Microsoft
Business
       Solutions

Microsoft Business Solutions-Navision

Application Benchmark Tool 1.00

White Paper

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Microsoft

Contents

Introduction

The Application Benchmark Tool version 1.00 is developed for Microsoft Business Solutions-Navision W1 4.0 and Microsoft Navision W1 3.70A.

This document describes how to install, set up and use the Application Benchmark Tool. These guidelines describe version 1.00 of the tool for Navision W1 4.00.

These guidelines contain the following sections:

- The Application Benchmark Tool
- Installation, Initialization and Setup
- The Advanced Features
- The Objects in the Application Benchmark Tool
- Maintaining the Tool
- Localization
- Support

The Application Benchmark Tool

The Application Benchmark Tool has been developed to measure the performance of a Navision installation, and to express the results in terms that mirror real world situations. Ideally, these results should relate directly to the terms of a requirement specification from a customer.

The tool can be used when you are running Navision on either Navision Database Server or on SQL Server. The tool puts a realistic load on the server in order to monitor the true performance of Navision.

Important
The tool should only be used in a test environment.

How Does the Tool Provide Realistic Situations?

The tool should represent the customer's environment. Customers often have a list of specifications that outline their needs and you can use these specifications to define the profiles that you use in the Application Benchmark Tool.

To create a real world setup, the tool should use all the vital Navision functions/objects and executes exactly the same triggers and C/AL code as the customer.

To mirror a typical customer setup, an unlimited number of user profiles can be defined within the tool. A user profile can be a person, a group of persons or a specific role in the company. For each user profile, an unlimited number of activities can be defined. These are called job profiles.

The tool also uses random profiles to reflect the unpredictability of a customer's situation. For example, a person in the sales department can never know who their next caller will be and what items they will be asked about. The random profile identifies the next G/L account, customer, vendor or item that will be dealt with in a random order.

As the random profiles are generated on the server the test can be repeated again and again with the same set of random master data.

What Does the Tool Offer?

The Application Benchmark Tool:

- *Generates server load.* The tool can run in a client/server environment that has an unlimited number of clients defined. Each client session is assigned a user profile.

- *Generates random data based on user profiles.* The tool can generate a large amount of data. This can be done by running a client/server session with a number of different user profiles or by running one client that is assigned one user profile that includes all the necessary activities.

- *Provides basic statistics.* The tool contains a report called Test Result. This report shows the number of processed documents and the elapsed time per activity (job profile).

Design Goals

The Application Benchmark Tool has been developed with two goals in mind.

The first goal is to ensure that only a minimal number of standard Navision objects are modified.

New modified versions of the following standard objects are included in the Application Benchmark Tool:

Type	ID and Name	New ID and Name
Report	296 - Batch Post Sales Orders	99512 - Batch Post Sales Orders (4.00)
Report	297 - Batch Post Sales Invoices	99513 - Batch Post Sales Inv. (4.00)
Report	496 - Batch Post Purchase Orders	99514 - Batch Post Purch.Orders (4.00)
Report	497 - Batch Post Purchase Invoices	99515 - Batch Post Purch. Inv. (4.00)

These modifications involve the removal of dialog boxes and the handling of filters.

Secondly, to ensure realistic situations during run time, no abnormal operations can be carried out. In other words, the Application Benchmark Tool must not perform any operation that is not typical for an end user.

Application Benchmark Tool – Structure

This section describes the design and table structure of the Application Benchmark Tool. The following diagram illustrates the table relationship of the tool:
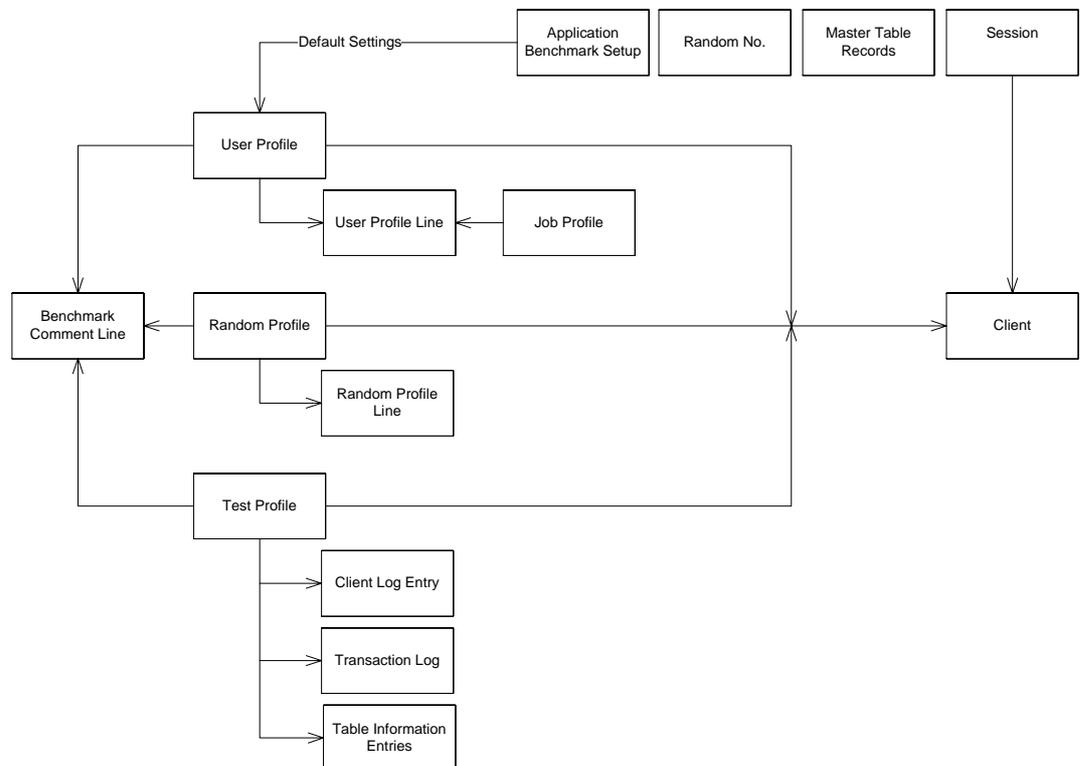
Application Benchmark Tool

The Application Benchmark Tool consists of the following tables:

Application Benchmark Setup (99500): this table contains the default settings of the system. Some of these settings are automatically copied to the *User Profile* table during creation.

Test Profile (99501): this table contains information about the server and database settings for the test profile. When a test has been performed, the client log entries are linked to the **Test No.** field.

Job Profile (99502): this table contains the name and details of each activity. For example, job profile 202 creates and posts a sales order. The **User Profile Line** table looks up the **Job Profile Line** record.

Random Profile (99503): this table contains the name and description of each random profile.

Random Profile Line (99504): this table contains a list of random G/L account, customer, vendor and item numbers that are used during run time.

User Profile (99505): this table contains the name and descriptions of the user profiles. A user profile can be a person, a group of persons or a specific role in the company. For each user profile, an unlimited number of activities can be defined (job profiles). The profile also controls the maximum number of lines that can be included on sales and purchase orders as well as the criteria for simulations.

User Profile Line (99506): this table contains all the activities or job profiles that have been defined for a user profile. The **Job Profile** field is linked to the *Job Profile* table.

Random No. (99507): this table is used internally as a temporary table during run time.

Benchmark Comment Line (99508): this table contains comments for the user profiles, random profiles and test profiles. The comments are not used by the system but are for informational purposes only.

Client (99509): this table contains the setup of all the client sessions. This includes the session ID, user profile, random profile, test profile and additional information about the process, such as the length of the start delay and the duration.

Client Log Entry (99510): this table contains all the log entries for a recorded test.

Transaction Log (99511): this table contains the transaction log entries. A transaction log entry contains all the information about each transaction including the state of completion (error or successfully completed). This makes it easy to see which transactions failed and why.

Master Table Record (99512): this table stores information about the master records which are used as templates for generating new master data, for example, extra customers.

Codeunit List (99513): this table is used internally as a temporary table during run time.

Table Information Entries (99514): this table is used to capture database information such as the name of the tables involved in each transaction and the number of records that were inserted. This table is updated before the test starts and after the test has been run.

Installation, Initialization and Setup

The tool can be installed and run on Navision Database Server 4.0, Navision Client 4.0 (direct access to database) or on the SQL Server Option for Microsoft Business Solutions–Navision 4.0. This document describes how to install and run the tool on the SQL Server Option for Navision 4.0 W1.

Importing and Compiling Objects

Before you can import the Application Benchmark Tool you must ensure that you have installed Microsoft SQL Server and the SQL Server Option for Navision 4.0 W1.

To import and compile the objects:

1. Start SQL Server and start a Navision client.

2. Open a standard Navision 4.0 database that contains the demo data.

3. Import the `Application Benchmark 1.00 for Navision 4.0.fob` file.

4. Compile all the Application Benchmark objects (version list filter = *BenchMark*).

Note

You will receive an error message informing you that one object failed to compile. This occurs because the Application Benchmark Tool contains two versions of the same object – one for Navision Database Server and one for the SQL Server Option.

Initializing the Application Benchmark Tool

You must initialize the Application Benchmark Tool before you can start to use it.

To initialize the benchmark tool:

1. In the Navigation Pane, right-click the bottom of the pane and click Refresh.

2. Scroll up until the new Application Benchmark Toolkit menu is visible.

3. Click the Application Benchmark Toolkit menu, Setup, Application Benchmark Setup to open the ***Application Benchmark Setup*** window:
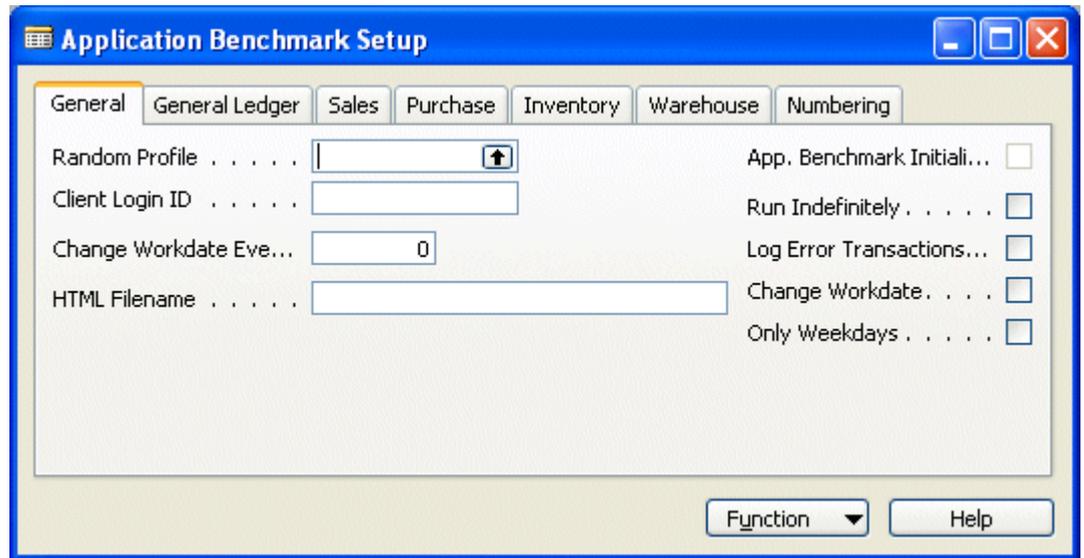
Application Benchmark Setup

4. In the ***Application Benchmark Setup*** window, click Function, Initialize Tool.

The ***Application Benchmark Setup*** window is no longer empty.

Updating the Demo Data

You must also update the demo data that comes in the sample Navision database before you use the Application Benchmark Tool. This must be done to ensure that the user profiles you generate can perform successfully.

The main aim of this procedure is to remove the need for user interaction by bypassing modal request windows. This is done by updating selected dimension values, customer location codes, Bill-to Customer No.s, Item tracking codes, Serial No.s, Lot No.s and Costing methods.

To update the demo data:

1. In the Application Benchmark Toolkit menu, click Periodic Activities, Demo Data, Update Demo Data and the **Update Demo Data** window opens:
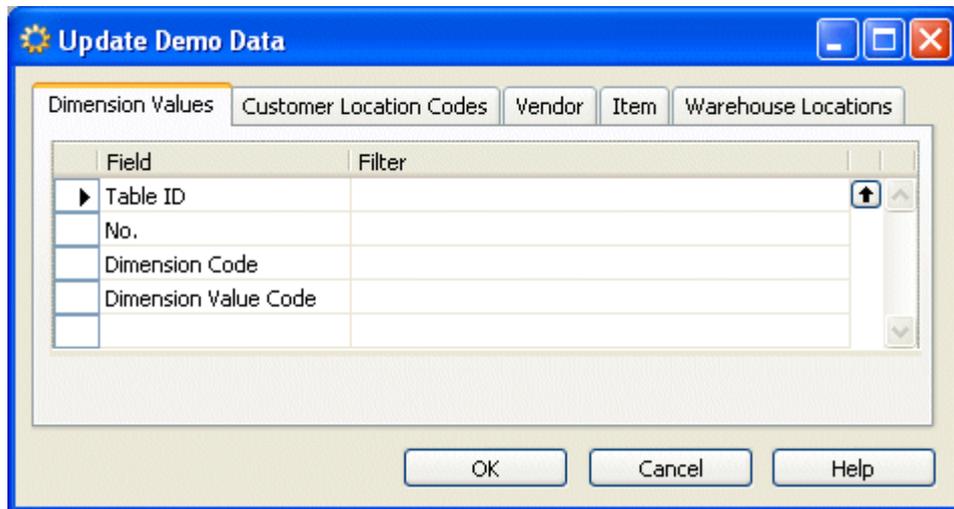
Update Demo Data

2. Click OK and the demo data is updated.

You have now updated the demo data in the database and are ready to set up the profiles that you will use to test your application.

Setting up User Profiles

You must setup the user profiles that you will use when you are testing your application with the benchmarking tool. These profiles determine the tasks that will be performed and therefore the type of data that will be generated.

The Application Benchmark Toolkit comes with a number of predefined profiles that can be used to test the demonstration database.

You can add new profiles or modify the existing list of user profiles. For more information on adding and changing user profiles, see User Profiles.

Creating the Random Profile Lines

As mentioned earlier you must add a random element to the user profiles to ensure that the workload performed by each user profile is not predictable.

The Application Benchmark Tool comes with a default random profile that you can use. Before you can use a random profile you must generate the random profile lines that contain the detailed information about the tasks performed by the random profile.

To create the random profile lines:

1. In the Application Benchmark Toolkit menu, click Setup, Random Profiles to open the ***Random Profile*** window:
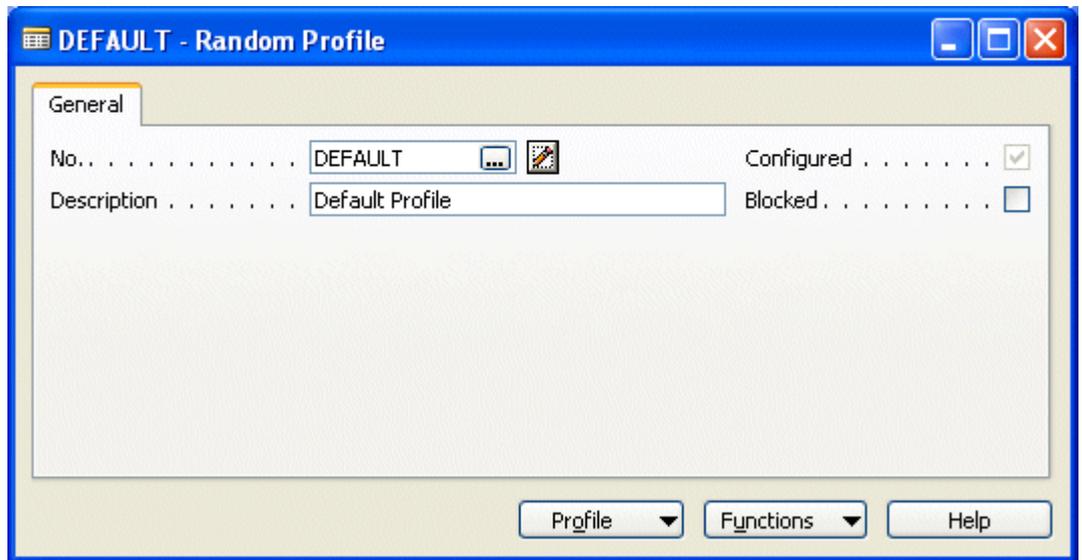
Random Profile

2. Click Functions, Create Profile Lines to open the ***Create Random Numbers*** window and click OK to create the random profile lines.

3. To check the random profile lines that have been created, in the ***Random Profile*** window click Profile, Lines to open the ***Random Profile Lines*** window:
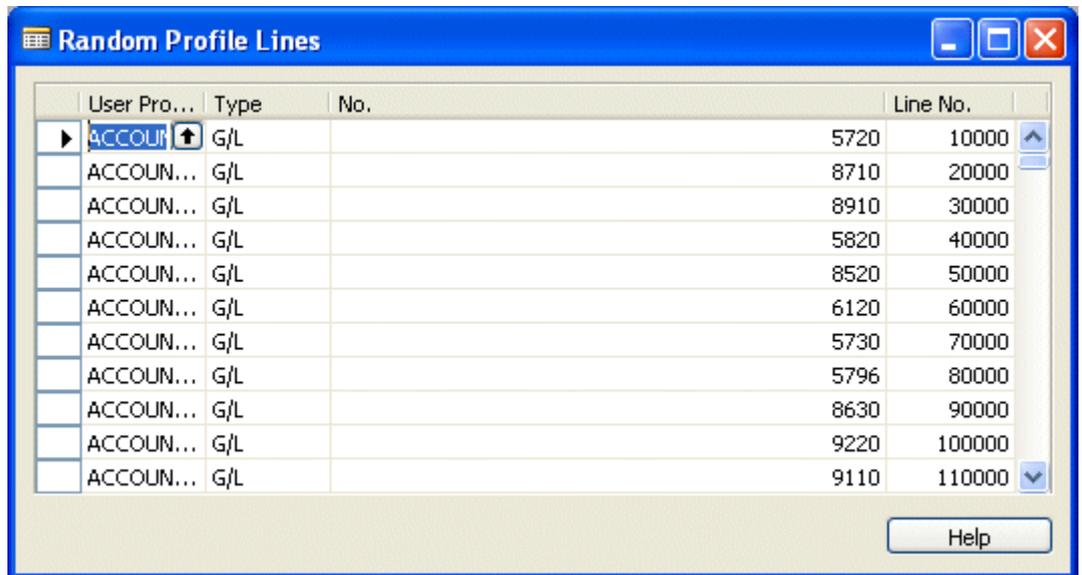

Random Profile Lines

Creating the Test Profile

To log the test results, you must create a test profile. You only need one profile per test.

To create and use the test profile:

1. In the Application Benchmark Toolkit menu, click Profiles, Test Profile to open the *Test Profile* window:
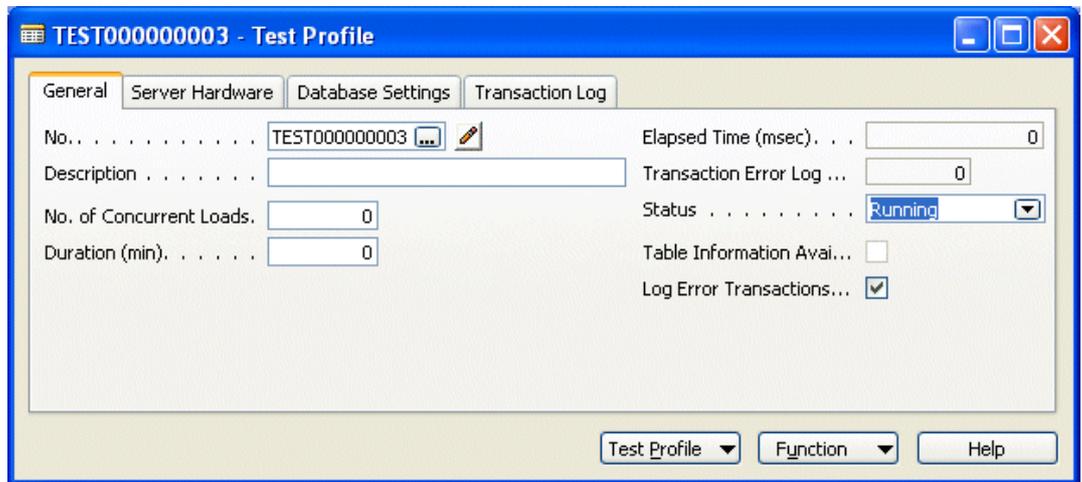
Test Profile

2. Press F3, Enter to create a new entry.

   Note
   You must never use the SYSTEM test profile.

3. In the **Status** field, click the AssistButton and select *Running* from the drop-down list.

4. The other fields in this tab and in the other tabs in this window contain fields that you can enter information into and save for future reference.

5. Close the window and the test profile is saved.

You have now set up the profiles that you will use in the Application Benchmark Tool.

Setting Up the Test Environment

The next step is to set up the test environment. This involves setting up the users, determining how many sessions to start as well as the user profiles and random profiles that each client will use during the test.

Setting Up Users

Security in Navision allows you to use either a Database Login or a Windows Login to log on to the server and access the database. We recommend that you use a Windows login to run the Application Benchmark Tool.

To set up users for the Application Benchmark Tool:

1. In the Application Benchmark Toolkit menu, click Client Admin to open the *Client Admin* window:

Client Admin

2. In the **Session No.** field, click the AssistButton to open the *Database Sessions* window:

Database Sessions

This window lists all of the sessions that are currently logged on to the server. From this you can easily deduce the number that the next session will have. In this example it will be number 52.

Note
On the SQL Server Option for Navision, the first client session number is 51. On Navision Database Server, the first client session number is 0.

3. In the *Client Admin* window, in the **Session No**. field enter number 52 as the number for the client session that you will start with the Application Benchmark Tool.

4. In the **User Profile No.** field, click the AssistButton to open the *User Profile List* window and select a profile from the list.

5. In the *User Profile List* window, click User Profile, Card to open the *User Profile Card* for the profile that you selected:
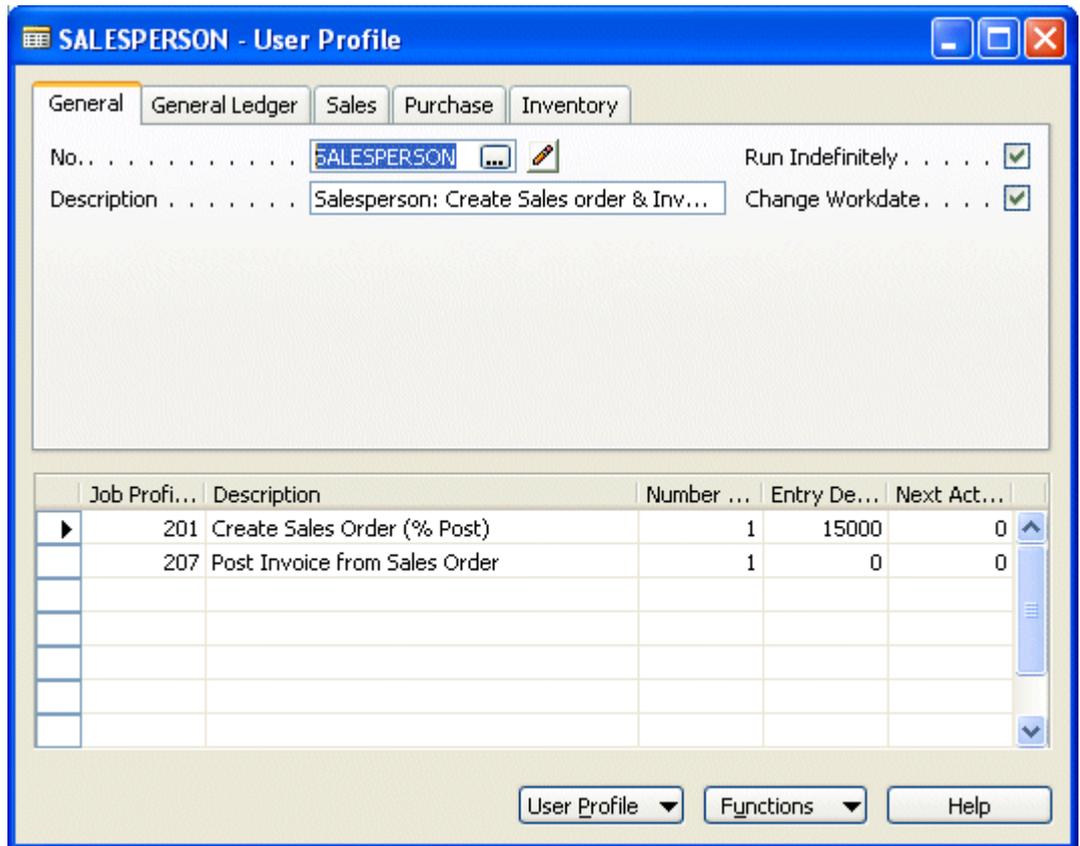
User Profile Card

This window contains the details of the tasks that this user profile performs.

The information contained in this window includes:

- The name and description of the user profile.

- Whether or not the user profile should run indefinitely.

- Whether or not the user profile should change the Workdate.

- The number and description of each job profile (activity) that this user profile performs.

- The number of times each job profile will be repeated.

- The number of milliseconds that each job profile will wait before entering each field.

- The number of milliseconds that each job profile will wait before performing the next activity.

The other tabs contain similar information about those business areas.

6. Close this window and go back to the *Client Admin* window.

7. In the **Duration in minutes** field, add the length of time that each user profile will run in minutes. If you do not enter a value, no fixed duration will be set.

8. In the **Start Delay (sec)** field you can enter the amount of time that the client will wait before starting this user profile.

    This ensures that the different clients (user profiles) don't all start at the same time and prevents them from placing a large burden on the server when you start the test.

9. In the **Random Profile No.** field, click the AssistButton and in the *Random Profile List* window select the random profile that this user profile will be assigned.

10. In the **Test Profile No.** field, click the AssistButton and in the *Test Profile List* window, select the test profile that this user will be assigned.

   Note
   You must never select the SYSTEM test profile.

11. Close this window and the user is set up.

Starting the Benchmark Test

Now that the user is set up you can start a client and begin the benchmark test.

To start the test:

1. In the *Client Admin* window, select the clients that you want to start by entering a checkmark into the **Configured** field

   Alternatively, if you have set up several user profiles, you can click Function, Set Configured On/Off:
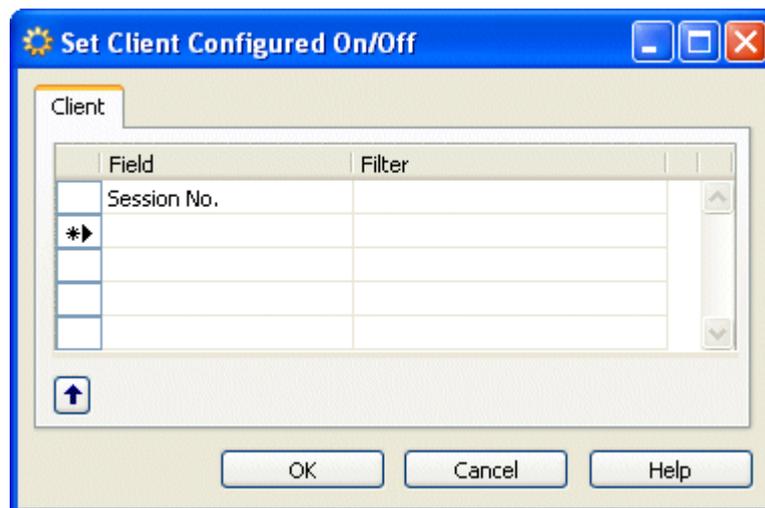
Set Client Configuration On/Off

   In the *Set Client Configuration On/Off* window, enter a filter that selects the user profiles that you want to run and click OK.

2. Open another instance of Navision and remember to use a Windows login to open the database. This is called the CLIENT session.

3. In the Application Benchmark Toolkit menu, click Start Client and the following window opens:
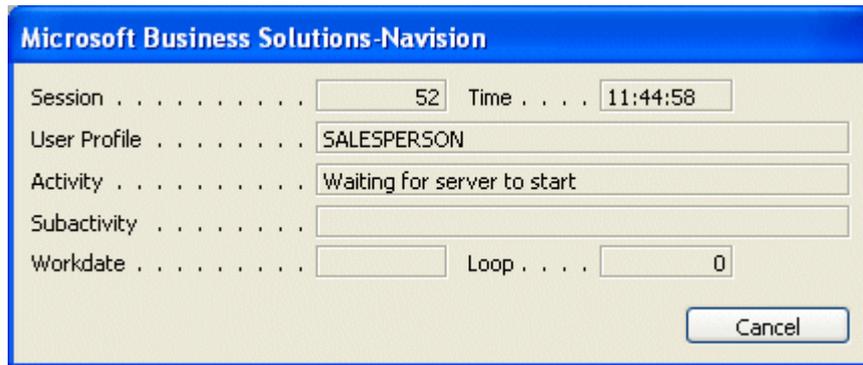
New Client

In this window, you can see that session number 52 has started and has been assigned the user profile you selected but is still waiting to connect to the server.

Go back to the Client Admin session and in the *Client Admin* window, click Functions, Stop/Start Client(s) to open the *Stop/Start Clients* window:
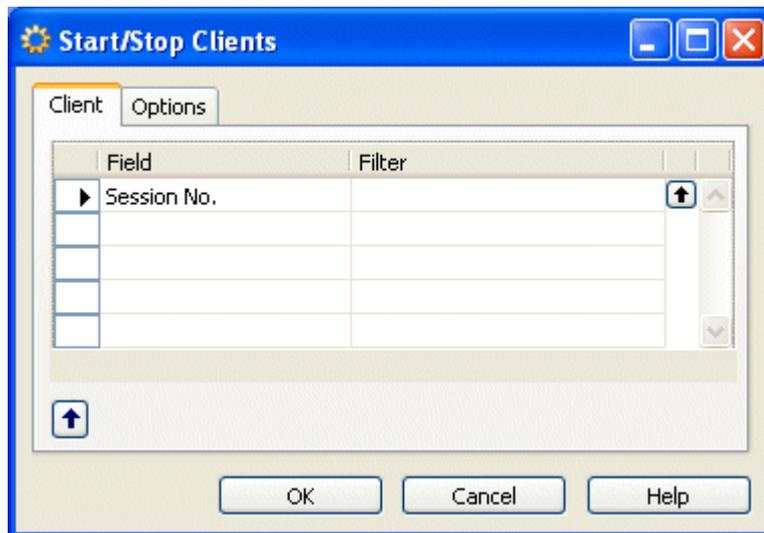
Stop/Start Clients

In the **Filter** field, enter a filter that selects the user profiles that you want to start and click OK and a message is displayed informing you that the client was started successfully.

4. Go back to the CLIENT session and you can see that it is busy running through the tasks that have been defined for that user profile:
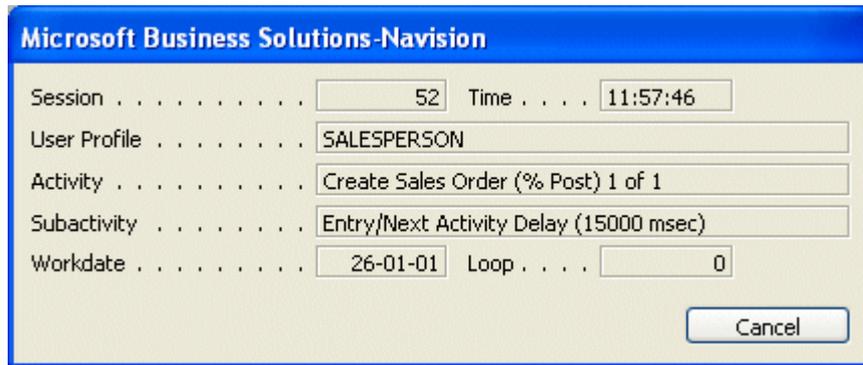
Running Client

The client is now running with the defined user profile. You can start several clients with the same or different user profiles. Remember to use a Windows login.

Stopping the Client

To stop the client:

1. In the Client Admin session, click the *Client Admin* window, click Function, Stop/Start Client(s) and the *Stop/Start Clients* window opens.

2. Click the *Options* tab:
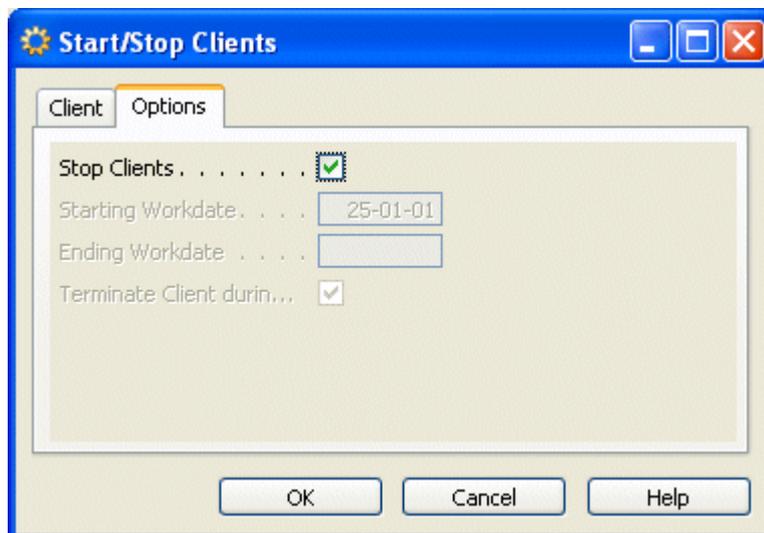
Stop/Start Clients

3. In the **Stop Clients** field enter a checkmark and click OK to stop the client session.

4. In the client session you can see that the client profile has stopped working.

Note

You can only stop a client in this way if *Terminate Client during runtime* option was checked when it was started.

You now know how to set up and use the basic functionality that is provided by the Application Benchmark Toolkit. However, the tool also contains some advanced features that allow you to refine the way it works.

The Advanced Features

The Application Benchmark Tool contains some advanced features that allow you to:

- Automatically start the clients.

- Create random profiles.

- Automatically create multiple client profiles.

- Add more dimensions.

- Increase the number of records in the **Customer**, **Vendor** and **Item** tables.

- Take snapshots of the database size before and after running the benchmark tool.

- Place a realistic load on the server.

- Monitor database activity during runtime.

- Generate a report.

Automatic Startup of Clients

Navision can start the client sessions automatically.

Note
The following change in functionality is only necessary in Navision 4.0. In Navision 3.70, you can automatically start form 99519, Start Client using the login provided.

To enable the client sessions to start automatically, enter the following code in **Codeunit 1**:

```
Trigger: CompanyOpen()

IF GUIALLOWED THEN

  LogInStart;


//Application Benchmark Toolkit

IF BenchMarkSetup.GET THEN

  IF STRPOS(UPPERCASE(USERID),BenchMarkSetup."Client Login ID") >
0 THEN

    FORM.RUN(99519);
```

You must also create a local variable called `BenchMarkSetup` of datatype Record and with the **Application Benchmark Setup** table as the subtype.

Creating a Random Profile

You can create as many random profiles as you need. Each random profile represents a new matrix of the master data utilized in the tool. The sequence in which the master data is used is stored in the random profiles lines. You need to create random profile lines for each random profile you create.

To create the random profile:

1. In the Application Benchmark Toolkit menu, click Setup, Random Profiles to open the **Random Profiles** window:
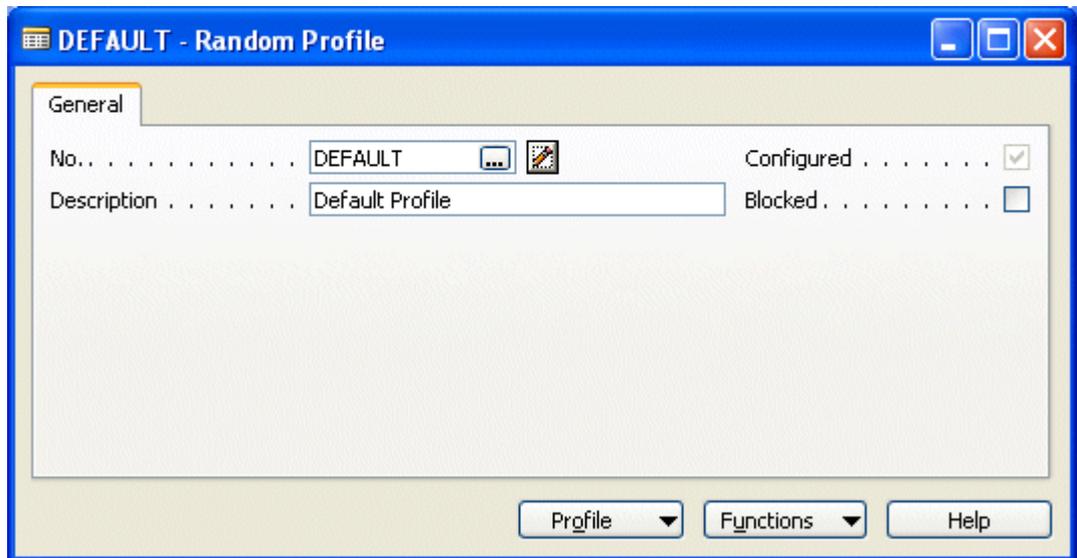
2. Click the **No.** field and press F3, Enter to create a new random profile.

3. Enter a description of the new random profile.

You must also generate the random profile lines for this random profile.

To generate the random profile lines:

1. Click the **No.** field and press Page Down to select the first of the random profiles that you are adding.

2. Click Functions, Create Profile Lines and the *Create Random Numbers* window opens.

3. Click OK to create the random profile lines for that random profile.

You must repeat this process for each available random profile and for each random profile that you create. If you are using a random profile that has been used before, you must delete the existing profile lines and then create new profile lines.

Important
If you add more user profiles or create additional master data (by, for example, using the Generate Master Table Records function) you must update your random profiles. This must be done because the random profile lines are generated based on the available user profiles and master data.

Using the Create Client Profiles Function to Create Multiple Client Profiles

You can create client profiles manually in the **Client Admin** window. When you are conducting a benchmark test involving many concurrent client sessions, it is more convenient to setup the client sessions using the *Create Client Profiles* function.

To create multiple client profiles:

1. In the Application Benchmark Toolkit menu, click Client Admin to open the *Client Admin* window.

2. In the *Client Admin* window, click Function, Create Client Profiles to open the *Create Client Profiles* window:
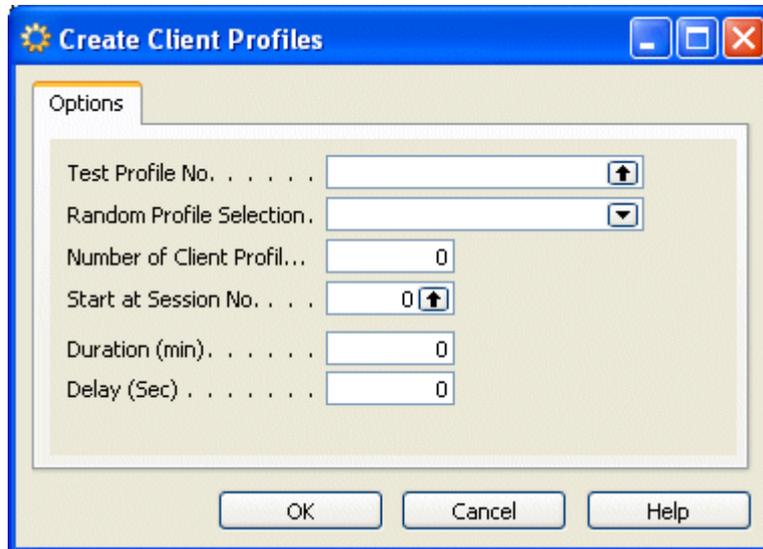
Create Client Profiles

3. In the **Test Profile No.** field, select the test profile that you want the new client profiles to use.

    Note
    Never select the SYSTEM test profile.

4. In the **Random Profile Selection** field, select the random profile that you want the new client profiles to use. You can select either of the following:

    -   Default – the standard random profile.

    -   Use 10 Profiles (R1-R10) – a group of 10 random profiles.

    Note
    If you select option "Use 10 Profiles (R1-R10) these Random Profiles will be created. However, you still need to manually create the Random Profile Lines – see section "Creating the Random Profile Lines"

5. In the **Number of Client Profiles to Create** field, enter the number of client profiles that you want to create.

6. In the **Start at Session No.** field, click the AssistButton to open the Database Sessions window and identify the number that the next session will be given. Enter this number in the **Start at Session No.** field.

7. In the **Duration (min)** field, enter the number of minutes that you want the profiles to run for.

8. In the **Delay (Sec)** field, enter the number of seconds that you want the Benchmark tool to wait before starting each profile. The number of seconds that you enter is divided equally between the different clients. If you create 5 client profiles and specify 100 seconds in the **Delay (Sec)** field, the clients will start at 20 seconds intervals.

9. Click OK and the *Client Admin* window is populated with the number of client profiles that you specified.

The existing client profiles are deleted and replaced by the new client profiles.

Note

The client profiles are created by using the standard user profiles in a predefined order. You can change this order by modifying report 99508, **Create Client Profiles**. We recommend that you familiarize yourself with the tool before changing to the standard setup.

Creating New User Profiles

The Application Benchmark Tool comes with some standard user profiles. You can update these user profiles and/or add as many as you need to conduct your test.

To create a user profile:

1. In the Application Benchmark Toolkit menu, click Profiles, User Profile to open the **User Profile** window:
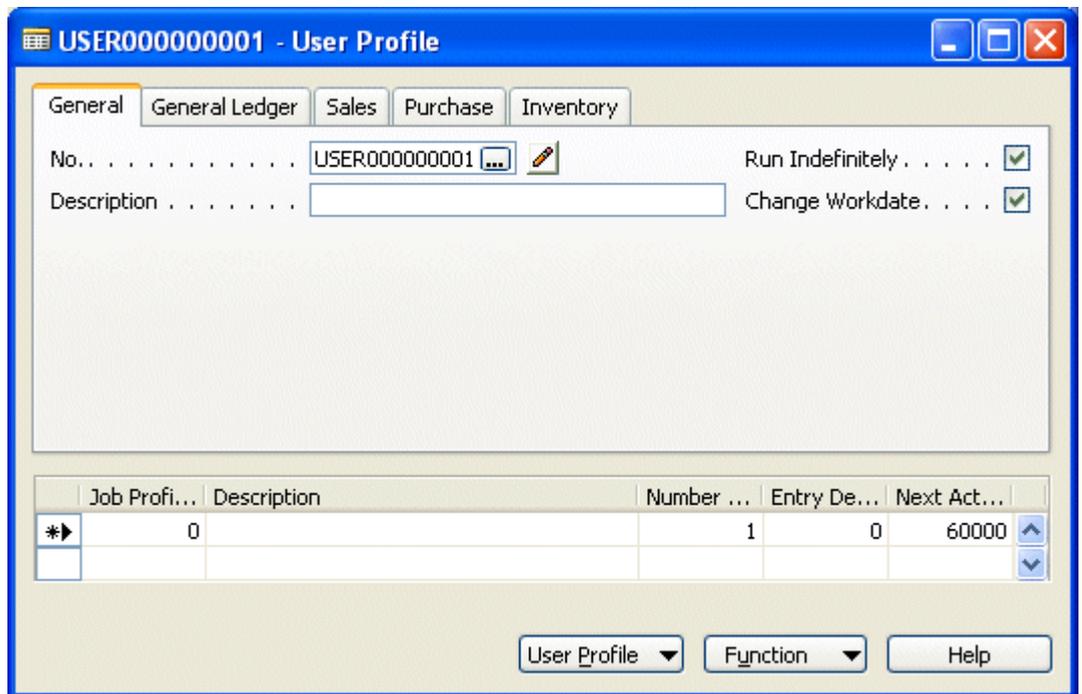
User Profile Card

2. In the **No.** field, press F3, Enter to create a new profile.

3. In the **General** tab, you can also specify whether or not the user profile should run indefinitely and whether or not it should change the work date.

4. Click the *General Ledger* tab:

User Profile Card – General Ledger

5. In the *G/L Lines to Simulate* field, enter the number of lines in the Chart of Accounts that this profile should use to generate the total and Total (LCY).

6. In the **G/L Lines to Lookup** field, enter the number of lines that this profile should lookup in the Chart of Accounts. This simulates the area that this user profile is interested in.

7. Click the *Sales* tab:

User Profile Card – Sales

8. In the **Number of Sales Lines** field, specify the maximum number of lines that you want this profile to create.

9. In the **Sales Line Allocation Method** field, specify the number of lines that you want this profile to create. There are two options:

   - Max – it creates between 1 to the amount specified in the **Number of Sales Lines** field. This option allows you to compare two tests.

   - Fixed – it creates the amount specified in the **Number of Sales Lines** field. This option allows you to generate more demo data.

   The *Purchase* tab contains the same fields as the *Sales* tab.

10. In the *Inventory* tab, specify the number of items that this profile should lookup.

Important

If you add one or more user profiles, remember to update the random profiles.

Adding More Dimensions

If you want to add more dimensions and to utilize Reservations and Item Tracking, you must update the demo data.

To update the demo data:

1. Click Periodic Activities, Demo Data, Enable Dim./Res./Item Tracking to open the *Enable Dim./Res./Item Tracking* window:
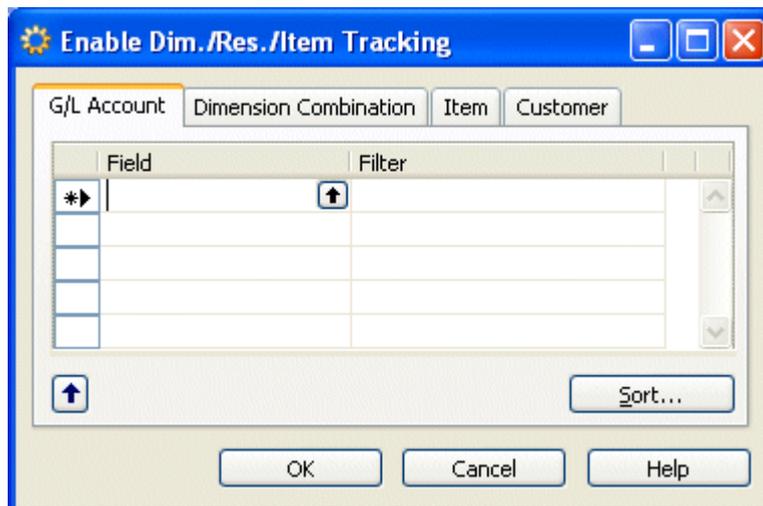
Enable Dim./Res./Item Tracking

2. Click OK.

This report creates 3 additional dimensions and assigns these to the G/L Accounts, Items and Customers that are included in the filter.

Generating Master Table Records

Before you run the Application Benchmark Tool, you can generate extra records in the master tables. This increases the number of records in the **Customer**, **Vendor** and **Item** tables thereby making the performance of the benchmark tool more realistic.

To generate extra entries in the master tables:

1. In the Application Benchmark Toolkit menu, click Periodic Activities, Master Data, Generate Master Table Records and the *Generate Master Table Records* window opens:
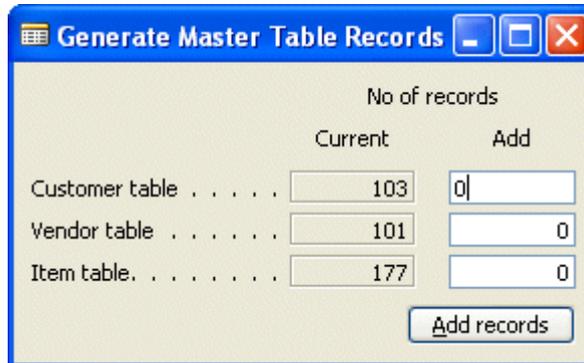
Generate Master Table Records

2. In the Add column, enter the number of records that you want to add to each table.

Important

If you add more master data records, remember to update the random profiles.

Taking Snapshots of the Database

You can take snapshots of the database before and after you run the tool. Comparing the snapshots will tell you how many records have been generated by the tool as well as how much the individual tables and the database have grown. The snapshot is associated with Test Profile data.

To take and compare snapshot of the database:

1. In the Application Benchmark Toolkit menu, click Test Profile to open the Test Profile window.

2. In the Test Profile window, click Functions, Table Information, Get pre-test information and the Application Benchmark Tool collects the data.

3. Click Test Profile, Table Information Entries to view the data that has been collected:

Table No.	Table Name	No. of Records (pre-test)	No. of Records (post-test)	Changed
3	Payment Terms	6	0	
4	Currency	47	0	
5	Finance Charge Terms	2	0	
6	Customer Price Group	0	0	
7	Standard Text	4	0	
8	Language	46	0	
9	Country	51	0	
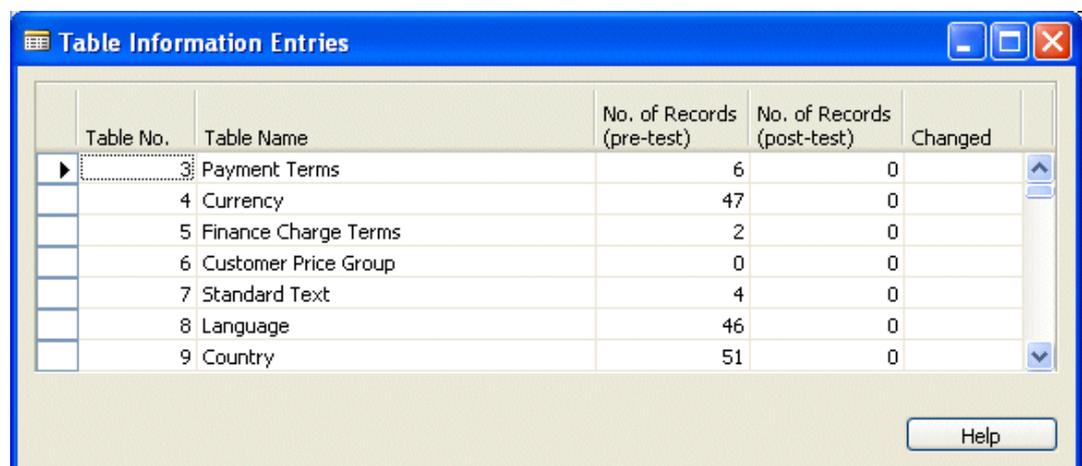
This window lists all the tables in the database and tells you how many records each contains.

4. Run the Application Benchmark Tool and test the database.

5. When you have finished testing the database, open the *Test Profile* window and click Functions, Table Information, Get post-test information to take a new snapshot of the database.

6. To see the changes that have been made in the database during the test, open the *Test Profile* window and click Test Profile, Table information entries:


Table Information Entries – post-test

The *Table Information Entries* window now contains both the pre-test and post test data and gives you an overview of the changes that have been made in the database.

You can get a more detailed picture of the database by clicking File, Database, Information, Tables and opening the *Database Information (Tables)* window:

Database Information (Tables)

Placing a Realistic Load on the Server

The Application Benchmark Tool allows you to specify that the clients work at a pace that reflects real-life and ensure that the different clients are not constantly blocking each other. You can specify that the clients should wait a number of milliseconds before entering data into each field as well as pause between tasks.

To make a client wait before entering data into a field:

1. In the Application Benchmark Toolkit menu, click Profiles, User Profile to open the *User Profile* window.

User Profile Card

The **Entry Delay (msec)** field contains information that specifies how long the client must wait before entering data into each field. For example, if you enter 500 in this field, it will take the program half a second to move from, for example, the **Account No.** field in a G/L transaction to the **Amount** field.

The **Next Activity Delay (msec)** field determines how long each job profile must wait before performing its next task (next job profile).

The Session Monitor

The Application Benchmark Tool lets you access to the Session Monitor. The Session Monitor gives you some detailed information about the activity of each connection that accesses the database and is therefore a useful tool for monitoring the Application Benchmark Tool during runtime. For example, in a laboratory environment with many sessions running

simultaneously, you can monitor the idle time for each session. If the idle time for a particular session increases, the session might have stopped because of an error and need to be restarted.

The Session Monitor contains different information depending on which version of Navision you are using.

To open the Session Monitor, in the Application Benchmark Toolkit menu, click Session Monitor:
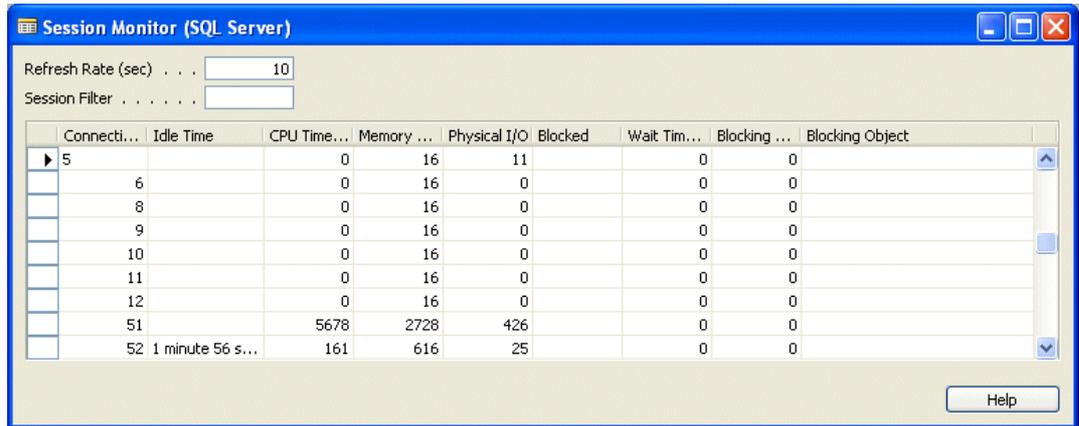
Session Monitor (SQL Server)

Generating a Report

The Application Benchmark Tool also allows you to generate a report that contains details about the test including the number of documents that were processed and the elapsed time per activity (job profile).

To generate the report:

1. In the Application Benchmark Toolkit menu, click Reporting and Analysis, Test Result to open the *Test Result* window:
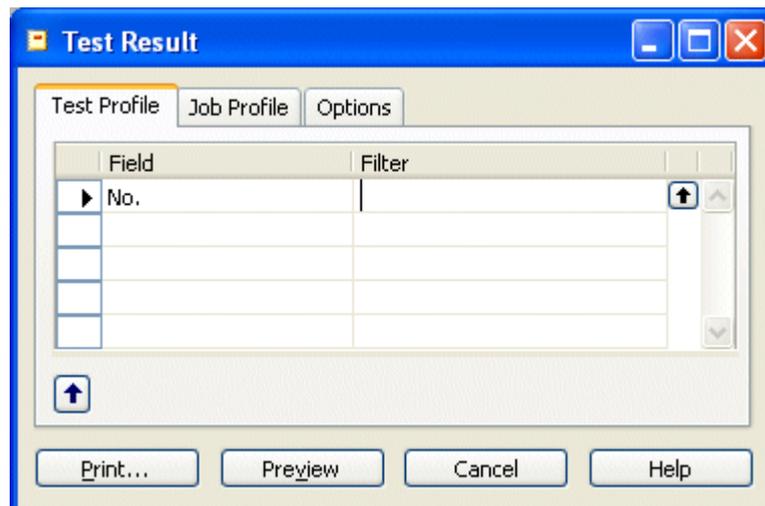
Test Result

2. In the *Test Profile* tab, you can select the test profiles and the fields from the test profiles that you want to include in the report.

3. In the *Job Profile* tab, you can select the job profiles and the fields from the job profiles that you want to include in the report.

4. In the *Options* tab, you determine whether or not the report should contain transactional details or only include the consolidated statistics of each Job Profile.

5. When you have decided which fields to include, you can preview and print the report.

The Objects in the Application Benchmark Tool

This section describes some of the objects in the Application Benchmark Tool.

Application Benchmark Setup Table

This table contains the default settings for the system. Some of these settings are copied to the *User Profile* table when you create the user profiles.

The most important fields in the *Application Benchmark Setup* table are:

Field	Description
App. Benchmark Initialized	When the tool has been initialized the value of this field is True.
Random Profile	The name and description of the Random Profile.
HTML Filename	When reports are printed, they are printed to the HTML file specified in this field. This is a global setting.
Only Weekdays	The default setting is *Yes*, which means that the tool uses work dates spanning from Monday to Friday. This is a global setting.
Run Indefinitely	The default setting of this field (*Yes*) is copied to the User Profile when you create the User Profile. This field determines whether or not you want the User Profile Lines repeated continuously. If this check box is selected, the activities for the user profile are repeated indefinitely.
Change Workdate	The default setting of this field (*Yes*) is copied to the User Profile when you create the User Profile. If this check box is selected, the work date is changed for the client according to the setting in the **Change Workdate Every (min)** field.
Change Workdate Every (min)	The work date is changed globally for all the clients that are running. The value in this field indicates the interval in minutes.
G/L Journal Template Name	This is the default name of the G/L Journal template. This can be changed in other country-specific versions. This is a global setting.
G/L Journal Batch Name	This is the default name of the G/L Journal batch. This can be changed in other country-specific versions. This is a global setting.
G/L Bal. Account No.	The default number of the G/L Balancing account. This is a global setting.
S&R Journal Template Name	The default name of the S&R Journal template. This can be changed in other country-specific versions. This is a global setting.
S&R Journal Batch Name	The default name of the S&R Journal batch. This can be changed in other country-specific versions. This is a global setting.
P&P Journal Template Name	The default name of the P&P Journal template. This can be changed in other country-specific versions. This is a global setting.
P&P Journal Batch Name	The default name of the P&P Journal batch. This can be changed in other country-specific versions. This is a global setting.
Test Nos.	The App. Benchmark Number Series.
Random Nos.	The App. Benchmark Number Series.
User Profile Nos.	The App. Benchmark Number Series.

User Profiles

A user profile relates to a person, a group of persons or a specific role in the company. The *User Profile* window consists of a header form and a subform. The header form describes the name of the profile and how this profile generally behaves. The subform contains the user profile lines. These are called Job Profiles and are the tasks performed by the User Profile.

When you run a user profile, the user profile lines are executed in sequence starting with the first entry and ending with the last. In the **Run Indefinitely** field on the User Profile Header you can specify whether or not you want the User Profile lines repeated continuously. If this check box is selected, the activities for this profile are repeated indefinitely.

The important fields in the *User Profile Lines* table are:

Field	Description
Job Profile No.	The number of the selected job profile. Click the AssistButton to open a list of the available job profiles.
Description	The description of the selected job profile. This field is filled in automatically.
Number of Repetitions	This value indicates how many times you want this activity (Job Profile) repeated before moving on to the next activity. For example, if you enter 5 in this field for the job profile 202 Create and Post Sales Order, the program will create and post 5 sales orders.
Entry Delay (msec)	The number of milliseconds the program takes to move from one field to another. For example, if you enter 500 in this field, it will take the program half a second to move from the *Account No.* field to the *Amount* field.
Next Activity Delay (msec)	The time in milliseconds that the program takes between ending one User Profile line and executing the next User Profile line.

Important
When you create a new user profile, you must also update the random profile.

Random Profiles

The *Random Profile* table contains information about how the program selects G/L account, customer, vendor and item numbers randomly. The benefit of having these defined in a table is that you can easily compare two performance tests.

You can either use the default random profile or you can create your own. When you have created a random profile, you must also create the random lines.

To create random lines:

1. In the Application Benchmark Toolkit menu, click Setup, Random Profiles to open the Random Profile Card.

2. In the Random Profile Card, click Functions, Create Profile Lines, and the *Create Random Numbers* window appears:
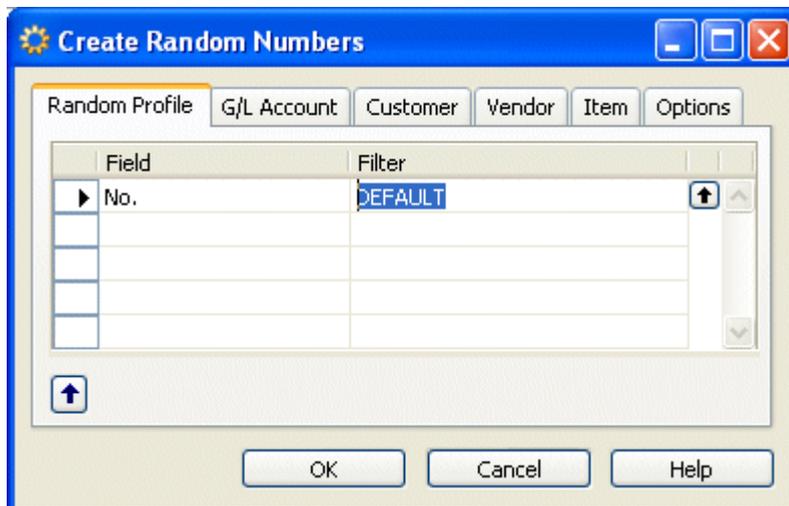
Create Random Numbers

For each of the master tables, you can set filters to define the accounts that apply to the random profiles.

On the Options tab, you can specify a factor. The default value is two. The factor indicates the number of times the master table records (G/L account, customer, vendor, and item) can be multiplied. The factor is used to eliminate the risk of some master table records not being included in the Random Lines.

For example, if you have 100 customers in the Customer table, the total number of Random Profile Lines for the Customer table will then be 100 x factor 2 = 200.

3. Click OK to create the random lines.

Test Profiles

The *Test Profile* table contains all the information about test scenarios, for example, server setup and database settings. In order to activate a test profile and make it available for the clients, you must define the status as *Running*.

When a test is finished, you change the status to Completed. The client log entries can be found in the *Test Profile Log Entries* window (by pressing Ctrl + F5) or by clicking the AssistButton in the **Elapsed Time (msec)** field.

Client

The *Client* table contains the setup of all the client sessions and enables you to control and monitor these sessions.

The important fields in the *Client* table are:

Field	Description
Session No.	This unique number indicates a client that is or will log on to the system. Click the AssistButton to see the actual number of logged on clients.
User Profile No.	This is the user profile that has been assigned for the particular session.
Description	The description of the user profile.
Duration in minutes	The number of minutes the current session will run for. The default value is 0 = infinite.
Start Delay (sec)	Indicates how many seconds the current session will wait before executing. This helps avoid a large server load when many sessions have been set up. It is a good idea to set a delay for every 10 sessions.
Random Profile No.	Specify the random profile to use.
Test Profile No.	In this field you specify the test profile no. If you want to log activities to the **Client Log Entry** table, the test profile must have the status = Running. If you don't specify any test ID, the current session will not be recorded.
Configured	When a session is ready, you can set Configured = Yes. This enters all the Random Profile Lines for this session (and the assigned user profile) into temporary tables. When all the sessions/clients are marked as configured you are ready to start the process.
Started	Indicates that the process for a session is running. Note: you cannot start the process by clicking on this field.

To start the process, you must click Functions, Start/Stop Client(s). This means that you can:

- Start all the clients in one go.
- Control the start and end work date of the selected sessions. Finally, you can determine whether or not you are able to terminate the sessions during run time. If you allow this option, it will have a small impact on performance as the process needs to check the client record.

Maintaining the Tool

This section describes the five basic codeunits that control the process and the guidelines for adding new job profiles to the system.

Basic Control

The basic processes of the Application Benchmark Tool are controlled by these five codeunits:

Codeunit	Description
Process Management (99501)	Controls the client logon process, the initialization of temporary tables and the execution of user profiles.

Initialize Benchmark App (99502*)*	Runs only once during the initialization of the tool. The following operations are performed during initialization:
	
	• Default values are applied to the **Application Benchmark Setup** table.
	
	• Number series are updated.
	
	• Job profiles are created.
	
	• Default random profile is created.
	
	• S&R Setup is modified:
	
	   • Field: "Credit Warning" = No
	
	   • Field: "Stockout Warning" = False

Random Management (99503)	Controls the random mechanism that requests the next random G/L account, customer, vendor or item.
Log Process Management (99504)	If a test profile is active and assigned to a client, all the activities are logged and stored in the **Client Log Entry** table. This codeunit controls this process.
Transaction Management (99505)	All the job profiles are defined as functions in this codeunit or as separate code units. These functions are called and controlled from the **Process Management** codeunit.

Adding New Job Profiles

To create a new job profile, you must:

• Create a new code unit and add the C/AL code that simulates the use case of the job profile.

• Add a new job profile to the Application Benchmark Tool and link it to the code unit.

Creating a New Codeunit

To add a new code unit to the Application Benchmark Tool, you must create a new codeunit with the needed use case to test. We recommend that you base the new codeunit on codeunit. 99509, **Profile Template**. For every entry delay you must call the function *CalculateDelay*.

Add new Job Profile

To add a new job profile:

1. In the Application Benchmark Toolkit menu, click Setup, Job Profiles to open the *Job Profiles* window:
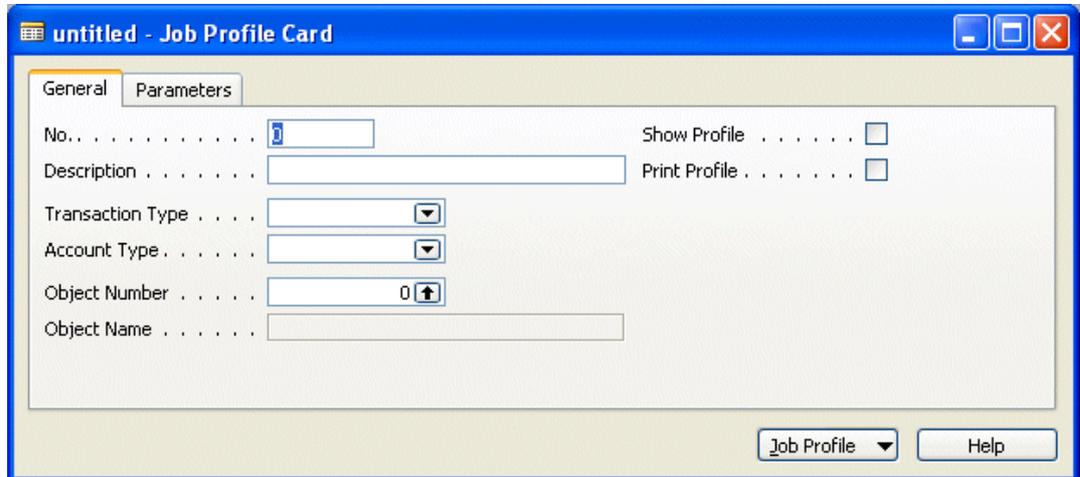
Job Profile Card

2. In the **No.** field add a new ID number.

    For more information about ID numbers, see the guidelines for adding new numbers in the next section.

3. Add a short description of the job profile.

4. In the **Transaction Type** field, specify the transaction type of this activity. You can select Master (for example, customer, vendor or item), Document (for example, Sales/Purchase Quote, - order, invoice and credit memo) or Journal (for example, G/L Journal and Sales Journal). The Transaction Type is use to determine the structure of the job and thereby its execution during runtime. For example, a master record is only related to one table whereas documents use both headers and lines.

5. In the **Account Type** field, specify the account type of this activity.

6. In the **Object Number** field, use the AssistButton to link the job profile to the codeunit you created earlier.

7. Enter a checkmark in both the **Show Profile** and the **Print Profile** field, to expose the new job profile in the Application Benchmark Tool.

8. In the *Parameters* tab, in the **No. of Master Entry Fields** field and in the **No. of Sub Entry Fields** field enter the no of fields that this job applies to.

    All the available transaction types apply to Master Entry fields whereas Sub Entry fields only apply when the transaction type is Documents. This number indicates the number of time you call the CalculateDelay function in the new job profile codeunit that you created. For job profile *201 Create Sales Order (% Post)*, CalculateDelay is called 5 times in the C/AL code dealing with the sales header and 3 times for each sales line.

    Important
    If the value in Master Entry Fields / Sub Entry Fields does not correspond to the actual number of times the CalculateDelay function is called in the code, the client log statistics will be wrong.

9. To receive the next master account set, enter a checkmark in the **Get next Master Account** field.

10. To get an array of item numbers (depending on the number of, for example, sales lines) enter a checkmark in the **Get Item Array** field.

Close the *Job Profile Card* and the new job profile is added to the Application Benchmark Tool and is ready to be used.

Note

If you need to re-distribute the tool with your new job profile(s) you should update the CreateJobProfiles function in codeunit 99502, *Initialize Benchmark App*. When you install the tool in another database the new profile will also be added.

Adding New Job Profile Numbers

The current job profiles use the following number series. The application area and the type of operation are taken into consideration in the following table. For example, the first job profile that covers a Sales & Receivables transaction has been assigned the number 200, the next transaction 201, and so on.

Area	From	To
System	0	99
General Ledger	100	199
S & R	200	299
P & P	300	399
Inventory	400	499
Resource	500	599
Job	600	699
CM	700	799
HRM	800	899
Fixed Assets	900	999
Manufacturing	1000	1099
Distribution / Warehouse	1100	1199
Service Management	1200	1299
CRM	1300	1399
Portal	1400	1499
Transactions	X00..	..x49
Simulations	X50..	..x69
Reports	X70..	..x99

Here is a list of some existing job profiles that have been named according to these rules:

No.	Description	Type
3	Write Log to Database	System
202	Create and Post Sales Order	Transaction
205	Create and Post sales Credit Memo	Transaction
220	Batch Post Sales Orders	Transaction
250	Customer Lookup – simulation	Simulation

No.	Description	Type
270	Report: Customer Top 10 List	Report
302	Create and Post Purchase Order	Transaction
303	Create Purchase Invoice (% Post)	Transaction
320	Batch Post Purchase Orders	Transaction
350	Vendor Lookup – simulation	Simulation
450	Item Lookup – simulation	Simulation

Localization

No "real" localization is required for the Application Benchmark Tool. However, the General Ledger, Sales and Purchase Template & Batch Names might need to be reassigned. This must be done in the Application Benchmark Setup.

Support

The Application Benchmark Tool version 1.00 supports Microsoft Navision W1 4.00 and 3.70.

The fob-files provided for these versions are:

- Application Benchmark 1.00 for Navision 4.0

- Application Benchmark 1.00 for Navision 3.70

This tool is not supported by Microsoft. We do not guarantee any updates when a new version of Microsoft Navision is released.

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http://www.microsoft.com/BusinessSolutions/