

Volume 5

GPR Web Site Installation Guide

with Notes on Security, Translation and Windows NT Installation and Setup

PREPARED FOR

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Import Control, The Ministry of Economy and
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Installation of the GPR Web Site

All files necessary to install and configure the GOEIC Product Register web site are on the GPR CD-ROM provided to GOEIC by DEPRA. The complete CD should be copied to a client computer so that enables GOEIC program administrators to access the files.

On the GPR CD, there are four main folders. The folder labelled 3. *GPR_Website* contains Product Register web site documentation files and all files necessary to install and configure the GOEIC Product Register web site. The directory structure of the folder 3. *GPR_Website* is as follows:

3. GPR_Website

Documentation

Website Installation Guide

GPR Website Installation Guide (Volume 5)

- Windows NT Server Installation Guide
- Notes on Security
- Notes on Translation

Website User Guide (Volume 4)

Website Program Files *(not in printed report; only on CD-ROM)*

_Themes

GOEIC

ASP and HTML Files

GPR_Visual Interdev Project

GPR

GPR_Local

(many Visual Interdev project folders and files)

Images Files

Arabic Versions

Images

English Versions

Images

The Documentation Folder contains the user guide and the installation guide and notes for future website administrator/developer on issues related to security and translation of text on the website pages from English into Arabic.

The Website Program Folder contains the

- *_Themes folder*, which contains all the layout and theme files required for the proper formatting and displaying of the web pages.

- *ASP and HTML* folder contains the actual web site Active Server Pages (ASP) and HTML pages.
- *GPR_Visual Interdev Project* folder contains the latest version of the Product Register Visual Interdev project.
- *Images Files* folder contains versions of both the English and Arabic images used as web site buttons throughout the Product Register web site.

PREPARATION FOR THE CREATION OF THE PRODUCT REGISTER WEB SITE

Before attempting to install and create the GPR Web Site, the GOEIC computer network (M.S. Windows NT Server) should be installed and functioning properly. A Web Server and a Database Server should be configured and ready to use. A person skilled in Visual Basic and HTML should be in charge of installation, and M.S. Visual Interdev 6.0 (or later) should be installed on the designated Web Site server

Also, the Product Register Database should be installed on the Database Server. Once the database is installed, it is necessary to create an ODBC Data Source Name (DSN) that points to the Product Register Database.

Perform the following steps to create an ODBC DSN. These steps are described in more detail in the GOEIC Database Admin Guide.

- 1) Open the Control Panel and click on ODBC Data Source.
- 2) Click on the System DSN tab. Click "Add".
- 3) Scroll down to SQL Server and click "Finish".
- 4) Type ProductRegister for "Name", type Product Register Database Connection for "Description", type GPRDBServer for the name of the database server you want to connect to. In case the database server has been given a different name, supply that name. Click "Next".
- 5) Leave the next page defaults. ie., NT Authentication radio button checked. Click "Next".
- 6) Check the checkbox labeled: "Check the default database to:" and select the ProductRegister database from the dropdown list. Click "Next".
- 7) Leave the next page defaults as is. Click "Finish".
- 8) On the next page, click on the "Test Data Source" button. You should see "TESTS COMPLETED SUCCESSFULLY" if everything is correct. Click "OK" three times to close all windows.

Once all the above steps have been completed successfully, you are ready to create the GPR Website

CREATING THE PRODUCT REGISTER WEB SITE

There are two ways to create the Product Register Web Site. An easy and fast method is to use an existing Visual Interdev 6.0 project that contains the latest version of the Product Register files, one that was created in the new network environment. The second method is to create the Visual Interdev project from scratch, thus creating the web site in the process.

If a Visual Interdev 6.0 project has been created in the new GOEIC environment and exists on a development computer, it is a simple matter of creating a Virtual Directory in IIS and point to this VI 6.0 project directory in order to create the GPR web site.

It is important to note that if the Web Server name is different than the name of the server that created the GPR project in the first place then a new project will have to be created from scratch. See “Creating a Visual Interdev project from scratch” below.

Also note that once the web server name is defined and the official GOEIC Product Register Visual Interdev project is created, this project can be used to create a new web site if necessary. Once this final project is created, it should be backed up on a CD or hard disk for future use.

Creating the Product Register web site using an existing Visual Interdev project

Always try to create the Product Register web site by using the VI 6.0 project files if available. It is simple and fast. Here are the steps: (note: In case Windows 2000 is used instead of Windows NT 4.0, the steps in Windows 2000 may vary slightly but the concepts are identical.)

On the web server:

- 1) Ensure that the World Wide Web service is running by clicking on Start / Settings / Control Panel / Services. Scroll to the bottom of the list and verify that the World Wide Web is “running”. If not, start it by clicking on “Start”. Close the Control Panel.
- 2) Open the IIS Service Manager by clicking on Start / Programs / Administration Tools / Internet Information Service Manager. You should see the IIS Server named GPRWebServer. (This name may be different if the network administrator who installed IIS supplied a different name other than GPRWebServer.) Double click on “Internet Information Services” to view the services.
- 3) Expand the Default Web Site by clicking on the “+” sign. You will see various web site folders here but not the ProductRegister web site.
- 4) Right click on “Default Web Site” and click on New / Virtual Directory and follow the wizard. For an alias name for the web site, type GPR. This name does not have to be GPR but we have chosen this name because it is short, simple, and apparently familiar to GOEIC personnel meaning GOEIC PRODUCT REGISTER. Click “Next”.
- 5) When asked to enter the path to the directory that contains the content, browse to the Product Register project local directory. Ex: GOEIC/GPR/GPR_Local directory. By doing this you

are creating a Virtual Directory that contains all required files to run the Product Register. Click “Next” to continue.

- 6) Leave the default access permission checked (Read and Run scripts). Click “Next” and “Finish” to complete the installation.
- 7) Before testing the web site, you have to create a database connection using the above created ODBC DSN connection. You do this by first deleting any existing DataEnvironment under the global.asa file. Right click on “DataEnvironment” and click “Delete”. Right click on “global.asa” and click “Add Data Connection”. Click the “Connection” tab. Under “Use Data Source Name”, select the ProductRegister DSN that you created previously. Click “OK”. Use “sa” for the logon ID with no password and click “OK”. In the Connection1 Properties display box, click the radio button for “Use ODBC Data Source Name” and select ProductRegister again and click “OK”. Now the Visual Interdev project has a connection to all the ProductRegister database tables and stored procedures.
- 8) You can test the configuration of the Product Register web site by opening the Internet Explorer browser and typing: //localhost/GPR. This should automatically search for the default.htm file and display the logon page for the Product Register. You could also type: //GPRWebServer/GPR (or whatever name was give to the web server).

Creating a new Visual Interdev project from scratch

In case a new Visual Interdev project needs to be created from scratch, the project can be created using the “Essential Files” folder files. Here are the steps:

- 1) Start Visual Interdev by clicking Start / Programs / Microsoft Visual Interdev 6.0 / Microsoft Visual Interdev 6.0.
- 2) You want to create a New Project. The default tab “New” should already be selected. “Visual Interdev Projects” and “New Web Project” should also be highlighted. The directory “GOEIC” should already exist on the C or D drive. This is where we want to create the new project. If not, create a directory name GOEIC. The new project files do not have to be in this location. We have just decided this in advance to simplify the installation process and instructions. Browse and point to the GOEIC folder. Type GPR for “Name:”.
- 3) Note: If the GPR folder already exists in the GOEIC folder then you will get an error message later on during the installation. Remember, we are only creating a new Visual Interdev project from scratch because the original GPR folder and files were corrupt or did not install properly. You should delete the complete GPR folder from the GOEIC main folder in this case. Click “Open” to continue.

- 4) Type GPRWebServer for the name of the server you want to use as the web server. Leave the Master Mode radio button selected. Click “Next”. If an error occurs now, it is either because the name of the web server is incorrect, the World Wide Web service is not running on the web server, or there is a network problem and the web server cannot be “seen”.
- 5) Leave the next page defaults as is: We do want to create a new Web application and the name should be “GPR”. Click “Next”.
- 6) Leave the default <none> for “which layout do you want to use” and click “Next”.
- 7) Leave the default <none> for “which theme do you want to use” and click “Finish”.
- 8) The new GPR project will be created but with only the basic skeleton files in place. We now need to add the “_Themes” folder, all the ASP and HTML files, and all the images to the “images” folder. These all are “added” from the “Essential Files” folder.
- 9) Right click the project heading (should be GPRWebServer/GPR under the “Solution ‘GPR’ (1 project) title) and click Add / Add Item. Click the Existing tab and browse to the GOEIC/Essential Files/Product Register Web Site Files folder. Click on “_Themes” and then the “Add Folder” button. This will add the _Themes folder to the new project along with all the related layout and themes files. You can contract the _Themes folder by clicking on the “-“ sign.
- 10) Right click again on the project heading and click Add / Add Item. Click the Existing tab and browse to the “English Version” / “ASP and HTML” folder. You want to add ALL files here by clicking on the first file and then simultaneously Ctrl Shift End to highlight all files. Click on “Open”. This process will take a few minutes. Click “Yes” to “Replace search.htm” and global.asa.
- 11) The last step is to add the images to the “images” folder. Right click on the “images” folder. This is important as we need to add all the images into this folder. Click Add / Add Item. Click the Existing tab and browse to the “English Version” / “Images” folder. You won’t see any files listed until you select “All files” from the “Files of Type:” dropdown list at the bottom. Select all files again by clicking once on the first file name and then simultaneously Ctrl Shift End. Click on “Open”.
- 12) This process has created a new Visual Interdev project and created the new virtual directory “GPR” within IIS.
- 13) You need to create the database connection as described in 7 & 8 above in ” Creating the Product Register web site using an existing Visual Interdev project”

14) You can test as before by opening the Internet Explorer browser and typing:
`//GPRWebServer/GPR.`

Microsoft Windows NT Server Installation Guide

OVERVIEW OF ENVIRONMENT INSTALLATION

GOEIC requires two main application servers to run the Product Register system. One will be configured as the Web Server and the other will be configured as the database server. Both servers will be configured with Windows NT (or Windows 2000 Server by the time the software is actually purchased), Option Pack 4, and the latest version of the Windows Service Pack available.

In addition to this, SQL Server 6.5 or SQL Server 7.0 (with the latest service pack available) will need to be installed on the database server.

Whichever computer will be used to maintain the web site (this should not be one of the two application servers) will require the following software installed:

- Internet Explorer 4.0 Arabic version or later
- Microsoft Visual Interdev 6.0

See the document "Installation of the Product Register Web Site.doc" for information about creating a project in MS Visual Interdev. This project will become the "source" for the actual Product Register web site.

Note: It is VERY important that the sequence of software installation be strictly adhered to. Installation of one software after another may overwrite critical system files. In general you must re-apply the Windows Service Pack after installing other application software.

Typical Application Server Installation Sequence

1. Windows NT installation
2. Service Pack version. 3.0 or latest installation
3. IE version 4.0 Arabic or latest
4. Option pack 4.0 or latest installation
5. Application Software (SQL, Visual Interdev)
6. Re-apply the Windows Service Pack (refer to the Microsoft web site for up-to-date information on installation processes).

DETAILED WINDOWS NT INSTALLATION INSTRUCTIONS

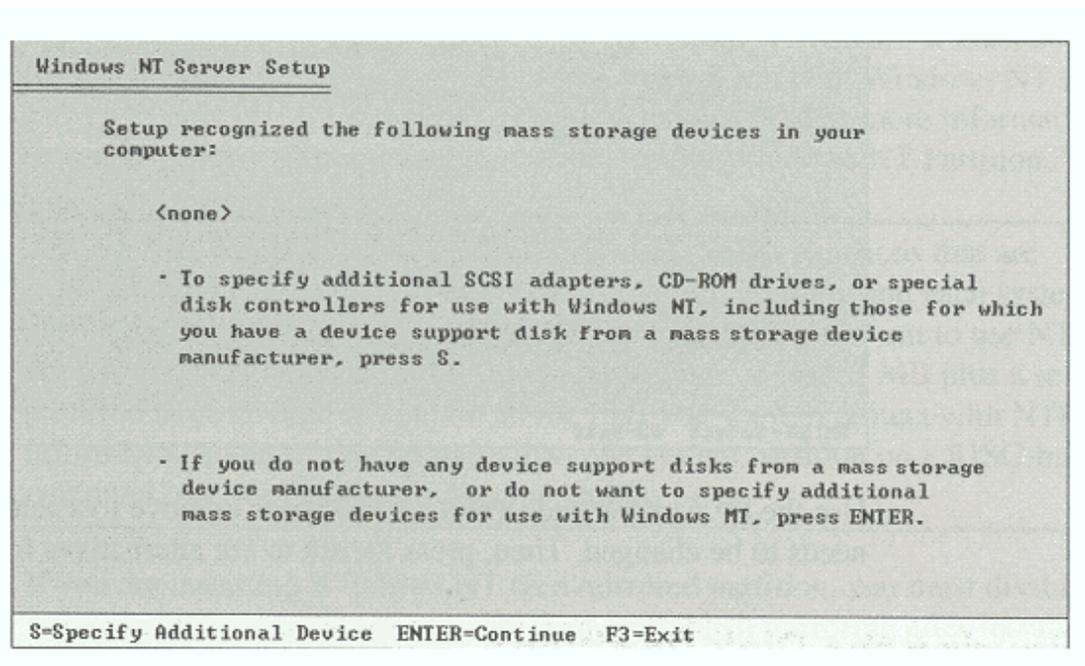
With your computer turned off, insert the disk labeled "Windows NT Setup Boot Disk" into drive A of your computer.

Or, if your computer's BIOS support the El Torito Bootable CD-ROM format, insert the Windows NT Server 4 CD with your computer turned off.

Turn on your computer. Setup will start automatically. Once Setup is started, follow the instructions on the screen.

Configuring a Mass Storage Device

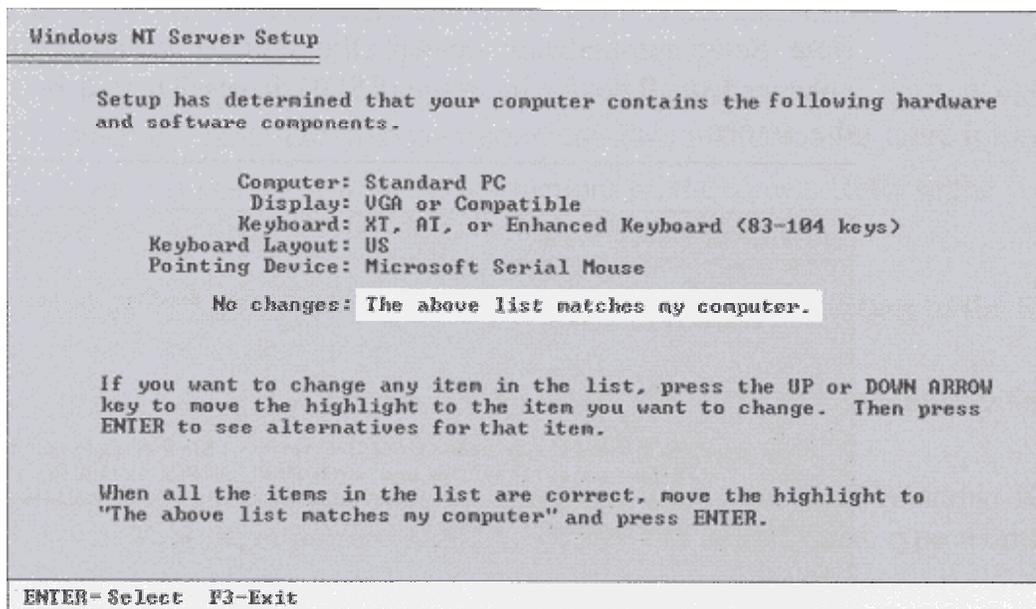
Next, Setup scans your computer to detect the mass storage devices, such as CD-ROM drives and SCSI adapters. Hard disks are not included in this scan.



Setup lists all the mass storage devices it finds. You can accept this list, or you can choose to add to it if you have a disk with device drivers from the manufacturer of your device. You can also wait and install additional mass storage devices after Setup is complete.

If any of your mass storage devices were not detected, press S to install them at this time.

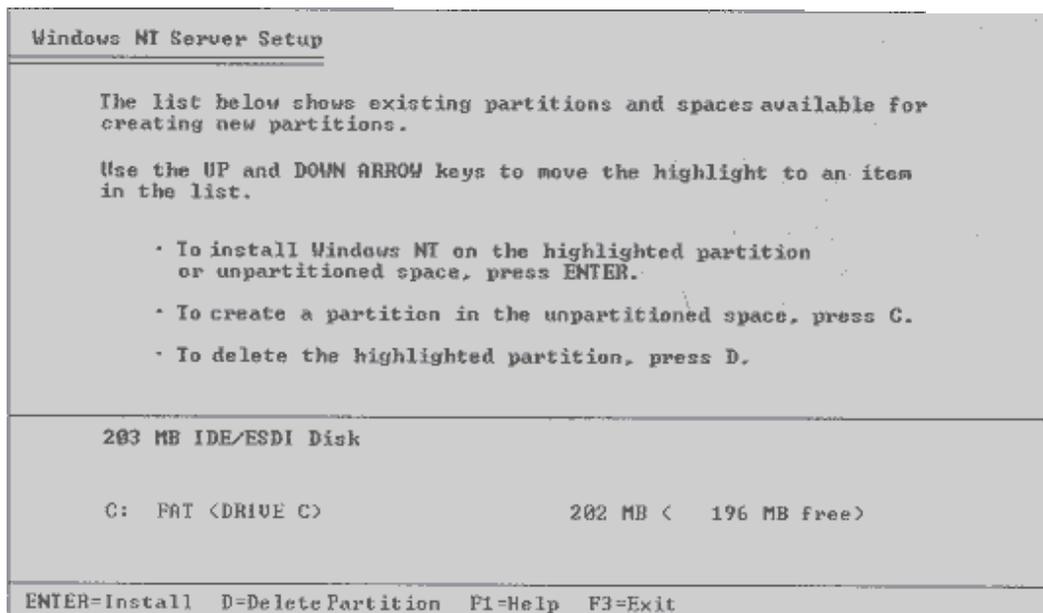
Next, Setup displays the list of hardware and software components it finds on your computer.



Use the UP ARROW and DOWN ARROW keys to move to a setting on the list that needs to be changed. Then press ENTER to see alternatives for that item.

Partitioning the Hard Drive(s)

Disk space on your hard drive(s) is divided into usable areas called partitions. Before it can install Windows NT, Setup must know the appropriate disk partition for installing the system files.



Once you have selected a partition for installing Windows NT, you must instruct Setup, which file system, NTFS or FAT, to use with the partition. Make sure you know all the considerations when choosing one file system over another.

```

Windows NT Server Setup

Setup will install Windows NT on partition

C: FAT                325 MB < 196 MB free>

on 326 MB IDE/ESDI Disk.

Select the type of file system you want on this partition
from the list below. Use the UP and DOWN ARROW keys to move the highlight
to the selection you want. Then press ENTER.

If you want to select a different partition for Windows NT, press ESC.

Convert the partition to NTFS
Leave the current file system intact <no changes>

ENTER=Continue  ESC=Cancel

```

After Setup accepts your partition and file system choices, it displays the name of the directory where it will install the Windows NT files. You can accept the directory that Setup suggests or type the name of the directory you prefer. For most installations, the proposed directory is appropriate.

```

Windows NT Server Setup

The list below shows the Windows NT installations on your computer
that can be upgraded to Microsoft Windows NT version 4.00.

Use the UP and DOWN ARROW keys to move the highlight to an item
in the list.

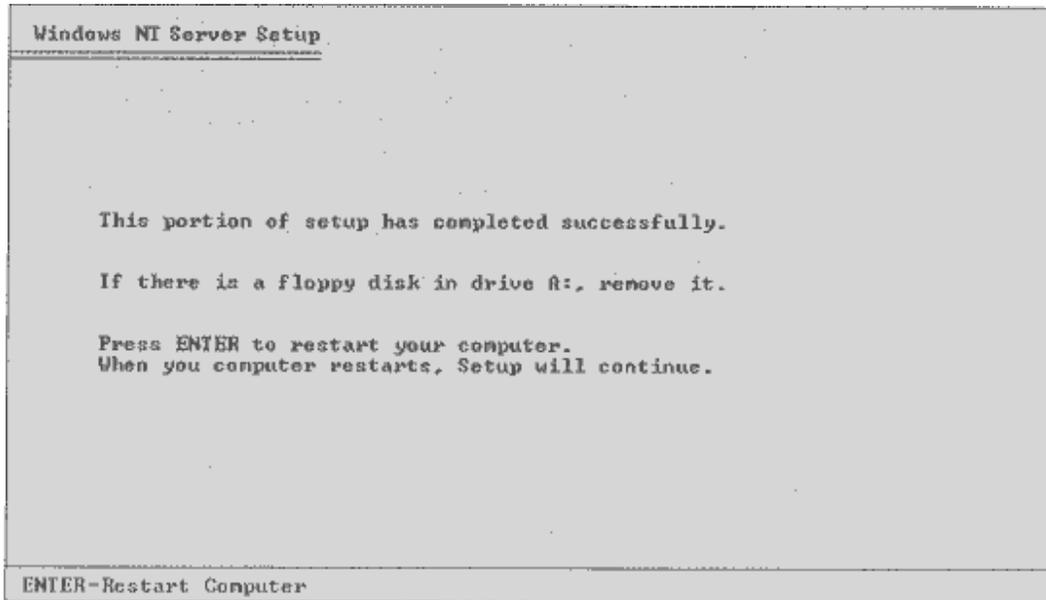
- To upgrade Windows NT in the directory shown above, press ENTER.
- To cancel the upgrade and install a fresh copy of Windows NT,
  press N.

C:\WINNT "Windows NT Workstation version 3.51"

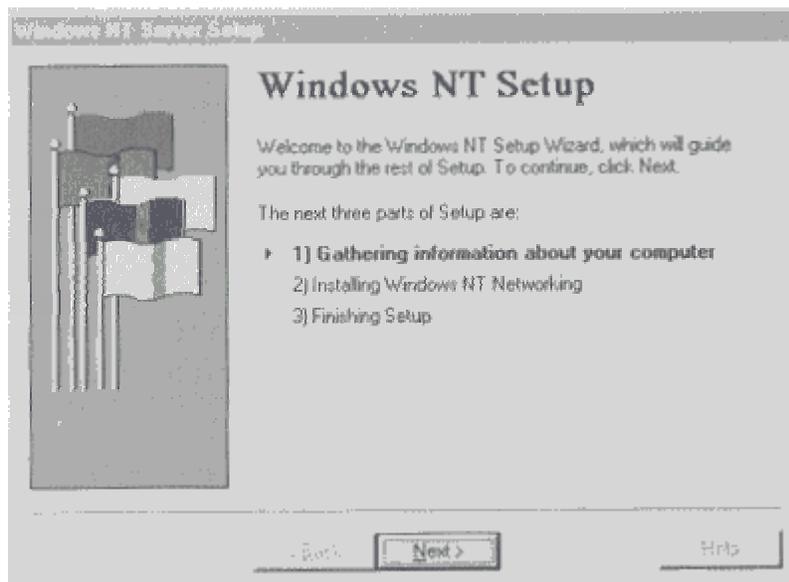
F3=Exit  ENTER=Upgrade  N=New Version

```

When all options have been decided on the first of several Setup screens appears. Setup copies all of the appropriate files to your computer and then tells you it is ready to restart.



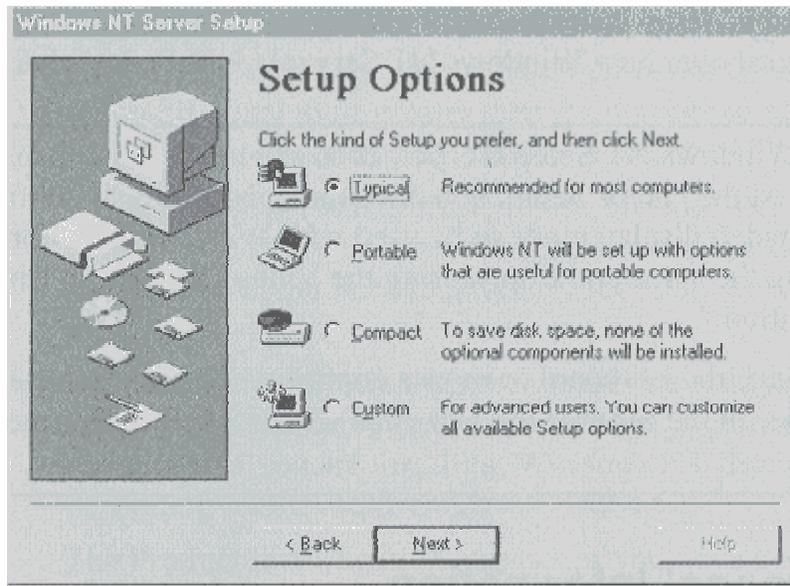
Once this restart takes place, you will be in the next portion of Setup, called the Windows NT Setup wizard. Screens in this portion look different from the ones you have seen thus far, but they perform a similar purpose to customize your installation of Windows NT.



During the Setup wizard you have the ability to skip among screens using the Back and Next buttons. This allows you to change information entered on previous screens in case you discover that the information you entered was not appropriate.

Choosing Installation Type

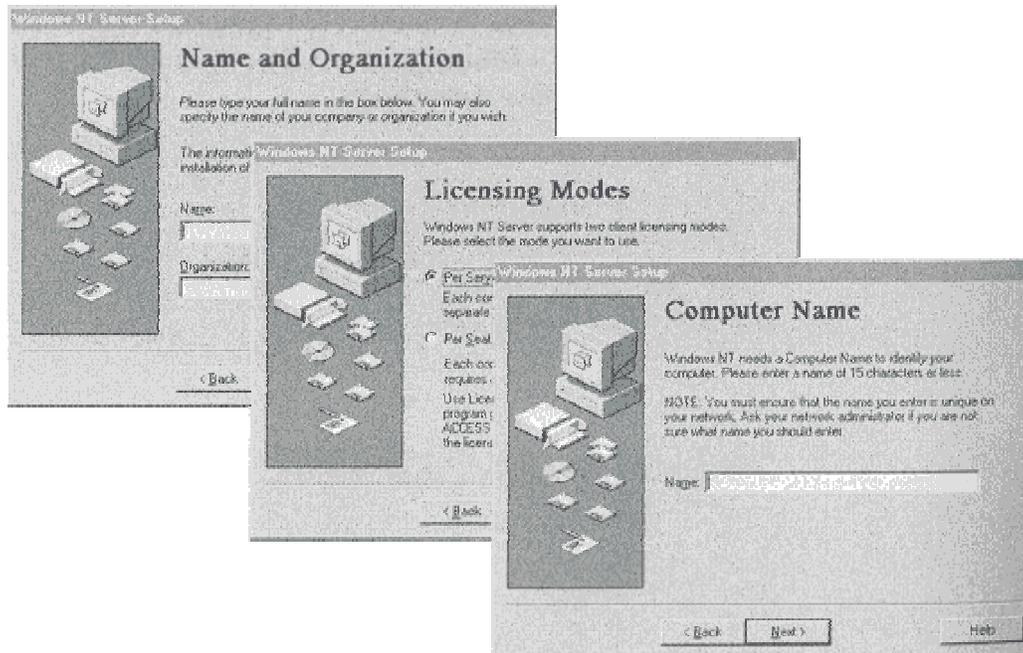
Setup offers four types of installation: Typical, Portable, Compact and Custom



- Typical Setup is the easiest way to install Windows NT Server and is recommended for most standard installations. Typical Setup asks you the minimum number of questions and installs all optional Windows NT Server components, such as Windows Messaging and HyperTerminal. Wherever possible, Typical Setup automatically configures the settings for your hardware and other components.
- Portable Setup installs options that are useful for portable computers.
- Compact Setup is designed for computers where disk space is at a premium. No optional components are installed.
- Custom Setup is designed for experienced users who want or need more control over how Windows NT Server is installed on their computers.

Identifying Your Computer

The next few screens of the Setup Wizard ask for information that will uniquely identify your computer.

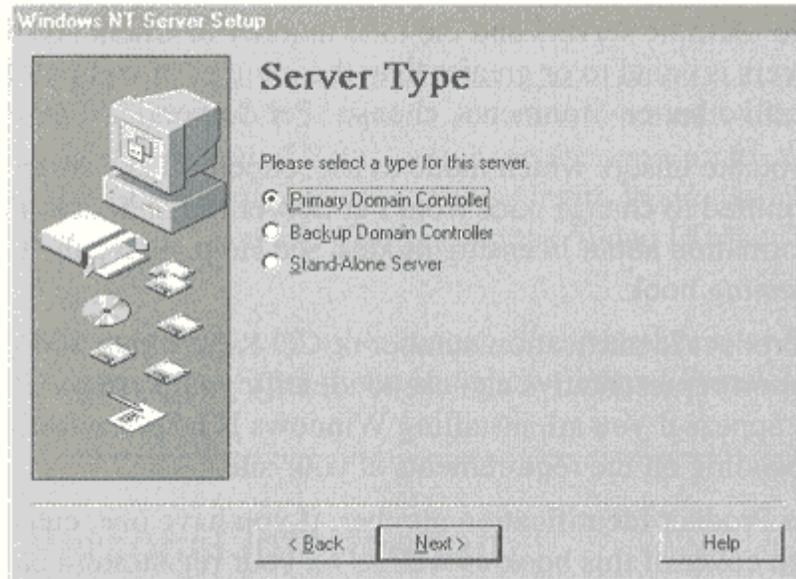


You will need to supply the following information:

- A user name and company name that Windows NT will use to identify you for various operations. You must type a response in order for Setup to continue.
- The licensing mode you want to use for this server. Choose "Per Seat" if you have multiple servers and the total number of Client Access Licenses across all servers is equal to or greater than the number of computers on your network. For all other environments, choose "Per Server".
If you are unsure which mode to use, choose "Per Server" since you are legally permitted to change once from Per Server to Per Seat at no cost.
- A Product Identification number or CD Key, this can be found on the inside back cover of the NT Server book as well as on your registration card. The CD Key if you have one is printed on your CD case. You must type a response in order for Setup to continue. After Setup is complete, you can see this Product ID number by pointing to Settings on the Start menu, clicking Control Panel and then double clicking the System icon.
- A name that will identify your computer on the network. This name must be 15 characters or fewer and must not be the same as any other computer name, domain name or workgroup name on the network. If you need to change the computer name after Setup is complete, double-click the Network icon in Control Panel.

Choosing Server Type

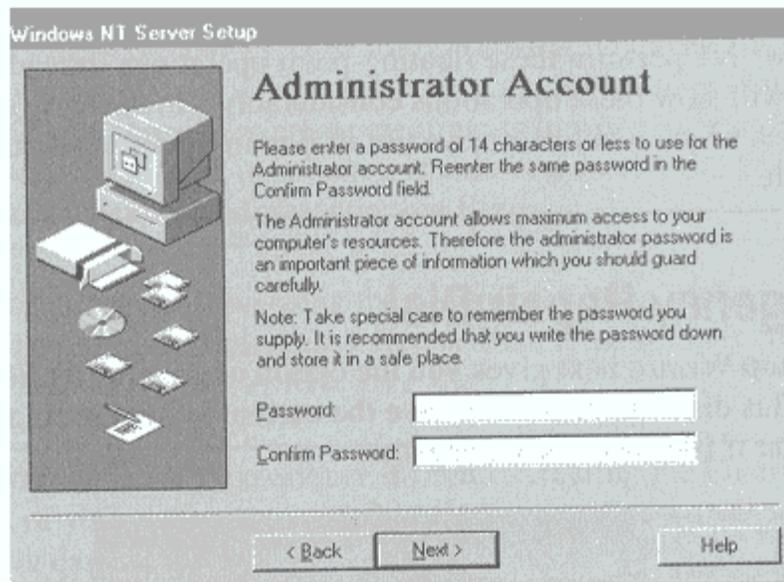
Setup allows three choices for the type of server it will install: Primary Domain Controller, Backup Domain Controller or Stand-Alone Server.



- Primary Domain Controller (PDC) - This is a server that tracks changes made to accounts of all computers on a domain. It is the only computer to receive these changes directly and therefore it serves as the account administrator for your domain. A domain has only one PDC.
- Backup Domain Controller (BDC) - This is a server that maintains a copy of the PDC directory database. This copy is synchronized periodically and automatically with the PDC. BDC's also authenticate user logon operations and can be promoted to function as PDC's as needed. Multiple BDC's can exist on a domain.
- Stand-Alone Server - This is a server that serves as neither a PDC or BDC.

Creating Default Account

Setup creates a default account, called the Administrator account, which grants administrative privileges for managing the overall configuration of your computer, such as managing security policies and working with user accounts. The Administrator account is intended for use by the person who manages this computer. On this screen in the Setup Wizard, you can specify a password for the Administrator account, or leave the screen blank to indicate no password for the account.



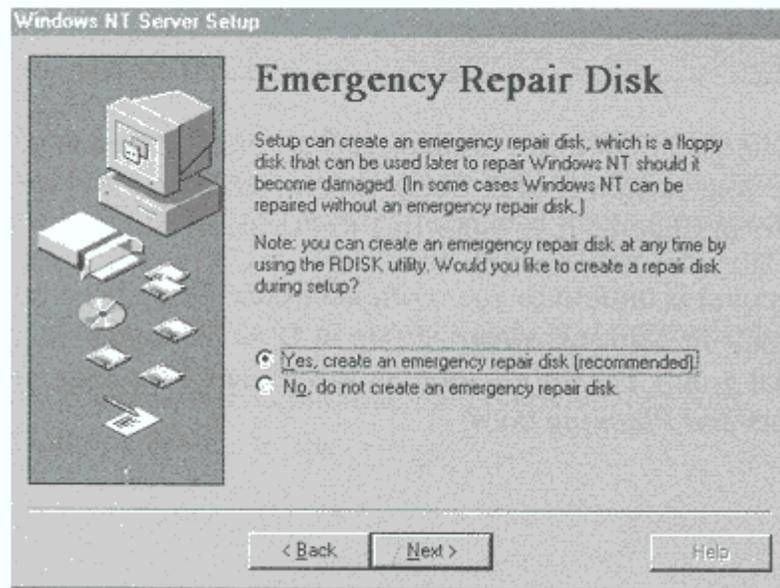
If you choose not to join a domain, this account is the one you will use initially to manage your computer after Setup is complete.

This account is built in to your computer once Setup is complete and is a member of the built-in Administrators group in User Manager. It cannot be removed from that group.

To set a password for the Administrator account, type a password of 14 characters or less in the first box, then retype the same password in the second box to confirm your choice. Take special care to remember the password you supply.

Creating Emergency Repair Disk

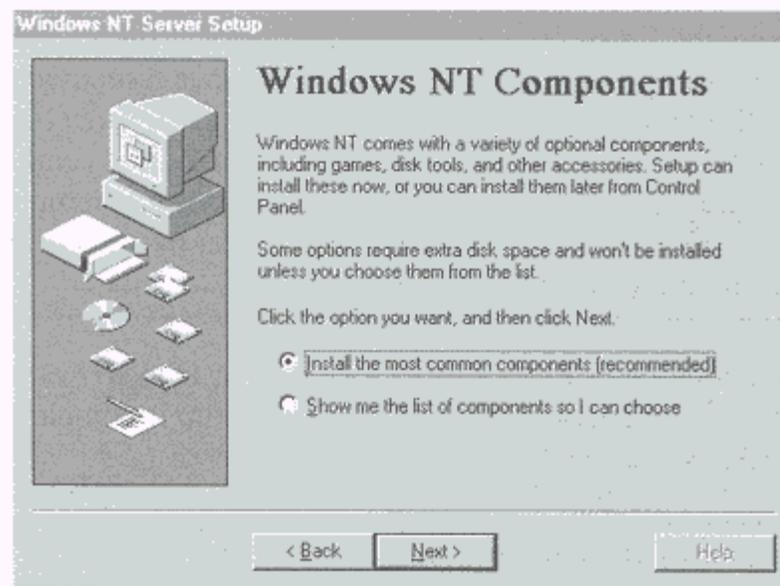
The Setup Wizard next gives you the option of creating an Emergency Repair Disk. This disk can be used to save the current system settings and restore your computer if files become damaged.



To create an Emergency Repair Disk, choose the Yes option on this screen. You will be prompted to insert the disk at a later point during Setup.

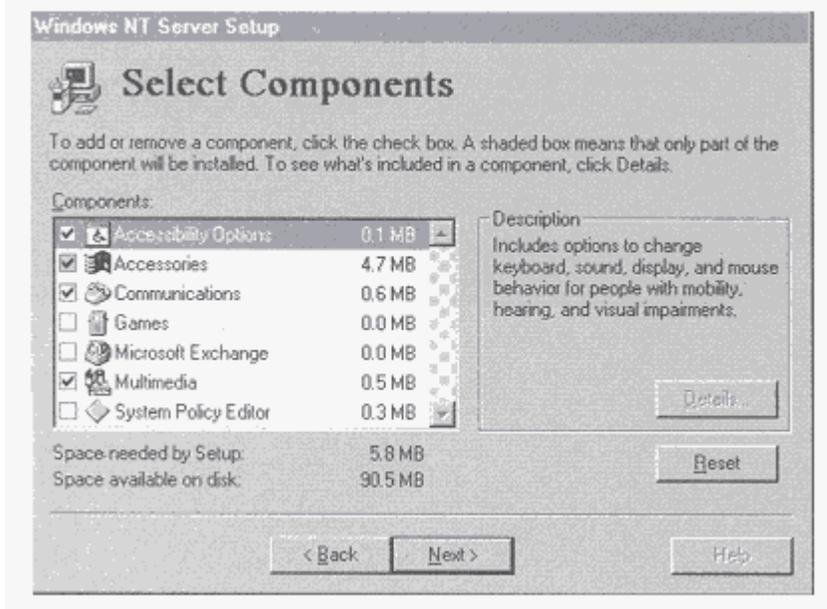
Choosing Other Options

Windows NT includes a variety of components which you have the option of installing during Setup. These components include Windows Messaging, Multimedia, Games and other Accessories. You can choose to let Setup install the most common components, or specify that you will choose which components you want.

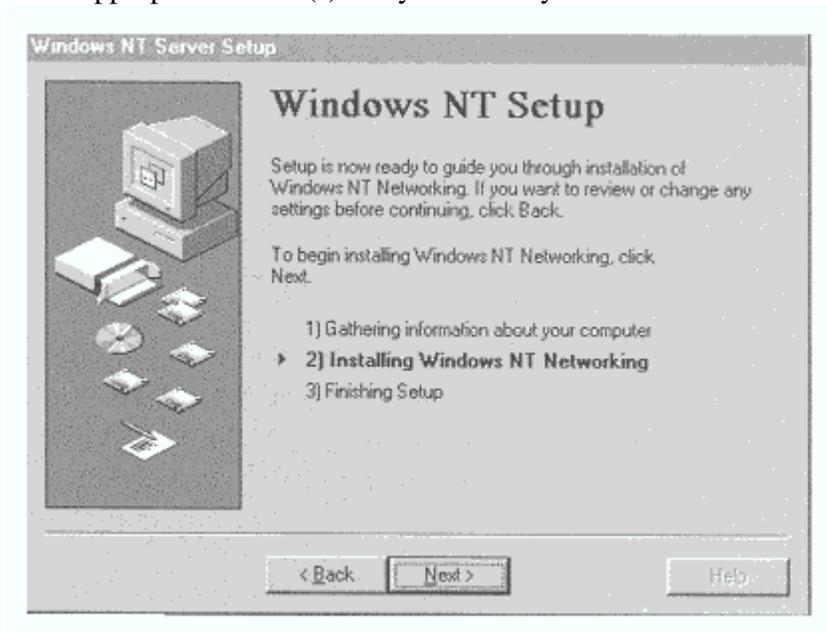


If you choose to select your own components, Setup displays a list from which to make your selections. Click the check box next to each item to select or clear your choice. To learn more about

a feature before selecting it, click the text or icon next to the check box and read the description in the box on the right side of the screen.



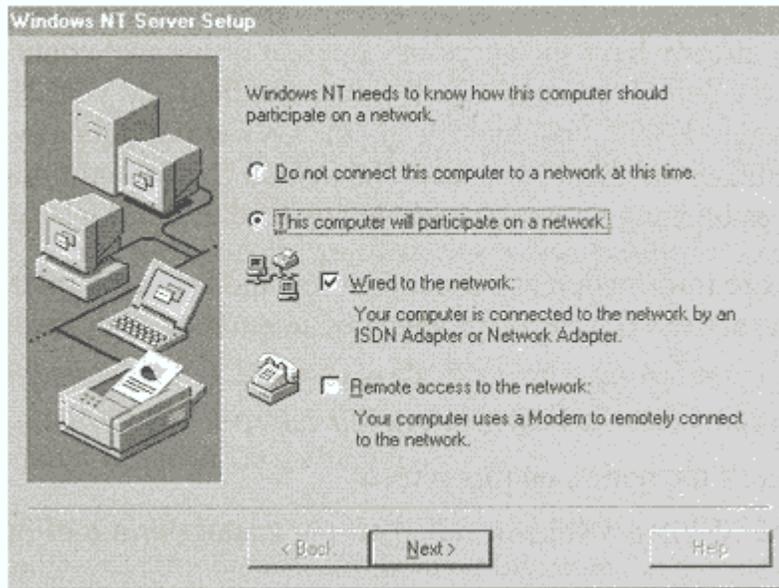
When you have finished with this screen. Setup reports that is ready to install networking on your computer. If you need to review or change any of the information you previously entered, you must click back to go to the appropriate screen(s) and you can only do so now.



Click next when you are ready to continue.

Selecting a Network Type

Your first network Setup choice is to indicate the type or types of network, if any, in which your computer will participate.

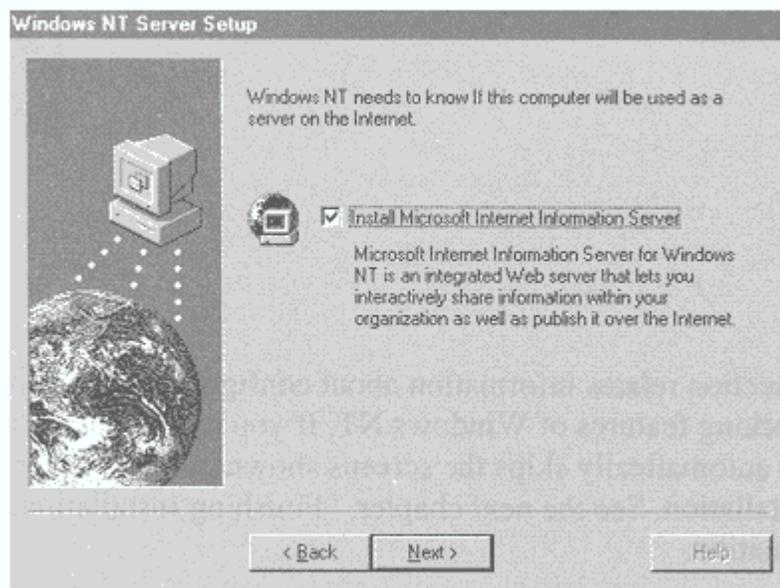


Check the Remote access to the network option if you will use a modem to connect to the network.

For all other network connection types, check the Wired to the network option. You can check both options if both scenarios apply to your computer. If you do not want access to a network, select the Do not connect this computer to a network at this time option. You can install or modify your network connections after Setup is complete by double-clicking Network in Control Panel.

Indicating Internet Server

Next, Setup asks if your computer will be used as a server on the Internet.

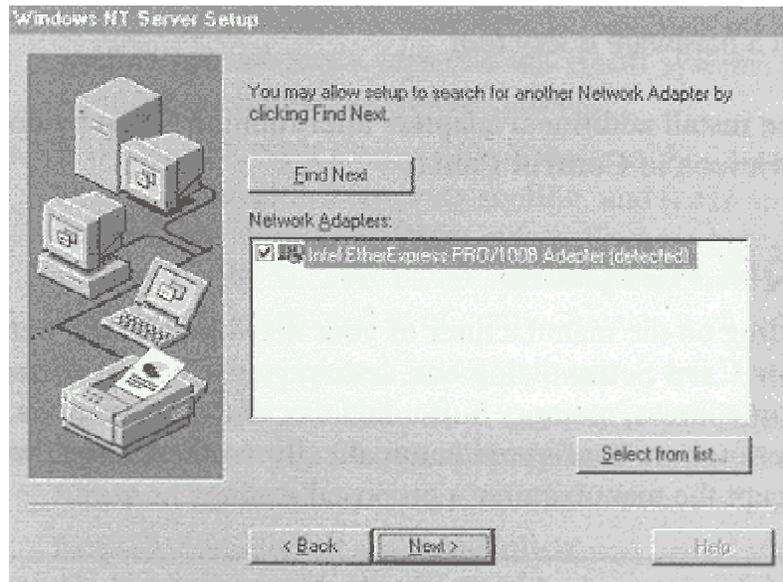


The tool for identifying your computer as an Internet server is called the Microsoft Internet Information Server (IIS).

Check the option on this screen. The IIS files will be installed during a later portion of Setup.

Identify Network Adapter

If your computer is wired directly to a network, the next step is to identify the network adapter(s) in your computer.



Setup uses an automated method of detecting adapters, but if you plan to use a type other than what is detected, you must do both of the following:

1. Check the Windows NT Hardware Compatibility List to verify whether your adapter will work successfully with Windows NT.
2. Have the adapter manufacturer's disk handy for loading the appropriate driver files.

When you click Start Search, Setup checks for network adapter cards in your computer and displays the first network adapter it finds. Click Find Next to search for additional adapters.

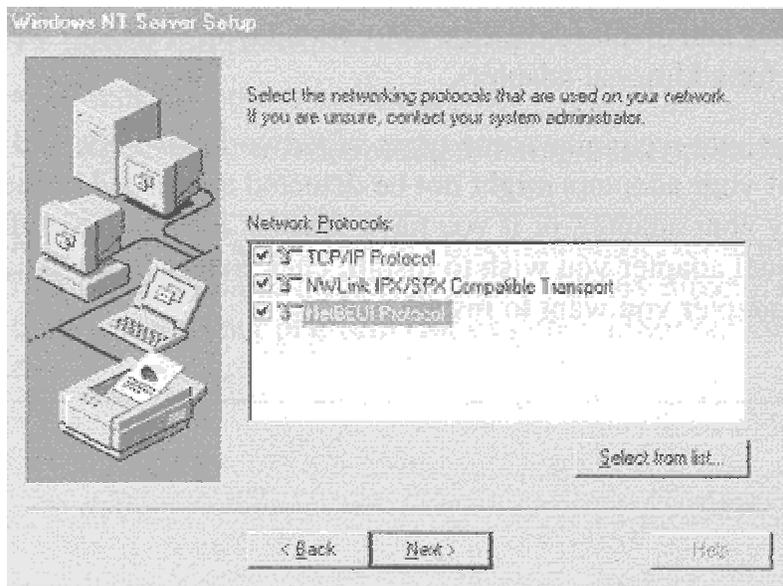
Setup cannot recognize some types of network adapters and as a result one or more of your adapters might not be detected and added to the list. If Setup cannot identify your adapter, or if you have the disk from the manufacturer of an additional adapter you wish to install, click Select from list... and click the name of the adapter you want to install.

You can install additional adapters after running Setup by double-clicking the Network icon in Control Panel.

Depending on the manufacturer of your network adapter, Setup might display an Adapter Card Setup dialog box, letting you select the correct IRQ number, I/O base port address, memory buffer address and other settings. For many adapters, these settings are configured automatically.

Selecting Network Protocols

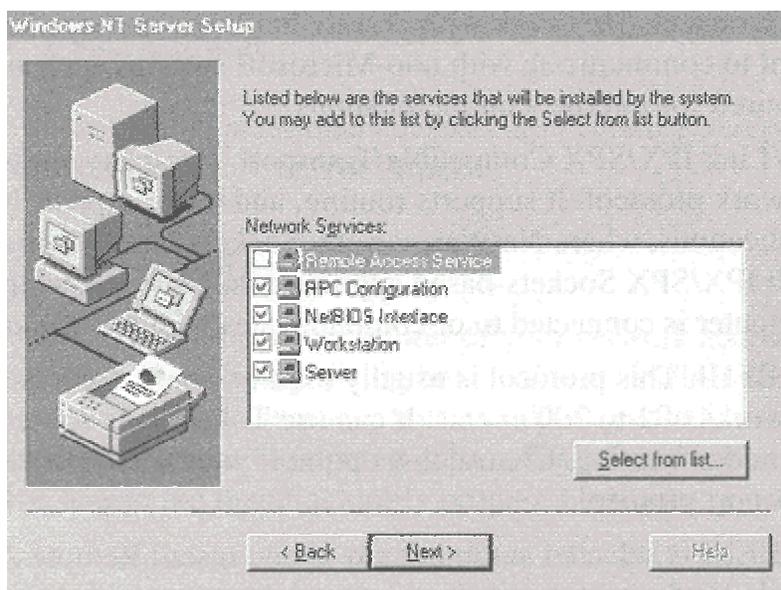
Next, Setup asks you to select one or more network protocols to install.



After Setup is complete, you can add or remove any transports for your system by double-clicking the Network icon in Control Panel.

Installing Additional Software

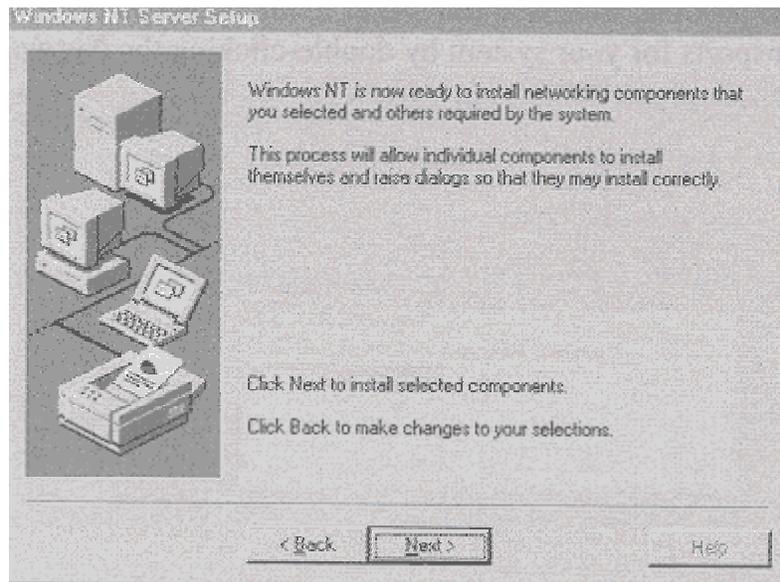
The Network Services dialog box appears after you configure the first network adapter so that you can install additional supporting software.



If you choose to install additional network components, you might be asked to insert additional disks supplied by the component manufacturer.

Copying Files and Installing Network Components

Setup is now ready to copy the necessary files for installing your network options and start the network. If you want to make any changes to your network choices, click the Back button to do so now.



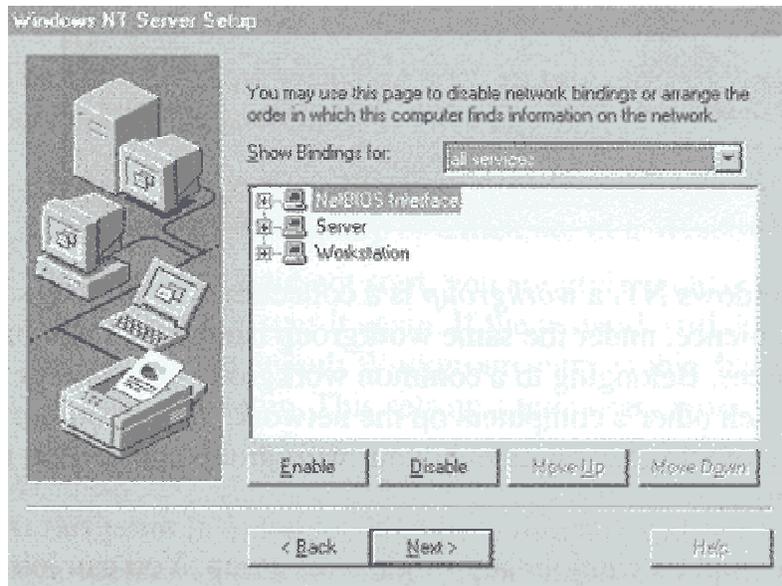
Click the Next button to begin installing the networking components.

While Setup is copying the needed files to your computer, dialog boxes might appear for the various adapters, protocols and services you have chosen to install. Accept the default values in each dialog box or type the settings required for your computer.

If you are installing Internet Information Server, be sure to register the IP address provided by your Internet Service Provider (ISP) unless the ISP uses DHCP to assign the address to you automatically.

Adjusting Network Bindings

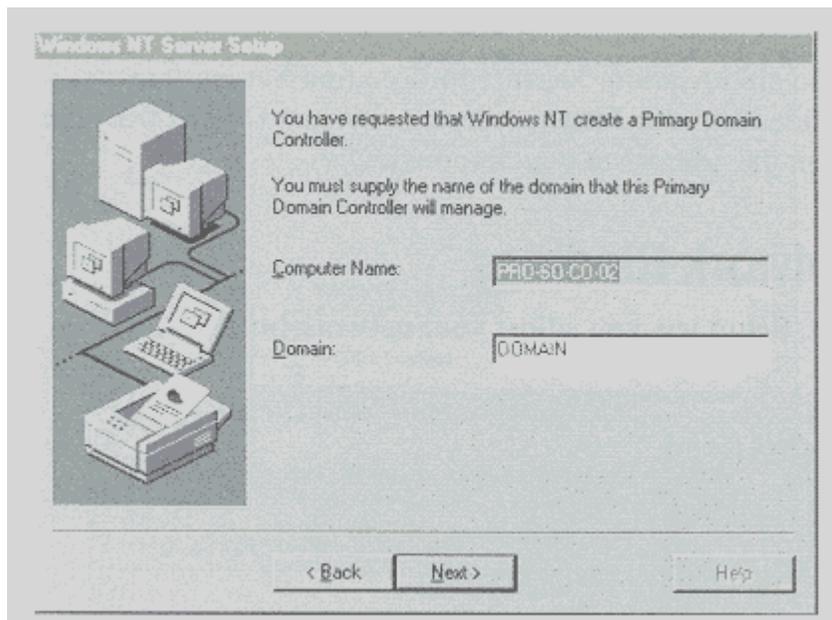
Next, Setup lets you adjust your network bindings.



To adjust the bindings for a network service, double-click the service name and click the adapter or protocol to which it is connected. Then, click the Enable and Disable buttons to allow or disallow communications along the selected path.

By default Setup displays all bindings, as they are associated with the network services. To change the view on this screen, click the drop-down menu arrow and choose all protocols or all adapters.

Next, Setup displays the Domain Settings dialog box.



If you do not know the domain name for your computer and you want to finish running Setup without this information, you can select the Workgroup option and then type any workgroup name.

After running Setup, you can join a domain or change the workgroup name by double-clicking the Network icon in Control Panel.

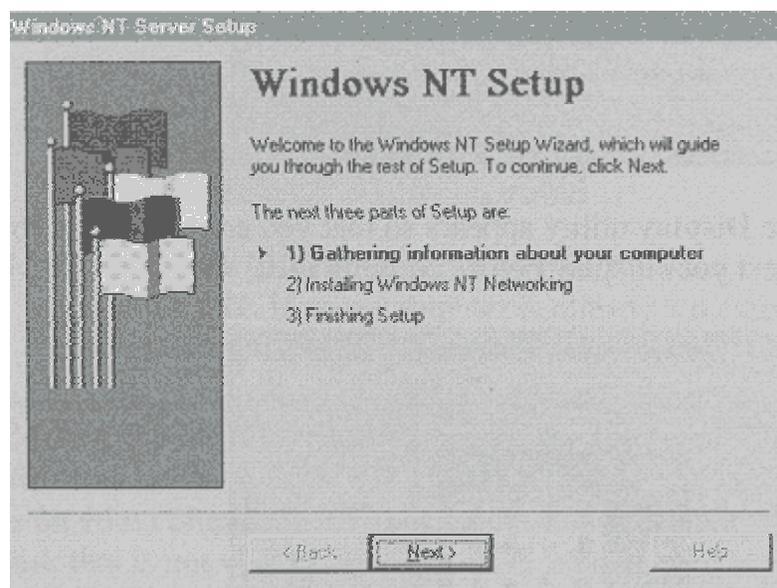
The Domain Settings dialog box can be used in two ways, depending on your network configuration:

- If the network started successfully, you can specify whether this computer is a member of a workgroup or a member of a Windows NT Server domain.
- If the network did not start, you are given a chance to reconfigure the network and attempt to start it again. If the network still does not start, you can accept or change the default Workgroup entry in this dialog box and then click OK to continue Setup. This sets up a temporary workgroup to which your computer can belong.

At this point in Set, dialog boxes might appear for the various adapters, protocols and services you have chosen to install. Accept the default values in each dialog box or type the settings required for your computer.

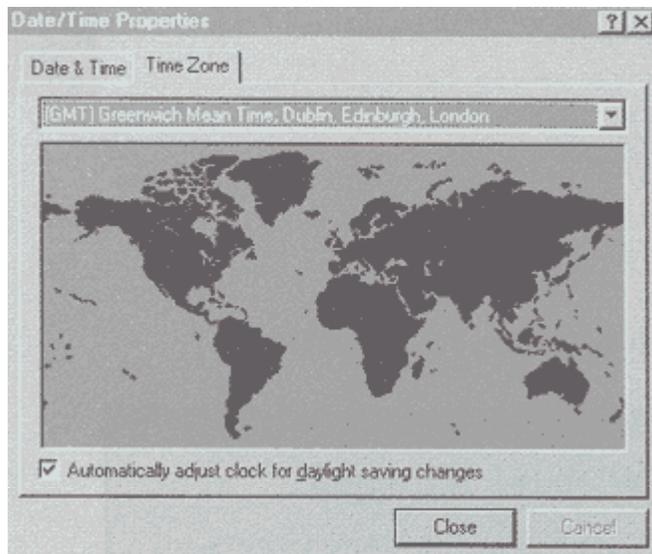
Finishing the Installation

Setup is now ready to finish your installation

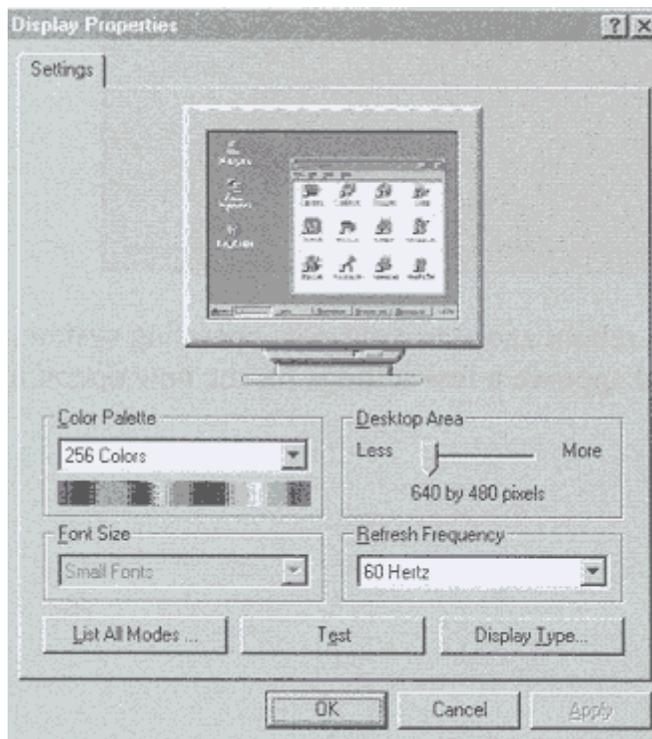


Before Setup can reboot and start your new operating system, however, it needs you to review and approve a few settings for the new operating system.

The first screen shows the Date and Time utility. Adjust these settings for your local time and time zone.



Next, the Display utility appears so that you can configure your video display. Be sure to test your display before clicking OK.



The display settings can be changed after Setup is complete by using the Display icon in the Control Panel.

After you complete the last screen of the Setup Wizard, Setup is ready to complete the final installation tasks.

1. When the Setup Wizard is finished and a message asks you to restart your computer, remove any disks from the floppy disk drives and choose the Reboot button.

2. A boot loader menu appears. If you have a dual or multiple boot, the Windows NT installation you just completed is highlighted at the top of the list. Press ENTER.
3. When the Begin Logon message appears, press CTRL+ALT+DEL to log on.



4. In the Logon Information dialog box, type and confirm your password and then click OK. If your computer is already a member of a domain, you must choose a domain in the From... box in order to log on.

Either way, you should now be successfully logged on. If you need more help, consult a Windows NT Installation Guide.

Notes on Security (Intranet)

OVERVIEW

Security is an uppermost concern for any online application. Transactions and recordings that occur in a networked environment require a high degree of security in order to prevent unauthorized access, as well as to verify user identity, and privilege level. This section outlines different security technologies and how they will be incorporated into the Product Register application infrastructure.

WINDOWS/NT SECURITY

The Windows NT is network operating system organized around the concept of a user name space, and domains. Windows NT uses the name space for access verification, logging, and identifying the owners of every process thread it must service. A username is an integral part of the operating system, and every process ever run on a Windows NT operating system always requires a username and password.

Each file on a Windows NT system, provided that the NTFS system is in use, includes an Access Control List (ACL) that determines its availability to users. This ACL contains user names and user groups along with a series of available privileges, such as read, write, delete and execute. These privileges come into play any time a user requests an action upon file or process on the NT machine, and are the heart of the NT security system.

NT Challenge/Response

When a user first initiates a process on a Windows NT machine, a challenge is requested of the user's identity. This is often called an NT Challenge/Response. Windows NT creates a virtual login context, the same as if the user were actually sitting at the machine's console. If the client user is already logged on to a Windows 95 or Windows NT machine, their logon credentials are passed on to the Challenging Machine and used in its login process. As in a local login, this information is verified against the Challenging machines local name space (or domain namespace if implemented) to determine whether the user may open a login context. Once this step is successfully completed, Windows NT creates the login context and then checks for access to requested process.

Domains

One of the administrative challenges that comes into play when machines all have their own name space revolves around synchronization of these respective user databases. To aid in this issue, the concept of domains exists. A domain is a collection of Windows NT machines that have been grouped together. A single NT Server is identified as a Primary Domain Controller (PDC), and has

final authority in all domain arbitration. Additional NT Servers can be identified as Backup Domain Controllers (BDC) in the case of a failure of the primary. All Domain Controllers share a common name space and replicate any changes automatically at specified intervals (usually 15 minutes).

Any Windows NT machines that are registered to a domain are granted access to use this common name space in their security implementation, and files and processes on the machine can be authorized to "Domain Users" as well as local users. This provides a mechanism for keeping user accounts in a single location, while allowing applications and processes to be distributed across multiple machines without losing the security intended for them.

The Product Register application will take full advantage of the existing Windows/NT domain name space. Every user in the enterprise will be assigned a unique username and password. This investment will be utilized in setting up the Intranet security model, and will become the backbone of all activity logging and access control.

User Groups

Another administrative challenge revolves around applying NT Permissions to files and processes. If individual user accounts are applied to individual processes and files, the addition or removal of a user account can involve a massive amount of alteration. Every file that the user had access to on every machine in a domain must be touched to remove the user's privileges. To aid in this effort, user groups are provided with the NT name space. A user group is a logical collection of user accounts that can be assigned as if it were a single user. An unlimited number of groups can be created, and groups can be intermixed with individual users in ACL's.

An example of their use would be to create a group for each division or office in the company. Users in the domain are then placed in their appropriate groups. Now, files directories and processes can be marked for use by any of the division groups, instead of each of the individuals. When a new individual joins or leaves a division, an adjustment is made to the group, and the change is implicitly propagated throughout the domain.

For the Product Register application, a Windows/NT group will be created in the primary domain for each functional division within the Enterprise. Each group will contain all of the users assigned to that organizational unit. These groups will be used as the top level access control layer for all of the Intranet applications.

INTERNET INFORMATION SERVER

Microsoft's Internet Information Server (IIS) is a web server service that takes full advantage of the Windows NT Security model. Since it is an NT process, it requires a user to create a login context, and thus be authenticated against the NT namespace (domain or local). Once the user has been authenticated, the login context, called a Session within IIS, is used in accessing all of the applications and pages housed within the web server.

When a page is requested from the web server, the server service checks the ACL on the file and verifies that the requesting user is either mentioned explicitly or is a member of a group with the read (or execute in the case of a script or CGI process) privilege. If the user's login context is not allowed to view or execute the requested process, a message is returned to the requestor either denying access, or requesting a new login for an account that does have access to the file.

Secure Channels

The first order of business when securing an Intranet involves protecting the communication stream from the client to the server from unauthorized breach. These communications include the transfer of usernames and passwords, submitted data, and other access requests and responses. For this purpose, specific “carrier” protocols called PCT and SSL have been developed to encrypt data as it is transferred between the client and server machines, as well as authenticate the server to the client, verifying that the user is indeed connecting to the server that they expect.

These protocols are application protocol-independent. A "higher level" application protocol (e.g., HTTP, FTP, TELNET, etc.) can layer on top of the PCT and SSL protocol in a manner that is transparent to the application. The protocol begins with a handshake phase that negotiates an encryption algorithm and (symmetric) session keys as well as authenticating a server to the client (and, optionally, vice versa), based on certified asymmetric public keys. Once the handshake is complete and transmission of application data begins, all data is encrypted using the session keys negotiated during the handshake.

Authentication Methods

Not all Web browsers are created equal. Even though Windows 95 and NT allow a mechanism for passing login credentials back and forth to each other behind the scenes, very few web browsers support it. When accessing a web site, there are 3 basic types of access: Anonymous, Clear Text and NT Challenge Response.

NT Challenge/Response

NT Challenge/Response, as discussed earlier in this document, automatically passes the user's local login credentials through to the web server. If the account exists on the target server or domain, and has the correct permissions for the requested file/process, then the request is granted. If not, a denial is logged, and the server service reacts appropriately. If the Clear Text Authentication option is enabled, access is attempted using it. If not, a denial response (HTTP Response Code 401) is sent to the client. NT Challenge/Response is only supported by Microsoft Internet Explorer versions 3.0 and higher.

Clear Text

Clear Text is the most common method of authentication used by web applications. When an initial request is made for a page on a web site, the server responds with a request for authentication. The browser responds with a username/password dialog box, and the credentials are passed to the server for authentication. Once verified, a login context is created and the request is served. Unlike NT Challenge/Response, if the credentials are not valid, three attempts are made at gaining valid credentials. If after the third attempt, a successful authentication has not occurred, a denial response is sent to the client (HTTP Response Code 401).

Anonymous

Anonymous Access appears to the client as if no access is required. Behind the scenes, however, this is not the case. Anonymous access under IIS simply means that a username and password have been predefined for all users, and a login context is created using its credentials instead of the client's. All file and process access is verified using the anonymous user's credentials. In the case that the anonymous user does not have access to a requested file or process, a clear text request is attempted.

There is a distinct hierarchy that is used when accessing the IIS server, and any combination of the three methods can be used. If the Anonymous Access option is enabled, all users are authenticated using the defined anonymous user account first. If Windows NT Challenge/Response is enabled, and anonymous access is disabled or fails, then this method is attempted. If NT Challenge/Response fails, is disabled, or is not supported by the client browser, then authentication falls back to Clear Text. Finally, if this authentication fails or is disabled, then the user is denied access.

Web Applications

IIS Web Applications, or Webs, are created using the same ACL as files or processes. Each Web application corresponds to an NT directory structure. When identifying a directory structure as an independent web application, permissions can either be inherited from the "Root Web" (the topmost directory of the web site) or assigned in the webs ACL. The permissions set in the ACL are applied to all documents and processes contained within the web.

For the purposes of the Product Register application, the Intranet application will be assigned one web. In future phases or releases, additional webs may be created for logical functions or subsystems within an application that require a different security context or ACL. Using Windows/NT domain user groups, top-level access to each application will be granted to the appropriate organizational units.

CONCLUSIONS

As detailed in this document, two distinct tiers of security will be implemented throughout the Product Register application. By using the Secure Sockets Layer (SSL), all communications to and from the server will be encrypted, guaranteeing authenticity. The main web of the Intranet site will allow anonymous access. All web applications, however, will use NT Challenge/Response and/or Clear Text, matching the username with one from GOEIC's established set of authorized domain names for authentication.

Notes on Translation of Web Site Pages from English to Arabic

It is strongly recommended that the translation of the Product Register Web Site from English to Arabic be done after the English version has been fully tested, debugged, and preferably used by GOEIC personnel in a live environment for several months. This would greatly clarify the administrative needs for translation, while reducing the risks and efforts of maintaining two separate sites. Any change being made on the English site would require duplicate changes on the Arabic site. Synchronization would be difficult to maintain. All modifications or enhancement requests should be reviewed by the development team. Some of the requests may or may not be possible to incorporate due to the complexity or severity of the modification.

The following procedures should be followed in order to ensure a complete and successful translation of the entire Product Register Web Site. It is recommended that the person responsible for performing the translation be very familiar with Microsoft Visual Interdev 6.0 and HTML, because this is programming environment in which modifications should be made. Easy verification of the results of the modifications can be easily viewed. It is critical that care be taken for each and every translation change. The ASP and HTML pages have tables that determine the layout of the page. If the HTML code that describes the table layouts gets modified by accident, the complete page will become unusable.

It is also suggested that the person responsible for the translation be very familiar with all the functionality of the English version of the Product Register. He/she should work closely with GOEIC inspectors to learn the operational needs and conditions and to get a better feel for GOEIC terminology that should replace English text where needed.

If the Arabic translation for a particular English word is significantly different in length (longer or shorter), this could completely change the overall layout of the page. In this case, if possible, the Arabic translation should be abbreviated or lengthened to approximate the length of the English word or phrase.

There are close to 100 ASP and HTML pages but not all of these need translation work. All the pages that have a "rs" prefix DO NOT need any translation. There are 38 of these pages. These pages are called from other ASP pages and perform database queries, inserts, updates, etc.

What needs to be translated? If you view an English version of a page you will see a title, input form field labels, some description text, popup alert or error messages, and buttons. These are the only items that need to be translated. As of now, all buttons have been translated into Arabic and are found on the GOEIC CD in the Arabic Version | images folder. When creating the actual Arabic Product Register Web Site, the Arabic images for the buttons would be added to the images folder instead of the English buttons. See the section "Creating the Product Register Web Site" for more detail about how to do this.

It is important to first create a new project in Visual Interdev that contains a copy of the complete English Product Register files. What you are doing is basically creating a duplicate project that will contain the Arabic images instead of the English images. All the English ASP and HTML pages will then be translated into Arabic.

Follow the instructions to create a Visual Interdev project from scratch in the “Creating the Product Register Web Site” section. The only changes in procedures would be:

- 1) give a new/different name for the project. We suggest GPRA for GOEIC Product Register Arabic.
- 2) Add the Arabic images to the images folder instead of the English version and images.
- 3) We do want to add all the English ASP and HTML files, just as for the English version site, because these are the pages that will soon be translated.
- 4) Add the “_Themes” folder just as for the English version site.

The last step would be to re-create the data connection as described in the “Installation of the Product Register Web Site” document.

The project should now be fully created and can be tested by opening the Internet Explorer browser and typing: //localhost/GPRA. The English version should appear with Arabic buttons.

STEPS REQUIRED TO TRANSLATE AN ASP OR AN HTML PAGE

With the new Arabic Visual Interdev project, start at the top of the list of files and open a page by double clicking on the file name. For instance the “AddNewCommodity.asp” page.

The following items should be searched for and translated. Not all of these items would appear on every page. It is suggested that the page to be translated be viewed or printed out so that it is easy to see which text items are present and need to be translated.

- 1) title of page. Found between the HTML tags <title> and </title>
example: <title>Add New Commodity</title>
- 2) label of an input text box or dropdown box. It is suggested to do a search for each English text item on the page. This will quickly identify where that item is found in the code. It is critical here to **NOT change any code** whatsoever—other than the text to be translated!
- 3) Alert or message boxes. Search for the keyword “alert” and “msgbox”. Any text found inside these commands WITHIN QUOTES should be translated.
Ex: alert("Commodity Added, click 'OK' to close");

Other English text found within quotes may or may not have to be translated. For instance HTML tags have text within quotes and should not be translated.

Test the page by opening the page in the browser and see if all English text has been properly translated. It is suggested that you translate only one or two items at a time and verify them before

translating remaining text. This way, in case of a problem, you would be able to easily identify which text item caused the problem.

NOTE: IF SOMETHING DOES GO WRONG – DON'T WORRY!

If you find during the translation of a particular page that something severely affected the layout of the page (table layouts changed, rows appeared where they shouldn't, etc.) or the page no longer works properly, it would be wise to simply delete that page from the VI project and add that one page back to the project from the original CD source.