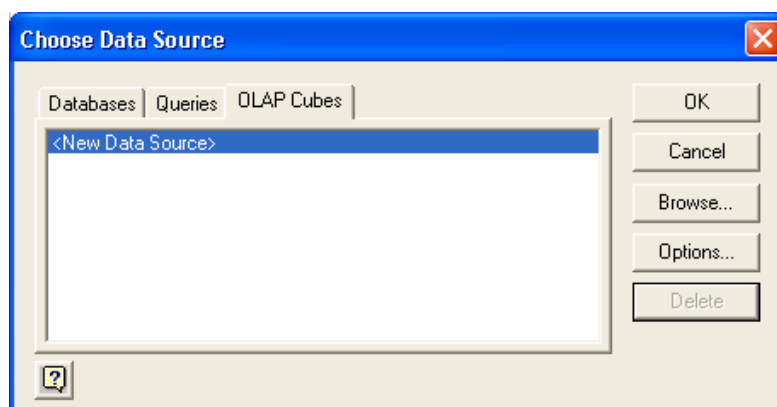
1. Open Microsoft Excel, and click Data, PivotTable and PivorChart Wiard. You will see this form:



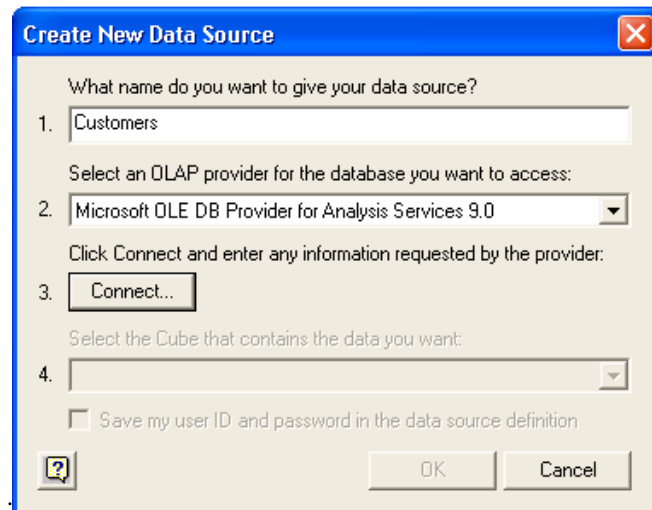
2. Select External data source, then click Next. You will see this form:



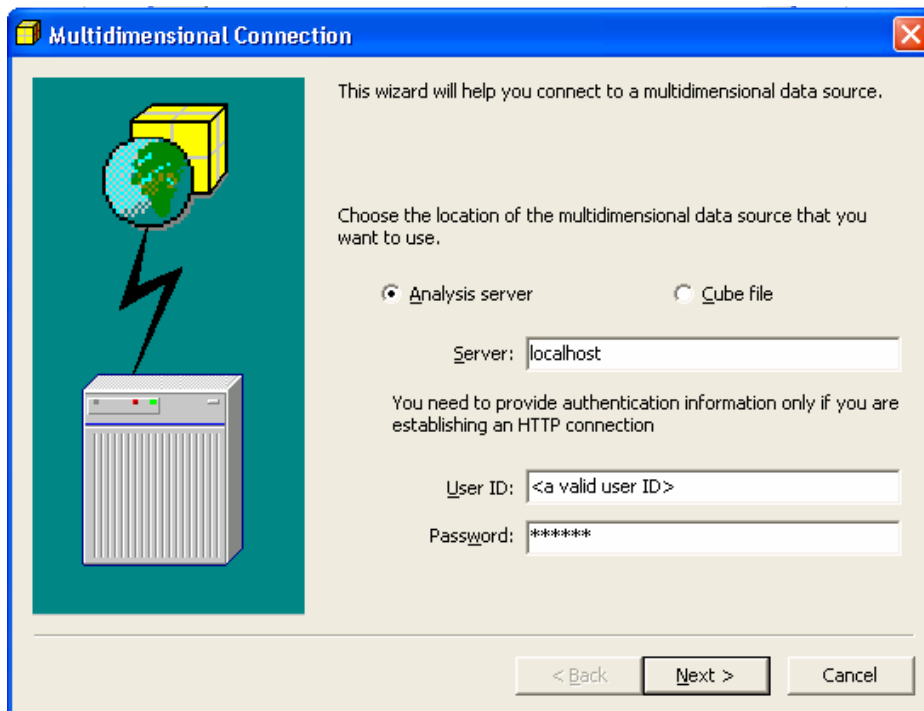
3. Click Get Data. You will see this form:



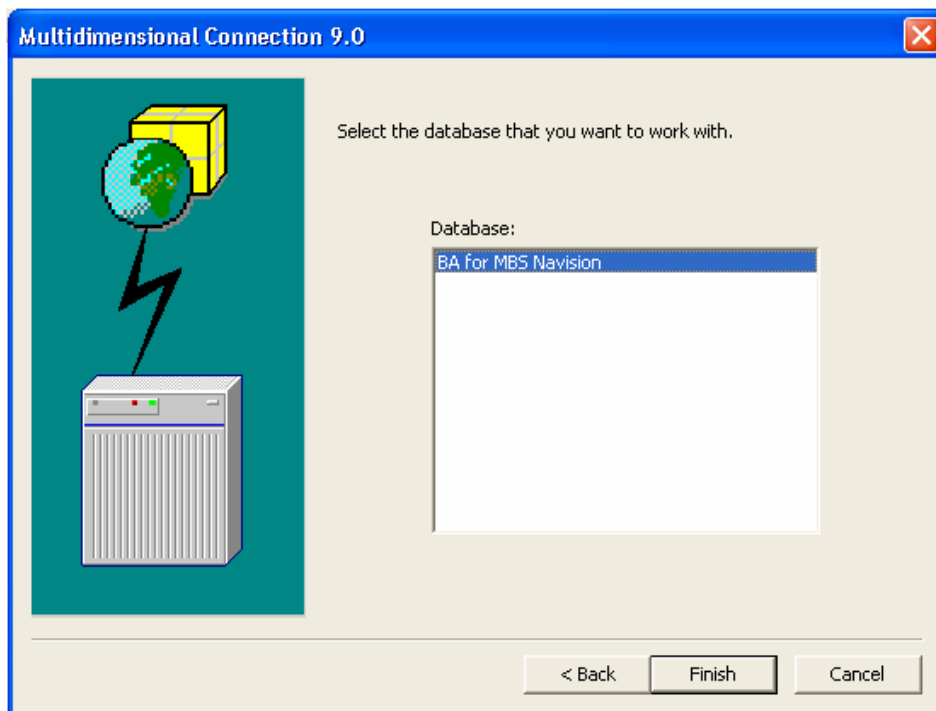
4. Select the OLAP Cubes tab, and then <New Data Source>. Then click next. The following form will open:



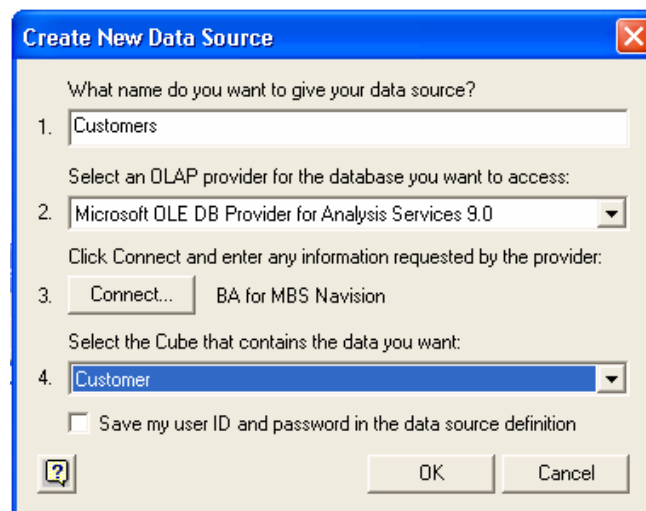
5. Give the data source a name (here it has been called "Customers"), and select a n OLAP provider, as shown. Then click Connect... You see the following form:



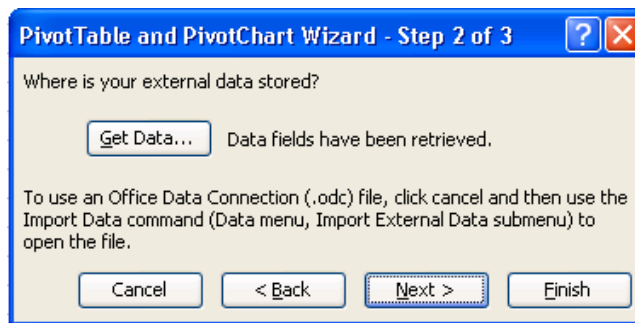
6. Enter the name of the server (in this example, we have used "localhost". This, however, only works when running Microsoft Excel on the same machine as Analysis Services is running on. This is probably not your situation.) If you do not enter any User ID/Password, the Windows login of the user running the setup will be used. Click Next when you have entered this information. You will the following form when the connection has been established:



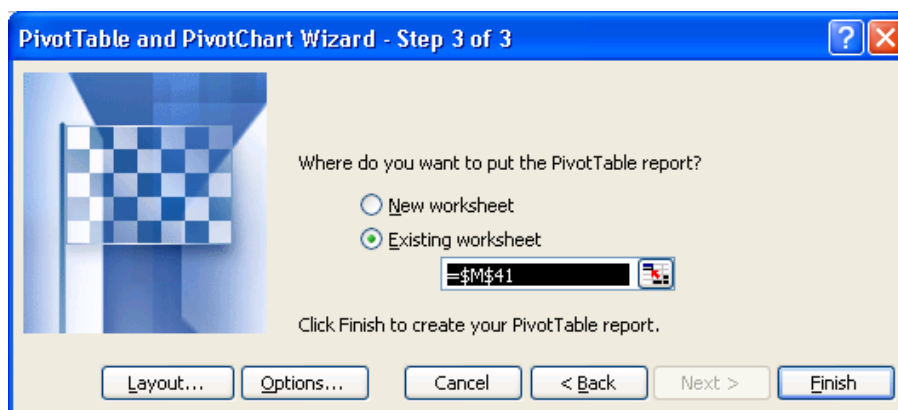
7. Select BA for MBS Navision, and click Finish. You will be returned to the Create New Data Source Form, but now you can select a cube to use for the pivot table. You can select the Customer cube for the purposes of this example, and then click OK twice:



8. You will be back in the PivotTable Wizard:



9. Click Next. You will now see the following form



10. Click Finish to create the Pivot Table. You can drag and drop fields from the Customer field into the pivot table in Microsoft Excel as when creating any other pivot table.

Note that you can actually send the spreadsheet by e-mail. The recipient will see the data as they were when you created the pivot table (or last refreshed the data.) If the recipient has access to Analysis Services, he or she can refresh the data to get newer data, meaning that once you have created the spreadsheet and distributed it, it can be a "live" document for the recipient.) The same can be said if you publish the spreadsheet on, for example, a Microsoft SharePoint site.

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