MODULE 3: MICROSOFT DYNAMICS NAV SERVER

Module Overview

This module describes the Microsoft Dynamics NAV Server, the middle tier of the Microsoft Dynamics NAV 2013 architecture. It will introduce you to the Microsoft Dynamics NAV security system. Next it explains the different interfaces that you can use to administer a Microsoft Dynamics NAV 2013 deployment and what you can do in each administration interface. Finally, it will discuss how to set up Microsoft Dynamics NAV Server to support logon over a wide area network (WAN).

Objectives

The objectives are:

- Explain how to install and configure Microsoft Dynamics NAV Server.
- Explain how to manage Microsoft Dynamics NAV Server instances.
- Explain how to administer Microsoft Dynamics NAV Server.
- Explain how to setup Microsoft Dynamics NAV Server to support wide area network connections.
- Illustrate how to setup Microsoft Dynamics NAV Application Server.

Microsoft Dynamics NAV Server

Microsoft Dynamics NAV Server is a .NET-based Windows® service application that works exclusively with SQL Server® databases. Microsoft Dynamics NAV Server provides an additional layer of security between clients and the database. It uses features of the Windows Communications Foundation to provide another layer of user authentication and uses impersonation to make sure that business logic is executed in a process that was instantiated by the user who submitted the request. This means that authorization and logging of user requests are performed on a per-user basis.

Microsoft Dynamics NAV Server supports different client types such as the following:

- RoleTailored client for Windows
- Web client
- Business web services
- Portal Framework for SharePoint® 2010
- NAS services

Installation

By default, Microsoft Dynamics NAV Server is included as part of the following installation options:

- Server
- Developer

Microsoft Dynamics NAV Server is also part of the **Install Demo** option. However, this installation option does not provide any user interaction during setup and will install Microsoft Dynamics NAV Server with default components and settings.

To install the product, follow these steps:

1. Start Microsoft Dynamics NAV Setup.
2. On the **Welcome to Microsoft Dynamics NAV 2013 Setup** page, click **Next**.
3. On the **Microsoft Software License Terms** page, select **I accept**.
4. On the **Microsoft Dynamics NAV Setup** page, click **Choose an installation option**.
5. Click the desired installation option.
6. On the **Specify parameters** page, enter the correct configuration settings.
7. Click **Apply** to start the installation.

Microsoft Dynamics NAV Setup will install Microsoft .NET Framework 3.5 SP1 (if this is not on the server).

📋 **Note:** *Microsoft Dynamics NAV Server can be included as part of the* **Custom Components** *installation option. It cannot be installed as part of the* **Client** *installation option.*

Configuration

Microsoft Dynamics NAV Server can be configured either during setup or after setup. During Setup you can customize the default settings for the Microsoft Dynamics NAV Server on the **Specify parameters** page. The information that is collected on this page is saved to a configuration file. Please realize that you cannot handle all configuration tasks and parameters with Microsoft Dynamics NAV Setup. For example, you can configure the instance of SQL Server and database to connect to and the TCP/IP port to use for the client. However, you cannot configure the users who must have access to the database.

The figure, Configuring the NAV Server Settings During Setup, shows an overview of the default settings that can be customized.
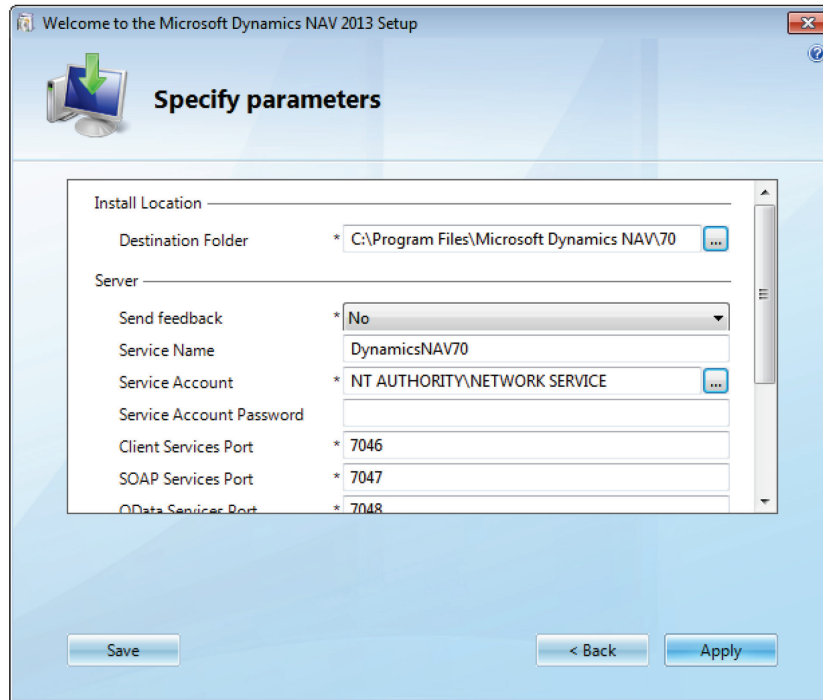
FIGURE 3.1: SPECIFY PARAMETERS FOR MICROSOFT DYNAMICS NAV SERVER SETTINGS DURING SETUP

Configuring Microsoft Dynamics NAV Server During Setup

When you run Microsoft Dynamics NAV 2013 Setup and install Microsoft Dynamics NAV Server, you can provide configuration information (on the **Specify parameters** page) that is then used as the configuration for the default Microsoft Dynamics NAV Server instance.

After you install Microsoft Dynamics NAV Server, you can change any of the settings that you provided during setup, or any of many other Microsoft Dynamics NAV Server settings, by using either the Microsoft Dynamics NAV Server Administration tool or the Microsoft Dynamics NAV PowerShell API. This is discussed later in this module. Although it is not recommended, you can also change configuration by manually editing the CustomSettings.config file in the Microsoft Dynamics NAV Server installation folder. (By default, Microsoft Dynamics NAV Server is installed in C:\Program Files\Microsoft Dynamics NAV\70\Service\. However, you can customize the installation path during setup.)

The parameters that you see in the **Specify parameters** pane depend on which components you have selected for configuration. When you install Microsoft Dynamics NAV Server, you are prompted for settings that relate to Microsoft Dynamics NAV Server itself and to the computer that is running SQL Server and the instance to which Microsoft Dynamics NAV Server will connect.

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All parameters identified with an asterisk are required parameters. You cannot continue in Setup if you leave any of these parameters blank.

Category/Parameter	Description
Server/Send Feedback	Specifies whether Microsoft Dynamics NAV Server can collect basic and anonymous information about your hardware configuration and how you use Microsoft Dynamics NAV Server. Information is automatically sent to Microsoft, which uses it to identify trends and usage patterns and to improve its software. Yes enables the collection and sending of this data.
Server/Server Port	The listening TCP port for RoleTailored clients for Windows. Default: 7046 Valid range: 1-65535
Server/Soap Web Service Port	The listening HTTP port for Microsoft Dynamics NAV SOAP web services. Default: 7047 Valid range: 1-65535
Server/OData Web Service Port	The listening HTTP port for Microsoft Dynamics NAV OData web services. Default: 7048 Valid range: 1-65535
Server/Management Service Port	The port that is used for Microsoft Dynamics NAV Management services. Default: 7045 Valid range: 1-65535
SQL Server Database Components/SQL Server	The computer that is running SQL Server.
SQL Server Database Components/SQL Server Instance	The instance of SQL Server to which Microsoft Dynamics NAV Server connects. If you leave this parameter blank, Microsoft Dynamics NAV Server connects to the default instance of SQL Server.

Category/Parameter	Description
SQL Server Database Components/SQL Database	The SQL Server database. Default: Demo Database NAV (7-0)
Add rule to Windows Firewall	Specifies whether Microsoft Dynamics NAV Setup adds a rule to Windows Firewall to enable Microsoft Dynamics NAV Server instances on the destination computer to communicate with RoleTailored clients for Windows on other computers, through the specified **Server Port**. Defaults: Yes for the **Client** or **Server** installation options, where the assumption is that Microsoft Dynamics NAV Server is installed on a different computer. No for **Demo** and **Developer** options, where the assumption is that the RoleTailored client for Windows is installed on the same computer. If the destination computer uses a firewall other than Windows Firewall, or if networking is not configured on the destination computer, then this option must be set to No or Setup will not be completed successfully.

Click **Apply** when you have finished entering values to return to the **Specify parameters** page in Setup.

After you finish running Setup, you can modify Microsoft Dynamics NAV Server By Using any of the methods described in the following section.

Configuring Microsoft Dynamics NAV Server After Setup

After you install Microsoft Dynamics NAV Server, you can change any of the settings that you provided during Setup, or any of many other Microsoft Dynamics NAV Server settings, in any of the following ways:

1. Using the Microsoft Dynamics NAV Server Administration tool. This is discussed later in this module.
2. Using the Microsoft Dynamics NAV PowerShell API. This is discussed later in this module.

3. By directly editing CustomSettings.config, the Microsoft Dynamics NAV Server configuration file. By default, this file is located in C:\Program Files\Microsoft Dynamics NAV\70\Service\Instances\<instancename>. Avoid direct editing of the configuration file because if you make any mistakes in typing or if you change the wrong parameter, then Microsoft Dynamics NAV Server may be unable to start the instance.

📃   *Note: After you modify a Microsoft Dynamics NAV Server setting, you must restart the associated Microsoft Dynamics NAV Server instance before any changes can take effect.*

Server Instances and Service Types

A Microsoft Dynamics NAV Server instance is the service through which the various types of Microsoft Dynamics NAV clients interact with the Microsoft Dynamics NAV SQL Server database. It is a distinct service in Windows and is the middle tier between the client and the data tiers.

When you install Microsoft Dynamics NAV Server on a computer, there is a single default instance. If your organization requires additional instances, then you can either install Microsoft Dynamics NAV Server on additional computers or create additional instances on the original Microsoft Dynamics NAV Server. You can create (and manage) additional server instances by using the Microsoft Dynamics NAV Server Administration tool. This procedure is described later in this module.

In a Microsoft Dynamics NAV Server instance, you can have multiple service types. Each service type, such as client services or OData web services, corresponds to a particular type of client that can connect to SQL Server through Microsoft Dynamics NAV Server. The only type of client that does not have its own service type is the Microsoft Dynamics NAV Portal Framework for Microsoft SharePoint® 2010. This is configured and managed separately. (This is described in the next module.)

Be aware that restarting the server instance affects all service types within that instance. For example, RoleTailored client for Windows users are disconnected, and web service applications are interrupted. Therefore, if you plan to run different types of services on a single computer running Microsoft Dynamics NAV Server, run the different services types in separate service instances. Your computer should have sufficient memory to run multiple service instances. For example, if you plan to use both the client services and OData web services on a single computer running Microsoft Dynamics NAV Server, then you should run the client services in one server instance and the OData web services in a separate server instance. Then, if you have to change an OData web services setting, then you do not affect RoleTailored client for Windows users when you restart the instance to enable the change.

Security Enhancements

After you have set up and configured Microsoft Dynamics NAV Server, there are several steps that you can follow to improve security.

Login Account

When you install Microsoft Dynamics NAV Server, the default configuration enables the service to log on by using the NT Authority\Network Service account. If Microsoft Dynamics NAV Server and SQL Server are on different computers, then we recommend that you configure Microsoft Dynamics NAV Server to log on by using a dedicated Windows domain user account instead. This account should not be an administrator either in the domain or on any local computer. A dedicated domain user account is considered more secure because no other services, and therefore no other users, have permissions for this account.

Disk Quotas

Client users can send files to be stored on Microsoft Dynamics NAV Server. So, we recommend that administrators set up disk quotas on all computers that are running Microsoft Dynamics NAV Server. This can prevent users from uploading too many files and therefore make the server unstable. Disk quotas track and control disk space use for NTFS volumes. This allows administrators to control how much data each user can store on a specific NTFS volume. For more information about disk quotas, see the Disk Quotas Technical Reference on Microsoft TechNet.

Limiting Port Access

The Microsoft Dynamics NAV Setup program opens a port in the firewall on the computer where you install Microsoft Dynamics NAV Server. By default, this is port 7046. Setup does not limit who or what can connect to this port. To improve security, you can consider limiting access to this port to a specific subnet. One way is to use netsh, which is a command-line tool for configuring and monitoring Windows-based computers at a command prompt.

For example, the following command limits access to port 7046 to the specified addresses and subnets:

```
netsh firewall set portopening protocol=TCP port=7046 scope=subnet
addresses=LocalSubnet
```

✺Server Administration

Microsoft Dynamics NAV 2013 provides four interfaces for administration:

- RoleTailored Client for Windows
- Development Environment
- Server Administration Tool
- PowerShell API

Please be aware that not all the interfaces provide the same functions for administration. Depending on the setting that you want to modify, you will have to use a different server administration interface.

This lesson will first introduce you in the Microsoft Dynamics NAV security system. Afterward, it will describe the different administration interfaces.

The Microsoft Dynamics NAV Security System

The Microsoft Dynamics NAV security system is built on the principles of authentication and authorization. You can use it to define who can access a database (users) and to control which objects or tables each user can access within each database (permission sets). In addition, you can specify the type of access that each user has to these objects and tables, that is, whether they can read, modify, enter, and delete data. It even enables you to specify which records table each user can access. This means that permissions can be allocated at both the table level and the record level.

Data Security

In the Microsoft Dynamics NAV security system there are four levels of security:

- Database
- Company
- Object
- Record

Graphically, these can be represented as the layers, where the central layer is the records in the database.

Database-Level Security

The first layer of security when you open Microsoft Dynamics NAV is database security. After you start Microsoft Dynamics NAV and try to open the database, your credentials are checked. If you are not granted permission to open the database, you receive an error message.

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To open a database, you must connect to a Microsoft Dynamics NAV Server instance. A Microsoft Dynamics NAV Server instance can only be connected to one database at a time. To open the database, click the Microsoft **Dynamics NAV** menu, and then click **Select Server**. The **Select Server** window appears. In this window, you can enter the address of the server to which you want to connect. The **Server Address** menu lists recently used server connections. After you have entered the correct server address, a list of available companies will appear in the Available Companies list.

Company-Level Security

After you have gained access to the database, you can select the company whose information you want to reach.

To select a company, click the **Microsoft Dynamics NAV** menu and then click **Select Company**. The **Select Company** window appears. This window lists all the companies that are created in the current database and that you have access to. A Microsoft Dynamics NAV database can contain several companies. Each company can use its own tables and can also share tables with other companies.

Select the company that you want to access click **OK**, and the company data becomes available. If there are companies in the database that you were not granted permissions to access, you cannot see their data in this window.

Object-Level Security

When you open company data in Microsoft Dynamics NAV, your ability to access information is determined by the security system.

The Microsoft Dynamics NAV security system consists of permission sets and permissions that you can assign to users who have access to the company. The permission sets determine the access that users have and the tasks that users can perform on the objects that exist in the database.

The security system divides the database into the following objects.

Object	Description
table Data	The actual data that is stored in the tables.
table	The tables themselves.
Page	The pages that are used to view and enter data.
Report	The reports that are used to present the data.
Codeunit	The codeunits that are used in the database.

Object	Description
XMLPort	The XML ports that are used to import and export data.
MenuSuite	The object that contains the menus that are displayed in the navigation pane.
Query	The object that you use to specify a dataset from the database.
System	The system tables in the database that allow the user to make backups, change license files, and so on.

The various permission sets that exist in Microsoft Dynamics NAV determine the tasks that you can perform on these objects.

Record-Level Security

Record-level security lets you limit the access that a user has to the data in a table. You do this by specifying that the user only has permission to access certain records in the table.

You implement record-level security by setting security filters to records. You can specify, for example, that a user can only read the records that contain information about a particular customer. This means that the user cannot access the records that contain information about other customers.

*Note: Record-level security filters do not support wildcard characters. This means that you cannot use * and ? in the filters. You can use the other symbols, delimiters, and operators, such as <, >, |, &, .., and =.*

The maximum length of a security filter is 250 characters, but all the delimiters, symbols, and operators such as, <, >, |, &, .., and = also count as characters and can much reduce the length of the security filters that you can enter.

Also, security filters are concatenated and therefore the sum of all the security filters applied to a user or a permission set cannot exceed 250 characters.

Record level security filters affect performance in the same way as any other filters that are applied by the user. It is important that the record level security filters have matching keys in tables that contain a large number of records, and that these keys are used.

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Users and Credential Types

In Microsoft Dynamics NAV 2013, you use User objects to identify who can access the Microsoft Dynamics NAV database. Before you can access the data in the database, you have to authenticate by supplying valid credentials.

Microsoft Dynamics NAV 2013 supports four credential authorization mechanisms for Microsoft Dynamics NAV users. When you create a user, you provide information, depending on the credential type that you are using in the current Microsoft Dynamics NAV Server instance.

The supported credential types are as follows:

Windows

With this credential type, users are authenticated with their Windows credentials (Active Directory®, the local workgroup, or just the local computer's users). Before you create a Windows user in the RoleTailored client, there must already be a corresponding user in Windows. Windows users, because they are authenticated through Windows, are not prompted for credentials when they start the RoleTailored client.

Username

With this setting, the users are prompted for username/password credentials when they start the RoleTailored client. These credentials are then validated against Windows authentication by Microsoft Dynamics NAV Server. There must already be a corresponding user in Windows. Security certificates are required to protect the passing of credentials across a wide area network. This setting should typically be used when the Microsoft Dynamics NAV Server is part of an authenticating Active Directory domain but the computer where the RoleTailored client is installed is not.

NavUserPassword

With this setting, authentication is managed by Microsoft Dynamics NAV Server but is not based on Windows users or Active Directory. Users are prompted for username/password credentials when they start the RoleTailored client. The credentials are then validated by an external mechanism. Security certificates are required to protect the passing of credentials. This mode is intended for hosted environments—for example, where Microsoft Dynamics NAV is implemented in Azure.

AccessControlService (ACS)

AccessControlService authentication is relevant only for Microsoft Dynamics NAV solutions that are deployed on Windows Azure. Windows Azure Access Control Service (ACS) is a cloud-based service that provides user authentication and authorization for web applications and services. With ACS, there is no need to factor authentication and authorization into your application code. Instead of implementing an authentication system with user accounts that are specific to your application, you can let ACS orchestrate the authentication and much of the authorization of your users. ACS integrates with standards-based identity providers, including enterprise directories such as Active Directory, and web identities such as Windows Live ID, Google, Yahoo!, and Facebook.

You do not have to create user logons in SQL Server before you create Microsoft Dynamics NAV users.

You can create users that can be used with multiple credential types. For example, you could create a user who would automatically be logged on to the RoleTailored client without having to present credentials when the credential type is Windows, but would be prompted for a user name (the value of the **User Name** field) and a password when the credential type is Username.

You specify which credential type is used for a particular Microsoft Dynamics NAV Server instance by configuring the relevant RoleTailored client for Windows configuration file and Microsoft Dynamics NAV Server instance configuration.

A separate instance of the ClientUserSettings.config file is maintained for each client user—you must edit the configuration for each instance of the file. The default location for this file is C:\Users\<username>\AppData\Roaming\Microsoft\Microsoft Dynamics NAV\70, where <username> is the name of the user.

📓   **Note:** *All users of a given Microsoft Dynamics NAV Server instance must use the same credential type.*

Permission Sets and Permissions

After you have defined a user, you can assign it to permission sets. A permission set is a set of permissions for a set of objects in the Microsoft Dynamics NAV database that you can assign to one or more users. By default, several predefined permission sets are provided in the RoleTailored client. You can use these permission sets as defined, modify them, or create your own permission sets.

Special Permission Sets

The following permission sets have special definitions that you should note as you implement permissions and security for RoleTailored client users.

Permission Set	Definition
SUPER	Can read, use, change, and delete all data and all application objects within the scope of your license. Microsoft Dynamics NAV 2013 requires that at least one user be assigned this permission set in each database. You cannot modify permissions for the SUPER permission set.
SUPER (DATA)	Can read, use, change, and delete all data. You typically assign this permission set to an accounting manager who has to work with all data but does not have to change Microsoft Dynamics NAV.
ALL	Can use fundamental but not high-security tables and functions. You must assign this permission set to all users except SUPER because it is a prerequisite for all other permission sets.
BASIC	Can access required system tables and other fundamental tables--a prerequisite for all other permission sets. When you create a new database, you must import the BASIC permission set from an XML file.

Indirect Permissions

When you define permissions, set the values for table permission to Yes, Indirect, or blank, which indicates no permission. You can use indirect permission to use an object only through another object.

For example, a user can have permission to run codeunit 80, Sales-Post. The Sales-Post codeunit performs many tasks, including inserting records in table 21, Customer Ledger Entry. When the user runs the Sales-Post codeunit, Microsoft Dynamics NAV checks whether the user has permission to insert records in the Customer Ledger Entry table. If the user does not have permission, then the codeunit cannot complete its tasks, and the user receives an error message. If the user has permission, the codeunit runs successfully.

However, the user is not granted direct insert permissions to the Customer Ledger Entry table: he cannot manually insert new records in the Customer Ledger Entry table. The only way to insert records in the Customer Ledger Entry table is through other objects, that is, the journal and document posting codeunits.

So when a user has indirect permission to a table, that user can only modify the table by running another object that has permission to modify the specific table. The user can only modify a table when doing this from supported application areas and cannot run the feature accidentally or maliciously by other methods.

First User Automatically Assigned the SUPER Permission Set

When a user creates a Microsoft Dynamics NAV database, that user is automatically assigned the SUPER permission set in the Microsoft Dynamics NAV security system. There are several ways to create a database, including performing a Demo install (which creates the CRONUS International Ltd. demonstration database) and restoring a previously backed-up database. The SUPER permission set allows the user to read, use, change, and delete all data and all application objects within the scope of the current Microsoft Dynamics NAV license. This user is then responsible for creating additional users and for assigning appropriate permission sets to those users.

For Microsoft Dynamics NAV to work correctly, the SUPER user must have the appropriate permissions in SQL Server, such as system administrator or db_creator permissions. When Microsoft Dynamics NAV 2013 Setup creates the CRONUS International Ltd. demonstration database in SQL Server, the current user is added as a database user with db_owner permissions.

Profiles and Role Centers

After you have created users and assigned them to permission sets, you can add users to profiles. This links them to Role Centers in the RoleTailored client.

Profiles are collections of Microsoft Dynamics NAV users who share the same Role Center. Profiles can be created or edited in the RoleTailored client.

A Role Center is a home page in Microsoft Dynamics NAV 2013 for all users of a profile. It is a type of page on which you can put different parts. Each part is a container in which you can host other pages or predefined system parts, such as an Outlook® part or parts for adding tasks, notifications, or notes. For example, the Order Processor Role Center is configured to reflect the tasks and priorities of an order processor. In the RoleTailored client, the profile that is used appears in the header of the Role Center's main content area.

There are 21 Role Centers available in Microsoft Dynamics NAV.

Configuration and personalization are ways to customize the RoleTailored client for Windows to suit the daily requirements and tasks of groups of users or individual users.

- Configuration: Modifications that an administrator implements, such as presenting a custom home page to all users of a Role Center.

- Personalization: Modifications that an end-user makes, such as changing the user interface of a page to fit individual requirements and preferences.

Configuration

An administrator, SUPER user, or Microsoft Certified Partner frequently performs Role Center configuration tasks. This person configures the Role Center for a specific role and then assigns users to the Role Center. For example, when Susan, an order processor, uses the RoleTailored client, she sees the Order Processor Role Center. This was customized to help her perform her daily tasks. In configuring Susan's Role Center, the administrator has added or removed UI elements. This includes items in the navigation pane, page parts, and FactBoxes.

The following elements in Role Centers can be configured:

- Navigation pane
- FactBoxes
- Home parts
- Lists
- Task pages
- Action menus
- Report menus

To configure a Role Center, you must start the RoleTailored client for Windows in configuration mode. This is described later in this module.

Personalization

The Order Processor Role Center can then be further personalized on a single computer to meet the needs of a person (end-user) who is performing the job as an order processor. This person can personalize the Role Center by:

- Resizing columns.
- Changing the contents of drop-down menus.
- Customizing the navigation pane.
- Adding or removing FactBoxes.

- Organizing items in the **Quick Access** pane.
- Saving queries or filters.
- Choosing columns in a list.

Resetting Personalization and Configuration Changes

Personalization changes that are made by end-users override configuration changes that are made by the administrator. The administrator can reset a Role Center to its default settings by deleting all entries in the personalization or configuration tables.

- To clear the configuration table, open the **Profile Card** window, click **Actions**, and then select **Clear Configured Pages**.
- To clear the personalization table, open the **Profile Card** window, click **Actions**, and then select **Clear Personalized Pages**.

RoleTailored Client

With the RoleTailored client, you can create new and modify existing users, profiles, and permission sets (which determine access to specific objects).

After you have created users and assigned them to permission sets, you can add users to profiles. This aligns them with Role Centers in the RoleTailored client.

RoleTailored client users can be managed from the **Users** page. To access this page, click the **Departments** page and then click **Administration > IT Administration > General > Users**. You can also use this page to link permission sets to users.

Permission sets can be administered from the **Permission Sets** page. To access this page, click the **Departments** page and then click **Administration > IT Administration > General > Permission Sets**.

To create new profiles or edit existing profiles, you can use the **Profiles** page. To access this page, click the **Departments** page and then click **Administration > Application Setup > RoleTailored Client > Profiles.**

📓 **Note:** *You can also open the **Users** page by typing "Users" in the **Search** box on your home page in the RoleTailored client and then pressing Return.*

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Demonstration: Create a User for Windows Authentication

Demonstration Steps

1. Open the **Users** page.
   a. Start the RoleTailored client.
   b. On the **Departments** page, click **Administration > IT Administration > General > Users**.

2. Create a new user.
   a. On the **Users** page, click **New**.
   b. In the **User Name** field, type a unique, short name to identify the user.
   c. In the **Full Name** field, type the user's full name (first name, last name).

3. Specify the credential type.
   a. In the **Windows User Name** field, either type the name of a valid Active Directory user, by using the format domain\username, or click **Assist**.
   b. Click **Allow for this client session**, and then use the **Select User or Group** box to identify a Windows user.

4. Add more user information.
   a. Add any notes or links for the user in the respective FactBoxes on the right side of the **New – Users Card** page.
   b. Click **OK**.

Demonstration: Create a User for Username Authentication

Demonstration Steps

1. Open the **Users** page.
   a. Start the RoleTailored client.
   b. On the **Department**s page, click **Administration**, click **IT Administration**, click **General**, and then click **Users**.

2. Create a new user.

    a. On the **Users** page, click **New**.

    b. In the **User Name** field, type a unique, short name to identify the user.

    c. In the **Full Name** field, type the user's full name (first name, last name).

3. Specify the credential type.

    a. In the **Windows User Name** field, either type the name of a valid Active Directory user, by using the format domain\username, or click **Assist**, and then click **Allow for this client session**. Use the **Select User or Group** box to identify a Windows user.

    b. In the **State** field, specify whether the user should at first be **Enabled** or **Disabled**.

    c. To set a time limit on the user's access, enter a date in the **Expiry Date** field.

    d. Click **Set Password** and enter a password for the user. The first time that the user logs on, the system prompts him or her to change the password.

    e. Click **OK** to exit the **Set Password** box and return to the **New – Users Card** page.

4. Add more user information.

    a. Add any notes or links for the user in the respective FactBoxes on the right side of the **New – Users Card** page.

    b. Click **OK**.

Demonstration: Create a User for NavUser Authentication

Demonstration Steps

1. Open the **Users** page.

    a. Start the RoleTailored client.

    b. On the **Departments** page, click **Administration**, click **IT Administration**, click **General**, and then click **Users**.

2. Create a new user.

    a. On the **Users** page, click **New**.

    b. In the **User Name** field, type a unique, short name to identify the user.

    c. In the **Full Name** field, type the user's full name (first name, last name).

3. Specify the credential type.

   a. In the **Windows User Name** field, either type the name of a valid Active Directory user, by using the format domain\username, or click **Assist**. Then click **Allow for this client session**, and then use the **Select User or Group** box to identify a Windows user.

   b. In the **State** field, specify whether the user should be **Enabled** or **Disabled** at first.

   c. To set a time limit on the user's access, enter a date in the **Expiry Date** field.

   d. Click **Set Password**, and enter a password for the user. The first time that the user logs on, the system prompts him or her to change the password.

   e. Click **OK** to exit the **Set Password** box and return to the **New – Users Card** page.

4. Add additional user information.

   a. Add any notes or links for the user in the respective FactBoxes on the right side of the **New – Users Card** page.

   b. Click **OK**.

Demonstration: Create a User for ACS Authentication

Demonstration Steps

1. Open the **Users** page.

   a. Start the RoleTailored client.

   b. On the **Departments** page, click **Administration**, click **IT Administration**, click **General**, and then click **Users**.

2. Create a new user.

   a. On the **Users** page, click **New**.

   b. In the **User Name** field, type a unique, short name to identify the user.

   c. In the **Full Name** field, type the user's full name (first name, last name).

3. Specify the credential type.

   a. In the **License Type** field, choose one of the available license types.

   b. In the **State** field, specify whether the user's access should be **Enabled** or **Disabled**.

   c. If you want to set a time limit on the user's access, choose a date in the **Expiry Date** field.

d. In the Authentication section, next to **ACS Access Status**, click on the word **Disabled**, or select the word and press **Enter**. This opens an **Edit -User ACS Setup** dialog box.

e. In the **Edit -User ACS Setup** dialog box, click **Generate Auth Key** on the ribbon. A string value is automatically inserted into the **Authentication Key** field.

f. Save the **Authentication Key** value to a text file or another location where you can find it later. After you configure your deployment for ACS, and configure your Microsoft Dynamics NAV components for ACS, send this value, along with the **User Name** value, to the actual user and direct the user to provide these values when logging on with a Microsoft Dynamics NAV client.

g. Click OK to exit the **Edit -User ACS Setup** dialog box.

The **ACS Access Status** is now **Pending**. It will change to **Active** after the user successfully logs in.

4. Add additional user information.

a. Add any notes or links for the user in the respective FactBoxes on the right side of the **New – Users Card** page.

b. Click **OK**.

Demonstration: Edit or Create a Permission Set

If the default permission sets that are provided with the RoleTailored client for Windows are insufficient or unsuitable for your organization, then you can create new permission sets.

If the individual object permissions that define a permission set are not suitable, then you can edit a permission set

Demonstration Steps

1. Create a permission set.

a. Start the RoleTailored client for Windows. Or, you can type "Permission Sets" in the **Search** box on your home page, and then click Permission Sets in the Results list. The **Permission Sets** page opens.

b. On the **Permission Sets** page, click **New**. The **New – Permission Sets** page opens.

c. Type a name for the new permission set in the **Permission Set** field and a brief description for the new permission set in the **Name** field.

d. The name of the new permission set is automatically formatted in all uppercase letters.

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e. Click Permissions to open the Edit - Permissions page.

f. Type or select an object type on the first line in the list. If you would prefer to select from a list that shows all database objects, instead of typing or selecting objects, click **All Permissions**.

g. Type or select an Object ID.

h. Click in the **Object Name** field to display the default name for the object.

i. Type or select the word "Yes" for all permissions (Read Permission, Insert permission, Modify permission and Delete permission, but not Execute permission) that you are including in this permission set. You can also assign a value of Indirect. For more information, see the Indirect Permission section, in this module.

j. Create any security filters that you want to apply to the permissions that you have assigned to the permission set.

k. To include permissions for additional objects, position the cursor on a new line in the list and repeat steps f through j.

l. When the permission set is complete, click **OK** to exit the **Edit – Permissions** page.

2. Edit a permission set.

a. In the **Search** box on your home page in the RoleTailored client for Windows, type "Permission Sets" and then click **Permission Sets** in the Results list. The **Permission Sets** page opens.

b. On the **Permission Sets** page, click **Actions**, and then click **Edit List**. The **Edit – Permission Sets** page opens.

c. Select a permission, and then click **Permissions** to open the **Edit - Permissions** page for the selected permission set.
Each row in the list defines the permissions for one of the objects included in the permission set definition.

d. Select an existing object to modify its permissions, or scroll to the end of the list and position the cursor on a new line to add an additional object to the permission set definition.

e. If you are adding an object to the permission set definition, type or select an Object ID. If you would prefer to select from list that shows all database objects, instead of typing or selecting objects, click **All Permissions**.

f. If you are adding an object to the permission set definition, click in the **Object Name** field to display the default name for the object.

g. Type or select the word "Yes" for all permissions that you are including in this permission set.
You can also assign a value of Indirect.

h. Create any security filters that you want to apply to the permissions that you have assigned to the permission set.

i. Continue modifying objects or adding new objects to the list until the definition is completed.

j. Click **OK** to exit the **Edit – Permissions** page.

Demonstration: Assign a User to a Permission Set

Microsoft Dynamics NAV 2013 provides a set of standard permission sets. A permission set is a collection of permissions for specific objects in the database. All users must be assigned one or more permission sets before they can use the RoleTailored client.

By default, several predefined permission sets are provided in the RoleTailored client. You can use these permission sets as already defined, modify the default permission sets, or create additional permission sets.

A table can contain a FlowField that generates sums based on values that are stored in another table. In this case, users must have permission to read both tables or they cannot read the first table.

Demonstration Steps

1. Assign a user to a permission set.

    a. In the **Search** box on your home page in the RoleTailored client for Windows, type "Users" and then click Users in the Results list. The **Users** page opens.

    b. Select a user, and then click **Permissions**.
        The **Edit – User Permissions** page opens. Any permission sets that are already assigned to the user are displayed.

    c. To assign a new permission set to the user, click to position the cursor on a blank line and then click **Assist** to display a list of existing permission sets.

    d. Click to select a permission set. You cannot select more than one permission set at a time. However, you can repeat the step to assign multiple permission sets to the user.
        If there is more than one company in your database, you can type or select a company in the Company column to restrict these permissions to that company. If you leave this column blank, the user will have the relevant permissions for the whole database.

    e. Click **OK** to exit the **Edit –** <username> page.

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Demonstration: Create or Edit a Profile

You use the **Profile** card to create profiles for end-users. Each profile is associated with a Role Center. Profiles are typically based on job titles in a company.

The procedure for modifying an existing profile is the same, except you select an existing profile in the **Profiles** page instead of clicking **New** (step 3).

Demonstration Steps

    a.   In the RoleTailored client for Windows, click **Departments**, click **Administration**, click **RoleTailored Client**, and then click **Profiles**.

    b.   In the ribbon, click **New** to open the **New Profile Card** window.

    c.   In the **Profile ID** field, type a name that describes the intended role of the user.

    d.   In the **Owner ID** field, click **AssistEdit** to view all available logins, and then select a Windows user.

    e.   In the **Description** field, type a description of the Profile ID, for example, "Order Processor".

    f.   In the **Role Center ID** field, click **AssistEdit** to view all available Role Centers. Then select a Role Center.

    g.   To make this Role Center the default for the profile, select Default Role Center.

    h.   Click **OK** to save your changes.

Demonstration: Assign a User to a Profile

You use the **User Personalization** window in the RoleTailored client for Windows to assign a user to a profile.

Demonstration Steps

1.   Assign a user to a profile.

    a.   In the RoleTailored client for Windows, click **Departments**, click **Administration**, and then click **RoleTailored Client**.

    b.   Click User Personalization to open the User Personalization Card window.

    c.   In the User ID field, click AssistEdit to view all available user logins.

    d.   Select a user logon, and then click **OK**.

    e.   In the **Profile ID** field, select a profile ID that you have already created. Click **AssistEdit** to view all available profiles.

    f.   In the **Language ID** field, select the appropriate language ID, or leave this field blank.

       g.   In the **Company** field, select a company from the **Companies** window.

       h.   Click **OK**.

Development Environment

You use the Development Environment to create and manage Microsoft Dynamics NAV 2013 databases, to create and manage Microsoft Dynamics NAV companies, and to upload or change Microsoft Dynamics NAV licenses.

In addition, the Development Environment enables you to open the Object Designer, which gives you access to Microsoft Dynamics NAV objects. Use the Development Environment to modify the application or to create new application areas. For more information about this topic, see the C/SIDE Introduction training manual.

The Development Environment is a subcomponent of the RoleTailored client for Windows and is automatically installed as part of the **Install Demo** and **Developer** installation options. It can also be installed as part of the **Client** and **Custom Component** options.

The following figure shows the Development Environment user interface.
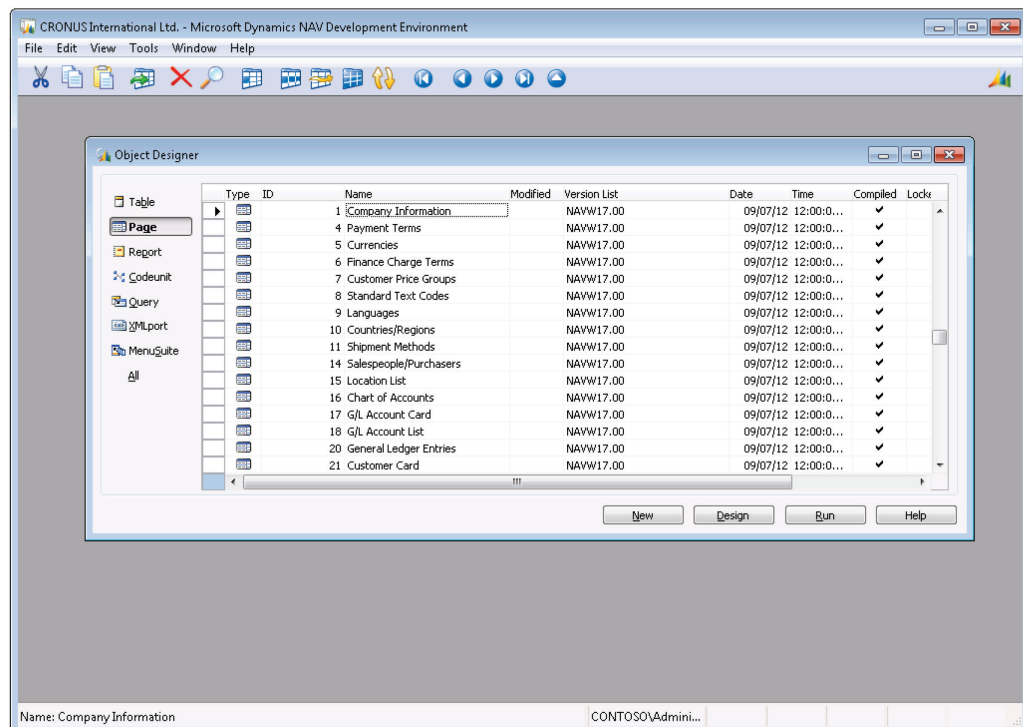

FIGURE 3.2: THE MICROSOFT DYNAMICS NAV 2013 DEVELOPMENT ENVIRONMENT WINDOW

Although you can install the RoleTailored client for Windows without the development environment, you cannot install the Development Environment component without the RoleTailored client for Windows.

The user interface of the Development Environment is only visible to administrators and can only be used for administrative tasks. It is not visible to the RoleTailored client users. Like the RoleTailored client for Windows, you can change the language of the user interface of the development environment. However, some of the functionalities (more in specific the C/SIDE design functions) in the development environment are available only in English.

To open the Development Environment, click **Start > All Programs > Microsoft Dynamics NAV 2013 Development Environment**. On startup, the Development Environment shows the Object Designer.

Unlike the RoleTailored client, the Development Environment will connect directly to a Microsoft Dynamics NAV SQL Server database. You can connect to different databases without having to restart other core components.

When you upgrade a RoleTailored client environment to Microsoft Dynamics NAV 2013, you will have to use the Development Environment to upgrade the existing Microsoft Dynamics NAV SQL Server database to the latest version.

Please be aware that managing databases, companies, objects, and licenses requires the necessary permissions on SQL Server. These permissions can be granted by using SQL Server Management Studio.

Permissions for Managing Databases

For an administrator to create new Microsoft Dynamics NAV databases in Microsoft Dynamics NAV Development Environment, that administrator must have the dbcreator and securityadmin Server Roles for the instance of SQL Server running Microsoft Dynamics NAV.

📔 **Note:** *The administrator must also have a Microsoft Dynamics NAV developer's license to use the Development Environment and be assigned the SUPER permission set.*

In the **Object Explorer** pane in SQL Server Management Studio, follow these steps after you connect to the instance of Microsoft Dynamics NAV SQL Server:

1. Expand the Security node, right-click Logins, and select New Login. If the administrator already has a Login, right-click the user and select Properties. Then go to step 4.
2. In the **Login – New** box, select Search.
3. In the **Select User or Group box**, select a valid Active Directory user.

4. In the **Login – New** box, under Select a Page, select Server Roles. Select the dbcreator and securityadmin check boxes.

5. Click **OK** to close the **Login – New** box.

When administrators create Microsoft Dynamics NAV databases in the Microsoft Dynamics NAV Development Environment, the account running Microsoft Dynamics NAV Server is automatically granted the db_owner database role for these databases.

Permissions for Managing Companies, Objects, and Licenses

Administrators who create Microsoft Dynamics NAV databases automatically have permission to manage companies, objects, and licenses in that database.

To grant permission to manage companies, objects, and licenses in Microsoft Dynamics NAV Development Environment to additional administrators, assign those administrators the db_owner database role for all relevant Microsoft Dynamics NAV databases.

To grant the db_owner role on a Microsoft Dynamics NAV database in SQL Server Management Studio, follow these steps:

1. If the administrator is not already a SQL Server login, add the administrator as a login by following the first three steps in the procedure above.

2. Select the Microsoft Dynamics NAV database, then **Security**, then right-click **Users** and select **New User**.

   Select the button at the right side of the Login Name field to open the Select Login box.

3. Select the check box for the relevant **Login** and then click **OK**.

4. Click **OK** to exit the **Select Login** box.

5. Enter a **User name** for the user. This can be the same as the login name.

6. In the **Database role membership** list at on the **Membership** page, select the **db_owner** check box.

7. Click **OK** to exit the **Database User – New** box.

License File Management

After an administrator or a Microsoft Certified Partner installs Microsoft Dynamics NAV, upload the license file that is supplied by Microsoft.

At first, Microsoft Dynamics NAV uses CRONUS.flf, which is the demonstration license file. All license files that are not demonstration license files are named FIN.flf. The demonstration license file has a different name so that it cannot be mistakenly overwritten.

The license file must be uploaded to SQL Server by using the Microsoft Dynamics NAV Development Environment. You can upload a license file either for all databases on an instance of SQL Server or for a specific database only.

Please be aware that on a computer that is running any version of Windows with User Access Control enabled, you must start the Development Environment with administrator user rights. Click **Start**, right-click Microsoft Dynamics NAV Development Environment, and then click **Run as administrator**.

The following procedure describes how to upload the license file to SQL Server:

1. Start the Development Environment.
2. Verify that you are connected to your database. On the **File** menu, point to **Database**, and then click **Open**.
3. On the **Tools** menu, click **License Information**.
4. In the **License Information** window, click **Upload**.
5. In the **Upload License File** box, browse to and open the license file.
   You should see the following message: The Server license was successfully uploaded.
6. Restart the Development Environment to enable the license if you will use it to work in the Development Environment.

To upload the license file to a specific database, follow these steps:

1. In the Development Environment, on the **File** menu, point to Database, and then click **Alter**.
2. In the **Alter Database** window, click **Integration**, and then click **Save license in database**.
3. Click **OK**.
4. In the **Upload License File** box, select the Microsoft Dynamics NAV license file, and then click **Open**.
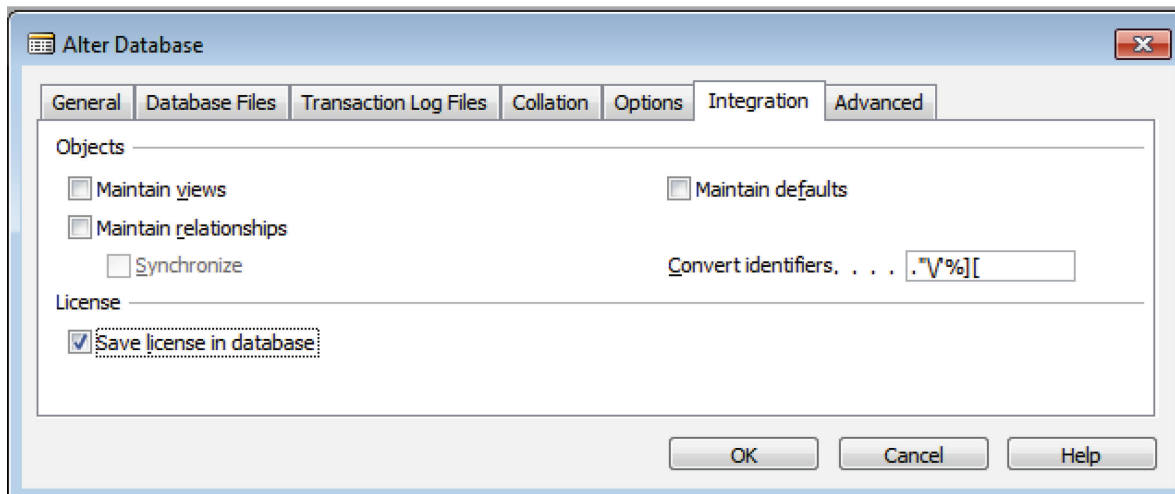
FIGURE 3.3: UPLOADING THE LICENSE FOR A SPECIFIC DATABASE

To save the license file in the database, you must have the Per Database license granule (2020) in your license. You must also have the necessary roles and permissions in SQL Server, as described earlier in this lesson.

Database Management

The Microsoft Dynamics NAV Development Environment enables you to maintain Microsoft Dynamics NAV databases. It can be used for the following tasks:

- Create a new database.
- Alter existing databases.
- Test databases.
- Delete databases.
- Increase the size of database files.
- Add new database files.
- Increase the size of the transaction log files.
- Add new transaction log files.
- Test tables in a database.

Databases can be managed from the **Database** menu (which is under the **File** menu).

NAV Server Administration Tool

The Microsoft Dynamics NAV Server Administration tool is a Microsoft Management Console (MMC) snap-in for creating and managing Microsoft Dynamics NAV Server instances. When you install the **Server** option on a computer, Microsoft Dynamics NAV Server Administration tool is one of the default features. Microsoft Dynamics NAV Server Administration tool is also an option when you install the **Client** option, although it is not one of the default components.

Note: Only members of the Administrator group on the computer can use the Microsoft Dynamics NAV Server Administration tool.

The NAV Server Administration tool can be used to perform the following tasks:

- Create a Microsoft Dynamics NAV Server instance.
- Manage Microsoft Dynamics NAV Server instances.
- Manage settings for a Microsoft Dynamics NAV Server instance.
- Administer a remote Microsoft Dynamics NAV Server.
- Administer multiple Microsoft Dynamics NAV Server computers from a single administrative console.

The NAV Server Administration tool can be run in two ways:

- From the Windows Start menu.
- From the Microsoft Management Console (MMC).

Although Microsoft Dynamics NAV Server will run on Windows Server 2008, the Microsoft Dynamics NAV Server Administration tool will only run on Windows Server 2008 R2.

Running the Server Administration Tool from the Windows Start menu

To start the tool, on the Windows taskbar, click Start > All Programs > Microsoft Dynamics NAV Administration.

*Note: Alternatively, you can click **Start**, and in the **Search programs and files** box, enter **Microsoft Dynamics NAV Administration**, and then click the related link.*

The following figure shows the Microsoft Dynamics NAV Server Administration tool started from Windows Start menu:
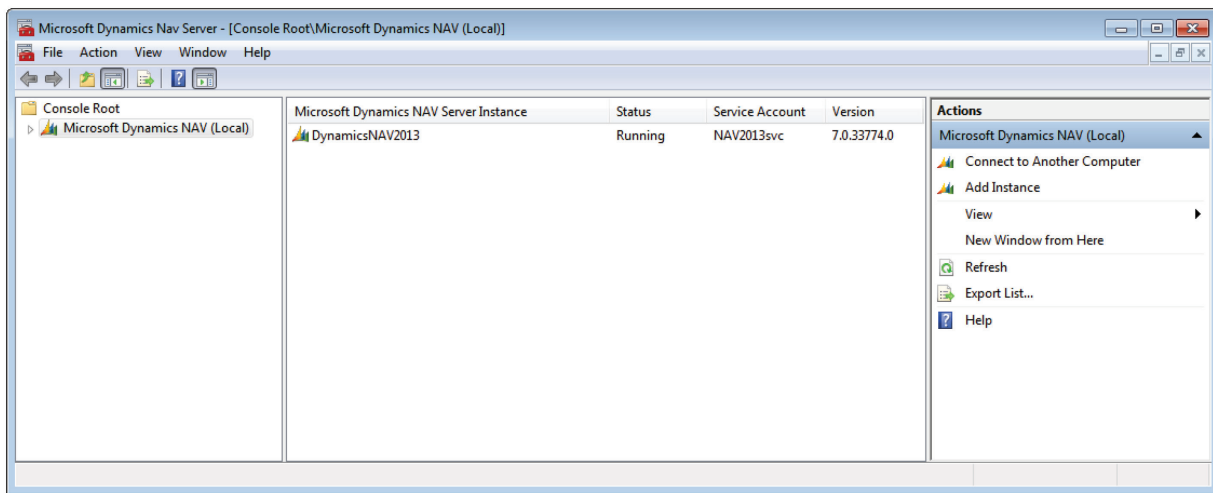

FIGURE 3.4: THE MICROSOFT DYNAMICS NAV SERVER ADMINISTRATION TOOL STARTED FROM WINDOWS START MENU

Microsoft Dynamics NAV Server Administration tool is divided into three panes:

- The left pane shows a tree view that lists all Microsoft Dynamics NAV Server computers that you are administering from this computer and all Microsoft Dynamics NAV Server instances on those computers. The first time that you run Microsoft Dynamics NAV Server Administration tool, the view is collapsed. You only see the local server without any Microsoft Dynamics NAV Server instances listed. To display any instances on the server, you can click the triangle to the left of the local computer. Next, you can right-click the default instance to display settings for that instance in the center pane.

- The center pane shows information about the item that you have selected in the left pane. When the selected item is a computer that is running Microsoft Dynamics NAV Server, the center pane shows a list of Microsoft Dynamics NAV Server instances on that computer and the status of each instance (running or stopped), and the name of the account under which the instance is running. When the item selected in the left pane is a Microsoft Dynamics NAV Server instance, the center pane shows the settings for that instance.

- The right pane displays available actions for the object that is selected in the left pane. These options differ, depending on whether a Microsoft Dynamics NAV Server or a Microsoft Dynamics NAV Server instance is selected. For more information, see Administration Tool Actions.

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Remember that if you start Microsoft Dynamics NAV Server Administration tool from the Windows Start menu, you can only connect to a single Microsoft Dynamics NAV Server at a time. (This can be either the local or a remote Microsoft Dynamics NAV Server.)

If you start the tool from MMC, you can administer multiple Microsoft Dynamics NAV Server computers from a single instance of Microsoft Dynamics NAV Server Administration tool. This is described next.

Running the Server Administration Tool from MMC

The following procedure describes how to start the tool from Microsoft Management Console (MMC) and to connect to the local Microsoft Dynamics NAV Server.

1. On the local Microsoft Dynamics NAV Server, click **Start > Run**, and then enter the following command:

```
mmc
```

2. In the management console window, on the **File** menu, click **Add/Remove Snap-in** to open the **Add or remove Snap-ins** box.
3. In the Available snap-ins list, double-click **Microsoft Dynamics NAV**.
4. In the **Connect to another computer** box, in the **Server Name** box, type the name of the local Microsoft Dynamics NAV Server, and then click **OK**. You can also accept the default value, which is (Local).
5. Click **OK**.
6. Click **OK** to close the **Add or remove Snap-ins** box.

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Now you see the single (local) Microsoft Dynamics NAV Server is listed in the tree view pane of Microsoft Dynamics NAV Server Administration tool:
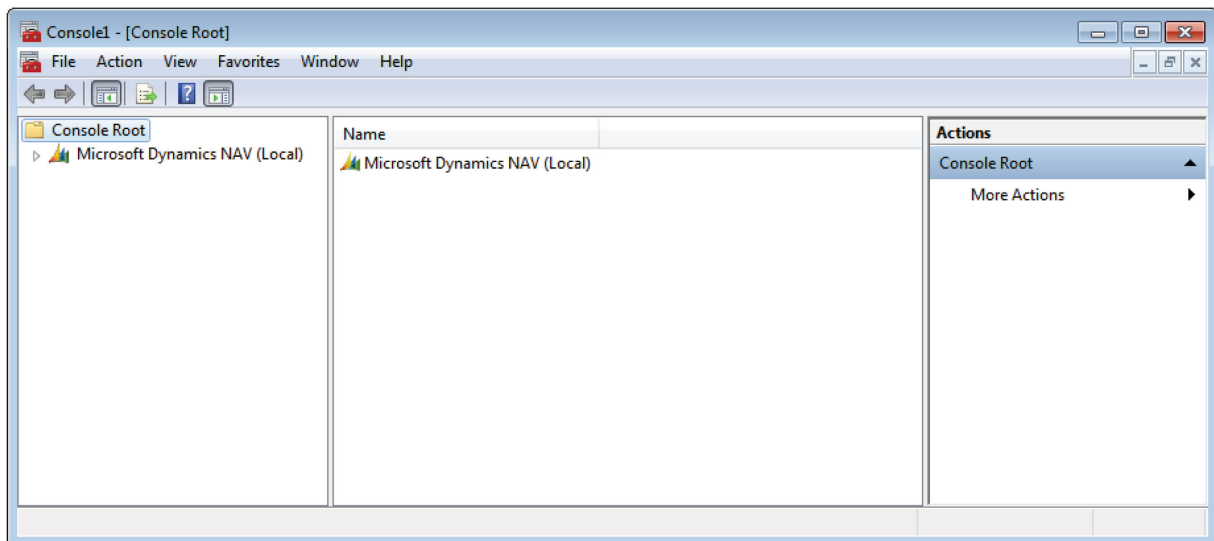

FIGURE 3.5: THE MICROSOFT DYNAMICS NAV SERVER ADMINISTRATION TOOL STARTED FROM MMC

When you close MMC, you are prompted to save your settings to a Microsoft Management Console (.msc) file. If you save your settings (for example to the Windows Desktop), then you can use this file to open MMC with the Microsoft Dynamics NAV Server already listed.

Connecting to Multiple Microsoft Dynamics NAV Server Computers

To administer multiple Microsoft Dynamics NAV Server computers from a single instance of the Server Administration tool, you have to start the tool from MMC. However, before you can connect to and manage remote Microsoft Dynamics NAV Server computers, you have to enable remote administration on each remote server that you want to manage from the Microsoft Dynamics NAV Server Administration tool.

The following procedure describes how to enable the remote Microsoft Dynamics NAV Server administration on a Microsoft Dynamics NAV Server.

1. Verify that the administrator who will be connecting to the remote computer is a member of that computer's Administrators group.

2. On the remote computer, open a Windows PowerShell™ command prompt with administrative credentials. Click **Start > Accessories**, right-click Windows PowerShell, and then click **Run as administrator**.

3. Windows PowerShell is included in Windows 7 and Windows Server 2008 R2 and can be installed on other Windows operating systems. For more information, see Windows PowerShell in the TechNet Library.

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4. On each remote computer, at the Windows PowerShell command prompt, type "Enable-PSRemoting", and then answer Yes to all questions.

Afterward you can configure MMC to connect to multiple Microsoft Dynamics NAV Server computers. To do this, follow these steps:

1. On the local Microsoft Dynamics NAV Server, click **Start > Run**, and then enter the following command:

```
mmc
```

2. In the management console window, on the **File** menu, click **Add/Remove Snap-in** to open the Add or remove Snap-ins box.

3. In the Available snap-ins list, double-click **Microsoft Dynamics NAV**.

4. In the **Connect to another computer** box, type the name of the Microsoft Dynamics NAV Server That You want to administer in the **Server Name** box, and then click **OK**. If you want to connect to the local Microsoft Dynamics NAV Server, you can either enter the name of the local computer or you can also accept the default value, which is (Local).

5. Repeat steps 3 and 4 for each Microsoft Dynamics NAV Server That You want to administer. A computer can only be added once to the same Server Administration tool instance.

6. Click **OK** to close the **Add or remove Snap-ins** box.

Now you see multiple Microsoft Dynamics NAV Server computers listed in the tree view pane of Microsoft Dynamics NAV Server Administration tool:

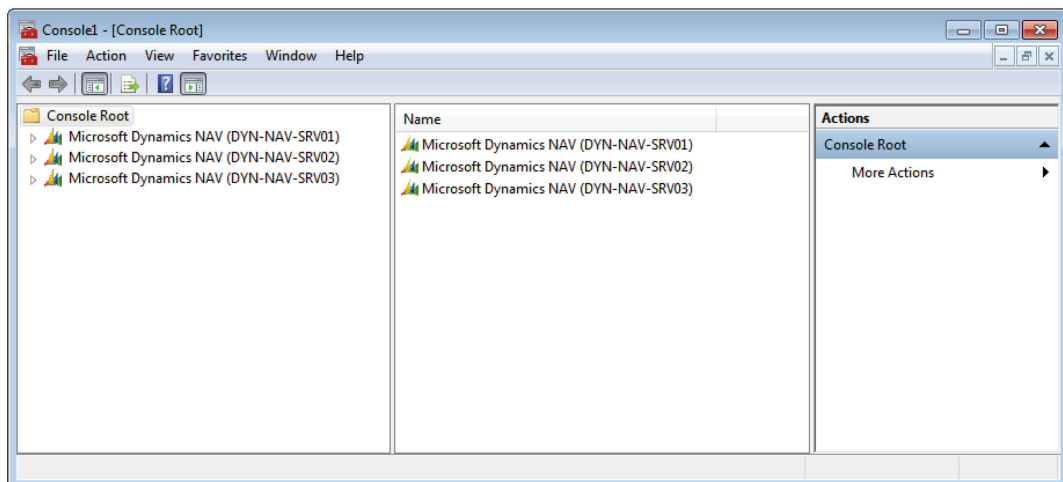**FIGURE 3.6: MICROSOFT DYNAMICS NAV SERVER ADMINISTRATION TOOL WITH MULTIPLE MICROSOFT DYNAMICS NAV SERVER COMPUTERS**

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Administration Tool Actions

Microsoft Dynamics NAV Server Administration tool actions are tasks that are listed in the right pane of the tool. The actions that are available vary, depending on whether you have selected a Microsoft Dynamics NAV Server or a Microsoft Dynamics NAV Server instance in the left pane.

Actions on Microsoft Dynamics NAV Server Computers

You can perform these tasks when you select a Microsoft Dynamics NAV Server in the tree view pane.

Action	Comment
Connect to Another Computer	With this action, you can connect to another Microsoft Dynamics NAV Server. When you select this option, the **Connect to another computer** box appears. In the box, type the name of the Microsoft Dynamics NAV Server That You want to administer in the **Server Name** box, and then click **OK**.
Add Instance	With this option, you can create additional server instances to a Microsoft Dynamics NAV Server. For more information, see Managing Server Instances later in this module.

Actions on Microsoft Dynamics NAV Server Instances

You can perform the following tasks when you select a Microsoft Dynamics NAV Server instance in the tree view pane.

Action	Comment
Configuration	When you select this option, you can view the configuration settings for the selected instance in the middle pane. To modify the settings, click **Edit** at the bottom of the middle pane. To save the modified settings, click **Save**. To discard the changes, click **Cancel**. When you change settings, you must restart the server instance.
Login Account	When you click **Login Account**, you see information about the login account for the Microsoft Dynamics NAV Server instance. To modify this information, click **Edit**.

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After you modify either the configuration or login account settings, you must restart the Microsoft Dynamics NAV Server instance for these changes to take effect. Follow these steps:

1. Select a Microsoft Dynamics NAV Server in the tree view pane.
2. In the center pane, under Server Instance, right-click the instance you have modified.
3. From the list, click **Restart** or click **Start** if the instance is not already running.

You can perform the following tasks when you select a Microsoft Dynamics NAV Server instance in the middle pane.

Action	Comment
Remove	This removes the selected server instance (and the underlying Windows service).
Restart/Start	The Restart action stops and starts a running service. The Start action starts a stopped server instance.
Stop	This option stops a running server instance.

Server Instance Management

When you install Microsoft Dynamics NAV Server on a computer, there is at first a single default instance. The default instance is identified as Microsoft Dynamics NAV Server. If your organization requires additional instances, then you can either install Microsoft Dynamics NAV Server on additional computers or create additional instances on the original Microsoft Dynamics NAV Server.

Each Microsoft Dynamics NAV Server instance on a computer runs as a separate Windows service and can run under a separate computer account, which is the Service account.

You can use the Server Administration tool to manage existing server instances and create new instances.

Server Instance Creation

The following procedure describes how you can create a new server instance on the local Microsoft Dynamics NAV Server.

1. Open the Microsoft Dynamics NAV Server Administration tool. Click **Start > All Programs > Microsoft Dynamics NAV Administration**.

2. In the tree view, which is the left pane, select the Microsoft Dynamics NAV Server where you want to add an instance. This is typically the local computer, which is Microsoft Dynamics NAV 7 (local). For more information about remote administration, see Running the Server Administration Tool from MMC and Administration Tool Actions.

3. Right-click the computer name, and then click **Add Instance**.

4. Supply the required values in the **Server instance settings** section for the new instance.
    Each instance on a computer must have unique values for these settings.

Parameter	Description
Server Instance	Enter a unique name for the server instance.
Management Services Port	Enter the number of the listening port for remote management instructions.
Client Services Port	Enter the number of the listening port for RoleTailored client for Windows connections.
SOAP Services Port	Enter the number of the listening port for SOAP web services connections.
OData Services Port	Enter the number of the listening port for OData web services connections.

Remember that you have to specify a value for all service types (Client, SOAP, OData, and Management), even if you want to create a server instance for specific service types only.

5. Supply the required values in the Log on Account section, and then specify the computer account that will run the instance in the **Service Account** field. You can select the Network Service account or a domain user account. If you select Network Service in the **Service Account** field, then you do not have to specify values for the **User name**, **Domain**, and **Password** fields.

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Parameter	Description
Service Account	Select the account type under which the server instance will run. You can select either Network Service or User Account.
User Name	Enter the user name of the Windows account under which the server instance will run.
Domain	Enter the domain name of the Windows account under which the server instance will run.
Password	Enter the password of the Windows account under which the server instance will run.
Confirm Password	Confirm the password of the Windows account under which the server instance will run.

6. Click **OK** to close the **Server Instance** window.

📓 **Note:** *Using the Network Service account to run a Microsoft Dynamics NAV Server instance is considered less secure because this account is a shared account that can be used by other unrelated network services. Any user who has rights to the Network Service account also has rights to other services that are running on this account. Running Microsoft Dynamics NAV Server instances under a dedicated domain user account, which is an account that is used only for Microsoft Dynamics NAV components, can be more secure but requires a domain administrator to set up and provision the account.*

When you create additional server instances on a Microsoft Dynamics NAV Server, a subfolder will be created under C:\Program Files\Microsoft Dynamics NAV\70\Service\Instances\ for each instance. This subfolder will have the same name as the server instance and will contain the CustomSettings.config file for the server instance.

After you have created a new server instance, you can also configure it using the Microsoft Dynamics NAV Server Administration tool.

Server Instance Configuration

After you have installed a Microsoft Dynamics NAV Server instance, you can use the Server Administration tool to (re)configure the settings for the server instance. To change these settings, start the Microsoft Dynamics NAV Server Administration tool, connect to the server that you want to administer, and then select the server instance to configure.

The following table shows the parameters that you can change:

Tab	Parameter	Description
General	Database Instance	The name of the SQL Server database instance to connect to. If this setting is a null string (""), Microsoft Dynamics NAV Server connects to the default instance of SQL Server. Default: NAVDEMO
	Database Name	The name of the SQL Server database. Default: "Demo Database NAV (7-0)"
	Database Server	A valid network name for the computer that is running SQL Server.
	Data Cache Size	The contextual size of the data cache. Default: 6
	Debugging Allowed	Specifies whether C/AL debugging is allowed for this Microsoft Dynamics NAV Server instance. Default: Enabled
	Enable Debugging	Specifies whether the Microsoft Dynamics NAV Server instance starts with debugging enabled. If this option is enabled, the following occurs: • When the RoleTailored client for Windows first connects, all C# files for the application are generated. • C# files persist between Microsoft Dynamics NAV Server restarts. • Application objects are compiled with debug information. Default: Not enabled

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Tab	Parameter	Description
	Enable Software Quality Metrics	Specifies whether the Microsoft Dynamics NAV Server instance can collect basic information about your hardware configuration and how you use Microsoft Dynamics NAV Server. Then it sends it to Microsoft. Microsoft uses this information to identify trends and usage patterns and to improve its software. Default: Not enabled
	Max Concurrent Calls	The maximum number of concurrent client calls that can be active on this Microsoft Dynamics NAV Server instance. Default: 40 Range: 1 - 2,147,483,647 You can also use MaxValue as a value to indicate no limit.
	Metadata Provider Cache Size	The number of objects that can be cached. Set this value to 0 to disable caching. Default: 150
	Network Protocol	The network protocol for accessing the database. Valid values: Default, NamedPipes, Sockets, MultiProtocol. Default: Default
	Server Instance Name	The name of the Microsoft Dynamics NAV Server instance. Default: DynamicsNAV70

Tab	Parameter	Description
	Services Default Time Zone	The time zone in which web service and NAS services calls are run. Values: • UTC All business logic for web services and NAS services on the server instance runs in Coordinated Universal Time (UTC). This is how all web services business logic was handled in earlier versions. • Server Time Zone Services use the time zone of the computer that is running. Microsoft Dynamics NAV Server. • \<ID of any time zone recognized by the current version of Windows> Specifies any Windows time zone as defined in the system registry under HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows NT\CurrentVersion\Time Zones. For example, Romance Standard Time. Default: UTC
	Session Event Table Purge Frequency	The day of the week and the start time that the session event table will be queried for purging. The value of the DayOfWeek ranges from 0 (Sunday) to 6. The value of Time should be a valid time of the day expressed in the format hh:mm. hh is hours measured on a 24-hour clock, and mm is minutes.
	Session Event Table Retain Period	An integer value that specifies number of months the session events should be retained
	SQL Command Timeout	The contextual time-out for an SQL command. Default: 0:30:00

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Tab	Parameter	Description
Client Services	Certificate Thumbprint	Certificate thumbprint for those who use security certificates to protect communications between RoleTailored clients for Windows and Microsoft Dynamics NAV Server over an open or wide area network. You must provide the certificate thumbprint to Microsoft Dynamics NAV Server by updating this setting.
	Enable Certificate Validation	Specifies whether validation should be performed on the certificate. Default: Enabled
	Chunk Size	The default size for a chunk of data that is transferred between Microsoft Dynamics NAV Server and the RoleTailored client for Windows, in kilobytes. Default: 28. The range of values is from 4 to 80.
	Compression Threshold	The threshold in memory consumption at which Microsoft Dynamics NAV Server starts compressing datasets, in kilobytes. Default: 64

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Tab	Parameter	Description
	Credential Type	How RoleTailored client for Windows users are authenticated when they connect to Microsoft Dynamics NAV Server. When set to **Windows**, Windows logon credentials are used, and users are not prompted for authentication information. When set to **UserName**, users are prompted for user name and password credentials. This setting is recommended for connecting RoleTailored clients for Windows over an open or wide area network that has communications protected with SSL. You must also configure the Client Credential Type setting in all RoleTailored client for Windows configuration files to match the value in the Microsoft Dynamics NAV Server configuration file.
	Enable Client Services	Specifies whether RoleTailored client for Windows services are enabled for this Microsoft Dynamics NAV Server instance. Default: Enabled
	Idle Client Time-Out	The interval of time that a Microsoft Dynamics NAV Server client session can remain inactive before the session is dropped. Time interval format: [dd.]hh:mm:ss[.ff] Where: • dd: days • hh: hours • mm: minutes • ss: seconds • ff: hundredths of a second You can also use MaxValue as a value to indicate no time-out. This is the default value.

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Tab	Parameter	Description
	Max Concurrent Connections	The maximum number of concurrent client connections that the current Microsoft Dynamics NAV Server instance accepts. Default: 150 You can also use MaxValue as a value to indicate no limit.
	Max Items in Object Graph	The maximum number of objects to serialize or deserialize. Default: 512
	Max Number of Orphaned Connections	The maximum number of orphaned connections to be kept alive concurrently for the time that is specified by ClientReconnectPeriod. A connection is "orphaned" when the client is involuntarily disconnected from Microsoft Dynamics NAV Server. Default: 20 You can also use MaxValue to indicate no limit.
	Max Upload Size	The maximum size of files that can be uploaded to or downloaded from Microsoft Dynamics NAV Server, in megabytes. Use this setting to avoid out-of-memory errors. Default: 5
	Operation Time-Out	The maximum time that Microsoft Dynamics NAV Server can take to return a call from the client. Time span format: [dd.]hh:mm:ss[.ff] Where: • dd: days • hh: hours • mm: minutes • ss: seconds • ff: hundredths of a second You can also use MaxValue as to indicate no time-out. This is the default value.

Tab	Parameter	Description
	Port	The listening TCP port for RoleTailored clients for Windows. Default: 7046 Valid range: 1 - 65535
	Prohibited File Types	A series of file name extensions, delimited by semicolons. Microsoft Dynamics NAV Server will not store files of any of the specified types when it is requested to do so by clients. Default: Many extensions—see Microsoft Dynamics NAV Server Administration tool for the complete list.
	Protection Level	The security services for protecting the data stream between RoleTailored clients for Windows and Microsoft Dynamics NAV Server. All RoleTailored clients for Windows that connect to the Microsoft Dynamics NAV Server instance must have the same ProtectionLevel value in their ClientUserSettings.config files. For background information on transport security, see Understanding Protection Level (http://go.microsoft.com/fwlink/?LinkId=267422). Default: EncryptAndSign Values: EncryptAndSign, Sign, None

Tab	Parameter	Description
	Reconnect Period	The time a client can use to reconnect to a running instance of Microsoft Dynamics NAV Server. Time span format: [dd.]hh:mm:ss[.ff] Where: • dd: days • hh: hours • mm: minutes • ss: seconds • ff: hundredths of a second Default: 00:10:00 You can also use MaxValue to indicate no time limit.
SOAP Services	Enable SOAP Services	Specifies whether SOAP web services are enabled for this Microsoft Dynamics NAV Server instance. Default: Enabled
	Max Message Size	The maximum permitted size of a SOAP web services request, in kilobytes. Default: 1024
	Port	The listening HTTP port for Microsoft Dynamics NAV SOAP web services. Default: 7047 Valid range: 1 - 65535
	Enable SSL	Specifies whether SSL (https) is enabled for the SOAP web service port. Default: Not enabled
	Use NTLM Authentication	Specifies whether NTLM authentication is enabled for SOAP web services. Enable this setting if you are using PHP or Java to start a web services connection to Microsoft Dynamics NAV. Default: Not enabled
OData Services	Default Company	The default company that is used if the user has never used the Microsoft Dynamics NAV client.

Tab	Parameter	Description
	Enable OData Services	Specifies whether OData web services are enabled for this Microsoft Dynamics NAV Server instance. Default: Enabled
	Max Page Size	The maximum number of entities returned per page of OData results. See Server-Driven Paging in OData Web Services.
	Port	The listening HTTP port for Microsoft Dynamics NAV OData web services. Default: 7048 Valid range: 1 - 65535
	Enable SSL	Specifies whether SSL (https) is enabled for the OData web service port.
NAS Services	Company	The Microsoft Dynamics NAV company that opens when NAS services start.
	Enable Debugging	Specifies that the NAS services session wait 60 seconds before executing the first C/AL statement. This allows time for starting and attaching the NAV Debugger to the NAS services session. Default: Not enabled
	Startup Argument	• A string argument to be used when NAS services start. The argument typically specifies an application type, sometimes with additional configuration information. • Example values: • "ADCS, ADCSID=1" • "OSYNCH" • "JOBQUEUE"

Tab	Parameter	Description
	Startup Codeunit	The codeunit that contains the method that will be called by the NAS Startup Method setting. Example values: • 0 When NASStartupCodeunit is set to 0, NAS Services do not start. This is the default value. • 1 When NAS services start they run the trigger specified by the NAS Startup Method in codeunit 1. • 450 When NAS services start they run codeunit 450 (Job Queue – NAS Start Up), and call the method specified by NASStartupMethod. When the codeunit specified in this parameter is a single instance codeunit, the Microsoft Dynamics NAS service session will remain alive even after it runs all code in the specified NAS Startup Method. Information about single instance codeunits is covered in the course *C/SIDE Introduction in Microsoft Dynamics NAV 2013*.
	Startup Method	• The method that will be called in the NAS Startup Codeunit. • Example values: • "" If no start method is specified (null string), the OnRun trigger is called. • StartNAS NAS services runs the StartNAS method in the NAS Startup Codeunit.

Tab	Parameter	Description
Management Services	Enable Management Services	Specifies whether Microsoft Dynamics NAV Server Administration tool is enabled for this Microsoft Dynamics NAV Server instance. Default: Enabled
	Port	The listening TCP port for Microsoft Dynamics NAV Server Administration tool. Default: 7045 Valid range: 1 - 65535

Remember that you must restart the Microsoft Dynamics NAV Server instance for the new settings to take effect.

Powershell API

Except the Microsoft Dynamics NAV Server Administration Tool, Microsoft Dynamics NAV 2013 also includes a command-line API for Server Administration. The API is implemented in Windows PowerShell 2.0. PowerShell 2.0 is included with Windows Server 2008 R2 and Windows 7. For other versions of Windows supported for Microsoft Dynamics NAV 2013, you can install it as part of the Windows Management Framework (http://go.microsoft.com/fwlink/?LinkId=267423).

The PowerShell API enables you to manage licenses and server settings, to create and remove server instances and to manage users, and permission sets.

To start a PowerShell administration session, click **Start > All Programs > Microsoft Dynamics NAV 2013 PowerShell Session**.

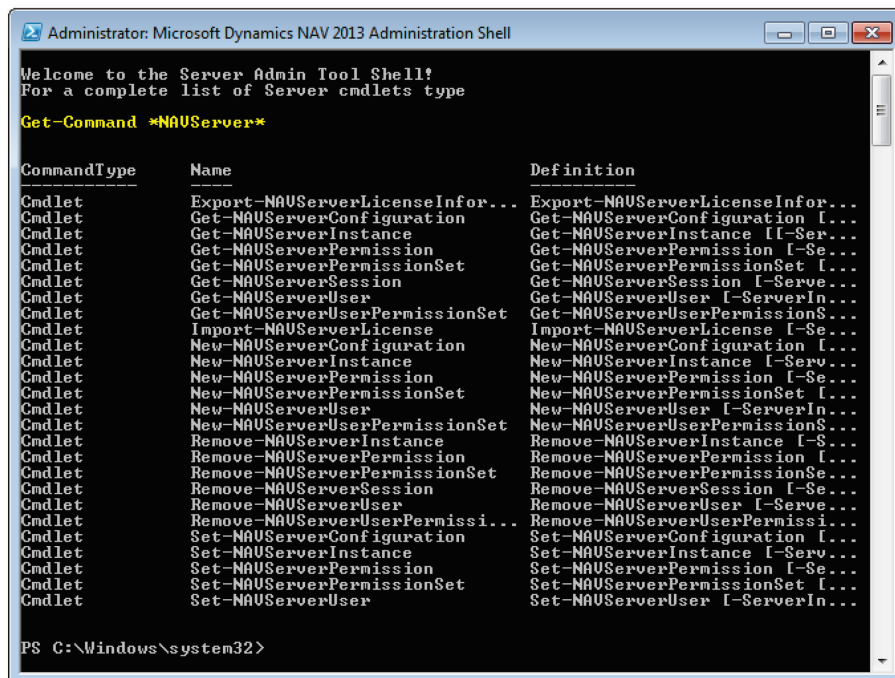The following figure shows a PowerShell prompt:

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FIGURE 3.7: SERVER ADMINISTRATION WITH MICROSOFT DYNAMICS NAV POWERSHELL SESSION

To then see the commands that are available for administering Microsoft Dynamics NAV, type the following command at the PowerShell prompt:

Get-Command *NavServer*

To get help on syntax and options for a specific command, type the following command:

Get-help <cmd name>

For example, to get Help about the Get-NAVServerInstance command, type the following:

Get-help Get-NAVServerInstance

For more information about the different PowerShell commands, see the "Microsoft Dynamics NAV PowerShell API" module.

Wide Area Network Connections

With Microsoft Dynamics NAV 2013 you can implement a secure RoleTailored client for Windows connection to Microsoft Dynamics NAV Server over a wide area network (WAN). In this deployment scenario, the RoleTailored client for Windows and Microsoft Dynamics NAV Server can be in the same or separate Active Directory domains. When you set up remote connections, use security certificates to protect your data.

This lesson also discusses some performance benchmarks that you should consider before you implement a WAN connection. Finally it will describe how to implement security certificates in test and production environments.

Deployment Scenario

Microsoft Dynamics NAV 2013 not only supports multiple client types, it also enables you to implement a secure RoleTailored client for Windows connection to Microsoft Dynamics NAV Server over a wide area network (WAN).

In this deployment scenario, the RoleTailored client for Windows and Microsoft Dynamics NAV Server can be in the same or separate Active Directory domains.

The following illustration shows how a computer that is running the RoleTailored client for Windows in one Active Directory domain can connect to an instance of Microsoft Dynamics NAV Server in another domain.
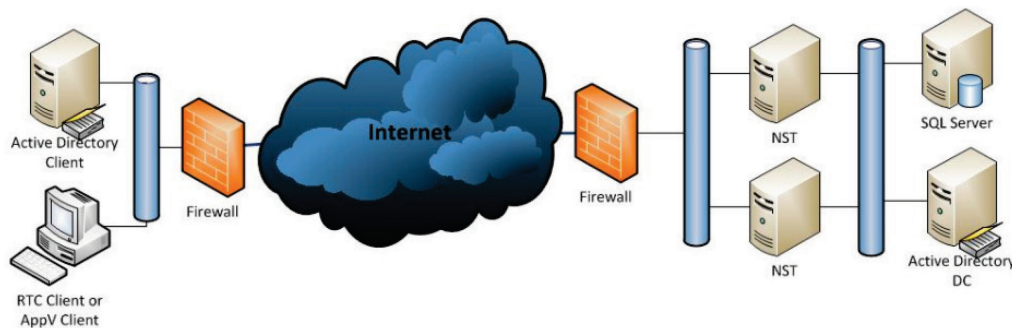

FIGURE 3.8: WIDE AREA NETWORK DEPLOYMENT SCENARIO

In addition, implementations such as these assume the following:

- All functionality is available to remote RoleTailored client for Windows users.
- User accounts are provisioned in an Active Directory domain, and SQL Server and Microsoft Dynamics NAV Server are installed on a computer in this domain.
- The administrator who is creating this implementation is a member of the Domain Admins group in this domain.

- On the computer that is running Microsoft Dynamics NAV Server, a DNS entry that resolves to the published server port on the computer's firewall exists for Microsoft Dynamics NAV Server.

- If the RoleTailored client for Windows or Microsoft Dynamics NAV Server is behind a firewall, then you must have opened a port to communicate with Microsoft Dynamics NAV Server on the RoleTailored client for Windows computer and published the port on the Microsoft Dynamics NAV Server. The default port number is 7046.

- The RoleTailored client for Windows and Microsoft Dynamics NAV Server are configured as described in the Walkthrough: Installing the Three Tiers on Three Computers topic in the MSDN Library http://go.microsoft.com/fwlink/?LinkId=267424.

Certificates

When you set up a remote access deployment, we strongly recommend that you protect your WAN connections with security certificates.

You can use service certificates to help secure RoleTailored client for Windows connections over a wide area network (WAN). Microsoft Dynamics NAV 2013 can support the following configurations:

- Chain trust, which specifies that each certificate must belong to a hierarchy of certificates that ends in a root authority at the top of the chain.

- Peer trust, which specifies that both self-issued certificates and certificates in a trusted chain are accepted.

This topic describes the chain trust configuration, which is the more secure option.

In a production environment, you implement chain trust by obtaining X.509 service certificates from a trusted provider. These certificates and their root certification authority (CA) certificates must be installed in the certificates store on the computer that is running Microsoft Dynamics NAV Server. The CA certificate must also be installed in the certificate store on computers that are running the RoleTailored client for Windows so that clients can validate the server.

Implementing secured RoleTailored client for Windows connections over a Wide Area Network requires administration on both the Microsoft Dynamics NAV Server and the client computers. This module will describe how to configure the Microsoft Dynamics NAV Server to support logon over a WAN. Configuration of the RoleTailored client for Windows to support logon over a WAN is described in the next module.

📋 **Note:** *Implementing remote logon requires changing the credential type for the Microsoft Dynamics NAV Server instance involved. Consider using a dedicated Microsoft Dynamics NAV Server instance for remote connections so that this change does not affect local users.*

However, before you start deployment, you should determine whether users fit the performance profile for running the RoleTailored client for Windows over a WAN.

Performance Considerations

You can use the information in this section to help decide whether the RoleTailored client for Windows over WAN option is appropriate for your organization. Specifically, this section should help you answer the following questions:

- Does your team's usage scenarios support running the RoleTailored client over a WAN?
- What kind of performance can you expect when you run the RoleTailored client over a WAN?

Targeted Usage Scenarios

There are two primary scenarios for running the RoleTailored client for Windows over a WAN.

- Mobile light users. Salespeople who visit customers, look up order histories, and take orders when at the customer site are examples of mobile light users. These users want quick and easy access to data to support their primary tasks. This usage is typically not extensive, and users prefer not to have to log on to the company network through a virtual private network.
- Hosted users. Multiple users who sit at one location and access Microsoft Dynamics NAV Server at a remote location are hosted users. These users do not have control of the installation, which is managed by a hosting provider.

For each scenario, the following assumptions are made:

- Each user has a download speed of at least 1 megabit per second and an upload speed of at least 200 kilobits per second.
- Network latency is less than 200 milliseconds.

- The RoleTailored client for Windows is running on a computer that cannot log on to an Active Directory domain controller, either in the domain where the RoleTailored client for Windows is installed or in the domain where Microsoft Dynamics NAV Server is installed. The RoleTailored client for Windows and Microsoft Dynamics NAV Server can be in the same Active Directory domain or in separate domains.

Performance Testing Results

Performance testing of these scenarios focused on latency and bandwidth. An environment where both latency and bandwidth could be throttled helped simulate different types of connectivity. The tests were based on 10 concurrent users posting 10 automated one-line sales orders with the RoleTailored client for Windows. This kind of measurement is not completely realistic because the order entry is so fast that the screen cannot render before **Post** is pressed. Therefore, if this is the benchmark load, then any real-life loads that involve similar operations will be slower.

Bandwidth that ranged from a 10-megabit download and 1-megabit upload connection to a 300-megabit download and 300-megabit upload connection, which is comparable to a local area network, was tested.

Latencies that ranged from 0 to 600 milliseconds were also tested. This range approximates connections from a fast LAN connection to a slow ADSL connection. The range also approximates a fast satellite connection. This would be between 500 and 1000 milliseconds.

In the Throughput/Latency graph, the x-axis from left to right shows the round-trip time added to the connection in milliseconds. The line that runs from the lower-left to the upper-right shows the latency, or response times. The other lines show the maximum kilobytes received per second, average kilobytes received per second, maximum kilobytes sent per second, and the average kilobytes sent per second.
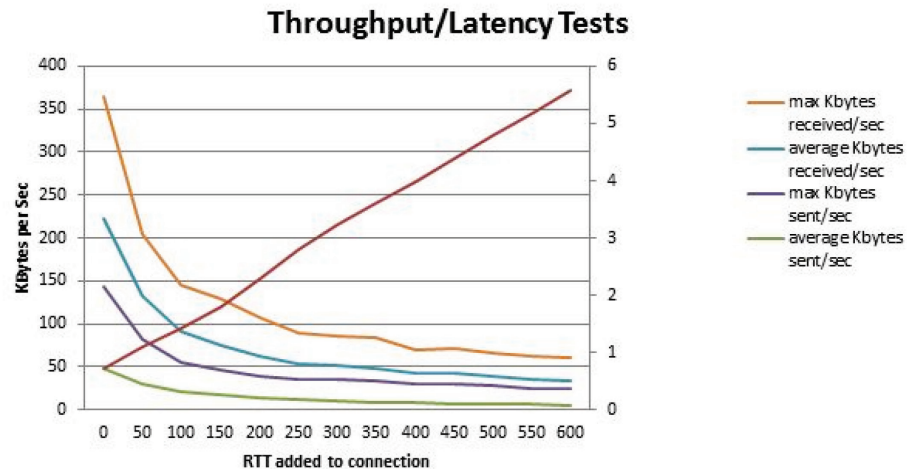
Throughput/Latency Tests

FIGURE 3.9: THROUGHPUT/LATENCY TESTS FOR WAN CONNECTIONS

The graph shows that latency linearly affects the response time. It also shows that a larger latency affects the ability to use the available bandwidth and that the "elbow" or optimum latency is between a latency of 100 and 150 milliseconds.

In the Bandwidth per User graph, the x-axis shows bandwidth per user, and the y-axis shows the response time for the 10 sales orders. On the bandwidth per user axis, 5/1 represents a 50-megabit upload and 10-megabit download connection, and 2/0.5 represents a 20-megabit download and 0.5 megabit upload connection.
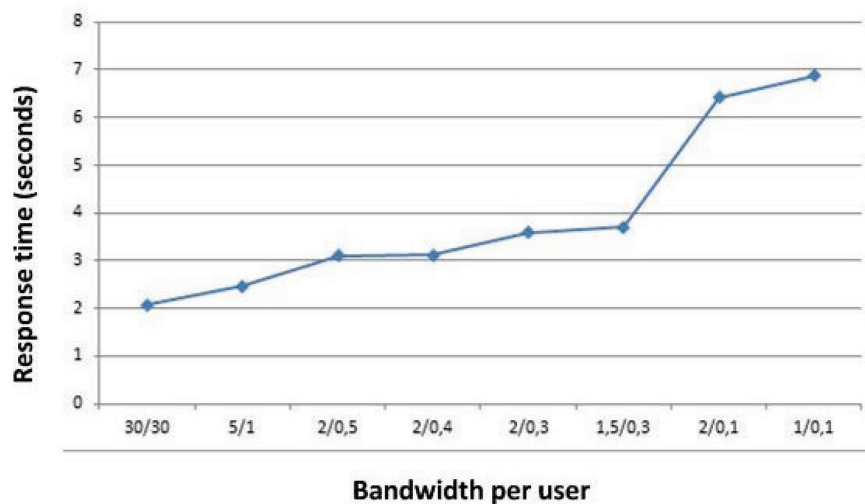
FIGURE 3.10: BANDWIDTH PER USER WINDOW

The graph shows that the "elbow" or optimal bandwidth is between 1.50/0.3 megabits and 2/0.1. Additional tests show that the determining factor for these connections is the upload speed instead of download speed, and that the elbow is between 0.1 and 0.3 megabits per user for the tested scenarios.

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Because these tests targeted limited bandwidth scenarios, you can also have a single session use all available bandwidth for any kind of connection when you transfer a large file or run a large report.

📝 **Note:** *The term Secure Sockets Layer (SSL) is not used in this topic to describe the implementations. Although these implementations do use the public and private key infrastructure of SSL and SSL certificates, they use Windows Communication Foundation (WCF) transport-level security (TLS) over the TCP/IP protocol instead of https. This means that they are not strict SSL implementations.*

Demonstration: Implement Security Certificates in a Test Environment

In this demonstration you set up an environment to test integrating certificates into a configuration for connecting computers that are running the RoleTailored client for Windows to Microsoft Dynamics NAV Server instances over a wide area network (WAN) with the chain trust configuration.

Prerequisites

To complete this demonstration, you will need:

- The Certificates snap-in for Microsoft Management Console (MMC). If you do not already have this snap-in installed, then follow these steps:
  - Click **Start > Run**, and then type "Mmc.exe".
  - In the console, on the **File** menu, click **Add/Remove Snap-in**.
  - In the **Add Standalone Snap-in box**, select **Certificates > Computer Account > Local Computer > Add**.

- The makecert.exe utility. For more information, see Certificate Creation Tool (Makecert.exe) in the MSDN Library (http://msdn.microsoft.com/en-us/library/bfsktky3.aspx).

Microsoft Dynamics NAV Server Configuration

You create and install a root certification authority (CA) and a server certificate on the computer that is running Microsoft Dynamics NAV Server. Next, you create a certificate revocation list for the root certification authority and then install the certificate revocation list on the computer that is running Microsoft Dynamics NAV Server. (A certificate revocation list is required because WCF applications check the revocation list when validating certificates.) After that, you create and install the test certificate for the Microsoft Dynamics NAV Server service and you grant the Microsoft Dynamics NAV Server service account access to the certificate's private key. Finally, you will reconfigure Microsoft Dynamics NAV Server to support remote logon.

Demonstration Steps

1. Create a root CA and a private key file by using the makecert.exe utility.

   a. Create a temporary folder to use when you work with certificates.

   b. Click **Start > All Programs > Microsoft Visual Studio 2010 > Visual Studio Tools**.

   c. Right-click **Visual Studio Command Prompt (2010)**, and then click **Run as administrator**.

   d. At the command prompt, locate the temporary directory.

   e. Type the following command:

```
makecert -n "CN=RootNavServiceCA" -r -sv RootNavServiceCA.pvk
RootNavServiceCA.cer
```

   f. When you are prompted, enter a strong password.
   In this example, type "Pa$$w0rd".
   (You must have this password to create the service certificate.)

   The RootNavServiceCA.cer certificate file and the RootNavServiceCA.pvk private key are now saved in your temporary folder.

2. Install the root CA on the computer that is running Microsoft Dynamics NAV Server by using the Certificates snap-in.

   a. Start the Certificates snap-in for MMC on the computer that is running Microsoft Dynamics NAV Server, and then add the Certificates snap-in.

   b. In the Certificates snap-in box, click **Computer account**, and then click **Next**.

   c. In the **Select Computer** pane, click **Local computer** (the computer this console is running on), and then click **Finish**.

   d. Click **OK** to close the **Add or Remove Snap-ins** box.

   e. In the left pane of MMC, expand the Certificates (Local Computer) node.

   f. Expand the Trusted Root Certification Authorities node, right-click the Certificates subfolder, select **All Tasks**, and then click **Import**.

   g. In the Certificate Import Wizard, on the **Welcome** page, click **Next**.

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h. On the **File to Import** page, click **Browse**.

i. Browse to the RootNavServiceCA.cer certificate file, select the file, and then click **Open**.

j. On the **File to Import** page, click **Next**.

k. On the **Certificate Store** page, accept the default selection, and then click **Next**.

l. On the **Completing the Certificate Import Wizard** page, click **Finish**.

The RootNavServiceCA certificate is now visible in the list of trusted root CAs.

3. Create a certificate revocation list for the root certification authority

a. At the Visual Studio Command Prompt, type the following command:

```
makecert -crl -n "CN=RootNavServiceCA" -r -sv RootNavServiceCA.pvk
RootNavServiceCA.crl
```

b. When you are prompted, enter the password that you used to create the root CA.

4. Install the Certificate Revocation List on the Microsoft Dynamics NAV Server.

a. In the Certificates snap-in, in the left pane of MMC, expand the Certificates (Local Computer) node.

b. Expand the Trusted Root Certification Authorities node, right-click the Certificates subfolder, select All Tasks, and then click **Import**.

c. In the Certificate Import Wizard, on the **Welcome** page, click **Next**.

d. On the **File to Import** page, click **Browse**.

e. In the **File Type** field, select Certificate Revocation List (*.crl).

f. Browse to the RootNavServiceCA.crl file, select the file, and then click **Open**.

g. On the **File to Import** page, click **Next**.

h. On the **Certificate Store** page, accept the default selection, and then click **Next**.

i. On the **Completing the Certificate Import Wizard** page, click **Finish**. Select the Trusted Root Certificate Authorities node, and then refresh the snap-in.

A Certificate Revocation List folder that contains the RootNavServiceCA.crl file is created.

5. Create and install the test certificate on the Microsoft Dynamics NAV Server.

   a. At the Visual Studio command prompt, type the following command:

```
makecert -sk NavServiceCert -iv RootNavServiceCA.pvk -n "CN=NavServiceCert" -
ic RootNavServiceCA.cer -sr localmachine -ss my -sky exchange -pe
NavServiceCert.cer
```

📋 **Note:** *This command specifies the subject's certificate name as NavServiceCert. You must have this certificate name when you configure the RoleTailored client for Windows.*

   b. When you are prompted, enter the password that you used to create the root CA. In this case, "Pa$$w0rd".

   c. Select the Trusted Root Certificate Authorities node, and then refresh the snap-in.

   You now have the NavServiceCert.cer certificate file in your temporary folder. The certificate is installed under the Personal node in the Certificates snap-in.

6. Grant the Microsoft Dynamics NAV Server service account access to the certificate's private key.

   a. In the left pane of MMC, expand the Certificates (Local Computer) node, expand the Personal node, and then select the Certificates subfolder.

   b. In the right pane, right-click the NavServiceCert certificate, click **All Tasks**, and then click **Manage Private Keys**.

   c. In the **Permissions for NavServiceCert private keys** box, click **Add**.

   d. In the **Select Users, Computers, Service Accounts, or Groups** box, enter the name of the Microsoft Dynamics NAV Server service account, and then click **OK**.

📋 **Note:** *In a production environment, you run Microsoft Dynamics NAV Server under a dedicated domain user account instead of the less secure Network Service account. Because this is a test implementation, the Network Service account is acceptable.*

   e. Select **Allow Full Control**, and then click **OK**.

   f. In the right pane, double-click the NavServiceCert certificate.

      g.   In the **Certificate** box, click the **Details** tab, and then select the **Thumbprint** field.

           Copy or note the value of the **Thumbprint** field.

7.   Reconfigure Microsoft Dynamics NAV Server to support logon over a WAN.

      a.   Start the Microsoft Dynamics NAV Administration tool.

      b.   Connect to the computer that is running Microsoft Dynamics NAV Server.

      c.   In the middle pane, right-click the Microsoft Dynamics NAV Server instance that the RoleTailored client for Windows is using, and then select **Stop**.

      d.   In the left pane, select the server instance that you have stopped. Make sure that the configuration is selected in the right pane. The middle pane will now show the configuration settings for the server instance.

      e.   Select **Edit** at the bottom of the middle pane.

      f.   On the **Client Services** tab, change the **Credential Type** option to UserName. When you change it to UserName, RoleTailored client for Windows users who connect to the server are prompted for user name and password credentials.

      g.   On the **Client Services** tab, select the **Certificate Thumbprint** field and enter the value of the **Thumbprint** field in the previous procedure.

      h.   Click **Save** to confirm the new settings.

      i.   In the left pane, select the Microsoft Dynamics NAV Server to which the RoleTailored clients for Windows will connect.

      j.   In the middle pane, right-click the Microsoft Dynamics NAV Server instance that the RoleTailored clients for Windows will be using, and then select **Start**.

           Close the Microsoft Dynamics NAV Administration tool

Demonstration: Implement Security Certificates in a Production Environment

This demonstration describes the implementation of security certificates in production environments. The main difference with the previous demonstration is that you do not have to create the certificates yourself. Instead you will receive the certificates (and the detailed installation instructions) from a trusted provider.

The root CA must be installed on the computer that is running Microsoft Dynamics NAV Server and all computers that are running the RoleTailored client for Windows. The service certificate must only be installed on the computer that is running Microsoft Dynamics NAV Server.

Most enterprises and hosting providers have their own infrastructure for issuing and managing certificates. You can also use these certificate infrastructures. The only requirement is that the service certificates must be set up for key exchange and therefore must contain both private and public keys.

Note: An instance of Microsoft Dynamics NAV Server that is configured for secure WAN communication always prompts RoleTailored client for Windows users for authentication when they start the client, even when the client computer is in the same domain as Microsoft Dynamics NAV Server.

Prerequisites

To complete this demonstration, you will need:

- The Certificates snap-in for Microsoft Management Console (MMC). If you do not already have this snap-in installed, then follow these steps:
  - Click **Start > Run**, and then type "Mmc.exe".
  - In the console, on the **File** menu, click **Add/Remove Snap-in**.
  - In the **Add Standalone Snap-in** box**,** click **Certificates > Computer Account > Local Computer > Add**.

Microsoft Dynamics NAV Server Configuration

After you have installed the root CA and the service certificate on the computer that is running Microsoft Dynamics NAV Server, you must grant access to the service account that is associated with the server so that the service account can access the service certificate's private key. You must also change the configuration settings for Microsoft Dynamics NAV Server to enable remote logins.

Demonstration Steps

1. Install the Root Certificate on the Microsoft Dynamics NAV Server
   a. Follow the installation instructions from the trusted provider.

2. Install the service certificate on the Microsoft Dynamics NAV Server
   a. Follow the installation instructions from the trusted provider.

3. Grant the Microsoft Dynamics NAV Server service account access to the certificate's private key.

   a. In the left pane of MMC, expand the Certificates (Local Computer) node, expand the Personal node, and then select the Certificates subfolder.

   b. In the right pane, right-click the service certificate, select **All Tasks**, and then click **Manage Private Keys**.

   c. In the **Permissions** box for the certificate, click **Add**.

   d. In the **Select Users**, **Computers**, **Service Accounts, or Groups** box, enter the name of the dedicated domain user account that is associated with Microsoft Dynamics NAV Server, and then click **OK**.

   e. In the **Full Control** field, select **Allow**, and then click **OK**.

   f. In the right pane, double-click the certificate.

   g. In the **Certificate** box, click the **Details** tab, and then select the **Thumbprint** field.

   h. Copy or note the value of the **Thumbprint** field.

4. Reconfigure Microsoft Dynamics NAV Server to support logon over a WAN.

   a. Start the Microsoft Dynamics NAV Administration tool.

   b. Connect to the computer that is running Microsoft Dynamics NAV Server.

   c. In the middle pane, right-click the Microsoft Dynamics NAV Server instance that the RoleTailored client for Windows is using, and then select Stop.

   d. In the left pane, select the server instance that you have stopped. Make sure that the configuration is selected in the right pane. The middle pane will now show the configuration settings for the server instance.

   e. Select **Edit** at the bottom of the middle pane.

   f. On the **Client Services** tab, change the **Credential Type** option to UserName. When you change it to UserName, RoleTailored client for Windows users who connect to the server are prompted for user name and password credentials.

   g. On the **Client Services** tab, select the **Certificate Thumbprint** field and enter the value of the **Thumbprint** field in the previous procedure.

  h. Click **Save** to confirm the new settings.

  i. In the left pane, select the Microsoft Dynamics NAV Server to which the RoleTailored clients for Windows will connect.

  j. In the middle pane, right-click the Microsoft Dynamics NAV Server instance that the RoleTailored clients for Windows will be using, then select **Start**.

  k. Close the Microsoft Dynamics NAV Administration tool.

NAS Services

NAV Application Server

NAS (NAV Application Server) is a middle-tier server component that executes business logic without a user interface or user interaction. In Microsoft Dynamics NAV 2013, NAS is re-engineered to be one of the client services in Microsoft Dynamics NAV Server. Because NAV Application Server does not have a user interface, NAS services are managed completely from the Microsoft Dynamics NAV Server Administration tool (the **NAS Services** tab).
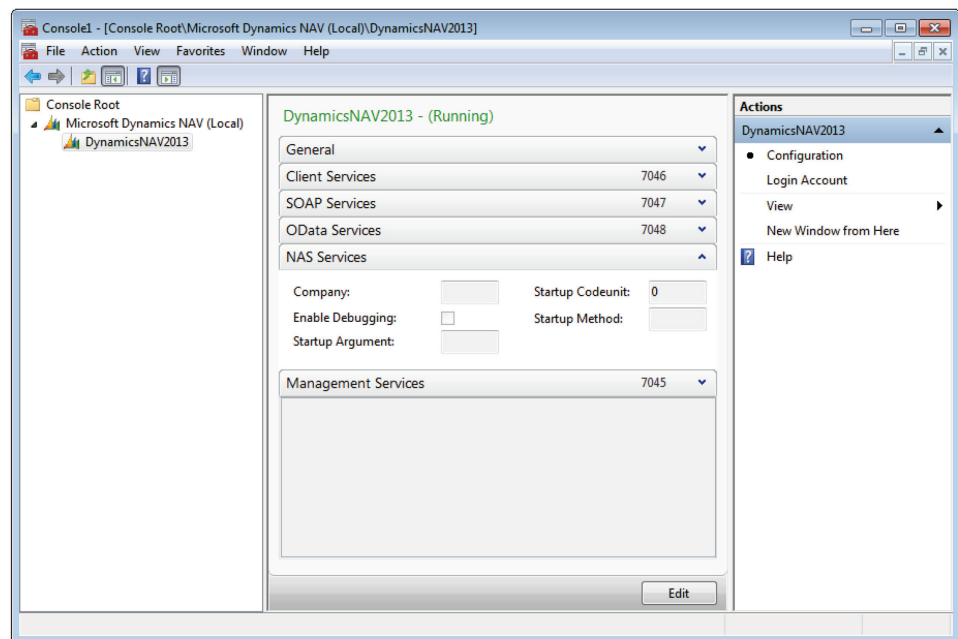
FIGURE 3.11: THE NAS SERVICES TAB IN MICROSOFT DYNAMICS NAV ADMINISTRATION WINDOW

If you have applications that used the NAS available with earlier version of Microsoft Dynamics NAV, you should now be able to use these applications with Microsoft Dynamics NAV 2013 without significant modifications. Modifications are required for applications that use COM, because server-side COM is no longer supported in Microsoft Dynamics NAV 2013. This is because not all COM components can execute on 64-bit operating systems.

NAS services can help you manage and optimize access to the Microsoft Dynamics NAV database. NAS Services in Microsoft Dynamics NAV Server support applications such as ADCS, Microsoft Office Outlook Integration, and the NAV Job Queue.

NAS Services Applications in Dedicated Server Instances

We recommend that you create a separate Microsoft Dynamics NAV Server instance for each NAS services application.

There are multiple reasons for running NAS services sessions in dedicated Microsoft Dynamics NAV Server instances:

- **Efficiency and convenience:**
  When you change any Microsoft Dynamics NAV Server setting, you must restart the instance for the change to take effect. This interrupts all services that use that instance. So if you are running different types of services in the same instance—for example, RoleTailored client for Windows services and NAS services—changing the settings for either service type will require a server instance restart that interrupts all other service types running through that instance.

  Even for different types of NAS services applications, it is wise to run each application in a separate server instance. For example, if you will be using NAS services for a Microsoft Office Outlook Integration application and also for a NAV Job Queue application, create a separate Microsoft Dynamics NAV Server instance for each NAS services application. Then, if you have to modify settings for the Microsoft Office Outlook Integration application, you will not affect the NAV Job Queue application, just as you will not affect the Microsoft Office Outlook Integration application if you modify the NAV Job Queue application.

- **Performance:**

  Configuring NAS services applications to use separate server instances makes better use of the server's resources. This lets you run more applications with less degradation.

- **Efficient error tracking:**

  If a NAS services session terminates in an error, and there are no other services that are running on the Microsoft Dynamics NAV Server instance, the service instance terminates and can be handled like any other Windows service. For example, you could configure the **Recovery** tab on the Service configuration item in Control Panel to restart or otherwise manage the service.

> 📋 **Note:** *If your NAS services application must handle a large number of requests, you can have multiple Microsoft Dynamics NAV Server computers run the same NAS services application so that requests can be handled faster.*

NAS Services Settings

You configure NAS services by using the settings on the **NAS Services** tab in Microsoft Dynamics NAV Server Administration tool:

Parameter	Description
Company	Specifies the Microsoft Dynamics NAV company whose data opens when NAS services start. The company name is case-sensitive.

Startup Codeunit	Specifies the codeunit that contains the method that will be called by the NAS Startup Method.
	
	Example values:
	
	• 0
	
	   When **Startup Codeunit** is set to 0, NAS services do not start. This is the default value.
	
	• 1
	
	   When NAS services start, they run the trigger specified by the **Startup Method** in codeunit 1.
	
	• 450
	
	   When NAS services start, they run codeunit 450 (Job Queue – NAS Start Up) and call the method specified by **Startup Method**.
	
	When the NAS Startup Codeunit is a single instance codeunit, the NAS services session will remain alive even after all code in the specified NAS Startup Method is executed.

Parameter	Description
Startup Method	Specifies the method that will be called in the NAS Startup Codeunit. Example values: • "" If no start method is specified (null string), the OnRun trigger is called. • StartNAS NAS services runs the StartNAS method in the NAS Startup Codeunit.
Startup Argument	Specifies a string argument to be used when NAS services start. The argument typically specifies an application type, sometimes with additional configuration information. • Example values: • "ADCS, ADCSID=1" • "OSYNCH" • "JOBQUEUE"
Enable Debugging	When selected, specifies that the NAS services session wait 60 seconds before executing the first C/AL statement, to make time for opening and attaching the NAV Debugger to the NAS services session.

NAS services sessions execute in the time zone specified by the **Services Default Time Zone** parameter (on the **General** tab) for Microsoft Dynamics NAV Server.

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Lab 3.1: Managing NAV Server Instances

Scenario

Tim has successfully finished his first installation of Microsoft Dynamics NAV 2013. During the installation, he also gained some experience with Microsoft Dynamics NAV Setup.

As a next step, he wants to redo the installation and set up a production and test environment. For this new installation, he will not use the SQL Server Express Edition; he will use an existing instance of SQL Server to install the databases. Next he will install two Microsoft Dynamics NAV Server instances, one for the production and one for the test environment. Finally he will disable both SOAP and OData services for the two environments.

Exercise 1: Install Database to an Existing SQL Server (Production Environment)

Exercise Scenario

Tim starts by installing the NAV database to an existing instance of SQL Server. This instance is the default instance of SQL Server.

Task 1: Log On to the SQL Server as Administrator

High Level Steps

1. Log on to the server as Administrator.

Detailed Steps

1. Log on to the server as Administrator.
   a. On the Desktop, press CTRL+ALT+DEL.
   b. In the **Password** field, type the password for the Administrator user:
      "Passw0rd".
   c. Press **ENTER** (or click the arrow icon at the right of the **Password** field.

Task 2: Start Microsoft Dynamics NAV Setup

High Level Steps

1. Insert the Microsoft Dynamics NAV 2013 product DVD in the DVD drive.
2. Start Microsoft Dynamics NAV Setup.

Detailed Steps

1. Insert the Microsoft Dynamics NAV 2013 product DVD in the DVD drive.

   a. Open the DVD drive by pressing the Eject button on the physical drive.

   b. Put the DVD on the tray.

   c. Press the Close button to close the DVD drive.

2. Start Microsoft Dynamics NAV Setup.

   a. Open Windows Explorer.

   b. Select **Computer** in the left pane to see a list of available drives.

   c. Select the DVD drive that contains the product DVD.

   d. In the root folder of the selected drive, double-click setup.exe.

   e. If the **Open File - Security Warning** box pops up (asking whether you want to run the setup.exe application), click **Run**.

Task 3: Select the Installation Option

High Level Steps

1. Select the installation option.

Detailed Steps

1. Select the installation option.

   a. In the **Welcome to the Microsoft Dynamics NAV 2013 Setup** window, click **Next**.

   b. On the **Microsoft Software License Terms** page, click **I Accept**.

   c. On the **Microsoft Dynamics NAV Setup** page, click **Choose an Installation Option**.

   d. On the **Choose an installation option** page, click **Custom**.

   e. On the **Customize the installation** page, click the icon at the left of the SQL Server Database Components node. The node will expand.

   f. Click the icon at the left of the Demo Database node.

   g. Select **Run from My Computer**.

   h. On the **Customize the installation** page, click **Next**.

   i. On the **Specify parameters** page, clear the **SQL Server Instance field**.

   j. On the **Specify parameters** page, enter NAV_DEMO2013_LIVE in the **SQL Database** field.

   k. On the **Specify parameters** page, verify that the **Replace Existing Database** field is set to No.

   l. Click **Apply** to start the installation.

Setup will now install the demonstration database to the default instance of SQL Server.

Task 4: Verify Installation

High Level Steps

1. Start SQL Server Management Studio (SSMS).
2. Check the Existing Databases.

Detailed Steps

1. Start SQL Server Management Studio (SSMS).

   a. On the Windows Taskbar, click **Start > All Programs > Microsoft SQL Server 2012 > SQL Server Management Studio**.

   b. In the **Connect to Server** box, in the **Server Type** field, click **Database Engine**.

   c. In the **Server name** field, enter the name of the SQL Server to which you want to connect.

      To connect to the current computer, you can enter either the computer name or "(local)" or "." (dot).

      If you want to connect to a specific instance of SQL Server, enter the full name as follows:
      <SQL Server Name>\<Instance Name>

   d. In the **Authentication** field, select **Windows Authentication**.

   e. Click **Connect**.

2. Check the Existing Databases.

   a. In the **Object Explorer** window, expand the server node.

   b. Expand the Databases node.
      The newly installed database NAV_DEMO2013_LIVE is in the list.

   c. Close SQL Server Management Studio.

Exercise 2: Setting Up the SQL Database for the Test Environment

Exercise Scenario

Tim wants to duplicate the NAV_DEMO2013_LIVE database so he can set up a test environment. He wants to use the same SQL Server and the same instance of SQL Server for both environments. As he cannot use Microsoft Dynamics NAV Setup to install additional copies of the database on the same Instance of SQL Server, he decides to make a backup of the production database by using SQL Server Management Studio. As a next step, Tim will restore the backup to create a database for the test environment.

Task 1: Start SQL Server Management Studio

High Level Steps

1. Start SQL Server Management Studio.

Detailed Steps

1. Start SQL Server Management Studio.
   a. On the Windows Taskbar, **click Start > All Programs > Microsoft SQL Server 2012 > SQL Server Management Studio**.
   b. In the **Connect to Server** box, in the **Server Type** field, select **Database Engine**.
   c. In the **Server name** field, enter the name of the SQL Server to which you want to connect.
   d. In the **Authentication** field, select **Windows Authentication**.
   e. Click **Connect**.

Task 2: Back Up the Production Database

High Level Steps

1. Back up the production database.

Detailed Steps

1. Back up the production database.
   a. In the **Object Explorer** pane, expand the server node.
   b. In the **Object Explorer** pane, expand the Databases node.
   c. Right-click the NAV_DEMO2013_LIVE database, and then click **Tasks > Back Up**.
   d. In the **Back Up Database – NAV_DEMO2013_LIVE** window, on the **General** pane, check that the NAV_DEMO2013_LIVE database is selected in the **Source – Database** field.
   e. Check that the **Backup type** is set to Full.

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f. Check that the backup destination is set to **Disk (Destination – Backup to)**. As this is the first time that you make a backup of this database, you can accept the default backup file name.

📄 ***Detailed Steps:*** *When you make a backup of a database, verify that the backup destination file already exists before you start the actual backup procedure. Then, you will not accidentally overwrite or modify an existing backup set.*

---

g. Click **OK** to start the backup procedure.

When the backup is complete, a message box appears with the text "The backup of database 'NAV_DEMO2013_LIVE' completed successfully."

h. Click **OK** to close the box.

Task 3: Restore the Backup

High Level Steps

1. Restore the backup (test environment).

Detailed Steps

1. Restore the backup (test environment).

   a. In SQL Server Management Studio, in the **Object Explorer** pane, right-click the **Databases** node and then select **Restore Database**.

   b. In the **Restore Database** window, under **Source**, select the **Device** option.

   c. Click the button at the right of the **Device** option.

   d. In the **Select backup devices** window, in the **Backup Media** field, select **File**.

   e. In the **Select backup devices** window, click **Add**.

   f. In the **Locate Backup File** window, select the backup file (*.BAK) you created in the previous task.

   g. Click **OK** to close the **Locate Backup File** window.

   h. Click **OK** to close the **Select backup devices** window.

   A list of backup sets included in the selected backup file is now displayed in the **Select backup sets to restore** list. In this case, there is only one backup set.

   i. In the **Restore database** window, select the backup set to restore. To do this, put a check mark in the **Restore** column of the backup set to restore.

   j. In the **Destination Database** field, enter NAV_DEMO2013_TEST.

---

k. In the **Select a page** pane, select **Files**.

l. In the Restore database files as list box, on the row with File Type Rows Data, click the button at the right of the **Restore as** column.

m. In the Locate Database Files window, enter NAV_DEMO2013_TEST.mdf in the **File Name** field.

n. Click OK to close the Locate Database Files window.

o. In the Restore database files as list box, on the row with File Type Log, click the button at the right of the **Restore as** column.

p. In the Locate Database Files window, enter NAV_DEMO2013_TEST.ldf in the **File Name** field.

q. Click **OK** to close the Locate Database Files window.

r. Click **OK** to start the restore procedure.

When the restore is completed, a message box appears with the text "The restore of database 'NAV_DEMO2013_TEST' completed successfully."

s. Click **OK** to close the box.

Task 4: Verify Installation

High Level Steps

1. Check the SQL Server databases.

Detailed Steps

1. Check the SQL Server databases.

    a. In the **Object Explorer** window, right-click the Databases node and then select **Refresh**.

    Both the NAV_DEMO2013_LIVE and NAV_DEMO2013_TEST databases are in the list.

    b. Close SQL Server Management Studio.

Task 5: Assign database permissions to the NAV Server service account

High Level Steps

1. Add a login for the service account.
2. Assign database permissions to the service account.

Detailed Steps

1. Add a login for the service account.

    a. In SQL Server Management Studio, expand the Security node.

    b. Right-click the Logins node and select **New Login**.

    c. In the Login – New dialog box, click Search.

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      d.   In the **Select User**, **Service Account**, or **Group** window, enter "CONTOSO\NAV2013svc" in the **Enter the object name to select box**.

      e.   Click Check Names.

      f.   Click **OK** to close the Select User, Service Account, or Group window.

2. Assign database permissions to the service account.

      a.   In the **Login Properties – CONTOSO\NAV2013svc window, in the Select a page pane**, click **User Mapping**.

      b.   In the **Users mapped to this login** list, select the NAV_DEMO2013_TEST database.

      c.   Put a check mark in the Map column.

      d.   In the **Database role membership for** list, select the db_owner role.

      e.   Repeat steps b to d for the NAV_DEMO2013_LIVE database.

      f.   Click **OK** to close the Login Properties window.

Exercise 3: Installing Microsoft Dynamics NAV Server (Production Environment)

Exercise Scenario

Now the databases for the production and test environments are ready. Tim will install the Microsoft Dynamics NAV Server software on the SQL Server. At the same time, he will install the Microsoft Dynamics NAV Administration tool so he can manage the configuration of the server instance. He starts with the server instance for the production environment.

Task 1: Log On to the Server as Administrator

High Level Steps

1. Log on to the server as Administrator.

Detailed Steps

1. Log on to the server as Administrator.

      a.   On the Desktop, press CTRL+ALT+DEL.

      b.   In the **Password** field, enter the password for the Administrator user:
Passw0rd

      c.   Press **ENTER** (or click the arrow icon at the right of the **Password** field).

Task 2: Start Microsoft Dynamics NAV Setup

High Level Steps

1. Insert the Microsoft Dynamics NAV 2013 product DVD in the DVD drive.
2. Start Microsoft Dynamics NAV Setup.

Detailed Steps

1. Insert the Microsoft Dynamics NAV 2013 product DVD in the DVD drive.

   a. Open the DVD drive by pressing the Eject button on the physical drive.
   b. Put the DVD on the tray.
   c. Press the Close button to close the DVD drive.

2. Start Microsoft Dynamics NAV Setup.

   a. Open Windows Explorer.
   b. In the left pane, select **Computer** to see a list of available drives.
   c. Select the DVD drive that contains the product DVD.
   d. In the root folder of the selected drive, double-click setup.exe.
   e. If the **Open File - Security Warning** box pops up (asking whether you want to run the setup.exe application), click **Run**.

Task 3: Select the Installation Option

High Level Steps

1. Select the components to install.

Detailed Steps

1. Select the components to install.

   a. In the **Welcome to the Microsoft Dynamics NAV 2013 Setup** window, on the **Maintenance** page, select **Add or remove components**.
   b. On the **Customize the installation** page, click the icon at the left of the Server node.
   c. Select **Run All from My Computer**.
   d. On the **Customize the installation** page, click the icon at the left of the Administration tool node.
   e. Select **Run from My Computer**.
   f. On the **Customize the installation** page, click **Next**.
   g. On the **Specify parameters** page, in the **Service Name** field, enter **DynamicsNAVLive**.

h. On the **Specify parameters** page, in the **Password** field, enter the password for the Service account.

i. Click **Apply** to start the installation.

    Setup will now install the selected components including Microsoft .NET Framework 4.0 (in case this is not installed).

j. Click **Close** to exit Microsoft Dynamics NAV Setup.

Task 4: Verify Installation

High Level Steps

1. Open Services panel.

Detailed Steps

1. Open Services panel.

    a. On the Windows Taskbar, click **Start > All Programs > Accessories > System Tools > Control Panel > System and Security > Administrative Tools > Services**.

    b. In the right pane, scroll down the list of services and check for a service called Microsoft Dynamics NAV Server [DynamicsNAVLive].

By default services are sorted alphabetically by Name (in ascending order). If this is not the case, you can click the header label of the Name column to change the sorting. You can also press M on your keyboard to move immediately to the first service whose name starts with M.

Exercise 4: Creating Server Instance for the Test Environment

Exercise Scenario

Next in Tim's planning is a step to create the Microsoft Dynamics NAV Server instance for the test environment. Tim will use the Microsoft Dynamics NAV Administration tool to do this.

Task 1: Start Microsoft Dynamics NAV Administration

High Level Steps

    1. Start Microsoft Dynamics NAV Administration tool.

Detailed Steps

    1. Start Microsoft Dynamics NAV Administration tool.

        a. On the Windows Taskbar, click **Start > All Programs > Microsoft Dynamics NAV Administration**.

Task 2: Create a New Server Instance

High Level Steps

    1. Create a new server instance.

Detailed Steps

    1. Create a new server instance.

        a. In the left pane, select Microsoft Dynamics NAV (local).

        b. In the right pane, click **Add Instance**.

        c. In the **Server Instance** window, in the **Server Instance** field, enter DynamicsNAVTest.

        d. In the **Management Services Port** field, type "7055".

        e. In the **Client Services Port** field, type "7056".

        f. In the **SOAP Services Port** field, type "7057".

        g. In the **OData Services Port** field, type "7058".

        h. In the Service Account field, select User Account.

        i. In the **User Name** field, type "NAV2013Svc".

        j. In the **Domain** field, type "CONTOSO".

        k. In the **Password** field, type the password for the NAV2013svc account.

        l. Type the password again in the **Confirm Password** field.

        m. Click **OK** to close the **Server Instance** window.

Task 3: Configure the Server Instance

High Level Steps

1. Configure the server instance.

Detailed Steps

1. Configure the server instance.

   a. In the left pane of the Microsoft Dynamics NAV Administration tool, double-click **Microsoft Dynamics NAV (local)**.

   b. In the left pane, select the DynamicsNAVTest instance. The configuration settings will now appear in the middle pane.

   c. At the bottom of the middle pane, click **Edit**.

   d. On the **General** tab, change the **Database Name** to NAV_DEMO2013_TEST.

   e. Click **Save** to confirm the new settings.

Task 4: Start the Server Instance

High Level Steps

1. Start the server instance.
2. Close Microsoft Dynamics NAV Administration.

Detailed Steps

1. Start the server instance.

   a. In the left pane of the Microsoft Dynamics NAV Administration tool, click **Microsoft Dynamics NAV (local)**.

   b. In the middle pane, right-click the DynamicsNAVTest instance, and then click **Start**.

   In the **Change Microsoft Dynamics NAV Server Instance Status** box, click **OK**.

2. Close Microsoft Dynamics NAV Administration.

   a. On the **File** menu, click **Exit** to close Microsoft Dynamics NAV Administration.

Exercise 5: Disabling Web Services

Exercise Scenario

When he configures the new server instance for the test environment, Tim notices that not only are client services enabled, but also SOAP web services and OData web services. Because these service types are currently not used, Tim decides to disable the service types in both production and test environment.

Task 1: Disable Service Types

High Level Steps

1. Start Microsoft Dynamics NAV Administration.
2. Reconfigure the server instance (production environment).
3. Reconfigure the server instance (test environment).

Detailed Steps

1. Start Microsoft Dynamics NAV Administration.

   a. On the Windows Taskbar, click **Start > All Programs > Microsoft Dynamics NAV Administration.**

2. Reconfigure the server instance (production environment).

   a. In the left pane of the Microsoft Dynamics NAV Administration tool, double-click **Microsoft Dynamics NAV (local)**.

   b. In the left pane, click the **DynamicsNAVLive** instance. The configuration settings will now be displayed in the middle pane.

   c. At the bottom of the middle pane, click **Edit**.

   d. On the SOAP Services tab, clear the Enable SOAP Services option.

   e. On the OData Services tab, clear the Enable OData Services option.

   f. Click **Save** to confirm the new settings.

3. Reconfigure the server instance (test environment).

   a. In the left pane, select the **DynamicsNAVTest** instance. The configuration settings will now be displayed in the middle pane.

   b. At the bottom of the middle pane, click **Edit**.

   c. On the SOAP Services tab, clear the Enable SOAP Services option.

   d. On the OData Services tab, clear the Enable OData Services option.

   e. Click **Save** to confirm the new settings.

Task 2: Restart Server Instances

High Level Steps

1. Restart server instances.
2. Close Microsoft Dynamics NAV Administration.

Detailed Steps

1. Restart server instances.

   a. In the left pane of the Microsoft Dynamics NAV Administration tool, click **Microsoft Dynamics NAV (local)**.

   b. In the middle pane, right-click the **DynamicsNAVLive** instance, and then click **Restart**.

   c. In the Change Microsoft Dynamics NAV Server Instance Status box, click OK.

   d. Repeat steps b and c for the DynamicsTest instance.

2. Close Microsoft Dynamics NAV Administration.

   a. On the **File** menu, click **Exit** to close Microsoft Dynamics NAV Administration.

Lab 3.2: Setting up NAS Services

Scenario

A recent meeting has pointed out that people in the customer service team spend lots of time executing tasks manually. Processes could be optimized if some manual tasks could be scheduled and executed automatically. Because of this meeting, Marie, the customer service manager, contacts Tim to check if this is possible and what has to be done.

Tim tells Marie that he can do this by using the Job Queue functionality in Microsoft Dynamics NAV. Tim will enable the Job Queue in the test environment. To do this, he has to set up NAS services. He decides to create a new server instance, so he can easily start and stop the Job Queue functionality without affecting the other users in the test environment.

Exercise 1: Creating a Server Instance

Task 1: Start Microsoft Dynamics NAV Administration

High Level Steps

1. Start Microsoft Dynamics NAV Administration tool.

Detailed Steps

1. Start Microsoft Dynamics NAV Administration tool.
   a. On the Windows Taskbar, click **Start > All Programs > Microsoft Dynamics NAV Administration**.

Task 2: Create a New Server Instance

High Level Steps

1. Create a new server instance.

Detailed Steps

1. Create a new server instance.
   a. In the left pane, select Microsoft Dynamics NAV (local).
   b. In the right pane, click **Add Instance**.
   c. In the Server Instance window, in the Server Instance field, type "DynamicsNAVTest-NAS".
   d. In the **Management Services Port** field, type "7065".
   e. In the **Client Services Port** field, type "7066".
   f. In the **SOAP Services Port** field, type "7067".
   g. In the **OData Services Port** field, type "7068".
   h. In the **Service Account** field, select **User Account**.

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     i.   In the **User Name** field, type "NAV2013Svc".

     j.   In the **Domain** field, type "CONTOSO".

     k.   In the **Password** field, type the password for the NAV2013svc account.

     l.   Type the password again in the **Confirm Password** field.

     m.   Click **OK** to close the **Server Instance** window.

Task 3: Configure the Server Instance

High Level Steps

1. Configure the server instance.

Detailed Steps

1. Configure the server instance.

    a.   In the left pane of the Microsoft Dynamics NAV Administration tool, double-click **Microsoft Dynamics NAV (local)**.

    b.   In the left pane, select the **DynamicsNAVTest-NAS** instance. The configuration settings will now appear in the middle pane.

    c.   At the bottom of the middle pane, click **Edit**

    d.   On the **General** tab, change the **Database Name** to NAV_DEMO2013_TEST.

    e.   Click **Save** to confirm the new settings.

Exercise 2: Setting Up NAS Services

Task 1: Configure NAS Services

High Level Steps

1. Configure NAS services.

Detailed Steps

1. Configure NAS services.

    a.   In the left pane of the Microsoft Dynamics NAV Administration tool, double-click **Microsoft Dynamics NAV (local)**.

    b.   In the left pane, select the DynamicsNAVTest-NAS instance. The configuration settings will now appear in the middle pane.

    c.   At the bottom of the middle pane, click **Edit**.

    d.   On the **NAS Services** tab, change the **Company Name** to CRONUS International Ltd.

    e.   In the **Startup Codeunit** field, type "1".

    f.   In the **Startup Method** field, type "NASHandler".

    g.   In the **Startup Argument** field, type "JOBQUEUE".

    h.   Click **Save** to confirm the new settings.

Exercise 3: Disabling Other Services

Task 1: Disable Client Services

High Level Steps

> 1. Disable client services.

Detailed Steps

> 1. Disable client services.
>   - a. On the Client Services tab, clear the Enable Client Services check box.

Task 2: Disable SOAP services

High Level Steps

> 1. Disable SOAP services.

Detailed Steps

> 1. Disable SOAP services.
>   - a. On the **SOAP Services** tab, clear the **Enable SOAP Services** check box.

Task 3: Disable OData Services

High Level Steps

> 1. Disable OData services.

Detailed Steps

> 1. Disable OData services.
>   - a. On the **OData Services** tab, clear the **Enable OData Services** check box.

Task 4: Save Settings

High Level Steps

> 1. Save settings.

Detailed Steps

> 1. Save settings.
>   - a. Click **Save** to confirm the new settings.

Exercise 4: Restarting NAS Services

Task 1: Restart Server Instances

High Level Steps

1. Restart server instances

Detailed Steps

1. Restart server instances

   a. In the left pane of the Microsoft Dynamics NAV Administration tool, click **Microsoft Dynamics NAV (local)**.

   b. In the middle pane, right-click the **DynamicsNAVTest-NAS** instance, and then click **Restart**.

   c. In the Change Microsoft Dynamics NAV Server Instance Status box, click OK.

Task 2: Verify Service Status

High Level Steps

1. Verify service status in Microsoft Dynamics NAV Administration.
2. Close Microsoft Dynamics NAV Administration

Detailed Steps

1. Verify service status in Microsoft Dynamics NAV Administration.

   a. In the left pane of the Microsoft Dynamics NAV Administration tool, click **Microsoft Dynamics NAV (local)**.

   b. In the middle pane, check that the Status column for the DynamicsNAVTest-NAS instance is set to Running.

2. Close Microsoft Dynamics NAV Administration

   a. On the **File** menu, click **Exit** to close Microsoft Dynamics NAV Administration.

Module Review

Test Your Knowledge

Test your knowledge with the following questions.

1. To create a new company in the Microsoft Dynamics NAV database, you must use:

    (   ) A Microsoft Dynamics NAV PowerShell session

    (   ) The RoleTailored client for Windows

    (   ) The Microsoft Dynamics NAV Administration tool

    (   ) Any of these three tools

2. Which of the following is true about the Development Environment?

    (   ) You can install the Development Environment without installing the RoleTailored client for Windows.

    (   ) The Development Environment has the same user interface as the RoleTailored client for Windows and contains some additional development functions.

    (   ) The Development Environment uses the server tier to connect to the database.

    (   ) You can use the Development Environment to manage licenses.

3. How do you install additional server instances on a Microsoft Dynamics NAV Server?

    (   ) You copy the Microsoft Dynamics NAV Server software from the product DVD to a different folder, and edit the CustomSettings.config file.

    (   ) You use Microsoft Dynamics NAV Setup to install Microsoft Dynamics NAV Server to a different folder.

    (   ) You use the Microsoft Dynamics NAV Administration tool to create additional server instances.

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( ) You use the Development Environment to create a new database on a separate SQL .

( ) You cannot install multiple server instances on the same . Each server instance must be installed on a separate server.

4. What is the default port number for client services?

( ) 2407

( ) 5555

( ) 7045

( ) 7046

5. Enabling RoleTailored client for Windows connections over a wide area network requires:

( ) Administration on the RoleTailored client for Windows computer only.

( ) Administration on the Microsoft Dynamics NAV Server only.

( ) Administration on both the Microsoft Dynamics NAV Server and RoleTailored client for Windows computers.

( ) No administration. By default, this is enabled.

( ) No administration, because this is impossible.

6. To create users, profiles and permission sets in Microsoft Dynamics NAV 2013, you must use:

( ) The RoleTailored client for Windows

( ) The Development Environment

( ) The Microsoft Dynamics NAV Administration tool

( ) Microsoft SQL Server

( ) Internet Information Server

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Test Your Knowledge Solutions

Module Review and Takeaways

1. To create a new company in the Microsoft Dynamics NAV database, you must use:

    ( ) A Microsoft Dynamics NAV PowerShell session

    (√) The RoleTailored client for Windows

    ( ) The Microsoft Dynamics NAV Administration tool

    ( ) Any of these three tools

2. Which of the following is true about the Development Environment?

    ( ) You can install the Development Environment without installing the RoleTailored client for Windows.

    ( ) The Development Environment has the same user interface as the RoleTailored client for Windows and contains some additional development functions.

    ( ) The Development Environment uses the server tier to connect to the database.

    (√) You can use the Development Environment to manage licenses.

3. How do you install additional server instances on a Microsoft Dynamics NAV Server?

    ( ) You copy the Microsoft Dynamics NAV Server software from the product DVD to a different folder, and edit the CustomSettings.config file.

    ( ) You use Microsoft Dynamics NAV Setup to install Microsoft Dynamics NAV Server to a different folder.

    (√) You use the Microsoft Dynamics NAV Administration tool to create additional server instances.

    ( ) You use the Development Environment to create a new database on a separate SQL .

    ( ) You cannot install multiple server instances on the same . Each server instance must be installed on a separate server.

4. What is the default port number for client services?

    ( ) 2407

    ( ) 5555

    ( ) 7045

    (√) 7046

5. Enabling RoleTailored client for Windows connections over a wide area network requires:

    (√) Administration on the RoleTailored client for Windows computer only.

    ( ) Administration on the Microsoft Dynamics NAV Server only.

    ( ) Administration on both the Microsoft Dynamics NAV Server and RoleTailored client for Windows computers.

    ( ) No administration. By default, this is enabled.

    ( ) No administration, because this is impossible.

6. To create users, profiles and permission sets in Microsoft Dynamics NAV 2013, you must use:

    (√) The RoleTailored client for Windows

    ( ) The Development Environment

    ( ) The Microsoft Dynamics NAV Administration tool

    ( ) Microsoft SQL Server

    ( ) Internet Information Server