Net UI
Fourth Shift Release 8.00

Fourth Shift Help
Release 8.00

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Net UI Module

The Net UI feature, installed with the Net UI (NUIM) Module, provides a method for accessing the Fourth Shift system, including across an intranet, phone line or the Internet. Net UI can also be used across a local area network (LAN) to improve performance by eliminating much of the network traffic. The Net UI Module contains add-on components that reside on both the client and on server computers.

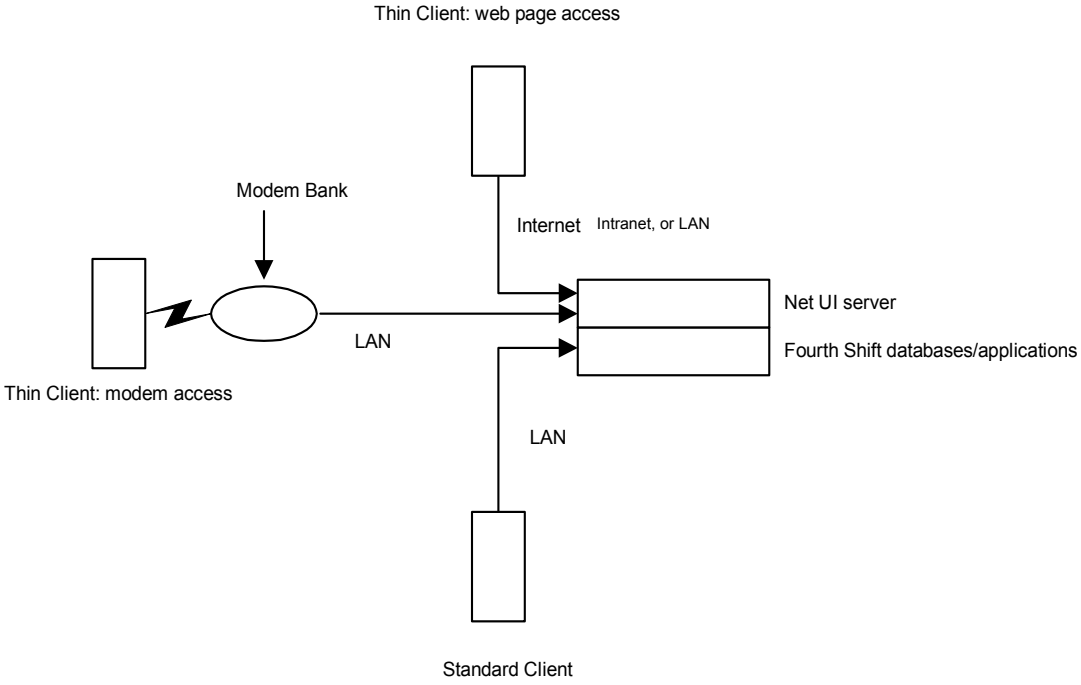
This section contains both background information about Net UI and information about installing and configuring your environment to use Net UI.

Net UI Concepts

Net UI Architecture

The Net UI architecture extends the client/server relationship to allow the server to act as the "host" to a client connection. This means that the client performs fewer operations and the server performs more operations. The net result is faster performance for the client.

Clients access Fourth Shift either directly (traditional clients) or through the Net UI server (Net UI clients). Any combination of client access methods can be used simultaneously and look similar to the following:



Client Operation

Net UI clients are different from traditional clients in a number of ways:

- **Installation Process.** Users can install client components by downloading files from a web page or running the standard workstation installation.

- **Installation Components.** Any files, such as screen definitions, which need to be accessed by the client are installed on the Net UI client. The components are accessed directly from the client and communication time is minimized between the client and server.
- **Client Connection Operation.** Net UI clients communicate with the Net UI server and a two-way client connection is started. The Net UI client communicates with the Net UI server and also starts an **application client connection** which runs the application programs on the server. Active client connections are listed in the Net UI Server dialog box on the Net UI server.

  This means that any communication software, such as dial-up networking, must be able to reach the Net UI server. The client and server communicate through a predefined port number.
- **Data Communication.** Net UI clients run the user interface and application programs from different machines to optimize performance. The user interface runs from the Net UI client directly. The application programs are run from the server after the Net UI connection is made. This allows the high performance server to do most of the processing and communicate the minimum amount of data across the connection to the Net UI client.
- **Startup.** Net UI clients must access the Net UI server to establish a connection to Fourth Shift. Remote users connect through either a web page link or through a user-created shortcut. See "Web Page Access for Remote or Local Users" or "Net UI Client Shortcut Parameters" in this manual for more information. Net UI users on a LAN can use the Net UI shortcut installed during the workstation installation process.
- **User Identification.** Each client must have a user-specific subdirectory on the Net UI server. This subdirectory has the same name as the Net UI Id entered when a Net UI client accesses a Net UI server.

Net UI Server

The **Net UI server** is a component which runs on a Windows server. This component manages the activities of any Net UI clients. It monitors access by starting and stopping connections as clients use Fourth Shift through Net UI. A running Net UI server program supports a single Fourth Shift database, and multiple NET UI server programs can be run for multiple Fourth Shift systems.

The Net UI server uses the following concepts:

- **Communication.** The Net UI server communicates with clients through a predefined port number. A port number is similar in concept to a telephone number. Fourth Shift clients specify the port number they are trying to "call" to connect to the Fourth Shift server.

  The port number is set by default to 5432 but can be changed as needed. The Net UI server then "listens" for client connection requests to connect to that port number.
- **Client Connections.** Once a client access request is received by the server, an application session is created on the server to process Fourth Shift requests. This connection is no different from starting a Fourth Shift session from the server manually except that the user interface is displayed on the Net UI client. Active client connections are listed in the Net UI Server dialog box on the Net UI server.
- **User Identification.** Each client must have a user-specific subdirectory on the Net UI server. This subdirectory has the same name as the Net UI Id entered when a Net UI client access a Net UI server.

Client Types

There are several types of clients which can be used with your Fourth Shift system to address a number of business and user requirements. You may have users who travel or you may need to access sites in different geographical areas. You can use any combination of these client types to address your needs.

In general, there are two categories of Fourth Shift users: local and remote.

- **Local users** are connected directly to the LAN. These users require no special dial-up or other connection to access the network.
    - **Access with a traditional client.** Clients are attached to the local area network using traditional methods. This method is used without the Net UI Module installed when there are no special access requirements.
    - **Access with a "thin" client.** Clients are attached to the local area network using traditional methods. This access method differs from the traditional client method because it uses Net UI to run programs on the server and not on the client. The application programs are run on the server and application program to database processing is not communicated across the local area network.
- **Remote users** are not connected directly to the LAN and use some sort of communication technology to access information either through dial-up networking or the Internet.
    - **Access using a modem.** Clients access the network through a phone line. Once attached to the network, clients can sign onto Fourth Shift using Net UI. The application programs are run on the server and application program to database processing is not communicated on the phone line. Dial-up communication software, such as into a modem bank, should be used.
    - **Access using the Internet.** Clients access a web page to sign onto the system. A button on the web page starts the system using Net UI, and allows you to sign on. The application programs are run on the server and application program to database processing is not communicated across the Internet.

  A web page (FSWEB.ASP) is provided in the MFGSYS\WEB\NUIM directory that can be used to access Fourth Shift. See Installing Net UI for more information on implementing the web page.

Installation Process

Net UI installation consists of several parts:

- **Module installation** for the Net UI Module is similar to any other module. Several additional steps may be needed, once you complete the module installation, to prepare for client access.
- **Server configuration** includes setting up remote user access software, preparing for Internet access (if applicable) and establishing security for the Windows server where the Net UI server will run. This is needed to ensure that users cannot access non-Fourth Shift data inappropriately.
- **Client installation** may involve both third-party communication and Net UI components depending on the client type selected. This manual only covers the Net UI components. Communication software setup varies based on the packages you are using. Client installations also vary based on whether users install from the web page or by using the workstation installation program for LAN access.

See Installing Net UI in this manual for more information.

Net UI User Id

One additional step is required when you sign on using Net UI. In order to sign on using a thin client, you must also enter a **Net UI user identifier.** Each client must have a user-specific subdirectory on the Net UI server. This subdirectory has the same name as the Net UI Id entered when a Net UI client access a Net UI server. The Net UI thin client identifiers must be unique.

This User Id is used to name a subdirectory of the FSUSER directory on the machine running the Net UI server. For example, if you enter USER1 as your Net UI identifier, your user directory on the Net UI server is \FSUSER\SystemName\USER1.

The Net UI Id can be specified using one of the following methods:

- **Manual entry when you sign on using Net UI.** You will be prompted to enter your Net UI Id before signing into Fourth Shift.
- **Command line** of the shortcut used to start your Net UI client. This eliminates the need to specify your Net UI Id each time you start your Net UI client. See "Net UI Client Shortcut Parameters" for more information.

Requirements

Server Requirements

It is common to run the Net UI server on the same server that is used as the Fourth Shift database server.

The Net UI server must be:

- run on a supported Windows Server version according to the Fourth Shift Product Support Matrix
- visible across the Internet (external DNS registration)

If you need more information about these requirements, please consult your Windows server documentation.

Microsoft Internet Information Server (IIS)

If you choose to include the Internet access method as one of the options for client access, Microsoft Internet Information Server (IIS) must be on the server. The IIS software allows the server to respond to client access from Internet Explorer. You also need IIS to allow Net UI clients to download installation files from the web page.

Remote Access Requirements

Clients not directly connected to your LAN are considered "remote" clients in this manual. Remote clients have the following requirements to sign onto Fourth Shift:

- TCP/IP servicing connection method to your network or connection through an ISP (Internet Service Provider) to the Internet
- installed Net UI components

Local Network Access

To provide access to your LAN for a remote client, you need to consider the following:

- **Dial-up Application.** A dial-up application which can create a TCP/IP connection must be available on the client. A modem bank, such as Shiva or another similar application, can be used to create this connection. You can use applications such as RAS or Citrix; however, the performance may not be acceptable in all situations. Applications such as PC Anywhere are not recommended for use with Net UI.
- **Name Resolution.** The client must be able to access the Net UI server using name resolution (DNS lookup). Name resolution can be verified by using the PING utility from the client to access the server. Alternatively, you can add the relationship between the server name and the IP address manually to the LMHOST or LMHOSTS file on the client.

Internet (Web Page) Access

- **Connection to the Internet.** A TCP/IP connection to the Internet through an ISP must be available on the client. A dial-up application is used to connect to the ISP but there are no specific requirements on how that connection is made.
- **Internet Explorer 6.0** or higher is required to install or run a Net UI client using the web page.

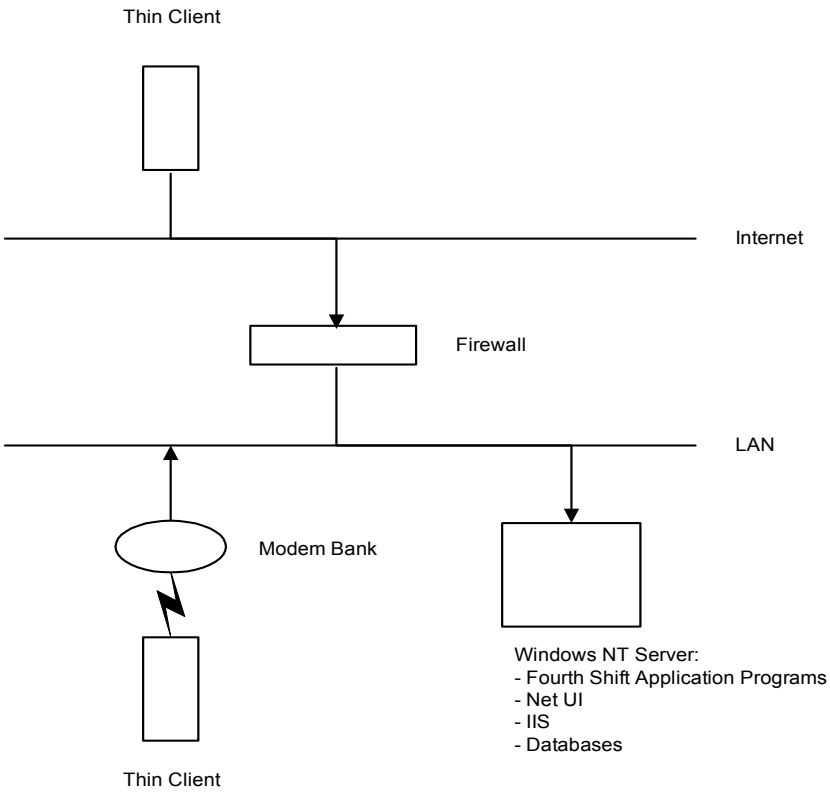
Net UI Security

System security must be carefully considered when using the Net UI Module on an Internet server. Any additional security required for implementing Net UI client access via the Internet, for example, should be considered before implementation.

The following security issues and suggestions should be considered:

- If you plan to allow Net UI client access over the Internet, your Fourth Shift server should be located inside a firewall in order to prevent unauthorized access to the system.
- Local network clients use the local area network security implemented in your company.
- Remote modem clients require additional security considerations.

The following diagram illustrates the client access routes for which security should be considered.



In this diagram, remote Internet client access is verified by firewall security. Remote modem client access is verified by modem bank security. Both client types are then verified by the LAN and Windows security.

Firewall Security

If a firewall is used to secure your Fourth Shift server, the port number used for server-client connections must be opened on the firewall to allow Net UI traffic to pass through. The default port number for the Net UI server is 5432.

Port 80 or 443 may also need to be opened on the firewall if:

- your company has a web page using port 80 for HTTP traffic
- your company has a web page using SSL port 443 for HTTPS traffic
- you wish to allow Net UI installation file downloads from the web page
- access is also need to another server across the Internet

A security risk may exist if both ports 5432 and 80 or 443 are open to a server on the firewall because port 80 allows HTTP traffic and 443 allows HTTPS traffic to pass through the firewall. If port 80 or 443 is open and no other security is provided for access to your Fourth Shift web page, it is possible that any Internet user can download the Fourth Shift thin client from the web page.

If ports 5432 and 80 or 443 must be open, you should implement additional security from the web page where the Net UI client components are downloaded. Any additional security should validate the user trying to download the client components. For example, place the files on a secured NTFS volume to allow security verification before the download.

Application and User Level Security

The Windows server, where the Net UI server is running, needs special security to support the client connections and restrict users from accessing server files which are not related to using Fourth Shift. The Fourth Shift application session created for a Net UI client inherits the profile of the currently logged-on server user (that is the user who started the Net UI server program).

You should create a "basic user" account (such as NETUI) and assign the appropriate directory access. When you logon to the Windows server, you should use this basic user account rather than an Administrator account that allows the client connection more access than is needed.

Access must be defined for a "basic user" and should include the following considerations:

- services needed by Fourth Shift are started automatically without validation against user identification
- the database server and Net UI server must be able to start using the security for this basic user
- Net UI clients create a client connection which needs access to the standard Fourth Shift directory structure just like the traditional client
- Net UI server and clients need access to the Windows operating system related directories for programs and support files

See your Windows documentation for more information on establishing directory access if needed.

Directory Access Assignments

Assign NTFS directory access assignments to the following Fourth Shift installed directories:

Full Control	Read Only
CSTM	\ (root of FSHIFT directory)
FS_APPS	MFGSYS\E
FS_APPS\D	MFGSYS\FONTS
FS_APPS\W	MFGSYS\HELP
FSUSER (including related subdirectories)	MFGSYS\MSDEFS
LOTM	MFGSYS\REPORTS
MFGSYS	MFGSYS\S
MFGSYS\CLIENT	MFGSYS\SQLMSS
MFGSYS\ENGM	MFGSYS\SYSTEM
MFGSYS\I	
MFGSYS\MMAM	
MFGSYS\SFRM	
XPORT	

In addition, the following directories on the server should be secured. Any other directories on the server are not used by Fourth Shift and you should secure them as needed by your operation.

Directory	NTFS Directory Access
Windows	Read
System32 or Windows	Read

Domain Name Resolution

Domain name resolution refers to the process of converting a server name into a specific IP address for TCP/IP communication. Domain name resolution is an integral part of the server communication method. Since IP addresses can vary based on use of DHCP or proxy server techniques, using the server name is a consistent way to reference a server.

Name resolution can be accomplished many different ways and no one way is preferred for Net UI purposes. These methods include WINS, DNS, HOST or LMHOST.

Some considerations when setting up name resolution include:

- firewall cannot prevent name resolution; in other words, DNS server cannot reside inside the firewall because remote clients need the server to perform the name resolution
- if you are using a proxy server for IP addresses outside your internal LAN, the proxy server must have a connection to the Net UI server and must be able to perform name resolution

Restricted Features

Modules Not Available with Net UI Thin Client

The Net UI thin client allows you to minimize network traffic for remote clients in a number of modules. However, some modules do not take advantage of the Net UI features at this time. This means that a remote client must access the application programs the same way as a client on the LAN. This generally results in unacceptable performance from a slow speed remote client.

The following modules do not take advantage of Net UI:

- Business Intelligence (BISM) Module
- Electronic Data Interchange (EDIM) Module
- Engineering (ENGM) Module
- Manufacturing Analysis (MMAM) Module
- Rules Based Pricing (RBPM) Module
- Sales Analysis (SAAM) Module
- Shop Floor Tracking and Reporting (SFRM) Module
- Sales Order Processing (SOPM) Module

In order to use these modules from a remote client, you should consider using other remote client options like Microsoft Terminal Server and Citrix. Contact Fourth Shift Client Business Solutions for more information about this software.

Printing Options

Fourth Shift generates several types of reports. When using a Net UI client, consider the following as you generate reports for the available types:

- **Screen Reports.** Screen reports can be generated by choosing either **Print** or **Print Preview** from the **File** menu. Print Preview uses the Fourth Shift Report Viewer. Reports are sent to the Windows default printer for the client by default.

  See "What Reports Can be Previewed?" in the Fourth Shift Basics online manual for a list of modules where the Fourth Shift Report Viewer is supported.

- **Batch Process Reports.** When a batch process runs, reports are generated either to a file or the default printer for the server, not the Net UI client. If you wish to use the report file generated, the file must be viewed or transferred to the thin client after the processing is complete.

Data Import

The data import features in the System Control Module can be used to input data from a file. The Net UI client can run the data import features but several considerations may limit the situations where running data import is reasonable.

- Reference files such as macro files (*.MAC) must be available to the Net UI client.
- Data files used as input must be visible to the Net UI client.
- Data import validation uses the FS.CFG file to confirm file locations using drive letter and directory specifications.

These restrictions mean that either a drive mapping must be available for the Net UI client which points to the files or the files must be copied to the client and the files accessed from there. For example, if you are running a remote client with a dial-up connection or across the Internet, you will need to map a drive to the import locations needed before starting the import process.

See "Using the Data Import Features" in the System Control online manual for more information on the data import feature.

DOS Commands and Batch Programs

Fourth Shift uses DOS commands and batch programs in several ways, including:

- Fourth Shift batch processes
- CIM Customizer batch processes
- EDIM and EDSM Module functions

Remote Net UI clients can not run DOS commands or batch programs. The following results can be expected.

- **Fourth Shift batch processes**. Execution of a Fourth Shift batch process containing one or more DOS batch programs is prohibited. No tasks in the Fourth Shift batch process are executed and a message box is displayed indicating the reason for the failure. For example, a Fourth Shift batch process containing the CMND or PROG task could not be run from a remote Net UI client. Use the BSET screen to review the batch processes that contain the CMND and PROG tasks.
- **CIM Customizer tasks**. Execution of a CIM Customizer task that specifies a DOS batch program is prohibited. The cause of the failure is displayed in a message box. For example, a CIM Customizer task that activates a batch process containing the PROG task could not be

run from a remote Net UI client. Use the CACF screen to review the records which define how external applications are accessed by Fourth Shift.

- **DOS internal commands**. DOS internal commands, such as COPY and CHDIR, can be executed but can not receive input or display output. If an internal command requests user input, a message appears allowing you to terminate the process. This prevents the internal command from waiting indefinitely for user input that can not be entered. For example, if a batch process includes the CHDIR command and prompts you for a directory, it can not be run from a remote Net UI client.
- **Restricted EDIM/EDSM functions**. Several functions in the EDIM Module and EDSM Module **can not** be executed from a Net UI client because they contain DOS batch programs. These functions are:
  - EXFC
  - IMIB
  - IMOB
  - TRED

Screens Requiring Diskette Drives

Some Fourth Shift screens write data directly to a diskette drive. These screens are not available from a Net UI client. These screens include:

- APTP (A/P 1099 Processing) from the Accounts Payable Module
- COCP (Custom Order Copy) from the Custom Product Manufacturing Module
- GLCO (G/L Consolidation Process) from the General Ledger Module
- GLHP (G/L History Process) from the General Ledger Module

Client Installation Options

Web Page Access for Remote or Local Users

Net UI clients can install client components and start Fourth Shift using Microsoft Internet Explorer. The **Run Net UI** button on the web page uses the application, screen and help files installed on the client to access the Fourth Shift server. Fourth Shift security is used to determine user permissions once signed onto Fourth Shift.

This option is available on a local area network (intranet), but is probably most useful when implemented over the Internet.

Web Page

A web page (FSWEB.ASP) is provided in the MFGSYS\WEB\NUIM directory that can be used to access Fourth Shift. See Installing Net UI for more information on implementing the web page.

The web page access can be implemented in many different ways to meet the needs of your users.

Considerations

Consider the following when using the web page startup method:

- If users need to use the web page to download the installation files and start Fourth Shift, the server must run Microsoft Internet Information Server (IIS) and the client must run Microsoft Internet Explorer 6.0 or greater.

- The Fourth Shift Report Viewer components are installed separately from the client components. The Report Viewer components must be downloaded in order to print from a remote thin client.

Client Installation with Remote Access

Net UI client components must be installed using package files created from the web page.

Remote access installations do **not** use the traditional Setup program. The Setup program configures the client to require mapped drives and other LAN-specific components. Remote users must install using either the default web page packages or through manual steps. The installation steps are listed in detail in the Installing Net UI section of this manual.

The following directories are created by the installation process on the client to support Net UI operation remotely:

Component	Installation Location	Description
Net UI client files	C:\FSTHIN\SYSTEM	These files are used when you start a Net UI connection.
Screen files	C:\FSTHIN\S	These files support the Net UI client files. They are the same as the files installed in the MFGSYS\S directory on your server.
Context-sensitive help files	C:\FSTHIN\H	These files allow access to context-sensitive help from a remote Net UI client. These files are the same as the files installed in the MFGSYS\H directory on your server.
Fourth Shift Report Viewer (FSPRINT.EXE)	C:\FSTHIN\SYSTEM	This file provides preview and printing capabilities from a remote Net UI client.
Crystal Reports components installed with Fourth Shift Report Viewer	C:\WINDOWS\SYSTEM	These files support printing of template-based reports.
Toolbar control update	C:\WINDOWS	These files support the "flat" toolbar.

Client Installation with LAN Access

The Net UI client can be installed from the Setup program on the Fourth Shift CD-ROM. The Setup program installs Net UI client components that can be used on the LAN, but not with the Internet. In other words, the LAN setup does not install local files which allow Net UI remote clients to minimize the amount of information transferred between the client and server. The LAN installation uses a mapped drive, which points to the files on the server.

The CD-ROM installation for LAN access creates a Net UI shortcut in the Fourth Shift group. The Net UI client shortcut accesses the same Fourth Shift functionality as the Fourth Shift shortcut. However, the Net UI client shortcut starts in the "thin client" mode so the Fourth Shift application session will be running on the Net UI server, not on the client computer.

Installing Net UI

Installation for the Net UI Module includes installing and configuring the server and clients.

Installation Process: Server

The Net UI Module must be carefully installed and configured. Careful pre-installation planning will help to ensure a successful implementation.

The installation process consists of the following tasks:

- **Server Installation.** The Net UI Module is installed on the Fourth Shift server like any other module. The module installation is used to establish the environment, Net UI server and default files used for configuration.

  The server installation also creates the NETUI.INI file. See "Net UI Settings and Configuration Variables" in this manual for more information.

- **Client Installation and Configuration.** Install the client using either the workstation installation program or an alternate installation method from a web page. Review the "Client Installation Options" section in this manual for more information on each type.

Install .NET v2.0 Framework and Service Pack Prerequisite

If the Microsoft .NET Framework version 2.0 and its Service Pack 2 (or a later Service Pack) is not installed on the server and the client machines, then it must be installed before beginning.

Install Net UI Module on Windows Server

The Net UI Module is installed at the Windows server using the same method as all other modules.

If you installed all modules at once, this step was completed during the module installation for the rest of the system. This step is needed only if you are adding the Net UI Module to your existing system.

Note: The Net UI Server application is installed during this process and must be running on the server for clients to be able to log in. You should use the same user name to complete the installation as will be used to run the Net UI Server application. This guarantees that the installation program sets up the correct user profile. This is especially important when the server is a Windows Terminal Server, because each user is assigned a different Windows directory.

1. Use the SETUP program to install the Net UI Module.

   See the Installing and Implementing Fourth Shift manual for detailed instructions on installing a new module. Be sure to run the SETUP program with “Run as administrator” as required.

2. Verify that a default Windows printer is defined.

3. Set up the appropriate security for the server directories.

   See "Net UI Security" in the **What is Net UI?** section of this manual for more information.

Prepare for Client Access via the Internet

After completing the Net UI server module installation, several files must be copied to the web server to access Fourth Shift via the Internet.

Note: These steps represent only one way to set up Internet access to Fourth Shift. You can implement Internet access differently if desired. For example, you could add the Fourth Shift access to your company web site. Use your internal resources to modify these steps accordingly.

Complete Server Setup

1. Go to the Web server machine.
2. Sign on as a user with administrator rights.
3. Map a drive to the FSHIFT directory on the Fourth Shift server.

   Note: Be sure to use the same drive letter as on the server. This is probably M:.

Website Install Utility

1. Go to the location specified by the **WebNuimDir** configuration variable.

   This location is probably \MFGSYS\WEB\NUIM\Setup.

2. Run **FSWebSet.EXE**.

   Right-click the file and choose the “Run as administrator” function if the operating system requires it (i.e., Windows Server 2008, or later).

   If you get a message asking if you want to allow the following program to make changes to this computer, click **Yes**.

3. Enter or verify the following information:

   - **Location of FS.CFG**. This is probably M:\MFGSYS.
   - **Local FSWeb Path**. This should default to the \InetPub\WWWRoot**FSWeb** directory, which will be created if needed. Browse to the appropriate location if you created the directory in another location.
   - **Net UI Listen Port**. Modify the port number if you changed the port number used on the Fourth Shift database server.

   Note: You may need to open this port through the server’s Windows Firewall for it to accept connections from the client.

4. Click **Install**.
5. If you get a message asking if you want to create the FSWeb directory, click **Yes**.
6. Click **Close** when the file copy process is complete.

For Multi Net UI Server Installations

If you use multiple Net UI Servers, do the following:

1. Rerun **FSWebSet.EXE** for each additional instance.
2. If there was a Net UI installation from a version of Fourth Shift before R7.50C, then select **Yes** to the message: "The old version of FSWeb has been installed in this machine. The program will delete the old files and folders. Do you want to continue?"

Final Steps

1. Publish the URL address to your users so they can begin using the new Web page by going to Microsoft Internet Explorer, and entering the following location:

   `http://ServerName.DomainName/FSWeb`
   (where *ServerName* is the name of the Net UI server and *DomainName* is the name of your domain.)

   For example, you might enter: `http://Server1.MyCompany.com/FSWeb`

2. Start the Net UI server by going to:
   Start > Programs > *SystemName* Fourth Shift > Net UI Server.

Installation Process: Client

Remote User Access: Thin Client

Remote client installations use the web page installed in the previous section to create a package for installation. You should **not** use the standard SETUP program to install remote clients because the configuration would assume that the client was on a local LAN. The Web page is designed to install only the components not already installed. If a component is installed at the correct version, no installation is completed.

The following workstation installation options are available from the web page:

- Default installation includes: Fourth Shift Net UI Base System, Fourth Shift Report Viewer, and Graph Viewer components.
- Fourth Shift Application Help can be included if the check box Include Fourth Shift Application Online Help is checked.

The Web page will indicate if a download is needed based on a comparison of the current version of the files on your workstation and the current version of the files on the web server. The recommendations indicate if more recent files are available on the server or if any required components are missing.

The package file created from the web page can be saved (rather than opened immediately) and transferred to a user directly if needed.

Install .NET v2.0 Framework and Service Pack Prerequisite

If the Microsoft .NET Framework version 2.0 and its Service Pack 2 (or a later Service Pack) is not installed on the server and the client machines, then it must be installed before beginning.

Additional Configuration

In order to complete the installation from the web page, specific security settings are needed.

The following steps must be completed on each remote workstation. These instructions are based on Internet Explorer 7. For other versions of IE, your exact steps may need to be modified.

1. Go to the remote workstation.

   You may need to be logged on as the **administrator** on the computer to complete this process.

2. Start Microsoft Internet Explorer.
3. From the **Tools** menu, choose **Internet Options**.
4. Choose the **Security tab**.

5. For the zone, select the **Local intranet**.
6. Click the **Sites** button.
7. On the **Local intranet** window, click the **Advanced** button.
8. Enter the website URL for the Fourth Shift web server.
9. Click the **Add** button.
10. Click **Close** to exit the Local intranet window.
11. Click **OK** to exit the first Local intranet window.
12. With the Local intranet zone selected, click the **Custom level** button for Security level for this zone.
13. Scroll to **ActiveX Controls and plug-ins** section.
14. Enable all options under **ActiveX Controls and plug-ins**.
    Be sure to enable “Initialize and script ActiveX controls not marked as safe" so that the ActiveX controls can function on the client machine.
15. Click **OK**.
16. Click **OK**.

Fourth Shift Installation Steps

These steps require that the web server is running properly.

1. Using Microsoft Internet Explorer, go to the web page from which the installation is accessible.
2. Select a Net UI server to download the Net UI thin client you want to install.
3. Check the option Include Fourth Shift Application Online Help if the Fourth Shift Help is needed on the client.
4. Click **Download**.

   The installation package is created.
5. Specify whether you want to open the package immediately or save it to a disk location.
   - If you choose to open the package immediately, the selected components will be installed.
   - If you choose to save the file to a disk location, the file can be copied to and used by multiple workstations. You must run the downloaded file before you can use Net UI. Saving the file will also allow you to right-click the file and choose the “Run as administrator” function if the operating system requires it (i.e., Windows 7, Windows Vista, or later).
6. In Internet Explorer, click the **Refresh** the web page button to enable the **Run Net UI** button.
7. Start Net UI from the web page by clicking the **Run Net UI** button.
8. Once installed, you can bypass the use of the web page to run Net UI. You can create an icon shortcut on the Desktop that starts the Net UI thin client. The command line for this icon may be similar to the following example:

   ```
   C:\FSThin\System\FSGUIApp.exe -N server.domain.com 5432
   ```

Local User Access: Thin Client

The local area network thin client access method requires access to the server as well as a mapped drive to the location where your Fourth Shift system is installed. These instructions assume you are using drive M:. Substitute your drive letter in these instructions as needed.

Start Installation

1. Verify that you have completed the necessary workstation preparation.
2. Go to the workstation.
3. Map the M: drive to the database server.
4. Verify that the **Reconnect at login** check box is selected when you create this drive mapping.
5. Run the SETUP program from the M:\MFGSYS\CLIENT directory.

   Right-click the file and choose the “Run as administrator” function if the operating system requires it (i.e., Windows 7, Windows Vista, or later).
6. Click **Next**.

   Note: SETUP may need to install several Windows components before installing Fourth Shift. You may have to restart the workstation once or more. In this case, SETUP automatically resumes after the workstation restarts.
7. Select the FS.CFG configuration file. The default is M:\MFGSYS\FS.CFG. Click **OK**.
8. Select the modules to install for this workstation. The System Control Module is selected automatically.

   Be sure to select the Net UI Module.
9. Click **Next**.
10. Verify the selections before beginning the actual installation process.
11. Click **Back** to return to a selection that needs to be updated.
12. Click **Next**.

    Files are installed for the workstation.
13. Click **OK** when the installation completion dialog is displayed.

    The installation continues.

Complete Installation

1. When the installation is complete, click **Finish**.
2. Review the C:\FSUSER\INSTALL.HIS file.

   A series of Advisory messages is displayed.
3. Use the **Appendix** section of this manual to determine actions necessary for any errors.

Tips about Shortcuts

The thin client installation from the network creates a Net UI shortcut in the Fourth Shift folder. The standard client installation creates a Fourth Shift shortcut to access the main Fourth Shift program. Both shortcuts can be installed on the same workstation. These shortcuts allow you to easily switch from one client access method to another. For example, to use the Engineering Module, the standard client must be used.

This might be useful, for example, if you use the same computer when accessing the network locally and when traveling remotely. The standard client could be used locally and the thin client used when traveling.

Client Startup Methods

Accessing the Program

The shortcut used to start a Fourth Shift session depends on the type of client.

Click the **Start** button, and then point to **Programs**. Point to the folder that contains the **Fourth Shift** group, and then click one of the following:

- To use Net UI, click **Net UI.**
- To use the standard client, click **Fourth Shift**.

All three shortcuts can be present on the same client. This might be useful if you need to use functionality that is not available via a thin client. For example, you might use the thin client most of the time for performance reasons. However, if you need to use the functionality of the Engineering Module the standard client is required.

Steps for Starting Via the Web Page

After all installation requirements are met and modifications made, complete the following steps to start Fourth Shift from a remote workstation.

1. Verify that the Net UI workstation installation and modifications were completed.
2. Using Microsoft Internet Explorer, enter the following location:

   http:\\ServerName**FSWeb** (where ServerName is the name of the Web server).
3. Press **Enter**.
4. Select a Net UI server to which you want to connect.
5. Click the **Run Net UI** button.
6. Enter a **Net UI User Identifier** then click **OK**.
7. Enter a **User Id** and **Password**.
8. Press **Enter** to sign onto Fourth Shift.

Administering Net UI

Typical system administration is changed in some ways once you implement Net UI in your operation. Additional considerations are needed for tasks such as automated processing and configuration options. You may also need to complete additional changes when updates are needed in your environment.

Starting the Net UI Server from a Shortcut

The Net UI server controls whether client connections can be started. The Net UI server should be started after the database server processes are running.

1. Start the Fourth Shift database server processes. This allows access to the databases for application programs.
2. Click the **Start** button, and then point to **Programs**.
3. Point to the folder that contains the **Fourth Shift** group, and then click **Net UI Server.**
4. Sign on from a Net UI client to test, if desired.

Performing Daily Backups

Your daily database backup process is only slightly affected by the use of thin clients. The Net UI server must be shut down and any thin client connections terminated before starting the backup process. See "Managing User Connections" in this manual for more information.

Database backups require a single point of control for the database. This means that all client connections must be terminated and the database must be brought up in single-user mode.

The Fourth Shift database window indicates the number of current client connections. This number includes both thin and traditional clients.

Managing User Connections

The Net UI Server allows clients to connect to Fourth Shift by "listening" for requests from the client. Once the client is connected, another process is started on the server which is controlled by the client as long as the client is connected.

In order to complete intensive or exclusive processing on the server, like a nightly batch processing run, you may wish to stop the "listening" process so no new users can connect. You may also wish to close any open client connections. Additional command line parameters for the Net UI server can initiate the "stop listening" and "close connections" operations.

Menu Options

Through the user interface for the Net UI Server, menu options are available to support Net UI Server administration. The following options are available from the **Actions** menu:

- **Close All Connections** allows you to locate any running client connections and break the connection. A several second delay is used by the Net UI server to ensure that any database updates are complete before the connection is terminated.

- **Stop Listening** closes the Net UI Server dialog box and stops the Net UI server but does not close any client connections. This option allows you to prevent new connections from being started. For example, you may wish to stop listening 10 minutes before closing any remaining open connections.

Command Line Options

The Net UI Server process is started using properties associated with a shortcut. These properties can include several additional parameters. You can also include the command line in a batch file or other automated process.

The standard properties for the shortcut look similar to the following:

```
M:\MFGSYS\SYSTEM\FSGUILSN   [port number]
```

Command line options can be added after the port number. These commands are used to seek out a running Net UI server and control the server without accessing the desktop. The command line options include:

Option	Description
CLOSE	Locates any client connections associated with the port number and breaks the connection. Same as choosing **Close All Connections** from the **Actions** menu.
STOP	Closes the Net UI Server dialog box and prevents new connections from starting. Same as choosing **Stop Listening** from the **Actions** menu.

For example, the command line to close any client connections for port 5432 would look like the following:

```
M:\MFGSYS\SYSTEM\FSGUILSN   5432   CLOSE
```

Net UI Client Shortcut Parameters

A shortcut is used to start a Net UI client connection when not starting from the web page. The shortcut properties contain detail about the server you connect to, the port number used and optionally your Net UI Id. The shortcut properties vary depending on if you are using a remote client or a local client.

The shortcut command line includes the following:

```
[location]\FSGUIAPP.EXE  -N [server]  [port]  [Net UI User Id]
```

An example line might look like the following:

```
[location]\FSGUIAPP.EXE  -N server1  5432  AAA
```

The target line contains the following parameters:

Parameter	Default	Description
Program name	FSGUIAPP.EXE	program started from the remote client For remote clients, this program is located in the FSTHIN\SYSTEM directory. For local clients, this program is in the MFG-SYS\SYSTEM directory.

Parameter	Default	Description
Startup mode	-N	parameter indicating that the client must connect to a Net UI server; the space following the parameter is optional
Server name	**NetUIServerName** configuration variable	name of Windows server where the Net UI server is running
Port number	5432	port number that the client connects to on the server specified in **Server name**
Net UI Id	n/a (not included in default shortcut target line)	optional; indicates your unique Net UI user id and causes thin client startup to skip Net UI id entry and proceed directly to the Fourth Shift master menu after sign-on

Examples Requiring Changes to Shortcut Properties

Except for adding your Net UI user identifier, it is unlikely that you will need to modify the default parameter values. However, the following events might require that some of these values be changed:

Event	Action
Application programs moved to a new server	Modify the Server name parameter value; new location must match location specified by **NetUIServerName** configuration variable
Server port number change	Modify port number to match that used by server

Net UI Settings and Configuration Variables

The Net UI Module installation and client sign-on add settings and configuration variables to the NETUI.INI and FS.CFG files. In addition, the **MaxGUISessions** variable has a different meaning when using the Net UI Module.

Standard Net UI Settings

The Net UI module installation creates the NETUI.INI file on the machine running the Net UI server. This file contains the [NetUI 9999] section. These settings specify the information necessary to start the Fourth Shift applications on the server. The settings include:

- ServerExe
- ServerMSSCmd
- UserDir
- AddToPath

See "Fourth Shift Settings File" in the System Administration online manual for more information on the specific Net UI server settings.

The Net UI Module server installation also creates the **WebNuimDir** configuration variable in the FS.CFG file on the server. This variable specifies the location of the Net UI components that must later be copied to the IIS server.

Client Sign-On

The first time a Net UI client is used to sign onto Fourth Shift, the **ThinClientId** setting is created in the [NetUI 9999] section of the NETUI.INI settings file on the client.

ThinClientId is initialized with the Net UI Id value you entered when starting a Net UI client connection. This setting identifies the client that is accessing the server and it defaults the next time you sign on.

MaxGUISessions Variable

The **MaxGUISessions** configuration variable defines the maximum number of Fourth Shift connections the server can run at one time. Each user identifier counts as one session. You may wish to restrict the number of sessions available if you encounter performance problems.

If you are unable to start a session from a thin client, the **MaxGUISessions** configuration variable may need to be changed. This variable specifies the number of sessions allowed on the server. The default value is 200.

If your server has reached the number of sessions allowed by the **MaxGUISessions** variable, do one of the following:

- **Increase the MaxGUISessions value**. The value of this variable does not significantly impact client performance. You may be able to increase the MaxGUISessions value if your user licenses allow.
- **Connect to another Net UI server**. If you have multiple Net UI servers, try starting a session on another server that has not reached its session limit.
- **Run a traditional client**. If possible, use the traditional client configuration until a thin client session is available.

UserDir Location

The **UserDir** configuration variable is used to define a unique location for files created when a user is signed onto Fourth Shift. Each client must have a user-specific subdirectory on the Net UI server. This subdirectory has the same name as the Net UI User Id entered when a Net UI client access a Net UI server.

When using a thin client, the @NETUIID@ value is appended to the **UserDir\SystemName** location. This value indicates that the Net UI thin client identifier is used to specify a subdirectory. For this reason, the Net UI thin client identifiers must also be unique.

The standard configuration variable looks similar to the following:

```
UserDir=c:\fsuser\[SystemName]\@NetUIId@
```

Multiple Net UI Server Processes

The Net UI Server controls user access to the Fourth Shift system. There is a one-to-one relationship between a Net UI server and a Fourth Shift database. You may need to run more than one Net UI server on a specific Windows server to support situations like multiple language versions of Fourth Shift or use of a live and test system.

A series of changes are needed to enable this capability. All the changes are made on the Windows server where the Net UI server process is running.

Select Port Numbers

A port number is similar in concept to a telephone number. Fourth Shift clients specify the port number they are trying to "call" to connect to the Fourth Shift server. The server must also designate the same port number as the one that "listens" for a client connection request. The Setup program specifies a default port number for clients and servers during installation.

If additional Net UI servers are needed, a unique port number must be assigned to each server process.

1. Open Windows Explorer.
2. Go to the Windows\SYSTEM32\DRIVERS\ETC folder.
3. Use NotePad to open the SERVICES file.
4. Review the port numbers currently in use and select one not in use for your new Net UI server.
5. Save and close the file.

Create Net UI Server Shortcut

Additional shortcuts can be defined using the original as a starting point. The new port number must also be assigned to the shortcut.

1. Go to the Windows directory.
2. Select the Profiles\All Users\Start Menu\Programs\Fourth Shift folder.
3. Highlight the shortcut for **Net UI Server**.
4. From the **Edit** menu, choose **Copy**.
5. From the **Edit** menu, choose **Paste**.
6. Highlight the shortcut for **Copy of Net UI Server**.
7. Change the shortcut description.

   Use a description that explains why you need a second Net UI server, like Net UI for German system.
8. With the shortcut selected, choose **Properties** from the **File** menu.
9. Go to the **Shortcut** tab.
10. Change the port number to the newly selected port number.
11. Click **OK**.

3. Update NETUI.INI File

Several changes are needed to the settings in the NETUI.INI file. The section of the NETUI.INI file looks similar to the following:

```
[NetUI  9999]
ServerExe=m:\mfgsys\system\fsguisvr.exe
UserDir=C:\fsuser\@NETUIID@
FSCFG=m:\mfgsys\fs.cfg
AddToPath=M:\mfgsys\system
```

For more information about these settings, see "Fourth Shift Settings File" in the System Administration manual.

Complete the following updates:

1. Use Notepad to open the NETUI.INI file in the WINNT or Windows directory.
2. Go to the [Net UI 9999] section.
3. Copy the existing [NetUI 9999] section and paste the section elsewhere in the file.
4. Update the port number to the newly selected port number.
5. Update the **FSCFG** setting to the location of the correct configuration file.

   For example: FSCFG=g:\mfgsys\fs.cfg.
6. Add the **AddToPath** setting if you wish to be sure that a specific location is added to the path when running this Net UI server.

   This path is used for the connection started on the Windows server when the client accessed Fourth Shift.
7. Save and close the NETUI.INI file.
8. Start the Net UI Server to verify that you can start the process successfully.

   If you have problems, verify all the configuration steps listed here.

Update Client Access Shortcuts

When clients access a specific Net UI server, the port number must be identified. To access the new Net UI server, be sure to use the correct port number.

Shortcut properties should look similar to the following:

```
[location]\fsguiapp.exe   -N  [server]  [port]
```

1. Create a new shortcut where the user will access it.

   These instructions assume you are creating the shortcut on the desktop.
2. From the right mouse button, point to **New** and then choose **Shortcut**.
3. Enter the command line including the required port number.
4. Click **Next**.
5. Enter a name for the shortcut.
6. Click **Finish**.
7. Test the shortcut and verify the correct system is accessed.

Net UI Error Messages

The following errors might occur when using a Net UI thin client.

This function is not available from a Net UI thin client. Use the Fourth Shift fat client.
A Net UI thin client does not support functionality such as the additional Engineering (ENGM) Module. A standard Fourth Shift client must be used to access these features.

See "Restricted Features" in this manual for more information.

Your local Net UI does not match the server's version. Update your local install.
The Fourth Shift server has been updated with a newer version of Fourth Shift. Update your client by running the appropriate client installation.

Your local Net UI install in <directory> does not contain the [contents].
The specified directory does not contain the definitions required to perform this action. Either the screen or help definitions are missing.

- If the screen definitions are missing, the workstation installation did not install all components. Complete the workstation installation again.
- If the help definitions are missing, it is likely that the minimum workstation installation was completed from the web page. The minimum workstation installation does not include help definitions. Select the Fourth Shift application help check box from the web page.

Unable to execute Seqn = 99 of this batch process. A PROG or CMND task that specifies a DOS batch program cannot be executed under Net UI.
Net UI thin clients cannot run DOS commands or batch programs. If you attempt to execute a Fourth Shift batch process containing one or more DOS batch programs, no tasks in the batch process are executed and the error is displayed. Use the BSET screen to review the batch processing that contain the CMND and PROG tasks and execute these tasks from a standard Fourth Shift client.