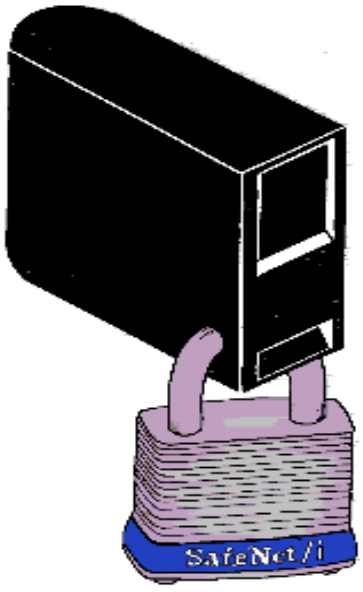
SafeNet/i

REFERENCE GUIDE

Version 12



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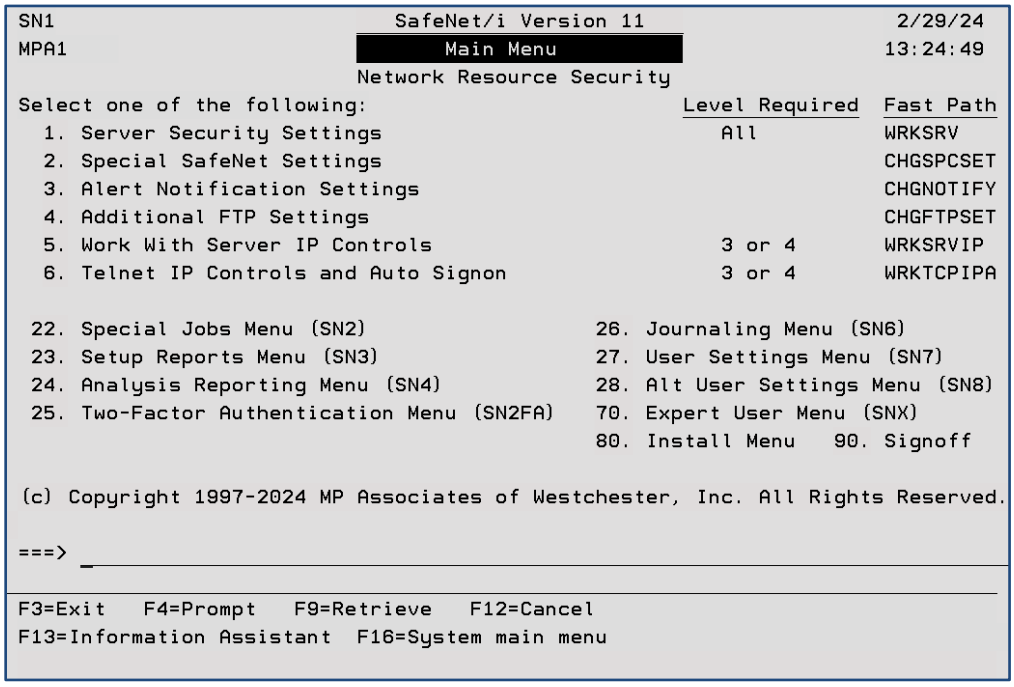
SafeNet/i
Reference Guide

Chapter 1 - SETTING UP USERS

Navigating through the screens and menus

You can perform each of the steps outlined in this chapter by using the corresponding option on the SafeNet/i Main Menu, SN1.

Type **GO PCSECLIB/SN1** to navigate to the Main Menu.



From this menu you can access all of the **SafeNet/i** functions and sub-menus.

On any menu you can use the menu options or you can use the Fast Path commands that are listed to the right of the options.

Sub-menus are accessed using Options 22 through 27, and Options 70 and 80. These options are available from every menu, even if the options are not listed on the menu.

To navigate among the sub-menus you can type the menu option number or you can type the menu name on the command line.

Menu Option	Menu Description	Menu Name
21	Main Menu	SN1
22	Special Jobs Menu	SN2
23	Reports Menu	SN3
24	Analysis Reporting Menu	SN4
25	DHCP Menu	SN5
26	Journaling Menu	SN6
27	User Settings Menu	SN7

Option 21 will always take you back to the Main Menu (SN1).

Navigating User Setup Screens

When using the **WRKUSRxxx** maintenance screens the following command keys provide navigation within **SafeNet/i**.

F1 Alternate HELP Key

F2 Display list of defined **SafeNet/i** users

F3 Exit

F6 Add new entries

F7 Toggle between the group profile* settings and the user profile settings when working with the user setting maintenance screens in **SafeNet/i**

F8 Display all the user profiles within the group*

F9 Advance to next user setting screen

F12 Cancel

HELP Additional HELP displays

***To use Group Profiles, you must have an unlimited user license.

SafeNet Administrator

There are three types of **SafeNet/i** Administrators:

- Super Admin
- Regular
- Read Only

You can set up a SafeNet Administrator or 'Super Admin' or a Read Only Admin using **Option 8 – Work with SafeNet Administrators** on the SafeNet/i User Settings Menu (SN7), or by using the **WRKSNADM** command.

The **WRKSNADM** command can be executed by a user with *SECADM or *SECOFR authority.

A user profile must be set up as a **SafeNet/i** 'Super Admin' to perform the following:

- Activate or deactivate **SafeNet/i**
- Change/copy/remove the IBM-supplied Q profiles settings in **SafeNet/i** (see note below)
- Use the WRKSRV, CHGSPCSET, CHGFTPSET commands

A regular **SafeNet/i** user or administrator does not have authority to the above functions.

A **SafeNet/i** Read Only Admin can only view **SafeNet/i** settings and transactions, and run reports.

Unless specifically changed, QSECOFR is ALWAYS a **SafeNet/i** Super Admin. User profile SAFENET is a Super Admin; this status can be changed or removed to suit your purposes.

Alternate Administrative Security

Beginning with **SafeNet/i** Version 10, you can change the way administrative security for **SafeNet/i** is handled on your system. You can now:

- Permit regular **SafeNet/i** Administrators to copy or remove rules from **SafeNet/i** and assign *ALL entries
- Authorize only a Super Admin to change the LOGALL parameter in the Change SafeNet Special Setting (CHGSPCSET) command
- Allow regular Administrators to work with or modify user profiles that start with the letter Q

The QPROFS parameter on the **CHGSPCSET** command controls this function.

From the Main Menu (SN1) use **Option 2 – Special SafeNet Settings** or the **CHGSPCSET** command to change the *QPROFS* parameter to *YES or *NO.

See Chapter 5 in the SafeNet/i Implementation Guide for more details on the **CHGSPCSET** command.

Important Note

Prior to this change, a regular **SafeNet/i** Administrator or a Super Admin was allowed to use the **Change SafeNet Special Settings** command, **CHGSPCSET**. With this release, you must be a Super Admin to access this command.

THIS CAN CREATE A PROBLEM if you have included this command in your system SAVE process to stop transaction logging during the backup.

We recommend that you remove this from your SAVE procedure now and use the IBM save-while-active process instead from this point on.

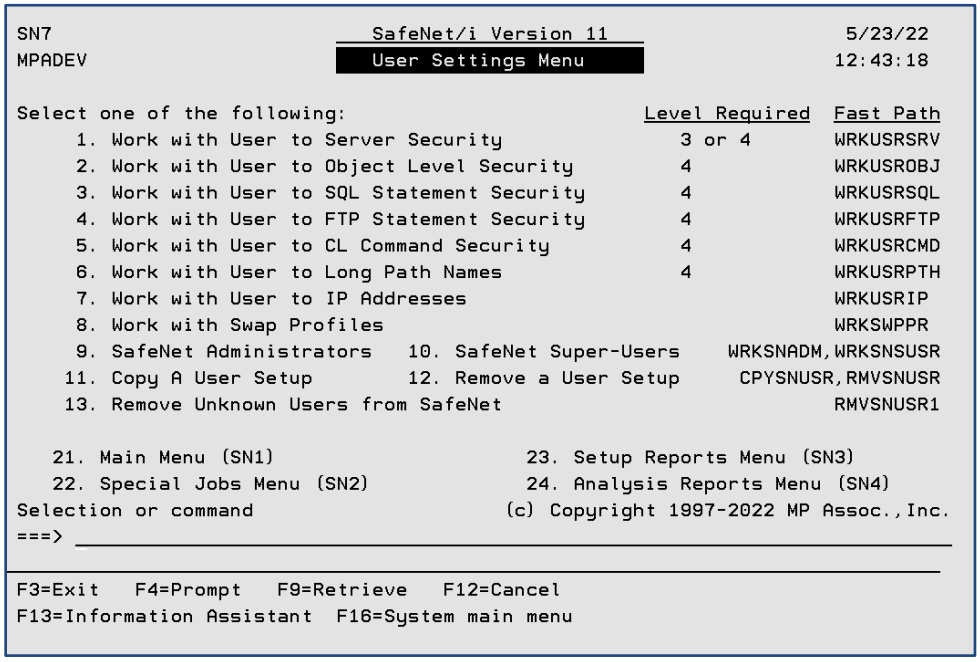
Group Profile as SafeNet/i Administrator

You can enroll group profiles as **SafeNet/i** Administrators. When you enroll a group profile as an administrator, every member of the group will be considered to be an administrator by **SafeNet/i**.

Super User Control – Trusted Users

Under special circumstances it may be necessary to have a user that should not be checked through all the **SafeNet/i** security routines. Transactions from these users can bypass the traditional **SafeNet/i** security routines; you can choose to log the Super User transactions or not log these transactions.

To maintain these users, select **Option 10 – SafeNet Super Users** from the User Settings Menu (SN7)



Note: You can turn logging on or off for Super Users by using the CHGSPCSET command and changing the LOGSUSR parameter to *YES or *NO. See Chapter 5 in the *SafeNet/i Implementation Guide* for more details on the CHGSPCSET command.

This should only be used under conditions when you want NO Super User transactions to be logged and recorded by **SafeNet/i**. This is a global setting for all Super Users.

Setting the User Logging Levels

The valid logging levels are:

Logging Level A	Log all transactions
Logging Level R	Log only rejected requests
Logging Level N	No logging

As you set up your user logging levels, please keep in mind the following:

- If you set the logging level on the Server Function (WRKSRV) to *NO LOGGING* or *REJECTIONS,* the Server Function (WRKSRV) setting will override the individual user logging level.

- If you set the logging level on the Server Function to *ALL*, the individual user logging level will override the Server Function logging level.

To make sure you are logging transactions correctly, we recommend that when you initially set up **SafeNet/i** you set the Server Functions to log *ALL* and set the User to Server logging levels to *ALL*.

Then, after you have had some experience with checking the logs and interpreting the results, you may want to make changes for specific user and server combinations.

An example of this might include certain "trusted" user profiles. If you trust the user in question and are concerned about the size and amount of logging activity, you might choose to only record rejected transactions for that user.

Another example might be a known client server application that is clearly defined and does not need to be monitored. For these applications you might choose to stop logging altogether. We have found several fax applications that fall into this category. They generate a large number of entries that are really not needed for your purposes in controlling access security.

Overview of Maintenance Program Options

View Parameter

Beginning with **SafeNet/i** Version 11, if you have an unlimited user license, we have developed a new WRKUSRxxx maintenance interface.

Provided in each WRKUSRxxx command is a new 'VIEW' parameter. The VIEW parameter has two possible options:

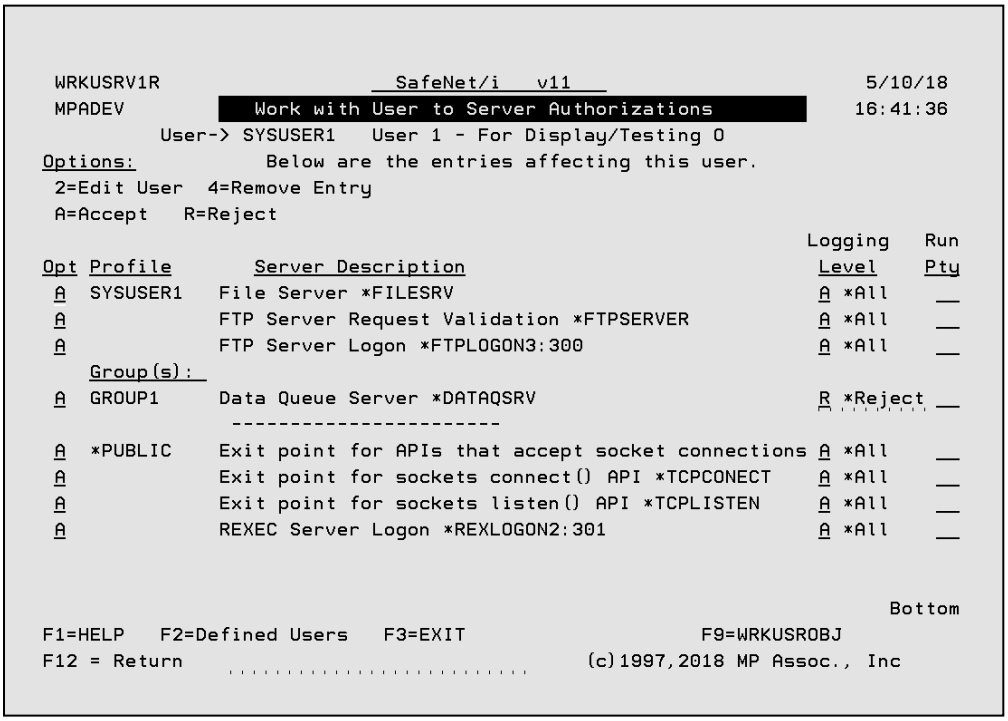
*STD – this displays the standard view just as all previous **SafeNet/i** versions have
*ADV – a new Advanced view that is used with an unlimited user license

By default, *ADV will be used for any unlimited **SafeNet/i** license

The new Advanced view will show all 'related' security settings for groups or *PUBLIC profile entries that may affect the specific user being edited.

In the following example, user SYSUSER1 has:

- Three server points specifically authorized to SYSUSER1
- One server point authorized to GROUP1
- One server point authorized to *PUBLIC



This new view shows all the authorized server points that user SYSUSER1 can access. From this screen you can use Option #2 to edit the user or group, and modify, add or change any listed server point.

Option 2 will take you to the *STD (or legacy) maintenance programs.

This new *ADV view operates the same for all the WRKUSRxxx commands.

Setting the default to *STD view

If you prefer to NOT use the new *ADV view, you can revert all the WRKUSRxxx default views to *STD by using the IBM CHGCMDDFT command.

For example, to modify the WRKUSRSRV command, use:

CHGDMDDFT PCSECLIB/WRKUSRSRV NEWDFT('VIEW(*STD)')

Repeat for each WRKUSRxxx command.

Note: This document will use STANDARD (*STD) view in the examples

Entering User Security Levels

If you plan on setting any of the Server Functions to Level 3 or Level 4, and anticipate doing anything other than simply logging all requests, the first step in configuring **SafeNet/i** is to give the users authority to any Server Functions they require.

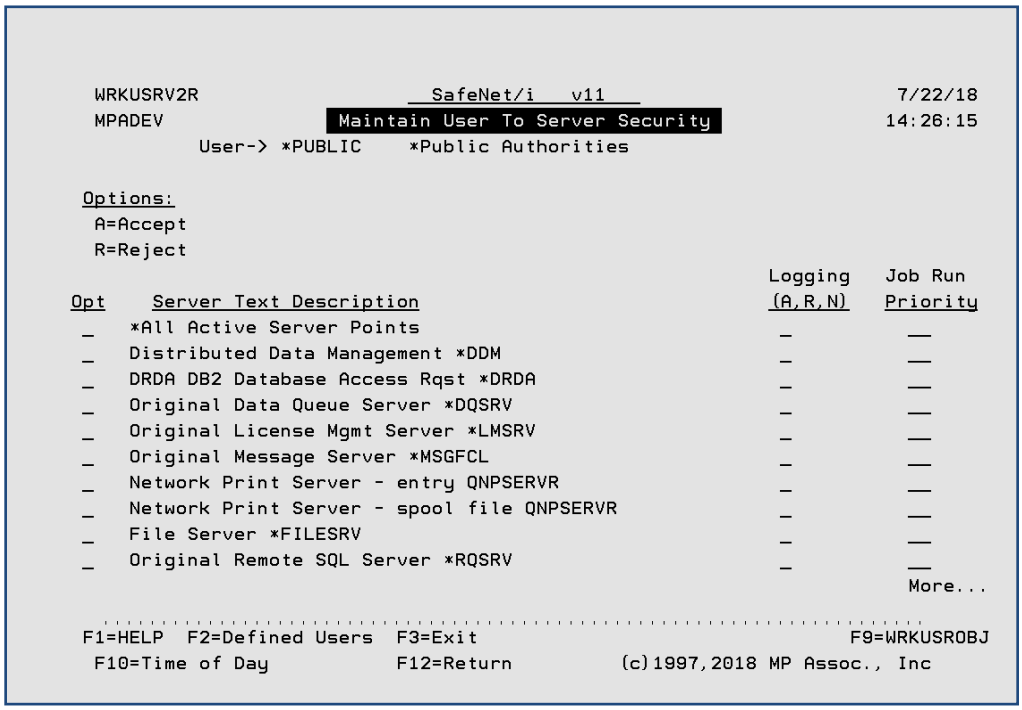
1. From the SafeNet/i User Settings Menu (SN7) select **Option 1 - Work with User to Server Security** or use **WRKUSRSRV** command

   The *Work User to Server Security* screen appears.

2. **Type the user profile** you will be setting up, or ***PUBLIC**, then **ENTER.**

   If you would like a list of all user profiles on the system, press **F4** or type ***ALL.**

   To see a list of users already defined within **SafeNet/i** type ***ALLDFN**.



The *Maintain User to Server Security* screen appears. A list of all the servers is displayed.

If you would like to see the list of all users who have been defined within **SafeNet/i**, press **F2.**

3. **Type 1** in the *Option* column in front of each server this user will have access to.

   If they will have access to all the server functions, **select**

   ***ALL ACTIVE SERVERS**

   To remove access to a particular server, remove the '1' and leave the *Option* column blank for that server.

4. **Enter** the *Logging Level* for each server.
   A = All
   R = Rejections only
   N = No logging

   When you have finished setting up servers for this user, press **ENTER.**

5. Enter the *Job Run Priority* for each server. Do this if you choose to override the operating system job priority defaults.

   The job priority will be set when the user accesses this server. Valid job priorities are 00 (the default) through 99. A value of 00 indicates no change to the default job priority.

Press F9 to continue to the next step - setting up user authorities to objects.

Entering User Authorities to Objects

Once you have given the user access to the servers, the next step is to enter the level of authority the user has to objects on the IBM i if you plan on setting any of the servers to Level 4.

1. If you used F9 from the previous screen, skip to Step 4.

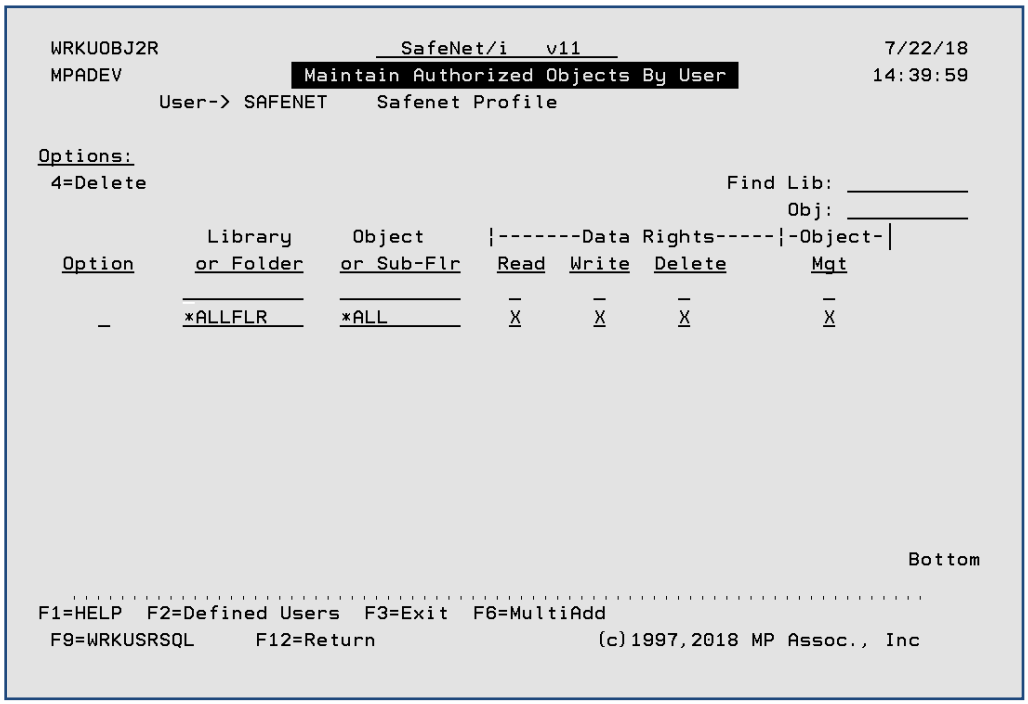
2. If you are currently on the SafeNet/i User Settings Menu (SN7), select **Option 2 - Work with User to Object Level Security** or use **WRKUSROBJ** command

   The *Work User to Object Security* screen is displayed.

3. Type **the user profile name, the Group** or ***PUBLIC**, then **ENTER.**

   To list all of the user profiles on the system, press **F4** or type ***ALL.**

   To see a list of users already defined within **SafeNet/i** type ***ALLDFN**.



   The *Maintain Authorized Objects by User* screen appears.

   If you would like to see the list of all users who have been defined within **SafeNet/i**, press **F2.** Select the ID to work with from the list.

   Press **F6** to add new objects and authorities to an existing user

4. In the *Library or Folder* column, **enter the name** of the library or folder, then **TAB** to the *Object or Sub-Flr* column and **type in the name** of the object or sub-folder.

Note: Allowed entries for **Library** or **Folder**

- *ALLLIB
- *ALLFLR
- Specific library name

When setting up a **library**, you must enter the **complete library name**. Generic library names are not allowed.

Allowed entries for **Object**

- *ALL
- Specific object
- Generic data/program or IBM i object name followed by * (FIL*)

NOT ALLOWED for object

- Long file or folder names - 10 position maximum (names over 10 are truncated)
- Generic sub-folder names (FOLD*)
- Generic folder content names

NOT ALLOWED for library

- Long folder names
- Generic folder names
- Generic library names
- *ALL

If granting rights to multiple objects in one library, you must list the library name multiple times or use a generic object name. For example:

LIBRARY	OBJECT
QUSRSYS	PAY1
QUSRSYS	PROJECT
QUSRSYS	PRT*

5. For *Data Rights,* **type an X** under the appropriate level of authority. Place an X for each data right that applies.

6. For *Existence Rights,* **type an X** if this user will be able to create, delete or move an object.

To assign EXCLUSIONS to objects and/or libraries, give the user no rights by leaving the *Data Rights* and *Existence Rights* columns blank.

7. Repeat these steps for each object or group of objects for this user profile.

PageDown to the next screen if you need more lines.

ENTER when you have finished keying in all necessary objects and rights.

The *Maintain Authorized Objects by User* screen is refreshed and all the information you just entered is displayed.

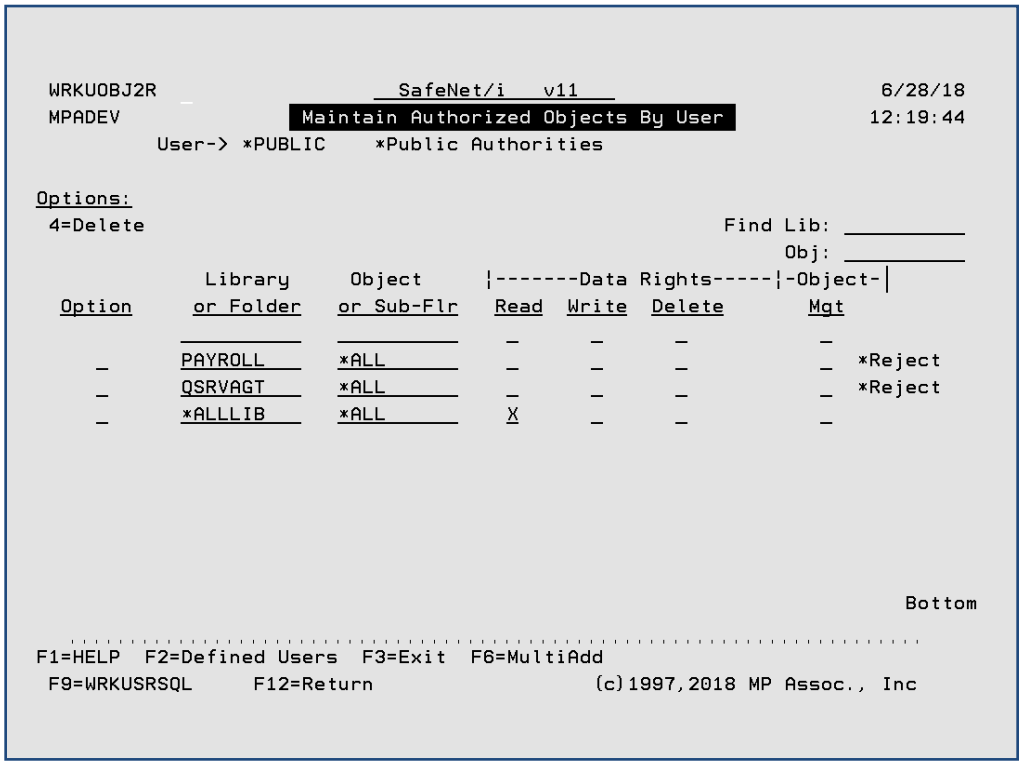
Press F9 to continue to the next step - setting up user authorities to SQL statements.

Reminder:

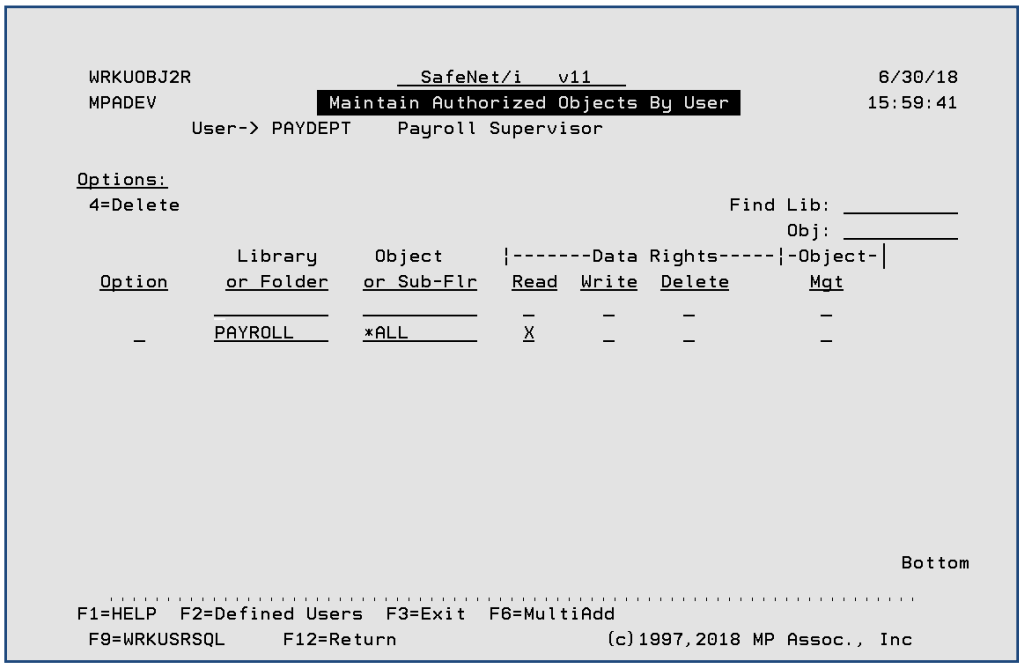
If you have already entered objects for a particular user, and you are updating their user to object level security, a list of existing object authorities will be displayed. To add more, **press F6**. To delete an existing entry, **type 4** in the *Option* column, then **ENTER.**

Exclusions

To give all users read access to all objects in all libraries, but exclude them from any objects in the PAYROLL library, give *PUBLIC READ authority to the library and exclude *PUBLIC from the PAYROLL library.



If the PAYDEPT profile needs to use objects in the PAYROLL library, grant user profile PAYDEPT READ authority to the PAYROLL library.



This individual authority overrides the *PUBLIC authority.

Entering User Authorities to SQL Statements

If you are going to set the *SQL* servers to Level 4, the next step is to authorize users to the SQL Statements they may need.

1. If you used F9 from the previous screen, skip to Step 4.

2. If you are currently on the SafeNet/i User Settings Menu (SN7), select **Option 3 - Work with User to SQL Statement Security** or use **WRKUSRSQL** command

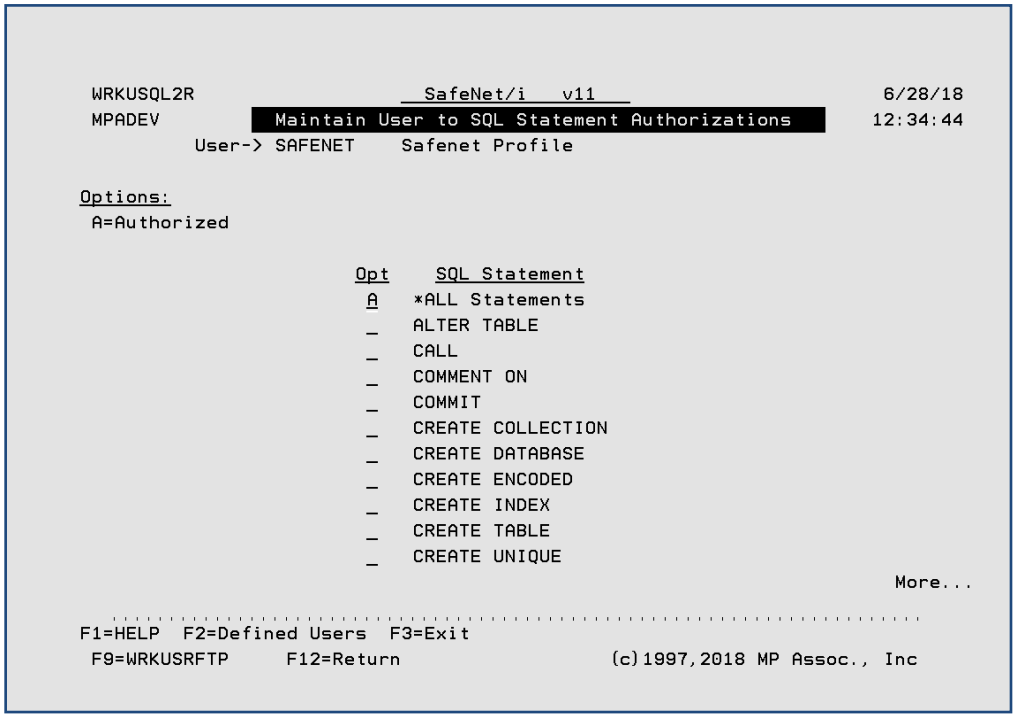
   The *Work User to SQL Statements* screen is displayed.

3. **Type the user profile, the Group** or ***PUBLIC**, then **ENTER**.

   If you would like a list of all user profiles on the system, press **F4** or type ***ALL**.

   To see a list of users already defined within **SafeNet/i** type ***ALLDFN**.

   The *Maintain User to SQL Statement Authorizations* screen appears.



4. **Type A** in front of each SQL statement that this user is authorized to use.

   Selecting ***ALL Statements** authorizes the use to all SQL statements

To remove authorization to a selection, remove the A.

If you would like to see the list of all users who have been defined within **SafeNet/i**, press **F2.**

5. When finished making all your selections, **ENTER**.

6. **Press F9** to advance to the next step - setting up user authorities to FTP statements.

Entering User Authorities to FTP Statements

Next you must authorize users to the FTP Statements they may need if you are going to set the *FTP Server* or *FTP Client* to Level 4.

1. If you used F9 from the previous screen, continue with Step 4.

2. If you are on the SafeNet/i User Settings Menu (SN7), select **Option 4 - Work with User to FTP Statement Security** or use **WRKUSRFTP** command

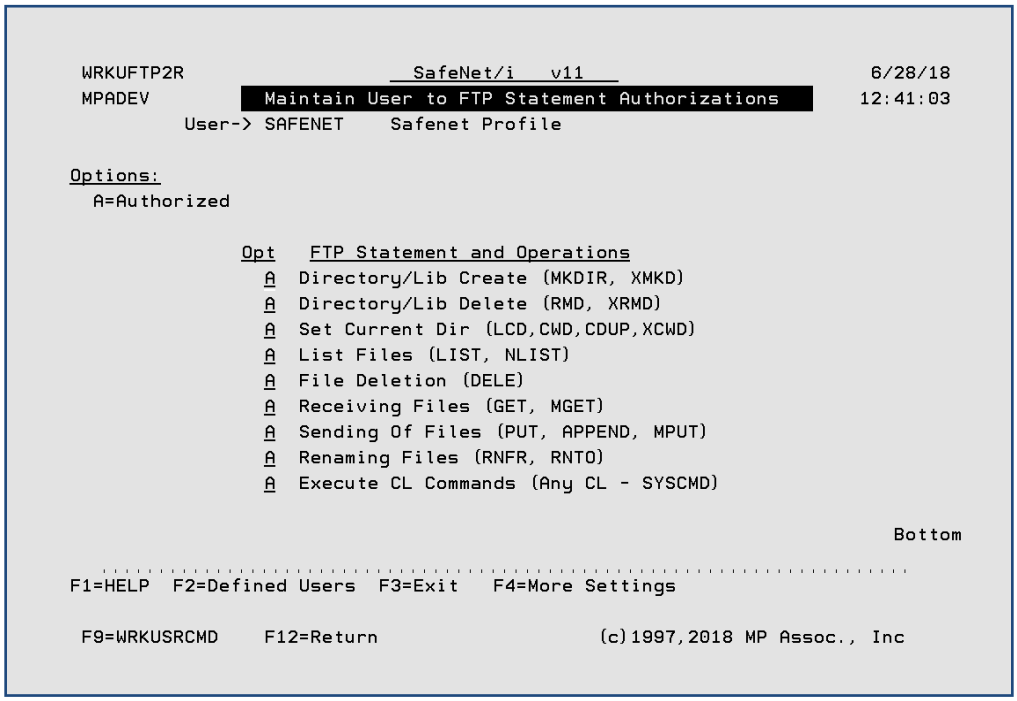
   The *Work User to FTP Statements, Enter User ID* screen is displayed.

3. **Type the user profile** or ***PUBLIC** then **ENTER**.

   If you would like a list of all user profiles on the system, press **F4** or type ***ALL**.

   To see a list of users already defined within **SafeNet/i** type ***ALLDFN**.

   The *Maintain User to FTP Statement Authorizations* screen appears.



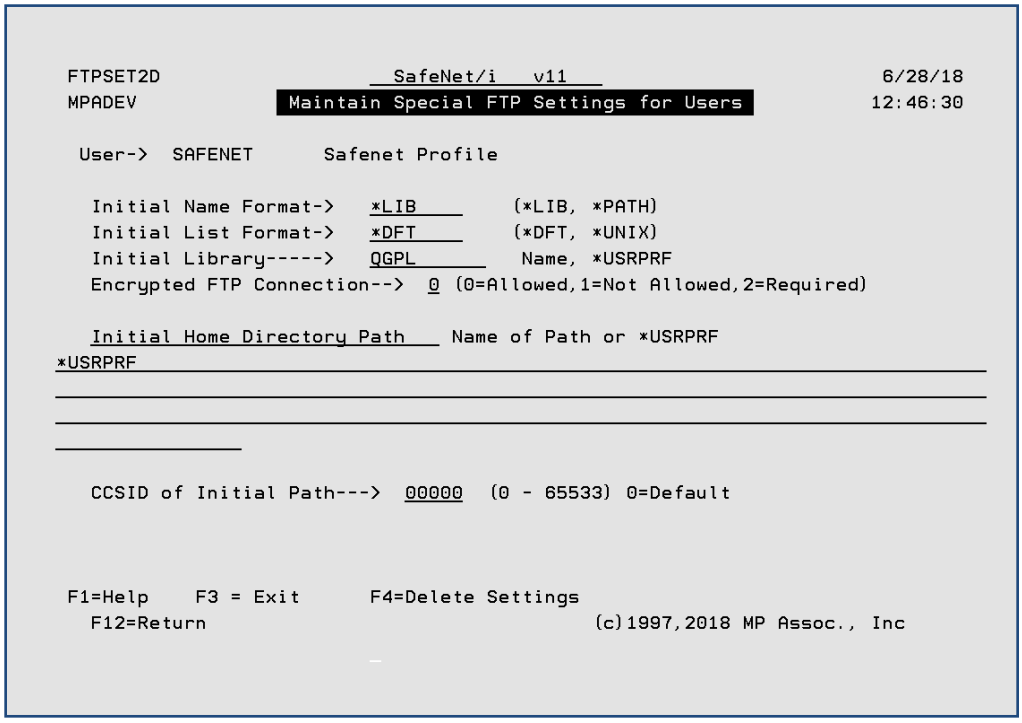
4. **Type A** in front of each FTP statement that this user is permitted to use.

   To remove authorization to a statement, remove the A.

If you would like to see the list of all users who have been defined within **SafeNet/i**, press **F2**.

5. Press **F4** to display the *Maintain Special FTP Settings for Users* screen

Note: Special FTP settings for a user are allowed only when your system is at OS/400 V5R1 or higher. If you are at a previous operating system level, these settings have no effect.



For this user, the initial Name Format and List Format will override the settings established by the iOS *Change FTP Server Attributes* command (CHGFTPA).

Select the parameters as follows:

Encrypted FTP Connection

- For SSL connections this should be set to 0 or 2
- For regular or non-SSL connections, leave this set to 0 or 1

Initial Home Directory Path

- This field is in effect only when Name Format is set to *UNIX. The field should point to an actual IFS directory on the IBM i.

Name Format

- *LIB indicates that the user sees standard Library/Object IBM i style names
- *PATH displays PC or *UNIX style file and directory names.

List Format

- *DFT user sees standard IBM i CHGFTPA server settings
- *UNIX user sees UNIX style directory listings

6. When finished making all your selections, **ENTER**.

7. **Press F9** to continue to the next step - setting up user authorities to CL commands.

Important Note:

When the FTP Client point is set to Level 4, only the GET and PUT FTP sub-commands are required. The other commands, when using the FTP Client, are for the TARGET SYSTEM ONLY (sent to/run on the target system).

When authorizing users to the GET/PUT sub-commands, the assumed object authority is reversed from authorities required for the FTP Server point and the same objects.

See the following examples.

Using FTP Client:

- Sending an object to a remote system
  An FTP PUT of object ABC in an FTP Client session requires *READ authority to object ABC on the local machine.
- Get an object from a remote system
  An FTP GET of object ABC in an FTP Client session requires *OBJMGT authority to the object ABC on the local machine.

Using FTP Server:

- Send an object to local system
  An FTP PUT of object ABC in an FTP Server session requires *OBJMGT authority to the object ABC on the LOCAL machine.
- Get an object from the local system
  An FTP GET of object ABC in an FTP Server session requires *READ authority to the object ABC on the LOCAL machine.

Entering User Authorities to CL Commands

Next, if you plan on setting the *FTP*, *DDM* or *Remote Command Servers* to Level 4, you must authorize users to the CL commands they may need.

1. If you used F9 from the previous screen, continue with Step 4.

2. From the SafeNet/i User Settings Menu, select **Option 5 - Work with User to CL Command Security** or use **WRKUSRCMD** command

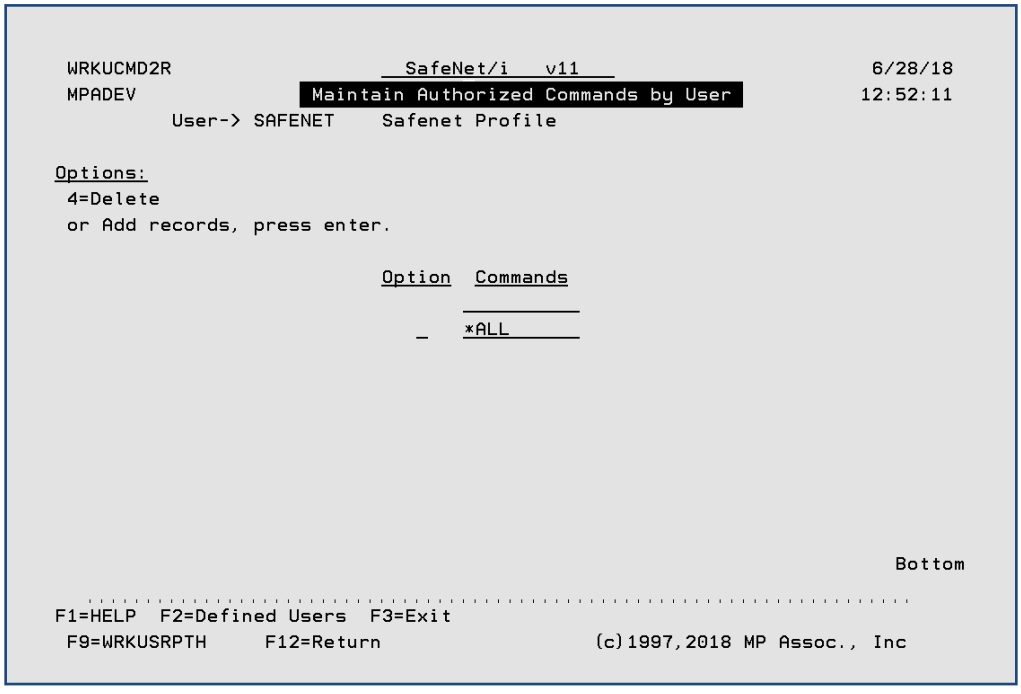
   The *Work User to CL Commands* screen is displayed.

3. **Type the user profile** or ***PUBLIC** then **ENTER**.

   If you would like a list of all user profiles on the system, press **F4** or type ***ALL**.

   To see a list of users already defined within **SafeNet/i** type ***ALLDFN**.

   The *Maintain Authorized Commands by User* screen appears.



4. **Type each CL command that this user is permitted to use.**

   If you want the user to have access to all CL commands, **type *ALL** in the first available space.

To remove authorization to a command, **FIELD EXIT** through the line to blank it out.

If you would like to see the list of all users who have been defined within **SafeNet/i**, press **F2**.

5. When finished typing all the required CL commands for this user, press **ENTER**.

6. **Press F9** to continue with setting up path names.

Entering Long Path Names

The default **SafeNet/i** setting is to use long path names.

If you choose to not use long path name support, you must first change the **SafeNet/i** default setting. Use the **CHGSPCSET** command to set the *PATHL* parameter to **SHORT*.

Important Reminder: SHORT PATH type has been deprecated as of Version 10.

Follow these steps to authorize the user to the paths.

1. If you used F9 from the previous screen, continue with Step 4.

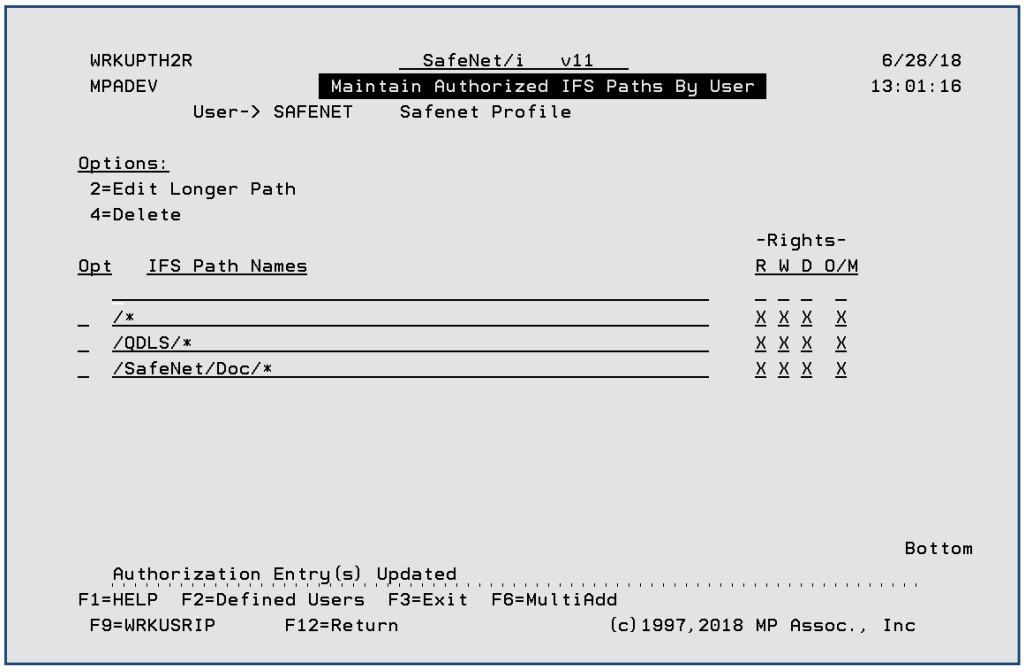
2. From the SafeNet/i User Settings Menu (SN7), select **Option 6 - Work with User to Long Path Names** or use **WRKUSRPTH** command

   The *Work with User to Path Names* screen is displayed.

3. **Type the user profile or *PUBLIC** then **ENTER**.

   If you would like a list of all user profiles on the system, press **F4** or type ***ALL**.

   To see a list of users already defined within **SafeNet/i** type ***ALLDFN**.



   The *Maintain Authorized IFS Paths by User* screen appears.

If you would like to see the list of all users who have been defined within **SafeNet/i**, press **F2**.

4. Enter the paths that the user is authorized to.

   Paths can be entered up to 512 positions in length, although only the first 60 positions are shown on the display. To enter and/or view a path over 60 positions long, **enter 2** in the option column.

   Use /* to give authority to all folders/paths

   End the path with * to allow access to all items in subfolders.

5. When finished typing all the paths for this user, press **ENTER**.

Building Generic Path Names for Lookups

You have a choice on how to perform generic path matching lookups.

Use the CHGSPCSET command to set the *GENPTH* parameter to **LTR* or **RTL*.

When using the default *Right-to-Left* lookup routine (*RTL), the lookup sequence is:

1. Check for full path match in WRKUSRPTH
2. Remove one character at end of string, add an asterisk (*) wildcard character
3. Check for a match in WRKUSRPTH
4. Repeat 2-3 until matched, or beginning of string

OR

When using the *Left-to-Right* lookup routine. (*LTR), the lookup sequence is:

1. Check for full path match in WRKUSRPTH
2. Start building the lookup string with /a* where a = the first character of requested path
3. Check for a match in WRKUSRPTH
4. Add one more character to lookup string from requested path (/ab*)
5. Repeat 3-4 until all possibilities are exhausted

Entering IP Address Controls – WRKUSRIP, WRKSRVIP

The next step is to enter the level of authority the user has to IP addresses on IBM i if you plan on utilizing the IP address controls in **SafeNet/i**.

You can activate the IP controls via the **WRKSRV** command on each specific server. Once you have decided which servers you will control by IP, enter the appropriate addresses here.

1. If you used F9 from the previous screen, skip to Step 4.

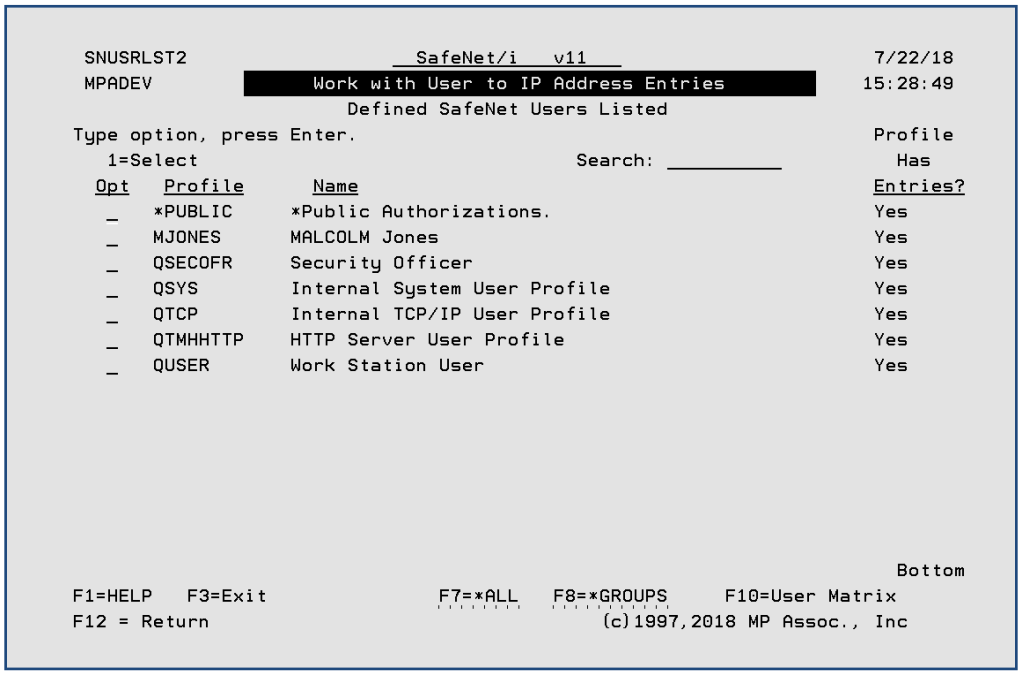
2. If you are currently on the SafeNet/i User Settings Menu (SN7), select **Option 7 - Work with User to IP Addresses** or use **WRKUSRIP** command

   The *Work User to IP Addresses* screen is displayed.

3. Type **the user profile name, the Group** or ***PUBLIC**, then **ENTER.**

   To list all of the user profiles on the system, type ***ALL.**

   To see a list of users already defined within **SafeNet/i** type ***ALLDFN**

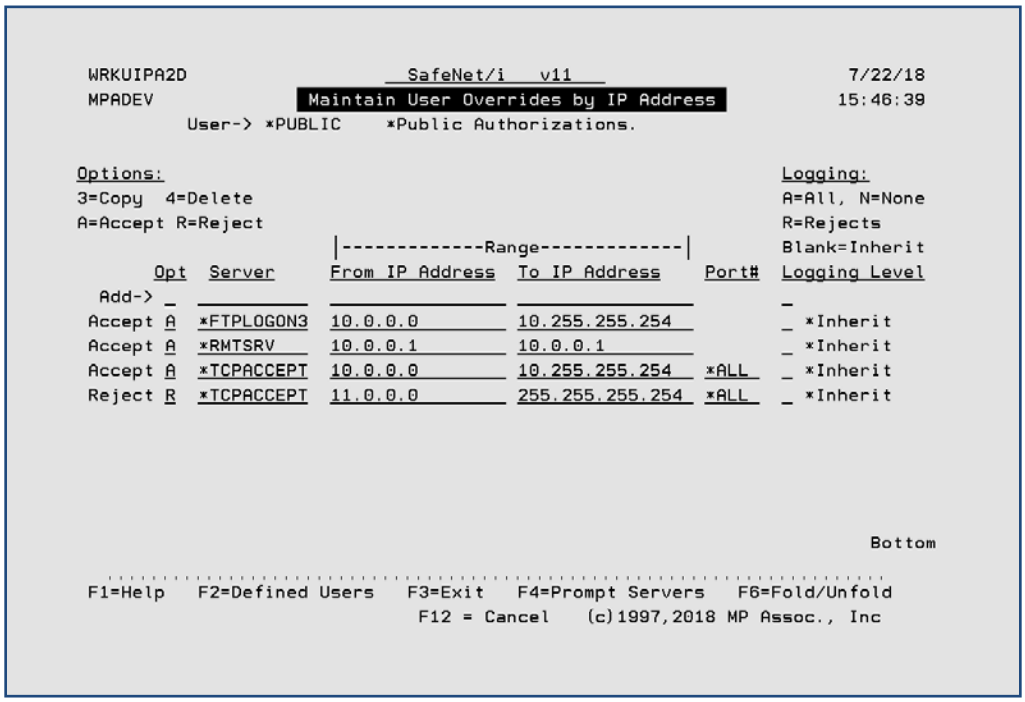


The *Work with User to IP Address Entries* screen appears

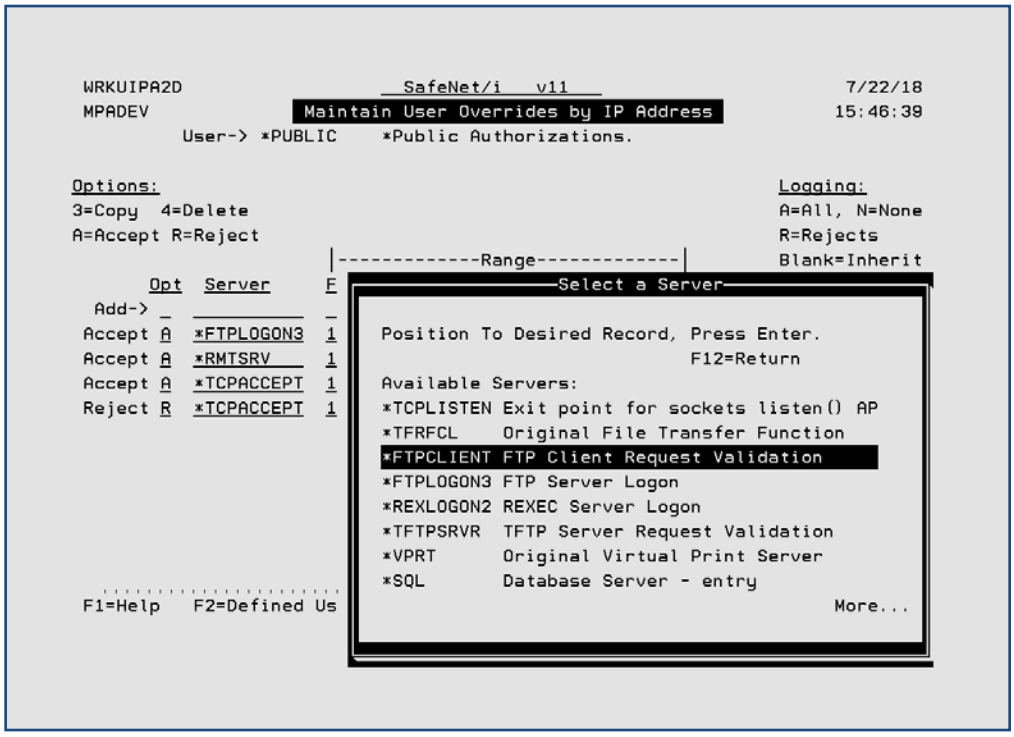
Note: If you enter a specific user ID that has already been defined, you will see the *Maintain User Overrides by IP Address* screen.

4. Type **1** in the *Option* column to select the user to work with

The *Maintain User Overrides by IP Address* screen appears.



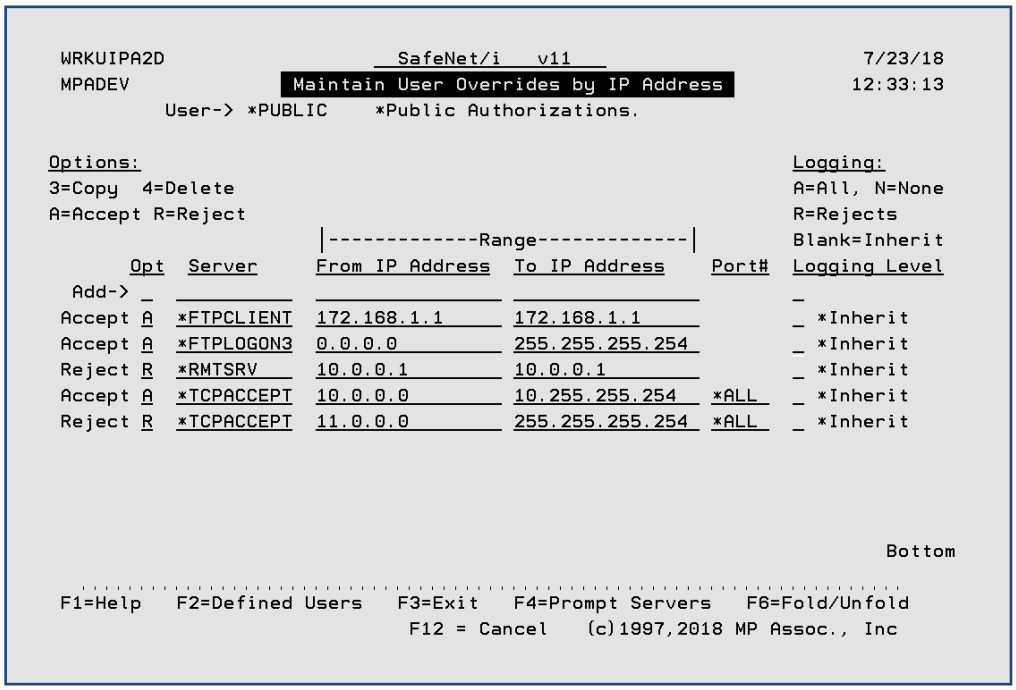
Use **F4** to prompt for a list of all servers that allow for IP controls within **SafeNet/i**.



5. Select the server and use the appropriate option to *Accept* or *Reject* an IP address.

Enter the IP addresses as follows:

	From IP Address	**To IP Address**
One specific IP address	172.168.1.1	172.168.1.1
Full range of IP addresses	0.0.0.0	255.255.255.254



Logging Level - use the logging level column to indicate if the logging should be "inherited" from the server setting, or if you wish to override the logging level to something more specific.

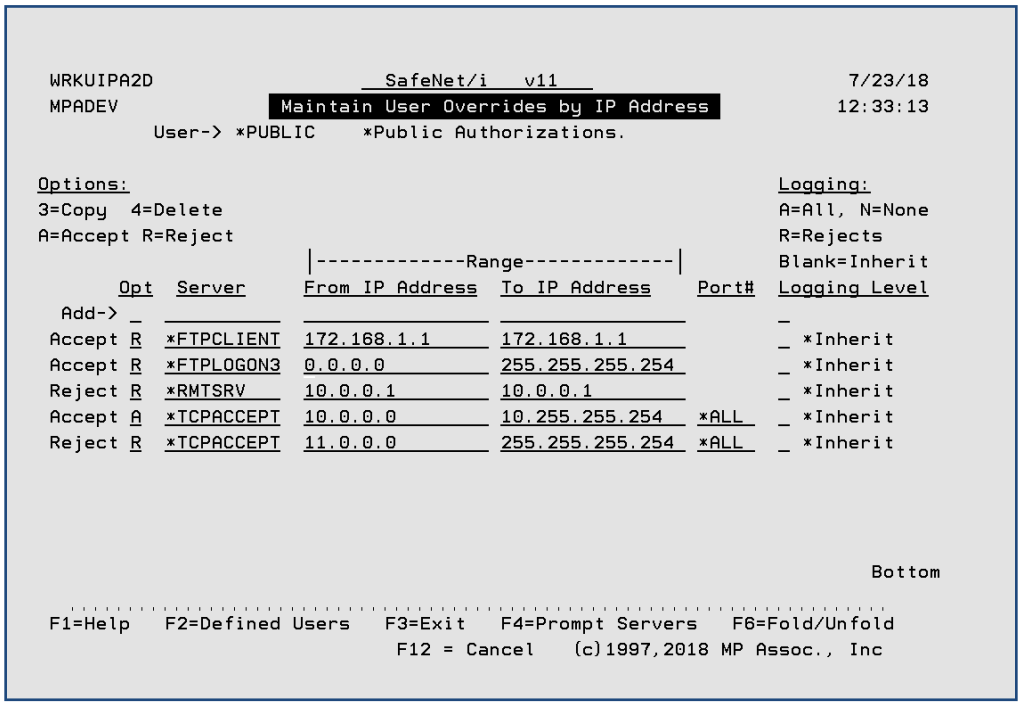
It's possible to have the server set to no logging, but whenever IP controls come into play, logging will be done according to the override setting here.

Port # - in addition, when working with *TCP Accept* or *TCP Listen* functions, you can specify which IP port the rule applies to. Ports 1-64512 are accepted.

Fold/Unfold - Use the **F6** command key to add notes to the entries. These notes are for documentation purposes only.

Exclusions

Use the *Reject* option to exclude an address or a range of addresses



Remember, any individual user authority overrides the GROUP and *PUBLIC authorities.

Copying an Existing User to Set Up a New User in SafeNet/i

This will allow you to copy the authorities and settings from one user to another within **SafeNet/i**. The new user profile must already exist in i OS.

1. From the User Settings Menu (SN7), select **Option 10 – Copy a User Setup to Another User** or use the **CPYSNUSR** command.

   The *Copy SafeNet User/Authorities* screen is displayed.

2. **Type the user profile** you are copying from, then **the new profile(s)** to add.

3. When finished entering all the new profiles, press **ENTER**.

   This will set up the new profile in **SafeNet/i** and return you to the User Settings Menu (SN7).

Removing a User from SafeNet/i

This option allows you to remove a user's authorities and settings from **SafeNet/i**, including Administrative rights

1. From the User Settings Menu (SN7), select **Option 11 – Remove a User Enrollment from SafeNet** or use the **RMVSNUSR** command

   The *Remove Users from SafeNet* screen appears.

2. **Type the user profile(s)** to remove, then press ENTER.

   This will remove the user from **SafeNet/i** and return you to the Special Jobs Menu.

Removing Unknown Users from SafeNet/i

Use the **RMVSNUSR1** command to remove user entries in **SafeNet/i** if the referenced user profile does NOT exist in the IBM i.

1. From the User Settings Menu (SN7), select **Option 12 – Remove Unknown Users from SafeNet** or use the **RMVSNUSR1** command

   The *Remove Unknown Users SafeNet/i* is displayed.

2. **Type any user profiles that you want to OMIT** from the removal process.

   This process will remove entries from the **SafeNet/i** control files if the user is unknown to the system and will return you to the User Settings Menu (SN7).

Removing Administrators from SafeNet/i

- From the User Settings Menu (SN7), select **Option 8 – Work with SafeNet Administrators** or use command **WRKSNADM**. Use *Option 4* to delete an Administrator.

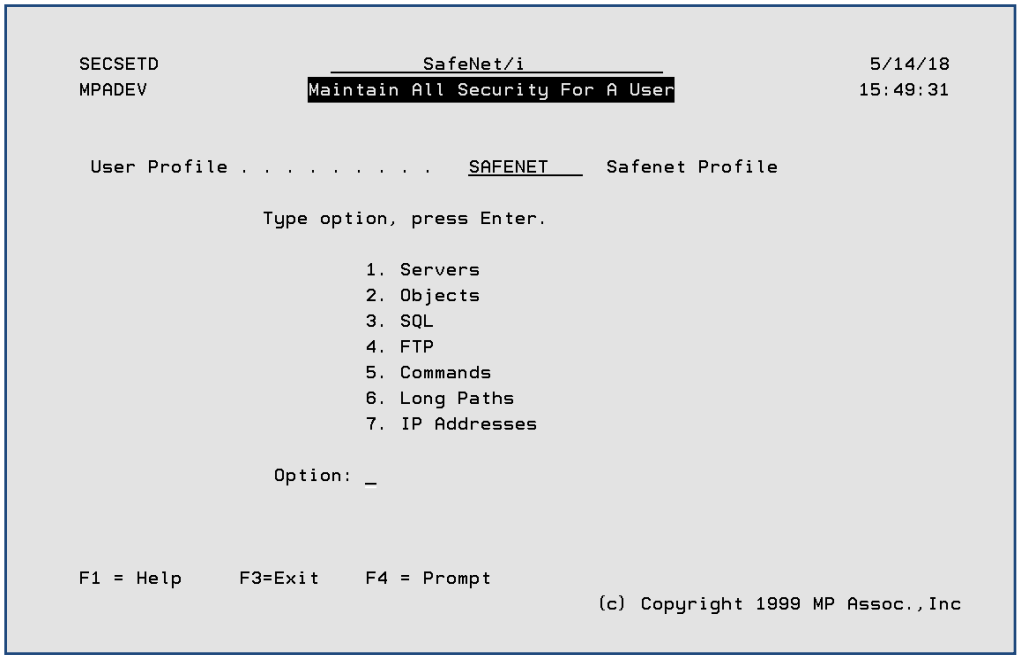
  OR

- Use command **RMVSNADM**, which does not appear on any menu.

Maintain all Security for a User

The **WRKUSRSEC** command, which is not found on any of the **SafeNet/i** menus, gives you the ability to perform security maintenance for an individual user without entering several different commands.

When you use the **WRKUSRSEC** command you will be presented with the *Maintain All Security for a User* screen.



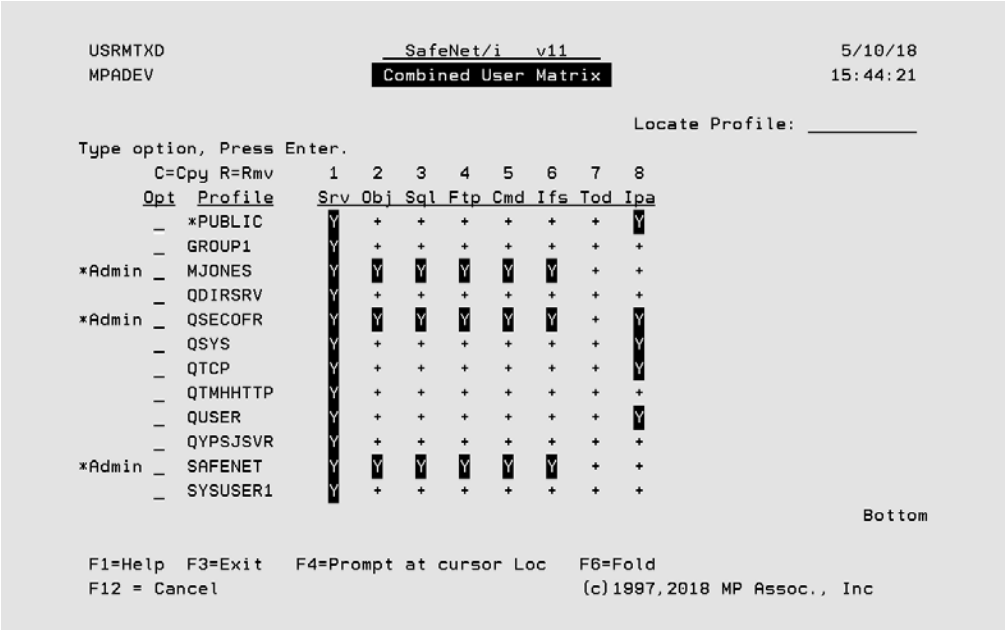
From this screen you can select which of the control files you wish to update for this particular user, without entering any additional commands or returning to the SafeNet/i Main Menu.

Within each of the applications, you can use **F9** to advance to the next maintenance screen.

Work with SafeNet Users – Matrix View

WRKSNUSRS command

Use **WRKSNUSRS** to navigate to a new *User Security Matrix* panel. It provides Administrators a quick view of users' authorities within **SafeNet/i**.



From this panel, you can access any of the users' individual security settings within **SafeNet/i**.

To retrieve a user's settings, position your cursor over the 'Y' or the '+' in the specific column you wish to see (*Srv, Obj*, etc.) and **press F4**.

OR

Position your cursor in the option column on the row with the user you wish to review. Key the number of the column you want to see and **ENTER**.

Example:
Enter 1 to access WRKUSRSRV
Enter 2 to access WRKUSROBJ
Enter 3 to access WRKUSRSQL
Enter 4 to access WRKUSRFTP
Enter 5 to access WRKUSRCMD
Enter 6 to access WRKUSRPTH
Enter 7 to access Time of Day Maintenance
Enter 8 to access WRKUSRIP

Setting up Time of Day Controls

If you want to exclude users from server functions based on the day of the week or the time of day, use Time of Day controls.

Use the WRKSRV command to activate Time of Day controls.

SafeNet/i checks authority in the following sequence:

Is the	**excluded from**	**at this time?**
User	Specific Server *ALL Servers	
Group	Specific Server *ALL Servers	
Supplemental Group	Specific Server *ALL Servers	
*PUBLIC	*Specific Server *ALL Servers	

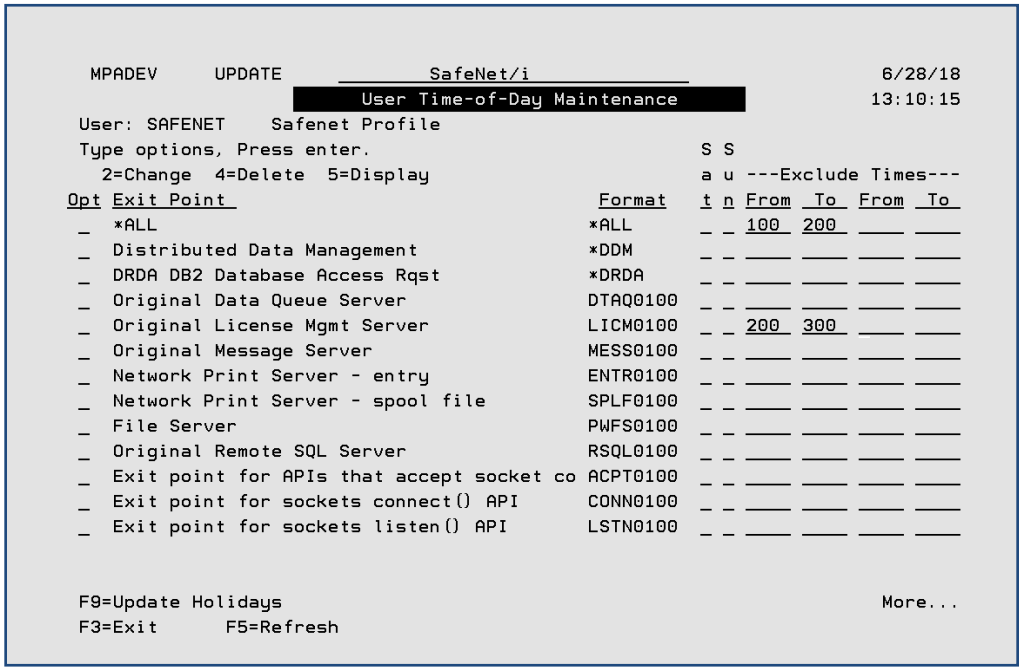
SafeNet/i checks until all the tests are passed or until an exclusion rule is encountered.

Note: In Version 8 and above, Time of Day controls are handled differently than in previous releases of **SafeNet/i**. With Version 8 and above, TOD controls are activated at the server level. Use the **WRKSRV** command to turn on Time of Day checking on the appropriate servers.

To set up the Time of Day controls for a specific user, use **Option 1 – Work with User to Server Security** from the SafeNet/i User Settings Menu (SN7) or the **WRKUSRSRV** command.

Type the user profile, **ENTER** and then **press F10**.

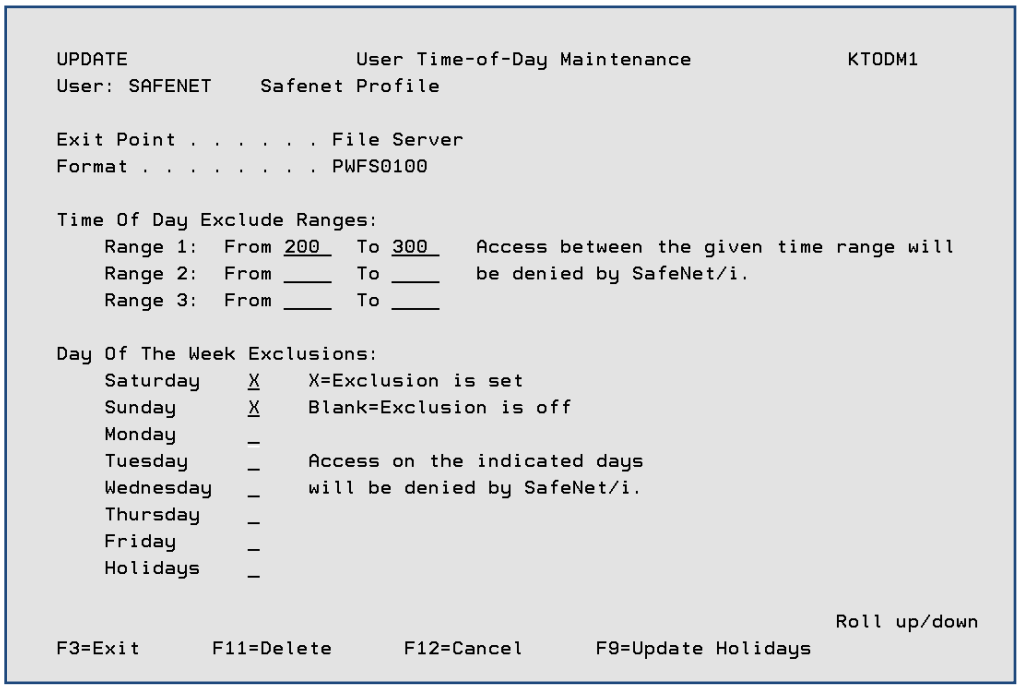
The *User Time-of-Day Maintenance* screen appears.



To exclude the user from all servers during the same days of the week and time of day, **type 2** – *Change* in front of *ALL.

To select individual servers, **type 2** in front of the servers you want to change

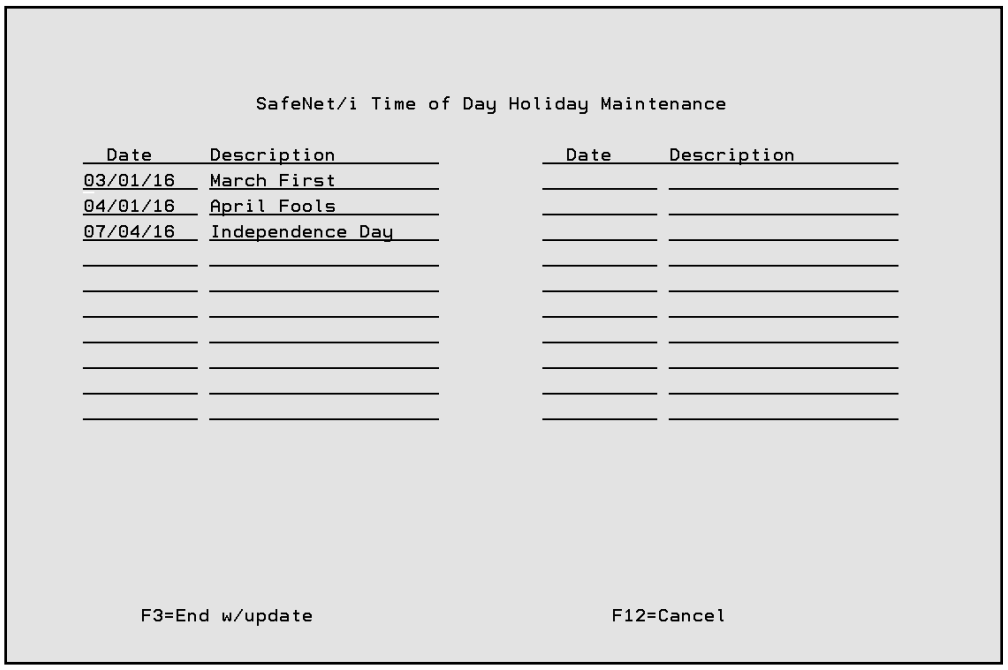
You can define up to three time ranges and can select which days to exclude by **typing X** in front of the day.



You can also define holidays that will be used to control Time of Day access.

Press F9 to display the *Time of Day Holiday Maintenance* screen.

Type the dates and descriptions of your holidays.



Press **ENTER**.

Chapter 2 - SETTING UP SERVERS

The final step in configuring **SafeNet/i** is to enter the Security Level settings for all the server functions.

Important:	If you do this step first and restrict access to the server functions prior to setting up user rights, you may disrupt network requests until the users' authority table setup is completed. Setting up the Current Level on the servers should be considered the **LAST STEP** during the setup process.

Typically, use the Future Server Settings for initial setup and testing. When you are ready to activate **SafeNet/i** settings, you can flip the current and future settings by using **Option 1 - Work with User to Server Security** on the SafeNet/i Main Menu (SN1) then F22.

You can also use the **WRKSRV** command and F22.

SafeNet/i Server Function Security Levels

Level 1 - BASIC:

- IBM default
- Unlimited access, all requests accepted
- Requests can be logged, reporting available
- Performance impact - minimal

Level 2 - OFF:

- No access at all, all requests for server are rejected
- Requests can be logged, reporting available
- Performance impact - not a consideration

Level 3 - INTERMEDIATE:

- Access granted on a user-by-user basis to the server
- Requests can be logged, reporting available
- Performance impact – minimal
- TELNET at Level 3 requires use of the TCP/IP control table

Level 4 - ADVANCED:

- Access granted on a user to server and object, command, SQL, FTP basis
- Requests can be logged, reporting available
- Performance impact – higher

  Level 4 requires authority to the server function and additionally requires table entries for proper authorization to individual or generic objects and/or folders by user profile. Data rights such as read/write and object management rights can be assigned on an individual basis.

  Level 4 on the *DDM, FTP* or *Remote Command/Program Call Server* requires setting up authorities to CL commands.

  For *DDM, FTP* or *Remote Command/Program Call Server*, all commands are restricted.

Level 5:

- This usually denotes a problem with an exit point program registration in IBM i
- This indicates that **SafeNet/i** does not recognize a program assigned to the exit point or has detected a user-defined program assigned. (Use **WRKREGINF** command to review existing exit point programs.)
- Not supported
- Cannot be changed via **SafeNet/i**, use **WRKREGINF** command
- See the section on 'Resetting Level 5 within **SafeNet/i**' in Chapter 9 of this guide

On the following pages you will find these levels grouped together to make it easier for you to decide the appropriate level of security required for each server function.

Setting the Server Function Logging Levels

The valid logging levels are:

Logging Level A	Log all transactions
Logging Level R	Log only rejected requests
Logging Level N	No logging

As you set up your Server Function logging levels, please remember the following:

- If you set the logging level on the Server Function to *NO LOGGING* or *REJECTIONS,* the Server Function setting will override the individual user logging level.

- If you set the logging level on the Server Function to *ALL*, the individual user logging level will override the Server Function logging level.

To make sure you are logging transactions correctly, we recommend that when you initially set up **SafeNet/i** you set the Server Functions to log *ALL* and set the individual user logging levels to either *ALL* or *REJECTIONS*.

Then, after you have had some experience with checking the logs and interpreting the results, you may want to make changes for specific user and server combinations.

Note: When using TCP/IP Address controls, you also have the option to override the logging level at the IP level. See command **WRKUSRIP**.

Basic Server Security - Supported by all Servers – Rating LOW

Level 1 - IBM Default

Level 2 - No access to server

Intermediate Server Security - Supported by all Servers - Rating MEDIUM

Level 3 - Users must be authorized to the server

Special - *TELNET - controls signon by IP address
Level 3 - Sockets – any IP controls are optional at Level3

Advanced Server Security - Supported by Specific Servers - Rating HIGH

Level 4 - The user must be authorized to the server, the objects requested, the FTP Op or SQL Op, CL commands or long path to be used.

TCP Sockets - if TCP Sockets points are set to Level 4, IP Address control entries are mandatory

Supported by the following servers:

Distributed Data Management Server	Data Queue Server
Original Data Queue Server	Remote Command/Program Call Server
Network Printer Server - Spool file requests	FTP Server Request Validation
Integrated File Server	FTP Client Request Validation
Original Remote SQL Server	REXEC Server request Validation
Original File Transfer Function Server	Showcase™ Server
Original Virtual Print Server	Spooled File Security
Database Server - Data base access	TCP sockets
Database Server - SQL access	

Recommended Server Settings

Server Description	Recommended Setting
Central Server - client management	**Level 1, Log None**
Central Server - conversion map	**Level 1, Log None**
Central Server - license management	**Level 1, Log None**
Database Server - entry	**Level 3, Log All**- Limit user access
Database Server - data base access - 100	**Level 4, Log All** - Limit user and object access
Database Server - data base access - 200	**Level 4, Log All** - Limit user and object access
Database Server - object information - 100	**Level 3, Log All** - Limit user access
Database Server - object information - 200	**Level 3, Log All** - Limit user access
Database Server - SQL access - 100	**Level 4, Log All** - Limit user, object and SQL statement access
Database Server - SQL access – 200	**Level 4, Log All** - Limit user, object and SQL statement access
Data Queue Server	**Level 1, Log None**

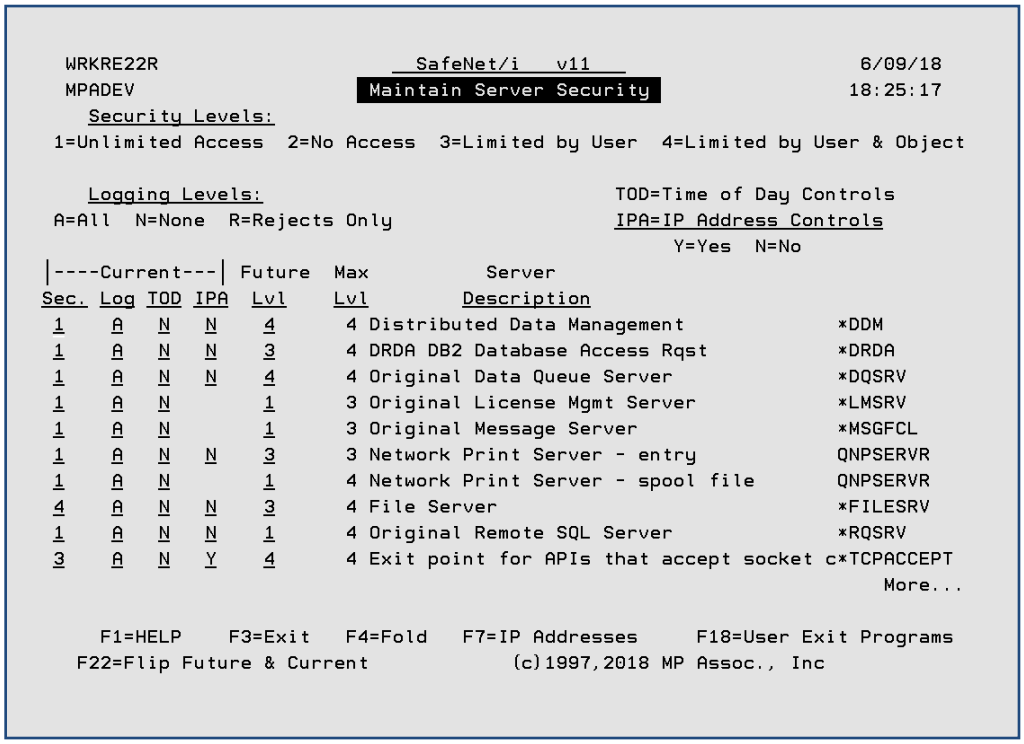
Server Description	Recommended Setting
Distributed Data Management	**Level 3, Log All** - Limit user access or **Level 4, Log All** - Limit users to specific objects and commands
DHCP	**Level 1, Log None**
DRDA DB2 Database Access Request	**Level 3, Log All** - Limit user
File Server	**Level 4, Log All** - Limit user and object access
FTP Client Server	**Level 4, Log All** - Limit user access & target connection by IP Address
FTP Logon Server	**Level 3, Log All** - Limit user access
FTP Server Validation	**Level 4, Log All** - Limit user, source IP address, object, FTP sub-commands
Network Print Server - entry	**Level 1, Log None**
Network Print Server - spool file	**Level 1, Log None**
Original Data Queue Server	**Level 1, Log None**
Original File Transfer Function	**Level 4, Log All** - Limit user and object access
Original License Mgmt Server	**Level 1, Log None**

Server Description	Recommended Setting
Original Message Server	**Level 1, Log None**
Original Remote SQL Server	**Level 4, Log All** - Limit user access to objects and SQL statements
Original Virtual Print Server	**Level 1, Log None**
PWRDWNSYS	**Level 1, Log All** – Log all requests
Remote Command/Program Call	**Level 4, Log All** - Limit user and object access and commands
REXEC Logon	**Level 3, Log All** - Limit user access
REXEC Server Request Validation	**Level 4, Log All** - Limit user, Source IP address
Spooled File Security	**Level 1, Log None** - Unless specific requirement for additional spool security
TELNET Logon or **TELNET Logoff**	**Level 1, Log None -** Unless specific requirement for IP address control
TFTP Logon	**Level 1, Log None**
User Profile Points	**Level 1, Log All** - Log all requests
TCP Signon Server	**Level 1, Log None**
Showcase™ Server	**Level 4, Log All** – Limit User,Object, Log all
TCP Sockets - Accept **- Listen** **- Connect**	**Level 3, Log All** **Level 1, Log None** **Level 3, Log All**

Entering Server Function Security Levels

1. From the SafeNet/i Main Menu select **Option 1 - Server Security Settings** or use **WRKSRV** command

   The *Maintain Server Security* screen is displayed.



2. Enter the level of security and the logging level that is required for each server description in the *Current* columns.

   The *Future* column lets you enter a setting for each server based on what you think the setting will be in the future. This makes it possible to use your historical transactions against both current and future server levels for testing purposes.

   Enter a 'Y' in the *TOD* column to control individual server functions based on time of day.

   When you change the *TOD* value it becomes effective immediately. Make sure you have used the *Time of Day* setup function, accessed via F10 within the **WRKUSRSRV** command, before you change this value on the server function.

   TOD entries are based on **EXCLUSION** times for the users, establishing when the user is **NOT** permitted system access.

Enter a 'Y' in the *IPA* column to control whether individual server functions check for valid IP addresses.

The *IPA* column indicates if this server is checking for valid IP addresses. Place your cursor on the server display line and press F7 to view the IP address entries. Or use the **WRKUSRIP** command.

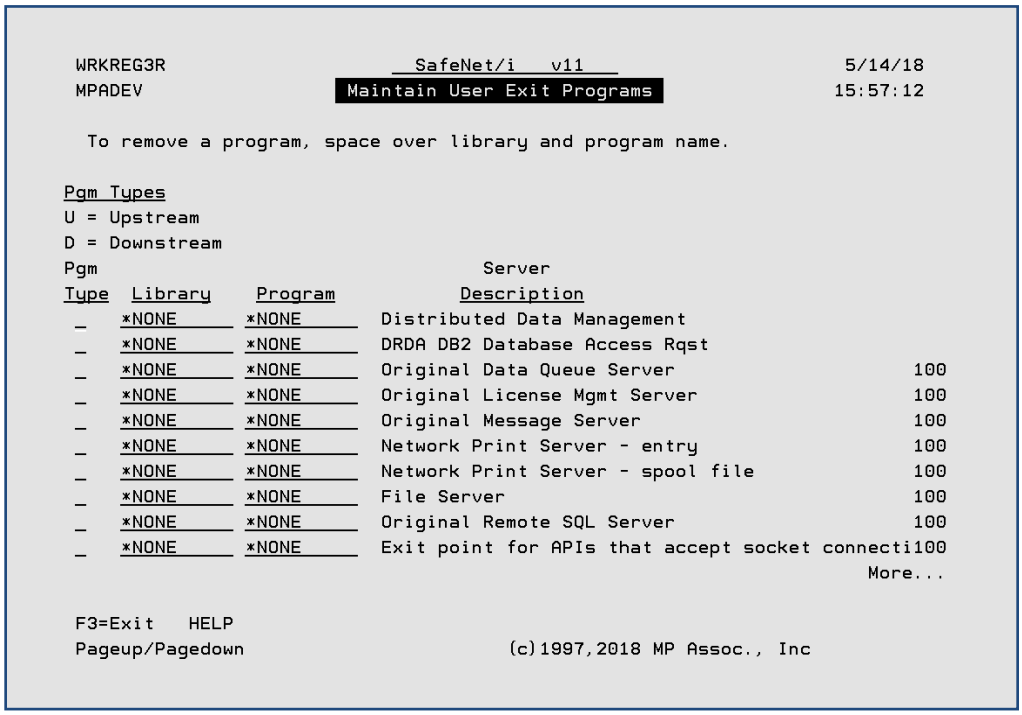
Note: The server functions are listed on multiple screens. **PageDown** to ensure you enter a level for all the servers.

3. When you have finished entering information for all the servers, **press ENTER.**

   The screen is refreshed and any changes you made are reflected in the *Current* columns.

Customer Exit Programs

If you would like to use your own programs over these server exit points, **F18** on the *Maintain Server Security* (**WRKSRV**) screen gives you the ability to do so.



SafeNet/i will look to see if there is a customer-written program to call. If there is, it calls the program, passing two parameters, a one-byte status code, plus the rest of the data string from the client. The customer exit program can be called before (upstream) or after (downstream) the normal **SafeNet/i** program. Downstream is the typical customer requirement.

Your custom exit program can do whatever you want. When it returns to **SafeNet/i**, if the status code has been changed to indicate any type of rejection, **SafeNet/i** stops and logs the request, and returns a rejection to the client.

If the exit program does not change the status code, the request will go through the normal **SafeNet/i** checking process.

The string that is passed is limited to 4,000 characters, as defined by IBM. Examples of these strings can be found in the TRAPOD file and the appropriate IBM manuals.

Chapter 3 - TELNET AND TCP/IP ADDRESS CONTROLS

Certain Exit Point server functions can be controlled by source or remote IP address and user profiles.

This function can be activated for all supported exit point servers that are at **SafeNet/i** security levels 3 or 4 (medium or high).

IP Address Controls Enhancement

Support for TCP/IP IPv6 addressing

All network transaction activity logged in **SafeNet/i** will contain the full IPv6 client address if available

All **SafeNet/i** reporting and analysis features will now support IPv6 addresses

New Options for IP Address Controls

CHGSPCSET – Change SafeNet/i Special Settings

A new parameter has been added:

CTLBYIP - Will access to any Exit Point Servers be controlled by IP addresses?

- ***NO** (default) - No IP address controls will be used within **SafeNet/i**
- ***YES -** Some Exit points may have access controlled by IP addresses within **SafeNet/i**

Note: This is a global **SafeNet/i** setting. To use IP address controls on ANY server requires you first turn on this global setting.

WRKSRV - Server Security Settings

A new field parameter for switching ON/OFF the **SafeNet/i** IP controls by Exit Point has been added

- **N (No/Off)** (default) – This Exit Point Server access is NOT controlled by IP address
- **Y (Yes/On)** – This Exit Point may have IP address controls active within **SafeNet/i**

Note: To use this control, the global setting must be set in CHGSPCSET command as noted above

WRKUSRIP – Work with Authorized IP Addresses for User

New command to Work with User to IP address entries

- Add an entry for each server to be controlled by IP
- Can specify *Reject the operation if required
- Supports Group profiles and *Public entries

WRKSRVIP – Work with Server IP Addresses

New command and maintenance screen to manage the Users and IP addresses at the server level

- Enter all the users at once for a specific server's IP entries
- Copy all at once the entries from one server to another

PRTIPUSG – IP Address Usage Report

A new usage report has been added. Print IP Usage. This will assist you in reviewing historical data for IP addresses by User and Server.

Pre-Requisite for IP Controls

1. This function can be activated only at **SafeNet/i** security levels of 3 or 4 (Medium or High) for each exit point server that supports IP controls. See *WRKSRV* maintenance screens.

2. This enhancement will make **OBSOLETE** all prior **SafeNet/i FTP** IP address control maintenance and implementation. If your installation currently utilizes **SafeNet/i** IP Controls you will have to convert any entries to this new IP address format immediately after upgrading to this newer version.

   BEFORE upgrading to this version of **SafeNet/i**, you should print the TCP/IP Address Control Listing on your current version. You will need this report to re-enter the IP controls into this new version. Use the PRTTCPIPA command to print the report.

3. This enhancement does NOT impact the current TELNET IP address controls in **SafeNet/i**. Any TELNET IP address control entries will remain in effect after upgrading to this newer version of **SafeNet/i**.

Setting Up SafeNet/i for IP Control

There are three steps to implementing the IP Controls in **SafeNet/i**:

1. Set up source IP address for each user
    - For each Server you want to control access by source IP address, set up each user's associated source IP address. Use WRKUSRIP or WRKSRVIP commands.

    You may also use Group and *Public profile entries if you wish.

2. Turn **ON** IP address checking for each server

    - Use WRKSRV to work with the server settings.
    - Each server that supports IP address controls will be indicated by the column listed as "IPA".
    - Set the desired servers to Y for IP control (column IPA)

    Note: You can only turn ON servers for IP Control if their current security Level is 3 or above.

3. Turn **ON** the Global IP control setting on the Change SafeNet/i Special Settings command

    - CHGSPCSET CTLBYIP(*YES)

Remember: you can turn ON IP controls for the server only if its security level is set to 3 or above

IP Control Process Flow

This applies to every transaction for certain exit points set to **SafeNet/i** Security Level 3 or higher

1. Check CHGSPCSET CTLBYIP to see if global function is ***YES/*NO**

If *NO - Allow
> Exit IP checking process
If *YES - Continue Checking
> Check the "Specific Exit Point" for status of IP checking.

If *NO (IP checking is not active at the server level) - Allow
> Exit IP checking process
If *YES (IP checking IS active at the server level) – Continue IP checking
>Check if **ANY** IP address is present for this exit point server

If IP addresses are NOT PRESENT for this server- Allow
>Exit IP checking process
If IP addresses are PRESENT – Continue ip checking
>Check the UserID & Source IP for an authorized IP address.
If UserID is found IN IP address Range with REJECTION Entry
> Reject and Exit process

If UserID is found AND IN the IP Range - Allow
> Exit IP checking process
If UserID is NOT found– Continue IP checking
>Check the GroupID & Source IP for an authorized IP address for this exit point server

If GroupID is found IN IP address Range with REJECTION Entry
> Reject and Exit process
If GroupID is found AND IN the IP Range - Allow
> Exit IP checking process

If GroupID NOT found – Continue ip checking
Check the *PUBLIC & Source IP for an authorized IP address

If *PUBLIC is found in the IP address Range with REJECTION Entry
> Reject and Exit process

If *PUBLIC is found AND in the IP Range - Allow
> Exit IP checking process
If Source IP NOT found –Reject
> **Exit SafeNet/i with Rejection**

NOTES:

1. ***Important*** - the TCP Sockets points allow IP controls at Level 3 that are optional. If entries are found, they will be used. If the Sockets points are set to Level 4, IP entries are mandatory

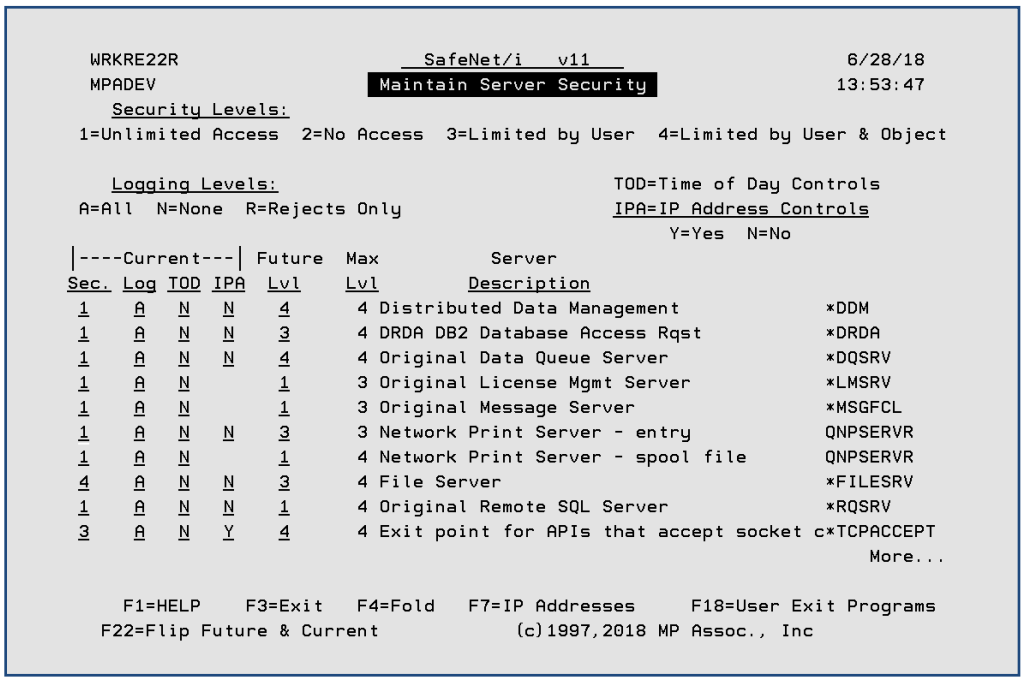
2. Valid IP Range is 0.0.0.0 thru 255.255.255.254

3. Wildcard IP entries(ALL IP addresses) are entered as: 0.0.0.0 thru 255.255.255.254

4. All Source IP addresses will be validated against an IP address Range (FROM – TO).

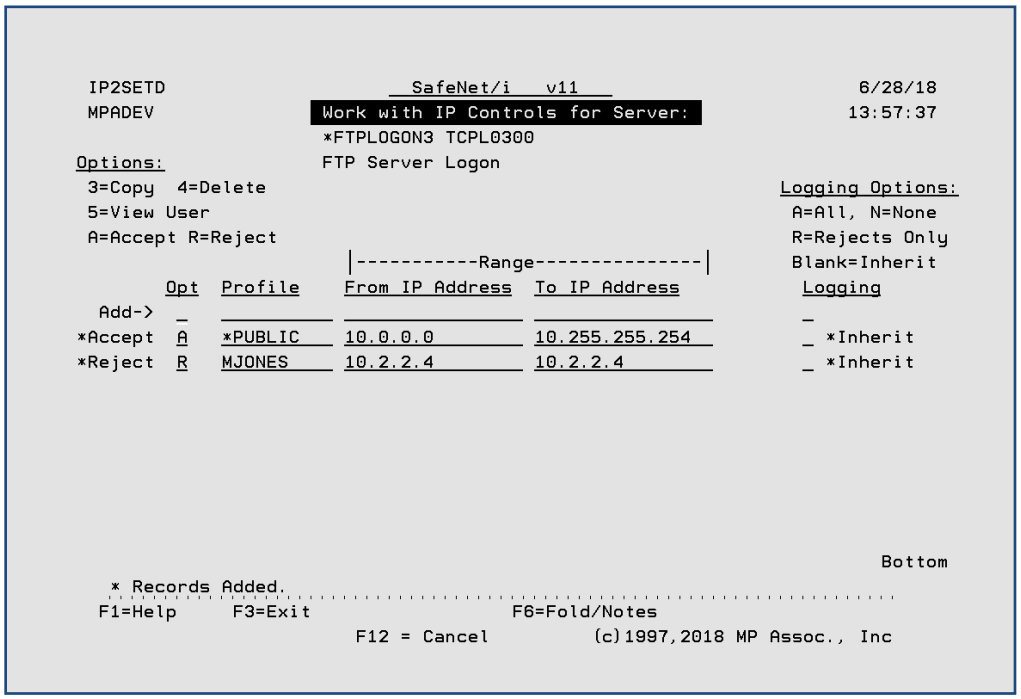
Some requests may show as having a source IP of 127.0.0.1 or even a blank IP address. This is normal for some IPL and internal processes. Any access through the loopback device address will be automatically accepted by **SafeNet/i**.

Example of **WRKSRV** *IPA* field

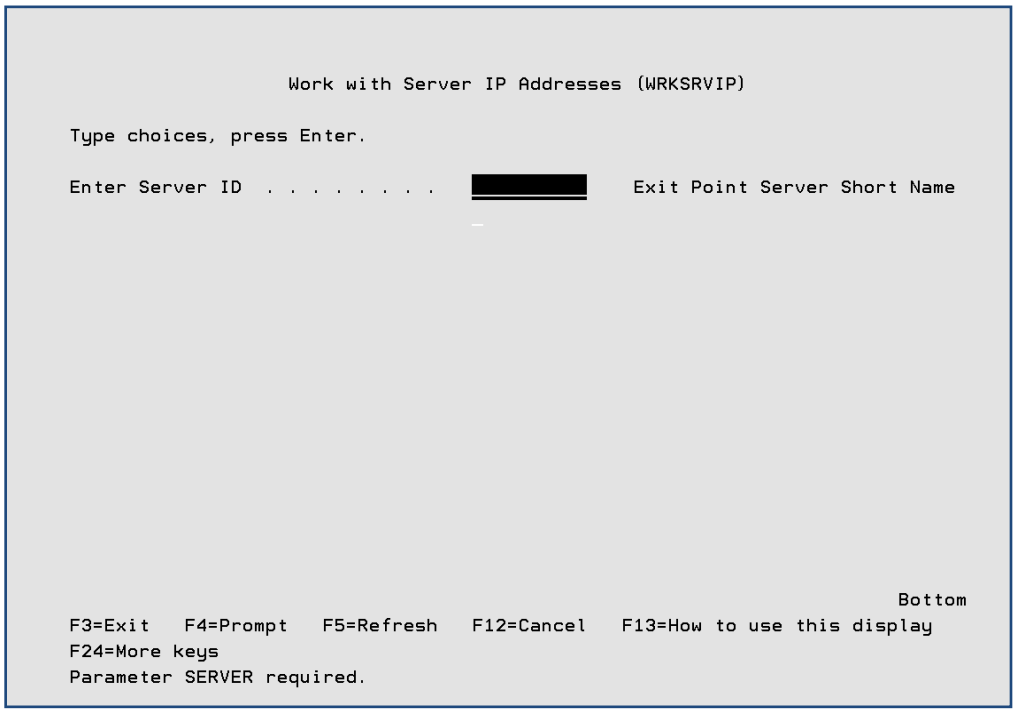


With your cursor on the server line, **press F7** to enter *user profiles* and *valid IP address* combinations.

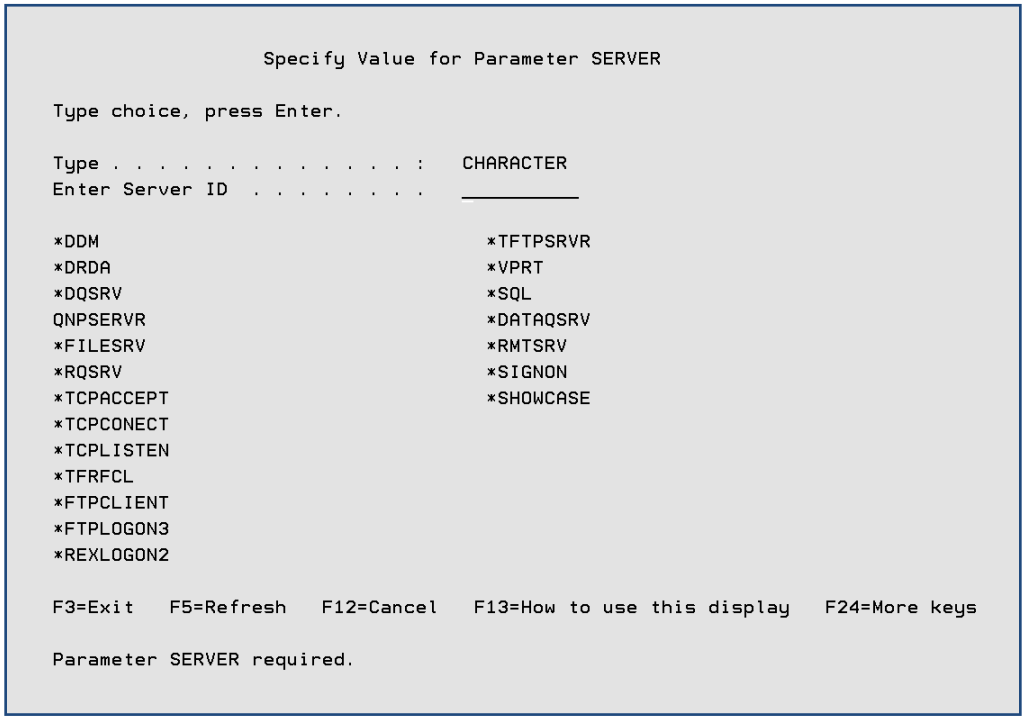
Note: You can override logging using IP control entries



You can also navigate to this screen using the **WRKSRVIP - Work with Server IP Addresses** command.



Press F4 to display a list of all servers that support this function



Setting up TELNET

TELNET control features are supported only when the server is set to Level 3. You may use some or all of the features available with the TELNET server point:

- Control access by IP address
- Allow auto sign-on (bypass sign-on)
- Restrict IP address to use specific device names (enhanced TELNET clients only)
- Restrict access based on the password type sent (none, clear or encrypted)

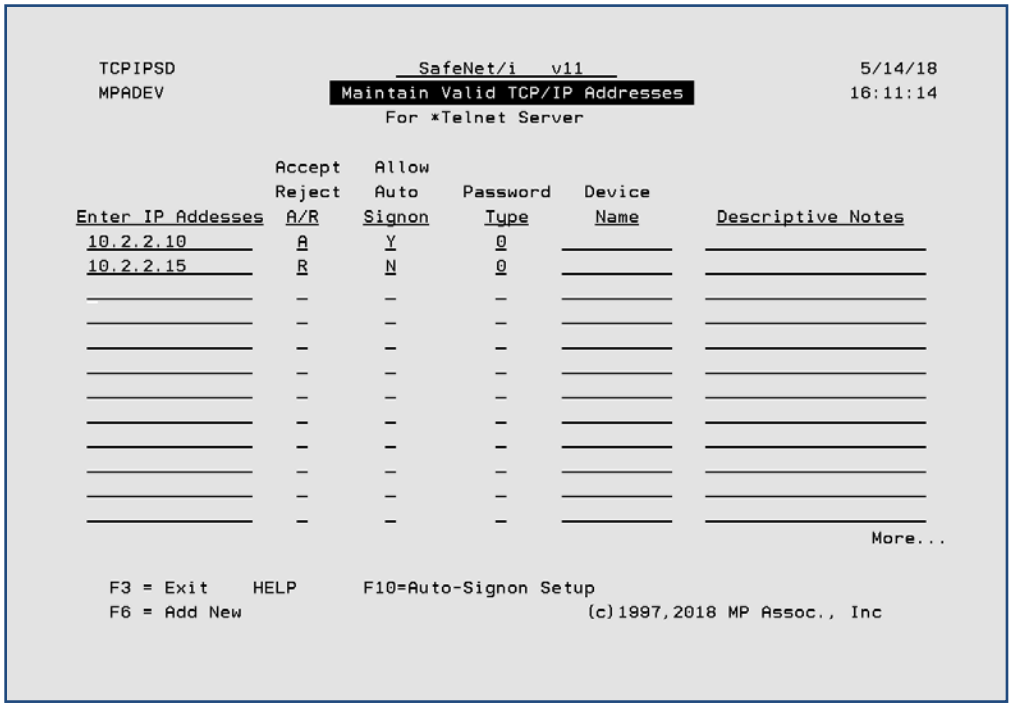
Controlling TELNET Access by IP Address or Restricting Device Naming in TELNET

1. Set the TELNET server to Level 3 using the **WRKSRV** command

2. From the SafeNet/i Main Menu (SN1), select **Option 5 – Work with Server IP Controls** or use the **WRKTCPIPA** command and enter ***TELNET** as the server to control

   OR

   To access this screen using the **WRKSRV** command, place your cursor on the *TELNETON server and press F7.



3. **Enter the IP address** in dotted decimal format (i.e., 10.2.2.10)

   Use wild card options if desired (10.2.2.x)

4. **Enter A or R** to accept or reject the request

   Example 1:

Address	Accept/ Reject
10.2.2.X	A
10.2.2.5	R

In this example any address from 10.2.2.1 through 10.2.2.255 will be accepted, with the exception of 10.2.2.5, which will be rejected.

Example 2:

Address	Accept/ Reject
10.2.2.1XX	A
10.2.2.14X	R

In this example all clients with addresses from 10.2.2.100 through 199 will be accepted, with the exception of clients addressed 10.2.2.140 through 10.2.2.149, which will be rejected.

5. To restrict access to specific device names **enter the device name** in the *Device Name* field with its corresponding IP address.

   You may also use a generic device name by putting an * at the end of the name. If you use a generic name, up to 99 will be used.

   For example:

   An entry of AP* would allow devices to be used as AP01 through AP99. The login process through TELNET will select the next available device name.

To print the control table, select **Option 10 - Print TCP/IP Address Control Listing** on the SafeNet/i Reports Menu, (SN3).

Setting the Required Password Type

This field must be set if the *TELNET Server* is set to Level 3. You must enter the appropriate setting for ALL TELNET IP address controls. As of OS/400 V4R2, only a setting of 0 or 1 is available. A setting of 2, although allowed here for encrypted passwords, is only available at or above system level V5R1.

Valid settings are:

0 – No password was received or validated

1 – A clear text password was received and validated

2 – An encrypted password was received (SSL TELNET requires V5R1 or above)

- For normal TN5250 (TELNET support is VT100) you must set this to 0, since non-enhanced TELNET clients do not support this feature.
- For IBM i Access for Windows TELNET, you can use a setting of 1. However, certain IBM i Access for Windows clients do not support this, so you MUST test this at your location.
- A setting of 0 will always allow the client to connect.

Kerberos

For use with additional external Kerberos authentication you must also use the CHGTELNET command to modify the parameter value *KERBEROS (*YES)* or *(*NO).*

The CHGTELNET command is not found on any **SafeNet/i** menu; you must execute it from the command line.

1. Type **CHGTELNET** and prompt with **F4**

2. Change *KERBEROS* to **YES* or **NO*

Single Sign-on

This feature will let you implement Kerberos single sign-on through **SafeNet/i** without having to use the **SafeNet/i** automatic sign-on feature. This can be helpful if you do not have static IP addresses assigned to local workstations and are implementing Kerberos.

If your Telnet exit point in **SafeNet/i** is set to level 1, then Kerberos single sign-on will work as is and you can stop here.

To enable the function:

1. Disable the **SafeNet/i** automatic sign-on option.

   If you have not enabled it yet, you can bypass this step.

2. To enable the Kerberos feature, run this command from the command line:

   CHGTELNET and prompt with **F4**

   Change *KERBEROS* to **YES*

At this point, the **SafeNet/i** automatic sign-on feature will not work and the data stream necessary for Kerberos single sign-on will work correctly.

If you want to revert back to the way this was set prior to the change, run this command:

CHGTELNET and prompt with **F4**

Change *KERBEROS* to **NO*

Allow Auto Sign-on

1. Use the **WRKSRV** command to set the TELNET server to Level 3

2. Use the **WRKTCPIPA** *TELNET command **to enter the IP address** allowed for auto sign-on

3. **Enter the password type** (0 or 1 is required)

4. **Enter a Y** to allow auto sign-on

5. Use the **WRKSIGNON** command to **enter the IP address, the user profile, library, program or menu** that the client will automatically be signed on to.

For IBM i Access for Windows, you must set the TN5250 session parameters on the client setup to bypass sign-on (see the IBM i Access documentation). This is required if you set the password type to 1 in the WRKTCPIPA setting.

For non-IBM i Access clients (named TELNET VT100 clients) you cannot use a password type of 1, only 0 is supported.

Important:	If you intend to allow auto sign-on, please test this thoroughly, since it could present a security exposure.

Logging of TELNET Sessions

Under normal sign-on conditions (no auto sign-on allowed), each request for a TELNET session is logged into the transaction history file (TRAPOD) by IP address, and a user name of QSYS. QSYS is used because no user profile is associated with the actual TELNET session start request. Each logoff is also recorded by IP address with a user of QSYS.

If you use the auto sign-on feature, the request will be logged with the associated user set up in the Auto Sign-on Control file. Each logoff of a TELNET will also record the transaction with the user profile that was automatically signed on.

When *TELNETON is set to Level 3, only devices with IP addresses already registered will be permitted access to the TELNET server.

Changing the security level of the TELNET server functions takes effect immediately.

Chapter 4 - SETTING UP FTP

Note: When using the FTP Logon Server, **SafeNet/i** can optionally update the user's previous signon date in their user profile. This user profile value is NOT changed under normal IBM i OS processing of FTP logons.

To have **SafeNet/i** update a user profile's previous signon date when the user accesses the system via the FTP server, use the following command:

CHGFTPSET SIGNONDATE(*YES)

Steps to Set up FTP for Normal User ID Access:

1. From the SafeNet/i Main Menu (SN1), select **Option 4 – Additional FTP Settings** or use **CHGFTPSET** command

2. On the Change SafeNet FTP Settings screen, set *Allow normal user IDs to log on the FTP* to ***YES** or use **RLOGON (*YES)** parameter

3. Return to the SafeNet/i Main Menu (SN1) and Select **Option 1 - Server Security Settings** or use **WRKSRV** command

   Locate the *FTP Logon, FTP Client* and/or *FTP Server* points. These must be set to Level 1, 3, or 4. (If you set these to Level 1, you can skip the rest of these steps.)

4. From the User Settings Menu (SN7), select the following options:

   a. **Option 1 - Work with User to Server Security** or use **WRKUSRSRV** command

      The user ID must be authorized to the *FTP Logon server* and one of the following:

      *FTP Client – if an IBM i user will be FTP-ing OUT from your IBM i
      *FTP Server – if an IBM i user will be FTP-ing INTO your IBM i

   b. **Option 2 - Work with User to Object Level Security** or use **WRKUSROBJ** command

      Authorize the user ID to their own current library as specified in the i OS user profile. Enter this library in *User to Object Security*

      Authorize the user ID to any other library or object. Enter these in *User to Object Security*

c. **Option 4 - Work with User to FTP Statement Security** or use **WRKUSRFTP** command

   Authorize the user ID to the FTP statements they will use. Use **F4** for additional user settings if required.

d. **Option 5 - Work with User to CL Command Security**

   Authorize the user to the CL commands they will issue through the *FTP Server*

Set the parameters for **CHGFTPSET** command as follows. The default value is highlighted in **bold**.

Parameter	Screen Selections	Value	Description
RLOGON	Allow Normal USERID FTP Logon	***YES** *NO	This parameter is used to determine whether or not you want regular IBM i user IDs to be able to sign on through the FTP server. If you want only anonymous logons, set this to *NO and FTP for anonymous logons to *YES. If you say *NO to this option (allow normal IBM i user profiles to log on) then only anonymous logons will be allowed/disallowed based on the other parameters. Regular IBM i user IDs will not be accepted for FTP logons.
SIGNONDATE	Update Previous Signon Date	*YES ***NO**	Specifies whether to update the user profile's *Previous Signon Date* when a regular user logs onto the system via FTP. Under normal OS processing, a user's previous signon date is updated only when using 5250 signon.
ALOGON	Allow Anonymous FTP Logon	*YES ***NO**	If you want users to be able to login with the user ID of Anonymous, enter *YES. If you don't want a user to use the FTP Logon User as Anonymous, leave this field *NO.
ALIBR	Anonymous User Library	*Libname*	When you allow anonymous logons, you must restrict those FTP users to a specific library. For security purposes, enter it here AND grant the user profile for anonymous logons object rights to this library or group of objects within this library from the SafeNet/i Main Menu, *Option 3*. For the ANONYMOUS user profile under IBM i, make the 'Current Library' this library name. Also grant the anonymous user ID authority to the FTP server on the Main Menu, *Option 2*. Add the user to the valid FTP statements from the Main Menu, *Option 5*.
GUEST	Allow Anonymous GUEST	*YES ***NO**	To allow Anonymous user logins with the password of GUEST, enter ***YES** here. You can choose GUEST or use an e-mail address.

	Password		*Note*: If you select GUEST, the IBM i still prompts an anonymous user for their e-mail address. **SafeNet/i**, however, will only allow GUEST as the password.
EMAIL	Allow E-mail Address for Password	***YES** *NO	If you allow an anonymous user to accept an e-mail address, **SafeNet/i** will scan the address entered for an embedded "@" (at sign) for validation, and record the address in the log request file for reporting
AUSRPRF	Profile for Anonymous Logons	*profilename*	If you allow anonymous logons, you must specify a **valid, pre-existing** user profile to run anonymous user logons in IBM i when the anonymous user logs on under FTP. In other words, a user would FTP to an IBM i FTP site running **SafeNet/i,** and that FTP site would prompt for a user name. The user keys 'ANONYMOUS' and the IBM i prompts for a password. The user then keys in a valid e-mail address and the IBM i starts a job assigned to the user ID you have specified here. The IBM i job is initiated using this profile and all its associated authorities. Enter the ANONYMOUS profile here, and if you want to assign a password to the profile enter that here also. **It is highly recommended that you leave this as *NONE, *NONE**. If you enter a password here, or use a profile other than ANONYMOUS, you leave a potential security exposure. ***Important:*** When using **SafeNet/i** and allowing for Anonymous, it is **strongly recommended that you create an IBM i user profile called 'ANONYMOUS' with a password of *NONE and *USER for the profile type**. If you do this, no one can use this profile to sign on since the password is set to *NONE.

Anonymous FTP Logon

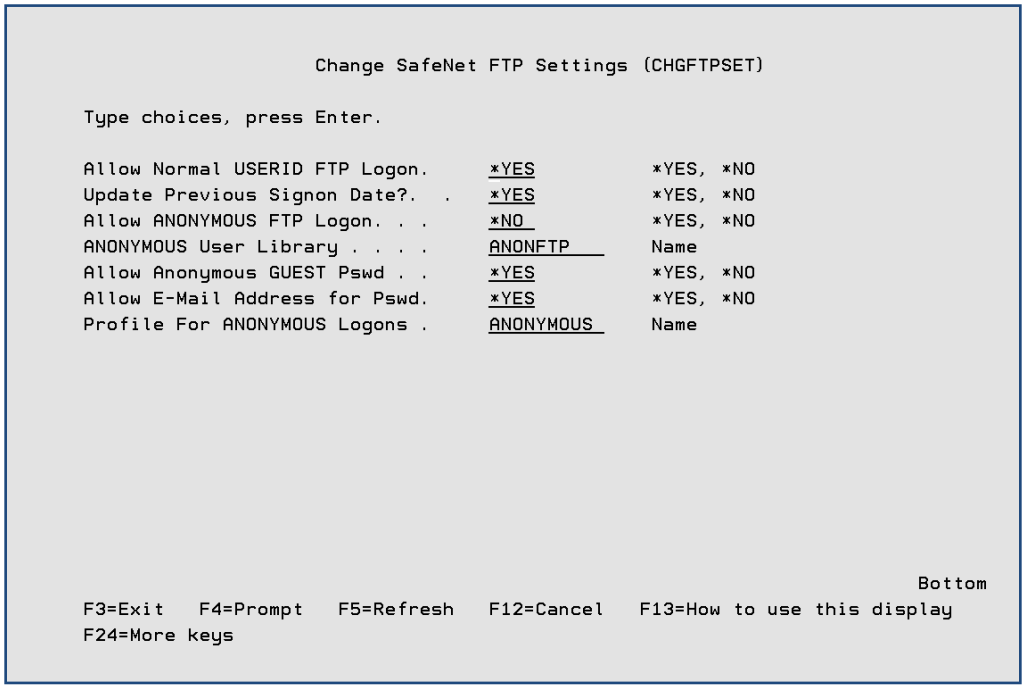
To set up for Anonymous Logon, you must fill in the special FTP settings, and set the *FTP Logon Server* to Level 3 and the *FTP Server Validation* to Level 4.

Follow these steps for FTP:

From the SafeNet/i Main Menu (SN1) select **Option 4 – Additional FTP Settings** or use **CHGFTPSET** command along with **F4**

The *Change SafeNet FTP Settings* screen is displayed.

Press F9 to see all parameters.



Here you will find the special parameters to control login access to the *FTP Servers* from both Anonymous and regular user IDs.

Setting up for ANONYMOUS FTP

Example

1. Create a user profile on the IBM i called ANONYMOUS, with password *NONE and user class *USER, and set the Current Library.

2. From the SafeNet/i Main Menu (SN1), select **Option 4 – Additional FTP Settings** or use **CHGFTPSET** command along with **F4**

3. Set the parameters as follows:

    - If you want to allow IBM i users other than ANONYMOUS to log in through FTP server set parameter **RLOGON** to***YES**
    - Enter **ALOGON(*YES)** to allow ANONYMOUS
    - Enter **the library name** to which the user is restricted in parameter **ALIBR**
    - Enter **the type of password** you want the user to enter - e-mail or Guest, or both
    - Enter **the IBM i user profile** in parameter **AUSRPRF** that was created in Step 1 above (ANONYMOUS)

4. Press **ENTER**

5. Return to the SafeNet/i Main Menu

6. Select **Option 1 - Server Security Settings** or use **WRKSRV** command

7. Locate the *FTP Logon Server* point

8. Change the *FTP Logon Server* to Level 3

9. Change the *FTP Server Validation* point to Level 4. If you want to allow for anonymous logons, you **MUST** set this to Level 4

10. From the SafeNet/i User Settings Menu (SN7), select **Option 1 -Work with User to Server Security** or use **WRKUSRSRV** command

11. Grant the ANONYMOUS user profile authority to the *FTP Logon* and *FTP Server Request Validation* server points.

12. From the SafeNet/i User Settings Menu (SN7), select **Option 2 - Work with User to Object Level Security** or use **WRKUSROBJ** command

13. Grant the ANONYMOUS user authority to the library entered in step 3 above (Current Library), and specifically to any objects within the library. Or, enter *ALL for all object and then assign the required data rights.

If using long path support, use the **WRKUSRPTH** command to enter the correct path or paths for ANONYMOUS.

14. From the User Settings Menu (SN7), select **Option 4 - Work with User to FTP Statement Security** or use the **WRKUSRFTP** command to grant the ANONYMOUS user ID authority to specific FTP commands. Use the additional FTP settings if required or if you want the ANONYMOUS profile initial path to be an IFS directory.

Object Level Security for FTP Client Sessions

To implement this function, set the *FTP Client Request Validation Server Function* to Level 4 in **SafeNet/i**.

When setting up object level security for the *FTP Client Request Validation Server*, remember that the data roles are reversed from *FTP Server Request Validation Function*.

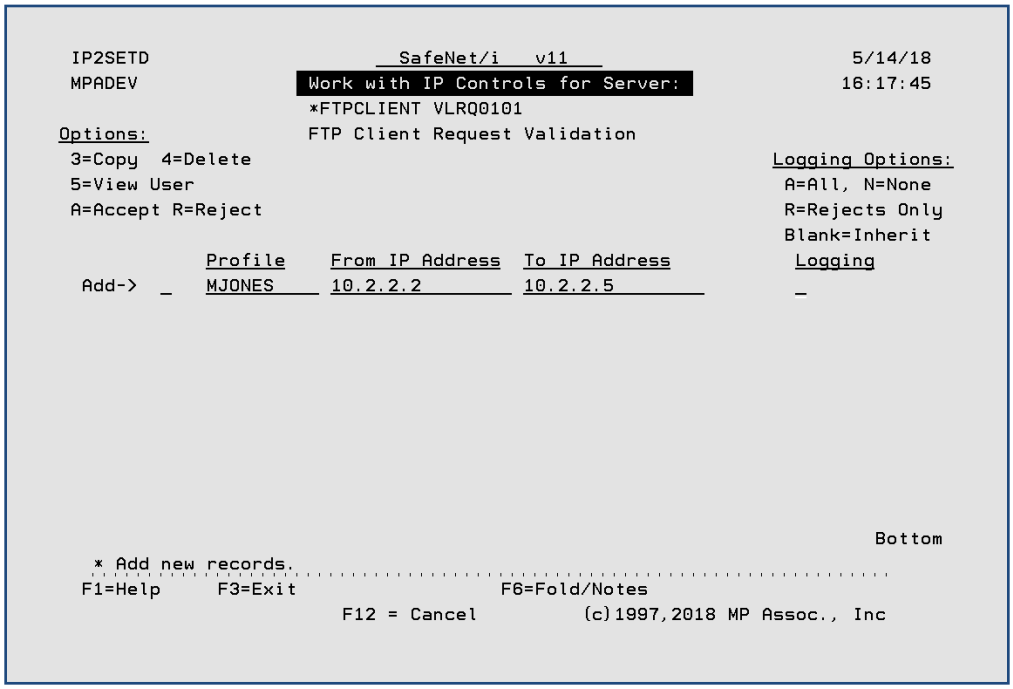
For example, a PUT from the FTP Client requires READ authority to the local object; a GET requires both WRITE and OBJ MGMT authority to the local object.

IP Address Checking for FTP Client Sessions

When the *FTP Client Request Validation Server Function* is set to Level 3 or Level 4, you can control which IP addresses the FTP Client users are permitted to connect to.

To activate IP Address controls for the FTP client, use the WRKSRV command, locate the *FTP Client Request Validation* server and set the '*IPA*' column to *'Y'*.

You can then access the valid IP address table by moving your cursor to the same *FTP Client Request Validation* server line and pressing **F7**, or use the **WRKSRVIP** command using server ID of *FTPCLIENT.



Chapter 5 - REPORTS

SafeNet/i reports are grouped into the following categories:

- **Setup Reports** provide information on server settings, user authorities to servers and to data, etc.

- **Analysis and Usage Reports** provide data on **SafeNet/i** usage – the who, what, where and when information you need to manage your system.

  Analysis reports have been enhanced to include the ability to select specific dates and/or users, including summaries by group profile. You can choose to print the reports or create an OUTFILE of the selected records in a readable format to use for your own ad-hoc reporting.

  You can also use the analysis reports to take advantage of the Auto-enrollment feature of **SafeNet/i**. See the SafeNet/i Implementation Guide for more information.

  The commands for all the usage reports support an archive file and member name. You can run the usage reports from any member of the TRAPARCW file on your system from any library. See the usage report commands PRTxxxUSG parameter ARCMBR

- **Journal Reports** provide additional auditing and controls if you have enabled the Journaling feature in **SafeNet/i**. See Chapter 8 in this guide for details on journaling.

Setup Reports

These reports are accessed through the SafeNet/i Reports Menu (SN3).

Each of these reports can be generated for a selected user or for *ALL users.

1.	**Server Status**	**PRTSRVSTS**
	Prints each Server Function and its security level setting	
2.	**User to Server Security Listing**	**PRTUSRSRV**
	Lists users and the Server Functions they are authorized to	
3.	**User to Object Security Listing**	**PRTUSROBJ**
	Lists users, the libraries and objects they have authority to and the rights the users have to the objects	
4.	**User to SQL Statement Listing**	**PRTUSRSQL**
	Lists all users and the SQL statements they are authorized to use	
5.	**User to FTP Statement Listing**	**PRTUSRFTP**
	Lists all users and the FTP statements they are authorized to use	
6.	**User to CL Command Listing**	**PRTUSRCMD**
	Lists users and the CL commands they are authorized to use	
7.	**User to Long Path Security Listing**	**PRTUSRPTH**
	Lists users and long path names they are authorized to use	
8.	**Print all the User Setup Reports**	**PRTUSRALL**
	Prints ALL the setup reports for a user	
9.	**Print Swap Profiles**	**PRTSWPPRF**
	Prints a list of all swapped profiles	

10. TCP/IP Address Control Listing **PRTTCPIPA**

Lists the TCP/IP address controls for any IP address control entries

11. Print Admins **PRTSNADM**

Lists all of the **SafeNet/i** administrators

12. Print Super Users **PRTSNSUSR**

Lists all of the **SafeNet/i** super users

Analysis and Usage Reports

These reports are accessed through the Network Transaction Analysis Reports Menu (SN4).

Options 2 through 7 on this menu also give you the ability to run auto-enrollment reports and perform the auto-enrollment process.

1. Security Report by User **PRTSECRT**
(Also Batch Transaction Test Report)

Lists each request by user, the Server Functions they are requesting, the server's security level setting, and whether the request was accepted or rejected.

Can also be used as a test report to recheck all historical transactions against current and future **SafeNet/i** settings.

Allows "what if" testing of all historical transactions against current and future control file settings to see if further set up is required.

2. User to Server Usage Report **PRTSRVUSG**

Using historical transactions, lists each server a user has accessed

3. User to Object Usage Report **PRTOBJUSG**

Using historical transactions, lists each LIB/OBJ a user has accessed and the type of access, i.e., READ, WRITE, DELETE

4. User to SQL Usage Report **PRTSQLUSG**

From historical transactions, lists each SQL operation performed by each user.

5. User to FTP Usage Report **PRTFTPUSG**

From historical transactions, lists each FTP operation performed by
each user.

6. User to CL Command Usage Report **PRTCLUSG**

Using historical transactions, lists each CL command issued by each
user.

7. User to IFS Path Usage Report **PRTPTHUSG**

Using historical transactions, lists each path accessed by each user.

8. Print User to IP Address Usage Report **PRTIPUSG**

Prints a list by user of each server accessed, and from what source IP address.

9. Print Executive Summary **SNEXESUM**

Provides a report, either detailed or summary, containing the current status and statistics of **SafeNet/i** on your system.

Using Archived Transactions with the Reports

You can run the Security Report or any of the analysis and usage reports using data that has been purged from the transaction history file or from a converted transaction journal receiver (see Note below). The TRAPARCW file must contain the data you want to process.

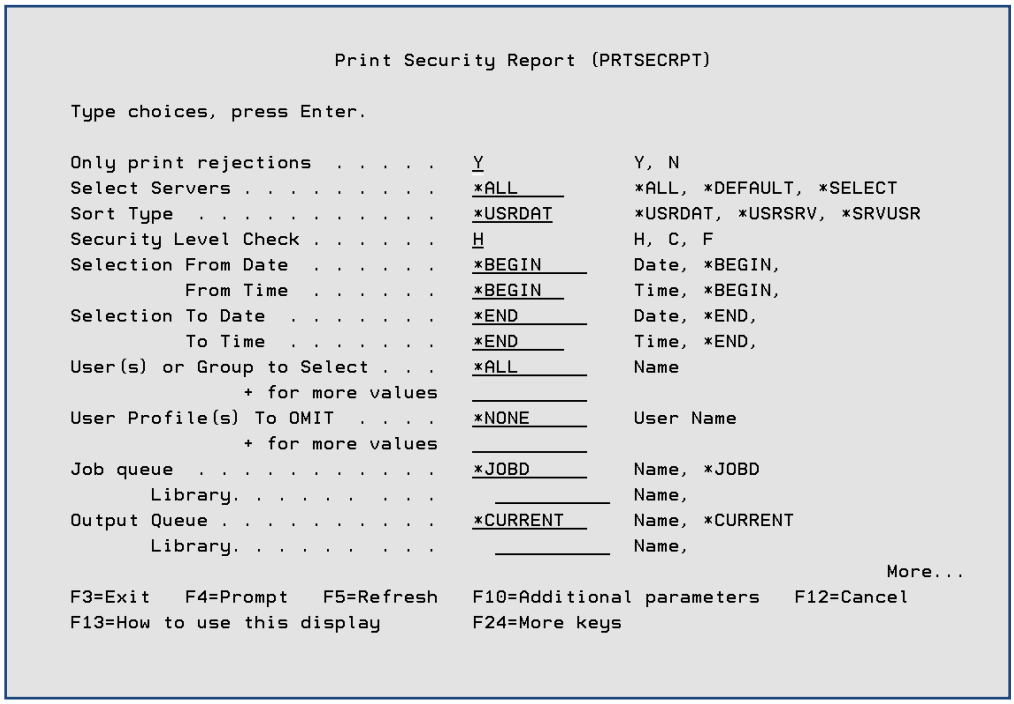
TRAPARCW is a multiple member file where member names are based on the date when the purge was run and records were written to the archive. In order to run the report from the archived data, you will need to know which member name to use.

For example, a member named 'A20090117' contains archive records from the purge that was run on January 17, 2009.

Once you determine which member you wish to use, you can enter that member name in the ACRMBR parameter, available within all the PRTSECRPT and PRTxxxUSG commands and reports.

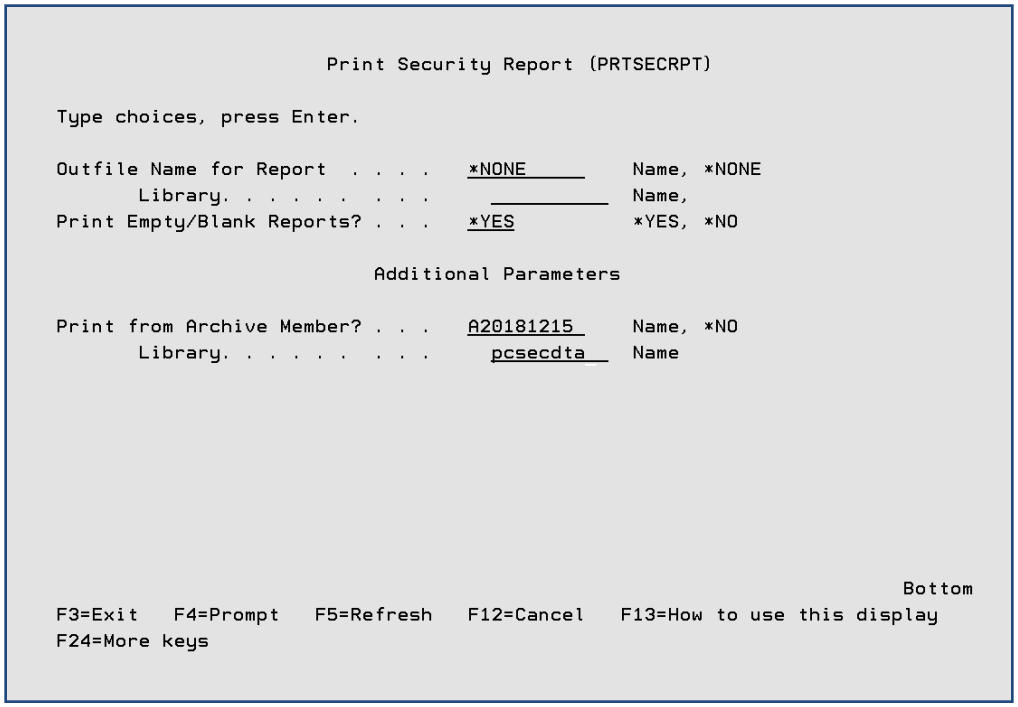
As an example, run the *Print Security Report by User* from the Network Transaction Analysis Reports Menu (SN4), Option 1 or use the PRTSECRTP command.

On the first screen of the PRTSECRPT command, you can enter the *Selection from Date* and/or the *Selection to Date*. If you use an archive member, you can leave the default date range selection as *BEGIN *END and specify the archive member. That will print everything in the member.



```
                    Print Security Report (PRTSECRPT)

Type choices, press Enter.

Only print rejections  . . . . .   Y             Y, N
Select Servers . . . . . . . . .   *ALL          *ALL, *DEFAULT, *SELECT
Sort Type  . . . . . . . . . . .   *USRDAT       *USRDAT, *USRSRV, *SRVUSR
Security Level Check . . . . . .   H             H, C, F
Selection From Date  . . . . . .   *BEGIN        Date, *BEGIN,
          From Time  . . . . . .   *BEGIN        Time, *BEGIN,
Selection To Date  . . . . . . .   *END          Date, *END,
          To Time  . . . . . . .   *END          Time, *END,
User(s) or Group to Select . . .   *ALL          Name
               + for more values   _____
User Profile(s) To OMIT  . . . .   *NONE         User Name
               + for more values   _____
Job queue  . . . . . . . . . . .   *JOBD         Name, *JOBD
       Library. . . . . . . . . .    _____        Name,
Output Queue . . . . . . . . . .   *CURRENT      Name, *CURRENT
       Library. . . . . . . . . .    _____        Name,
                                                                  More...
F3=Exit   F4=Prompt   F5=Refresh   F10=Additional parameters   F12=Cancel
F13=How to use this display        F24=More keys
```

Page down to the second screen and use **F10** to locate the *Print from Archive Member* parameter



Enter the member name containing the archive data you want to include in the report.

To report on a sub-set of what's in the member, you can specify a *FROM* date and a *TO* date in addition to the member name. If you do this, make sure your date selection range includes the dates in the member, or you will not get any results.

Note: You can also use this option to print a report from Converted Transaction Journal entries. You must first use the CVTTRNJRN command and copy the result data set from the command run to a new archive member. See CVTTRNJRN command in *Chapter 7* of this guide.

Chapter 6 - TESTING YOUR SECURITY SETTINGS

Once you have planned your server function Security Level settings, **SafeNet/i** gives you a method to test the settings to make sure they will provide the level of security you anticipate. It acts as a "what-if" tool to verify the effect your settings will have before you actually turn on access control.

If you have been logging network requests with **SafeNet/i** you can, at any time, run each historical record through the security checking routines and receive a result of 'ACCEPTED' or 'REJECTED' based on current or future **SafeNet/i** settings.

This allows you to make changes to the server function Security Level, the user-to-server settings, or data rights authorities, and using previously logged requests, tell immediately if your settings will give the desired response to the clients.

To test your collected transactions use one or both of the following, found on Special Jobs Menu (SN2):

- **Option 4** - *On-line Transaction Testing* (PCTESTR) – the preferred method
- **Option 2** – *Print Transaction Security Report* in test mode

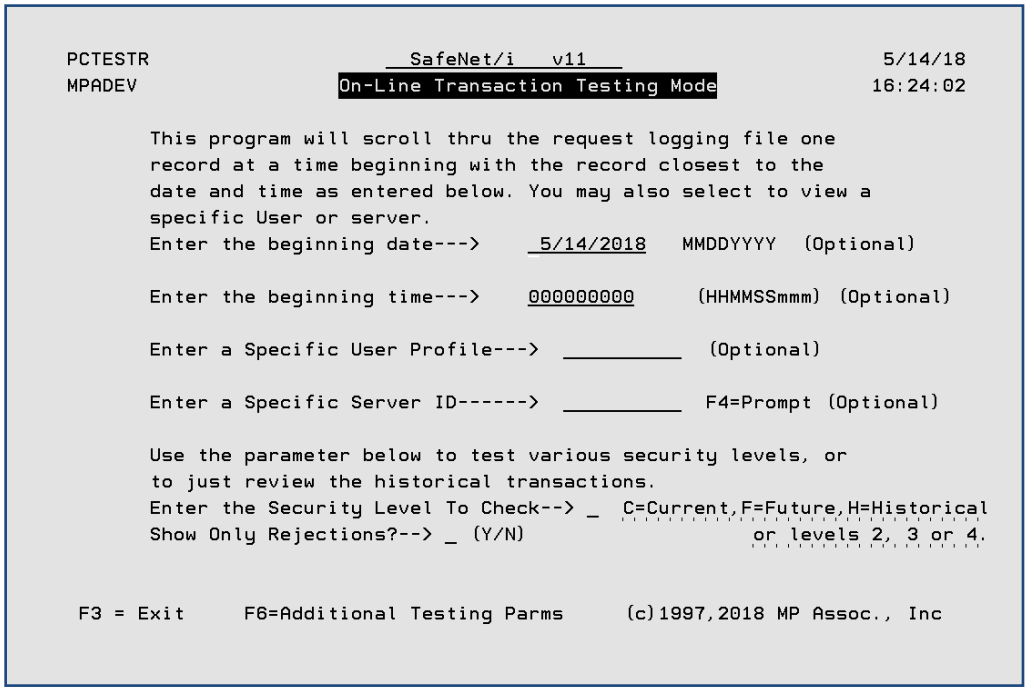
Testing SafeNet/i settings based on your historical data with the on-line transaction tester

This is the preferred method if you would like immediate feedback.

1. From the SafeNet/i Main Menu (SN1) select **Option 22 - Special Jobs Menu** (SN2)

2. Select **Option 4 - On-Line Transaction Testing** or use **PCTESTR** command

   The *On-Line Transaction Testing* screen will appear.



If you want, you may enter a beginning date and time, or the user or server ID, then enter the desired security level to test against your logged transactions.

If you do not enter a date and time, you will be shown requests beginning with the first available record in the file.

3. In the *Security Levels to Check* field:

   Type C (Current) to test transactions with your **present SafeNet/i** Server Security Levels

   Type H (Historical) to review the actual status received when the transaction was logged; no new 're-testing' is performed.

   Type F (Future) to test transactions with your **future** Server Security Levels. This will test each selected transaction against the future security setting to determine if your security control files are set up correctly.

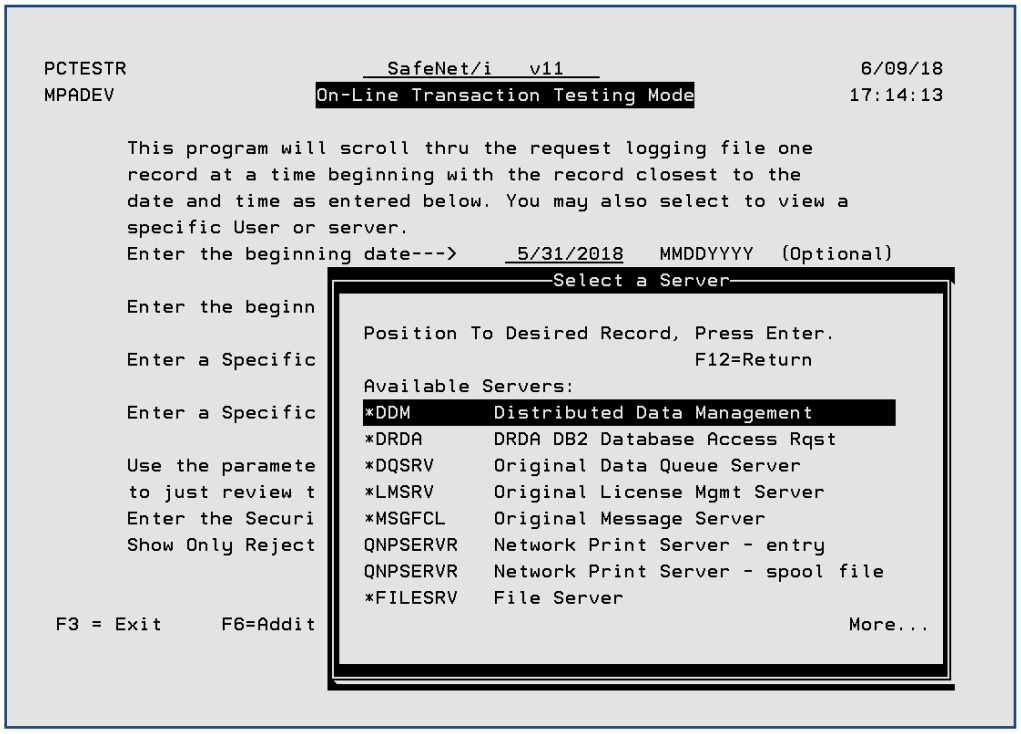
   You may also choose to test a specific security level using a **2, 3** or **4** in this field.

   If you want to test your Time-of-Day controls, **type Y** in Time of Day Check.

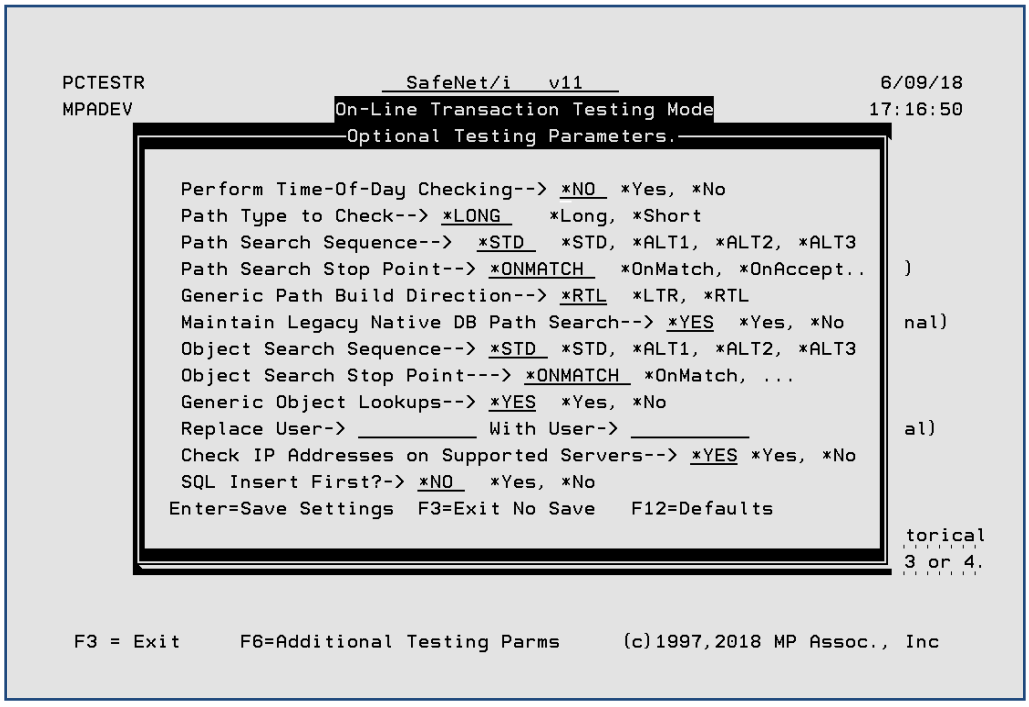
   If you want to see only rejected requests, **type Y** in *Show only Rejections*.

Important:	If you elect to display only rejections, be advised that this may seriously impact interactive performance. Consider using the *Batch Transaction Test Report* as an alternative.

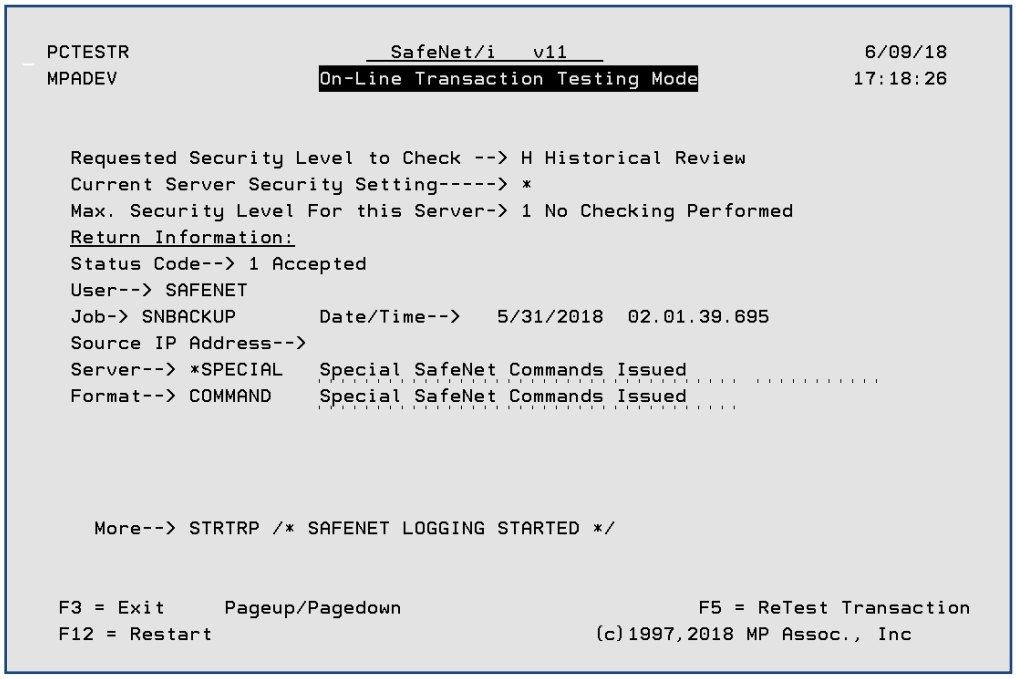
Use **F4** to display a list of server functions



Use **F6** to set additional testing options as you require



When you press **ENTER** and a transaction that meets your selection criteria is found, the *On-Line Transaction Testing Mode* screen is displayed.



This describes:

- The Requested Security Level setting to check
- The current Security Level for the server
- The maximum security level setting for this server
- The user making the request
- The group profile related to the user
- The date and time of the request
- The IBM i server job name the request came from
- The format
- The server function receiving the request
- Data used, if any
- Whether the request was accepted or rejected, and the reason for the rejection
- If it is displayed as a valid function key, you can **press F10** to view even more detail

- Additional command keys are shown when rejections are displayed. These additional command keys will allow you to work directly with the appropriate user setting based on the rejection code.

4. You can roll up or down to scroll backward and forward, or you can press **ENTER** to scroll forward to the next record in the logging file.

   At any time you can press **F12** to return and enter a new starting date and time, server or user, or change the Security Level to check.

Note: Use this tool to develop and test your initial security settings prior to putting them into production. You can go back and change the different **SafeNet/i** parameters to see how they affect each transaction.

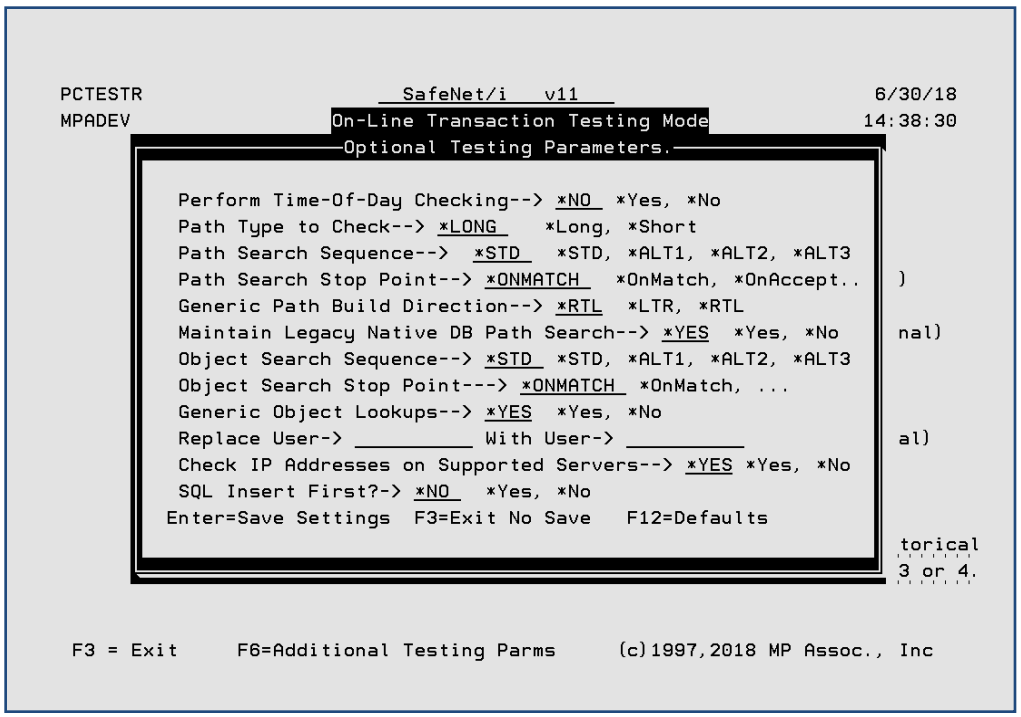
Use the additional command keys shown in rejections to immediately make changes to user settings.

*Testing transactions against *TESTUSER Rule set*

With release level 10.15 (PTF level PCPTF1015), **SafeNet/i** adds a new option when doing on-line transaction testing. You can set up a set of rules in **SafeNet/i** using a special profile named *TESTUSER, then test transactions against those rules. This will let you test a set of rules before encoding them into **SafeNet/i**.

To test rules against the *TESTUSER profile:

1. Set up the rules you want to use with that special user profile
2. Start the On-Line Transaction Testing process (Option 4 on the SN2 menu) and use the F4 function key to access the selection screen
3. On the Optional Testing Parameters display, you will see a new line at the bottom of the panel



When running your test, you can tell the program to substitute the *TESTUSER settings for a current user profile. When the program runs, the rules recorded for *TESTUSER will be used.

Batch Transaction Test Review/Report – Security Report by User

You can use this batch report to test all the historical transactions through current and future control file settings.

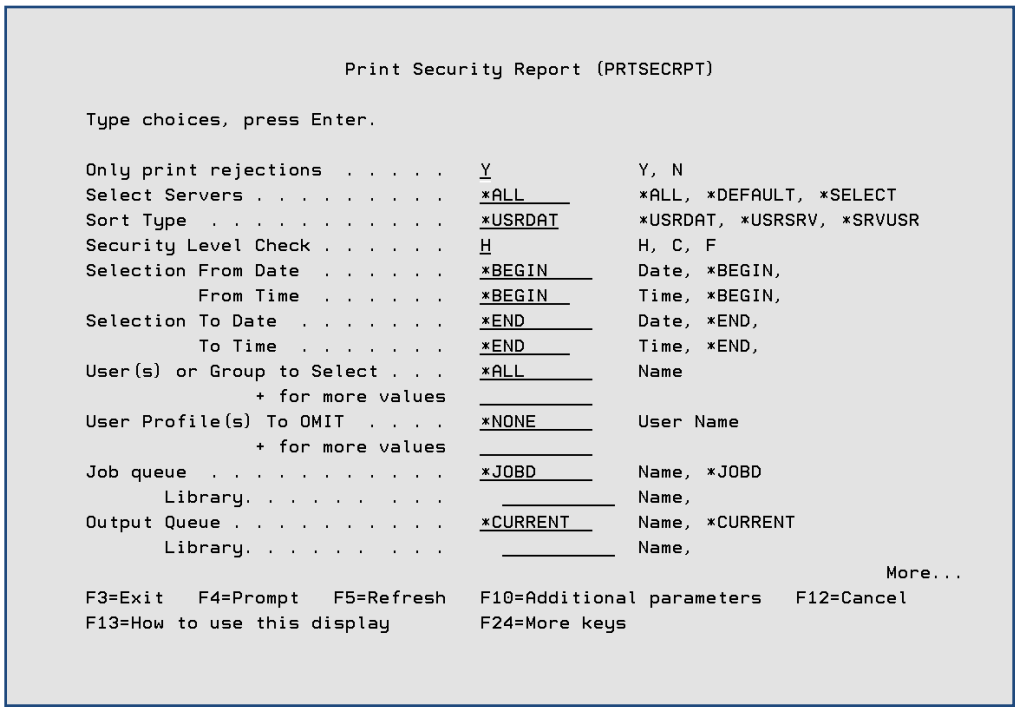
With this report you can make changes to control files, then re-run all the historical transactions back through a security check process to determine if further security set up is required.

If you want to see the same servers each time you run this security report, you can customize it by using Special Jobs Menu (SN2), **Option 1 - Select Default Servers for Security Report**. This option lets you select the specific servers you are interested in, then makes them the default each time you run the report.

This report is available from the Network Transaction Analysis Reports Menu (SN4), **Option 1 - Print Security Report by User** or the Special Jobs Menu (SN2), **Option 2 – Print Transaction Security Report**.

You can also use the **PRTSECRPT** command. Use F4 to prompt for parameters when entering the command.

Use F9 to display all parameters



```
                        Print Security Report (PRTSECRPT)

Type choices, press Enter.

Only print rejections  . . . . .   Y             Y, N
Select Servers . . . . . . . . .   *ALL          *ALL, *DEFAULT, *SELECT
Sort Type  . . . . . . . . . . .   *USRDAT       *USRDAT, *USRSRV, *SRVUSR
Security Level Check . . . . . .   H             H, C, F
Selection From Date  . . . . . .   *BEGIN        Date, *BEGIN,
          From Time  . . . . . .   *BEGIN        Time, *BEGIN,
Selection To Date  . . . . . . .   *END          Date, *END,
          To Time  . . . . . . .   *END          Time, *END,
User(s) or Group to Select . . .   *ALL          Name
               + for more values   _____
User Profile(s) To OMIT  . . . .   *NONE         User Name
               + for more values   _____
Job queue  . . . . . . . . . . .   *JOBD         Name, *JOBD
       Library. . . . . . . . . .    _____        Name,
Output Queue . . . . . . . . . .   *CURRENT      Name, *CURRENT
       Library. . . . . . . . . .    _____        Name,
                                                                  More...
F3=Exit   F4=Prompt   F5=Refresh   F10=Additional parameters   F12=Cancel
F13=How to use this display       F24=More keys
```

On the *Print Security Report* screen fill in the following:

1. Decide if you wish to print all transactions or only those that were rejected.

   Enter Y for only rejections (the default) or **N** to print all transactions

   Printing only rejections will reduce the size of the output report

2. Select the servers to include in the report

   - ***ALL** - all servers
   - ***DEFAULT** - based on servers that were selected on the Special Jobs Menu (SN2), **Option 1 - Select Default Servers for Security Report**
   - ***SELECT** - displays a list of servers to choose from

3. Select your preferred *Sort Type*

   - ***USRDAT** - by user, then by date within user
   - ***USRSRV** - by user, then by server within user
   - ***SRVUSR** - by server, then by user within server

4. Select the correct *Security Level Check* value

   - **H** = Historical Review only

     Show status at actual time of client request

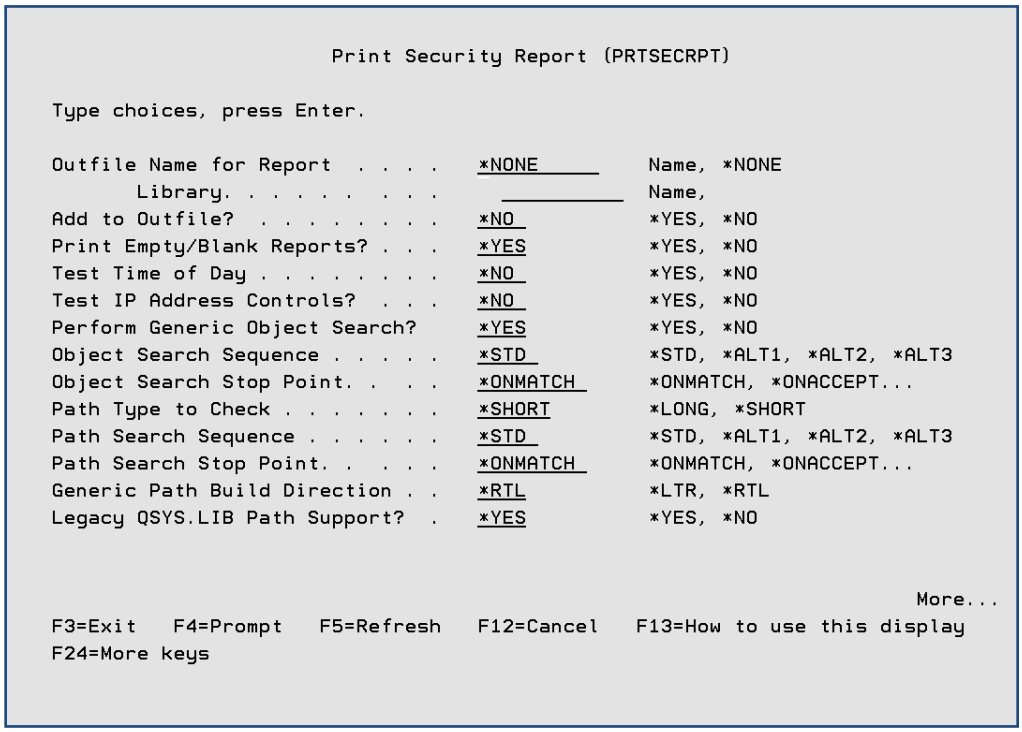
   - **C** = Re-check all transactions against current server settings
   - **F** = Re-check all transactions against the *Future* server settings

5. Select these optional parameters

   - Enter a start date and time or accept the default value
   - Enter an ending date and time or accept the default value
   - Enter a specific user ID or *ALL

Page Down to view additional parameters, or if you would like to print the report to an output file.

You can override any of your environment defaults to test various settings, if desired.



6. Decide if you want to test the time of day controls

   Enter ***YES** or ***NO** for the *Test Time of Day* parameter

7. Decide if you want to test IP Address controls

   Enter ***YES** or ***NO** for the *Test Time of Day* parameter

When you have finished making your selections, **ENTER** to submit the report to batch.

Recommended approach to testing

A recommended approach to using the *On-Line Transaction Testing* program is:

1. Set all of the important server functions to Security Level 1, Log All. This will log all requests without affecting any users. Set your *Future Server* settings or use the pre-loaded recommended values.

   Turn off logging on the non-critical servers to limit logging.

2. Collect your requests and print out the *Security Report by User* from the Network Transaction Analysis Reports Menu (SN4). Select *Historical Review*.

3. Set up your *User to Server* and *User to Object, SQL, FTP, CL,* etc. tables if you wish to go to Security Level 4.

4. You can use several tools provided with **SafeNet/i** to test your security settings. Use the *Security Report by User* or the on-line version, *PCTESTR*. These can be run to test the collected transactions against the current or future server settings. (Use Future Setting)

5. Use *Show only Rejections* on PCTESTR and *Print only Rejections* on the batch report. If your settings are correct for the Security Levels being tested, you should receive messages only for transactions that would be rejected.

   If any of the requests are rejected, check the message description and make the appropriate corrections to the **SafeNet/i** settings. Try the transaction again.

Note: If you request Level 4, you may only get a security check to Level 3 since some servers support only up to Level 3. This is noted on each record in the *On-Line Transaction Testing* as "Level Requested", "Level Checked" and "Max Level".

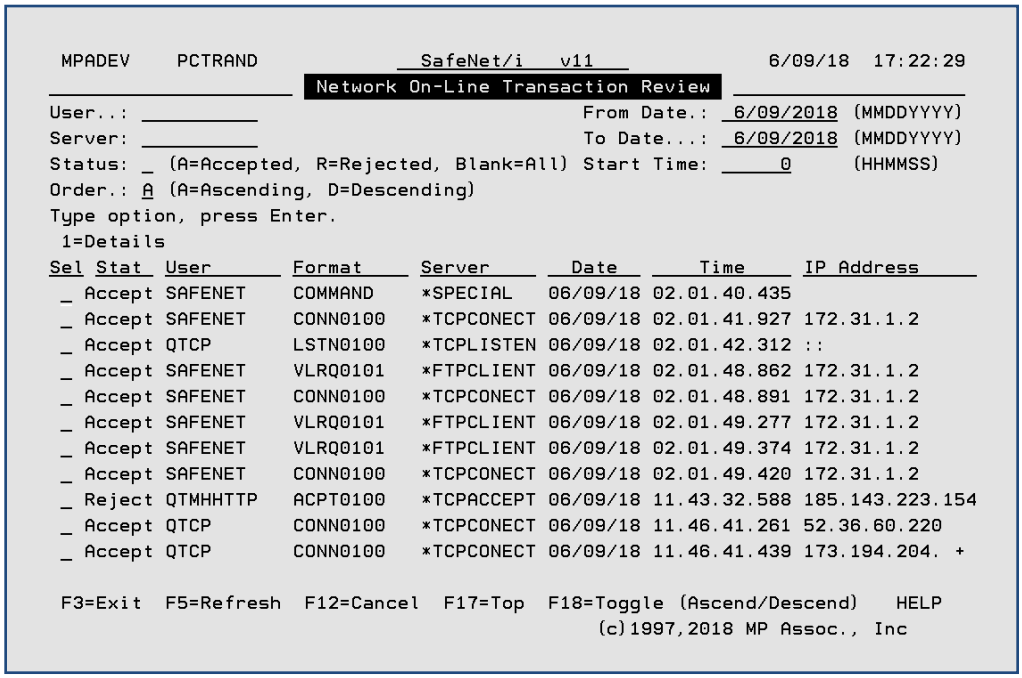
PCREVIEW

Use the **PCREVIEW** command or **Option 3 - On-Line Transaction Review** from the SafeNet/i Special Jobs Menu (SN2) to review each transaction logged by **SafeNet/i**.

This displays the historical transactions only. No testing can be performed using this tool.

1. Type **PCREVIEW** and press **ENTER**.

   The *Network On-Line Transaction Review* screen is displayed and the **HELP** key is active.



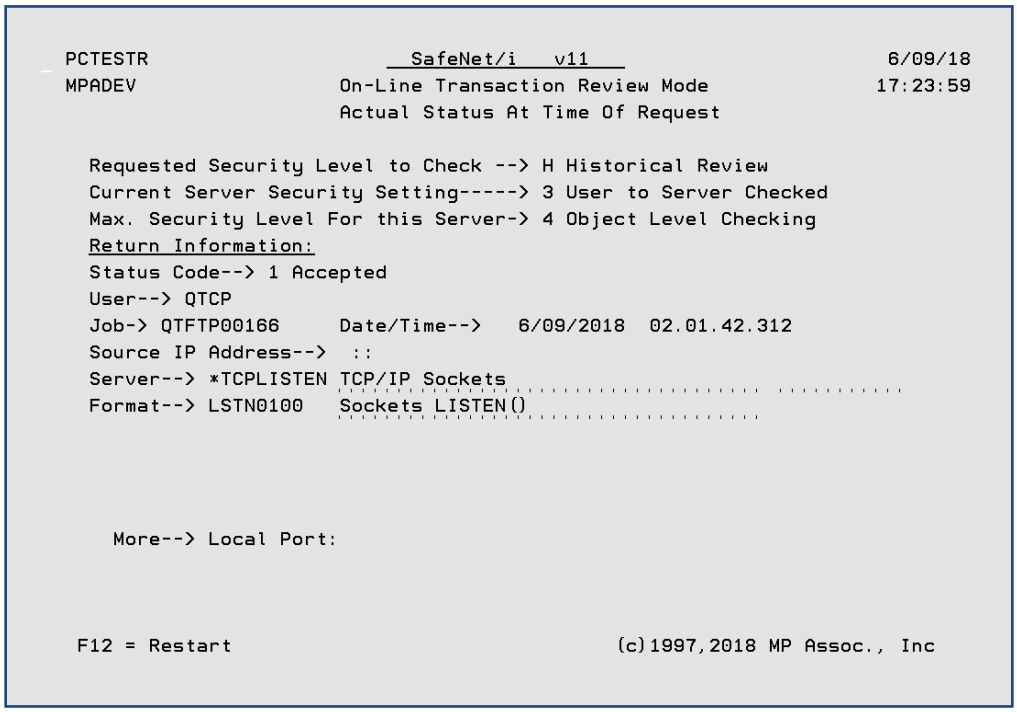
2. Using the fields at the top of the screen, you can select only the records you wish displayed. You can select by user, server, status, from and to date.

   For example, to review only rejections for today:

   - **Type R** in the Status field
   - By default, today's date is entered for you

3. To obtain additional information about a particular record, **type a 1** next to the record and press **ENTER**.

The *On-Line Transaction Review Mode* screen is displayed, supplying more detailed information about the specific transaction.



You can use the **ROLL UP/ROLL DOWN** keys to scroll through the sequential transactions or **press ENTER** to return to the PCREVIEW sub-file screen.

If you selected only a specific user or server to be displayed in PCREVIEW, you will find that only those records meeting the selection criteria will be displayed as you scroll through the file with the on-line transaction test program.

Chapter 7 - USING ALTERNATE VIEW USER SETTINGS

New for 2024

We have enhanced the management tools within SafeNet/i to include a new way to view and manage the access to system objects that SafeNet/i can control.

The Alternate View User Settings Menu (SN8) provides the option to view specific servers, objects, etc. and see **WHO** has access to them and **HOW** they have access.

The three parts of this enhancement and how to use them are outlined here.

First, SN8 Menu Options 1 – 6 provide the administrator with a way to see a list of already created authorization entries within SafeNet/i for objects, commands, IFS paths, SQL verbs, etc. and then see all the users who have that specific authorization entry and what specific authority to the object, command, etc. a user has.

For example, you can list all the users who have:

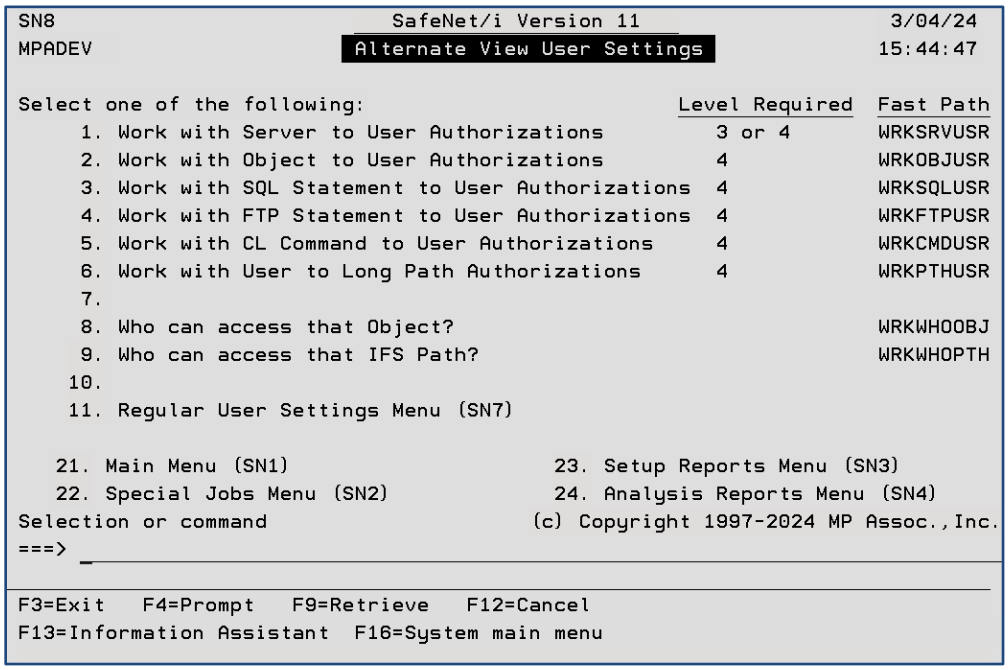
- *ALLOBJ/*ALLLIB object authority
- SQL SELECT verb authority
- a specific IFS path entry

Second, SN8 Menu Options 8 – 9 allow you to enter the name of any object or IFS path on the system and get a list of users WHO CAN access the object or IFS path. Once you see the list of users who can access the object or path, you will also see what their authority to the object or path is - read, write, delete, etc.

This will be a complete list of any user that has any kind of authority entry within SafeNet/i to the system object or path.

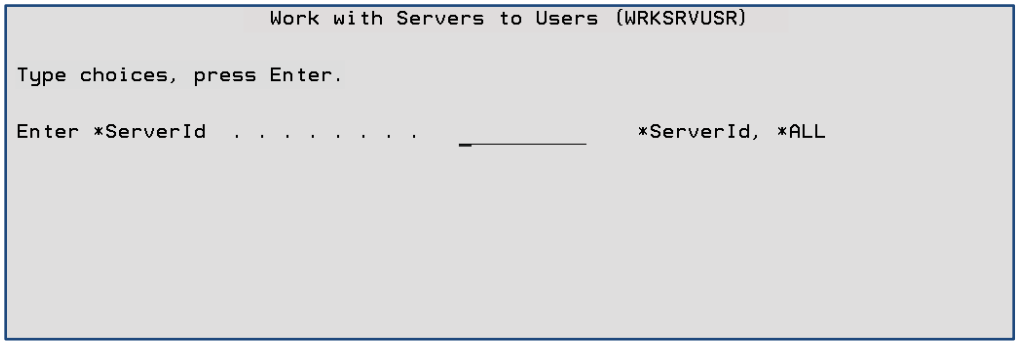
Third, SN8 Menu Options 8 – 9 allow you to see HOW a user can get access to the object or IFS path using which server exit points. Using these menu options, once you see a list of users that can access the system object, you can select to display a list of the server exit points that the user has access to in SafeNet/i.

From the SafeNet/i Main Menu (SN1) select **Option 28 - Alt User Settings Menu** to navigate to Alternate View User Settings Menu (SN8)



WHO has access to specific Servers

Use **Option 1 – Work with Server to User Authorizations** or use the **WRKSRVUSR** command



Key in the ServerID or **ENTER** to search for the ServerID

Key in the ServerID or scroll through the list and select the one you want

```
WRKSRVU1R                      SafeNet/i    v12                      4/01/24
MPADEV                  Maintain Authorized *Servers                 13:48:11

ServerID: *SIGNON    TCP Signon Server


Options: 1=Add 2=Edit User 4=Delete
   Position to User: __________
  Opt  Authorized Users
   _   __________   <--Add New
   _   *PUBLIC      *PUBLIC Authorities
   2   GENERAL      test sFTP user
   _   MJONES       HR JONES
```

These are the users who have access to this ServerID

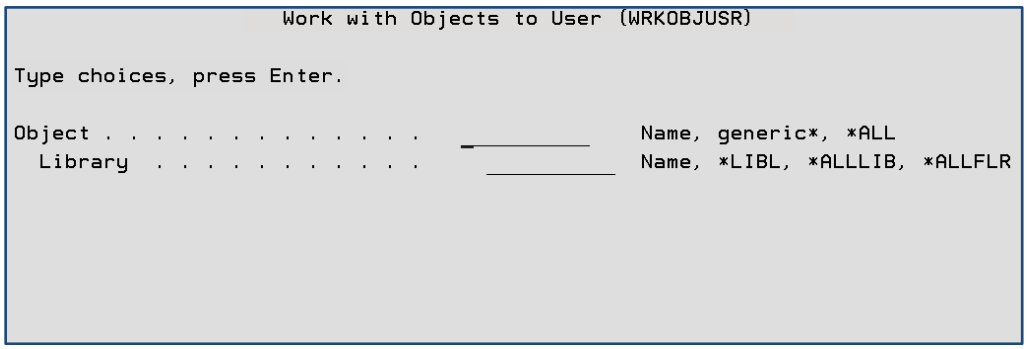
From here you can use *Options* to work with the users

```
WRKUSRV1R                      SafeNet/i    v12                      4/01/24
MPADEV          Work with User to Server Authorizations             13:50:46
          User-> GENERAL    test sFTP user
Options:           Below are the entries affecting this user.
 2=Edit User  4=Remove Entry
 A=Accept   R=Reject

                                                                Logging   Run
Opt Profile       Server Description                             Level    Pty
 2  GENERAL    FTP Server Request Validation *FTPSERVER          A *All    __
 A             FTP Server Logon *FTPLOGON3:300                   A *All    __
 R             TCP Signon Server *SIGNON                         A *All    __
    Group(s):
              ----------------------
```

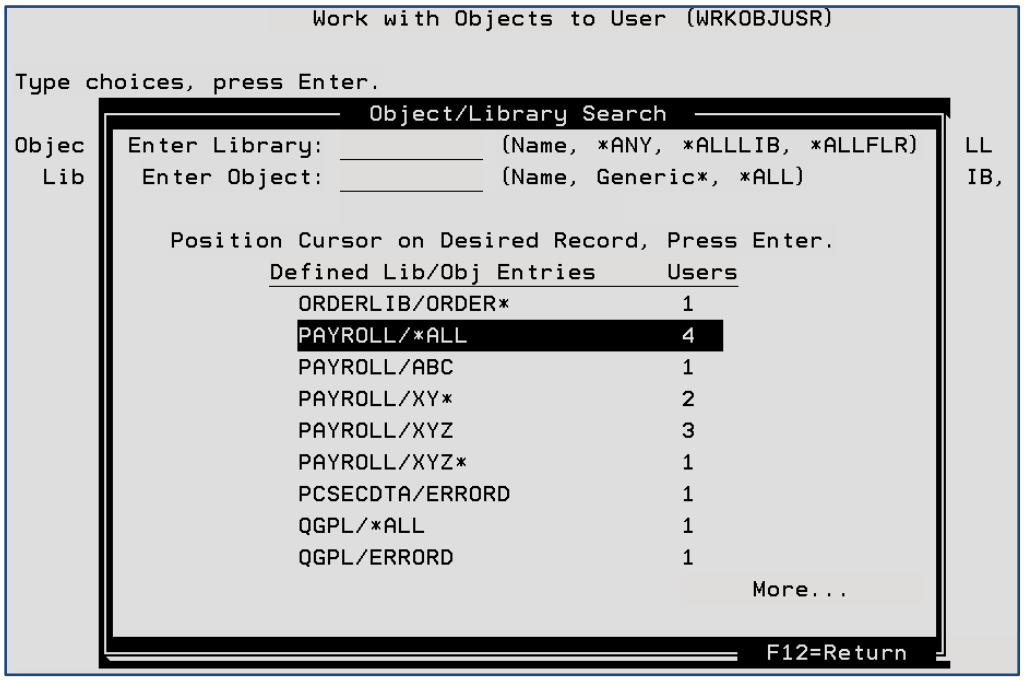
```
WRKUSRV2R                      SafeNet/i    v12                      4/01/24
MPADEV                  Maintain User To Server Security             13:52:02
          User-> GENERAL    test sFTP user

Options:
 A=Accept
 R=Reject

                                                          Logging    Job Run
Opt    Server Text Description                            (A,R,N)    Priority
 _   Exit point for APIs that accept socket connections *TCP  _          __
 _   Spooled file security exit point *SPLAUT 200            _          __
 _   Original File Transfer Function *TFRFCL 100            _          __
 _   Telnet Device Initialization *TELNETON 100            _          __
 _   FTP Client Request Validation *FTPCLIENT 100          _          __
 A   FTP Server Request Validation *FTPSERVER 100          A *All     __
 A   FTP Server Logon *FTPLOGON3 300                       A *All     __
 _   REXEC Server Request Validation *REXSERVER 100        _          __
 _   REXEC Server Logon *REXLOGON2 300                     _          __
 _   TFTP Server Request Validation *TFTPSRVR 100          _          __
```

WHO has access to specific Objects

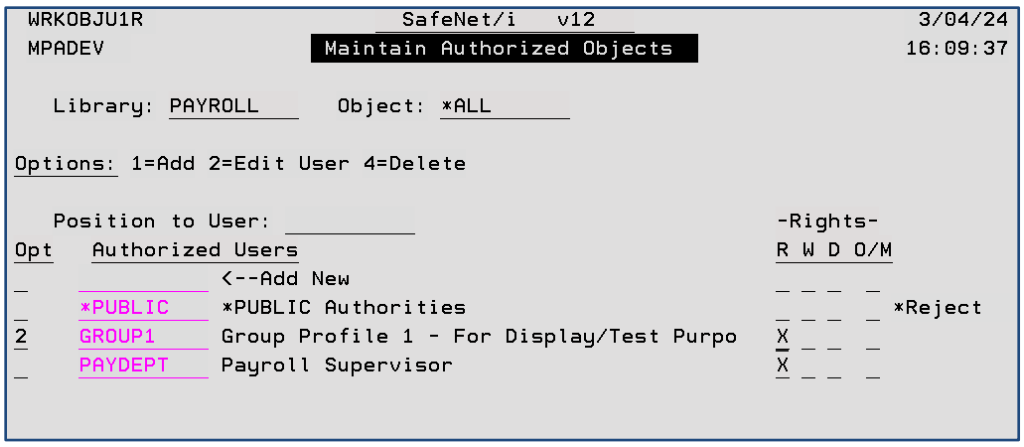
Use **Option 2 – Work with Object to User Authorizations** or use the **WRKOBJUSR** command



Key in the object information or **ENTER** to search for the object



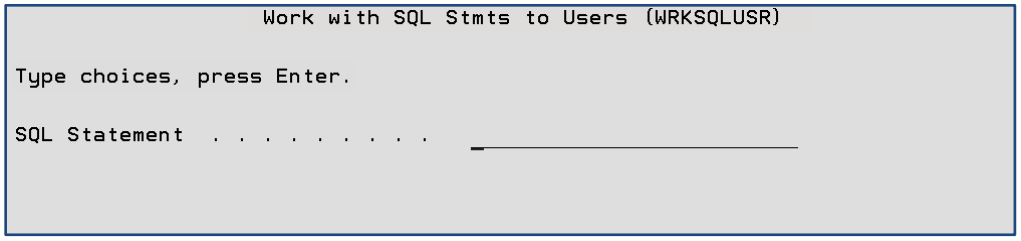
Key in the object information or scroll through the list and select the one you want



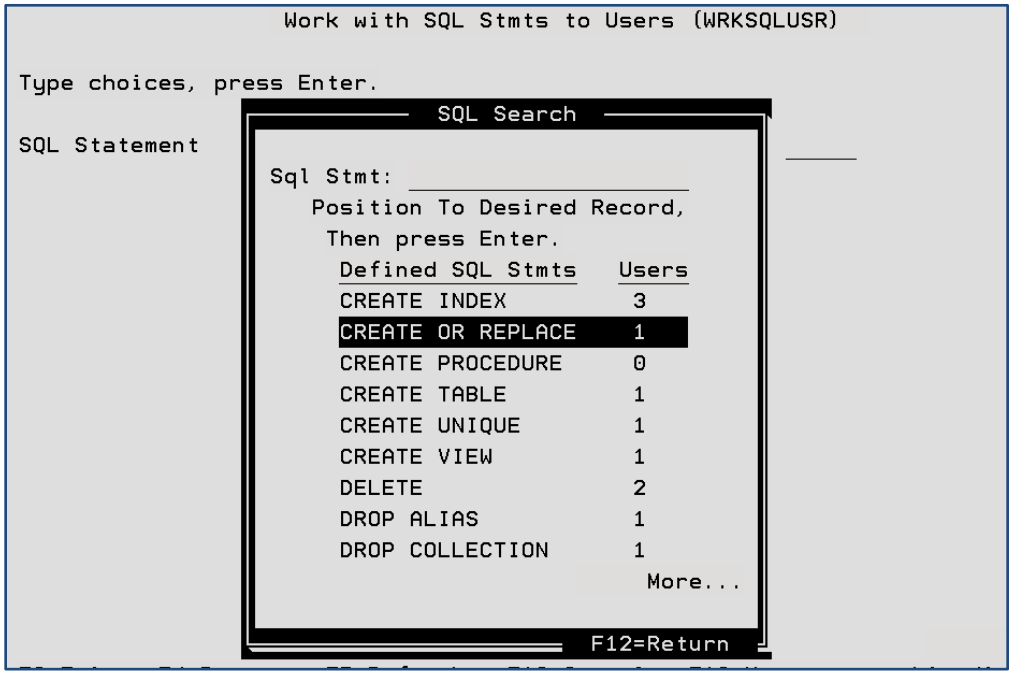
From here you can use *Options* to work with the users

WHO has access to specific SQL statements

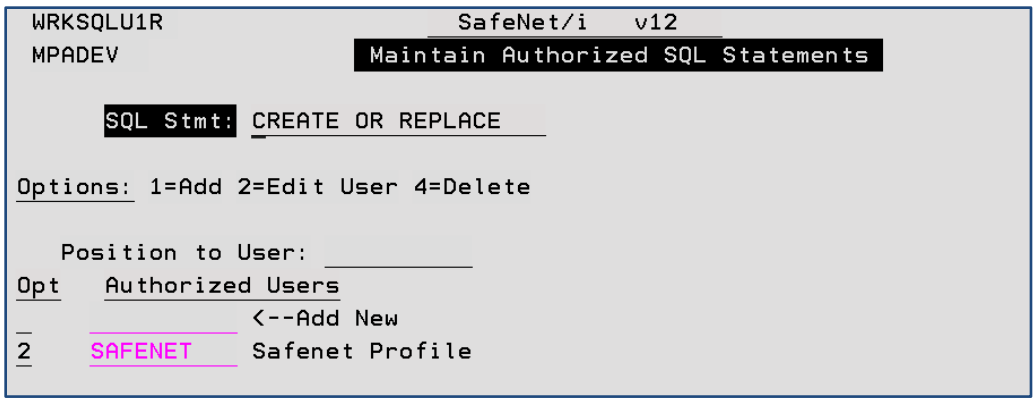
Use **Option 3 – Work with SQL Statement to User Authorizations** or use the **WRKSQLUSR** command



Key in the SQL statement or **ENTER** to search



Key in the statement or scroll through the list and select the one you want

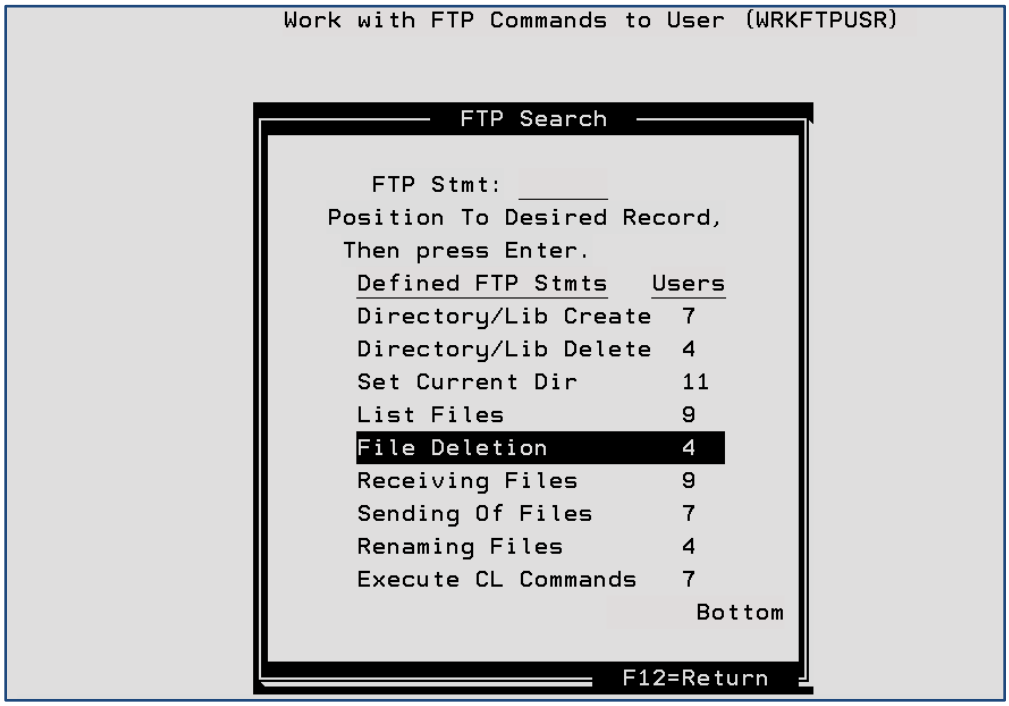


From here you can use *Options* to work with the users

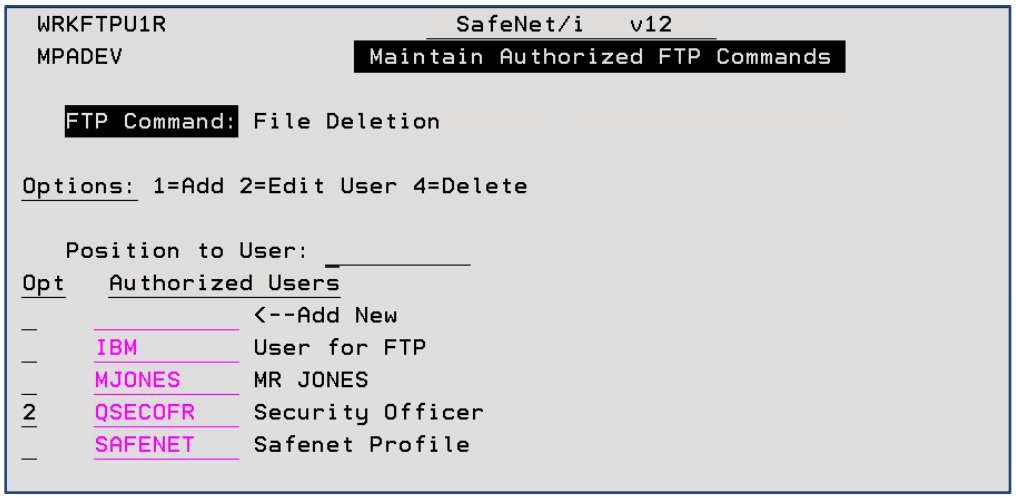
WHO has access to specific FTP commands

Use **Option 4 – Work with FTP Command to User Authorizations** or use the **WRKFTPUSR** command

ENTER to search for the FTP command



Key in the command or scroll through the list and select the one you want

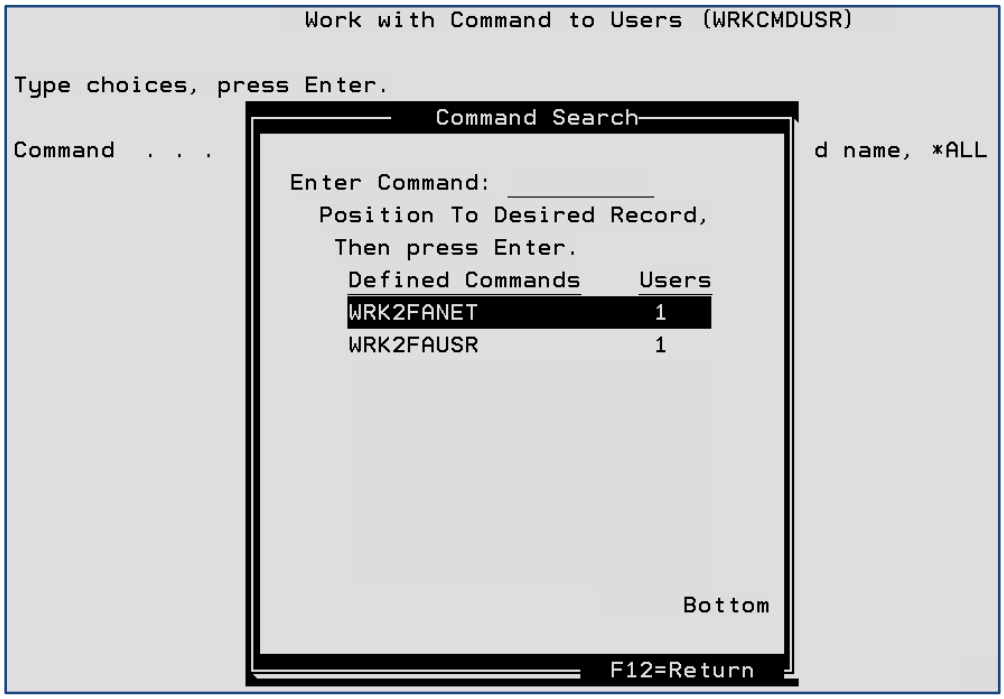


From here you can use *Options* to work with the users

WHO has access to specific CL Commands

Use **Option 5 – Work with CL Command to User Authorizations** or use the **WRKCMDUSR** command

ENTER to search for the CL command



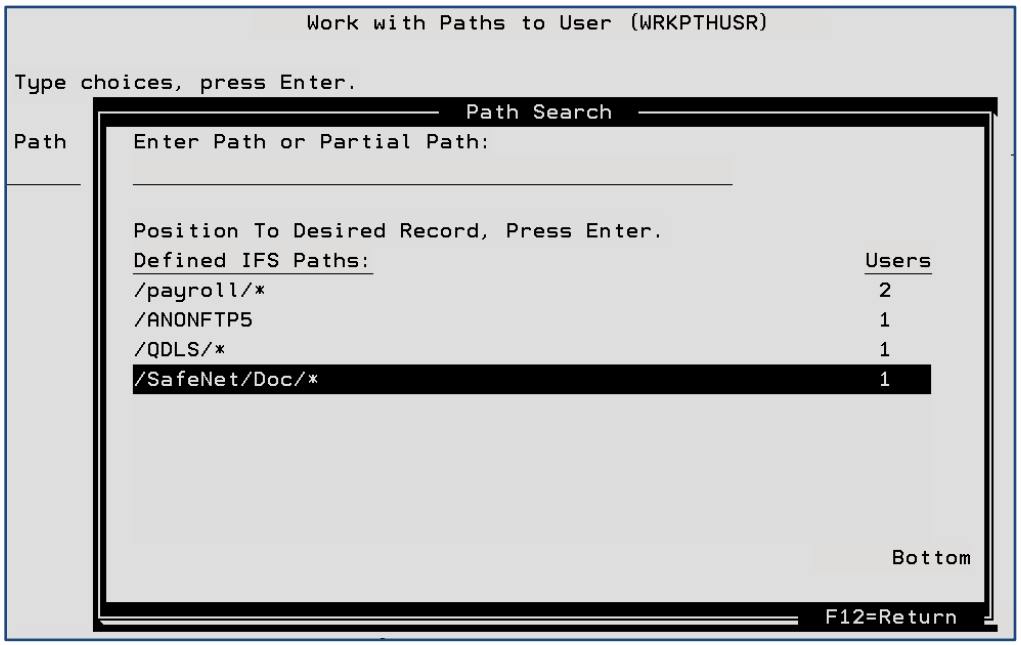
Key in the command or scroll through the list and select the one you want

From here you can use *Options* to work with the users

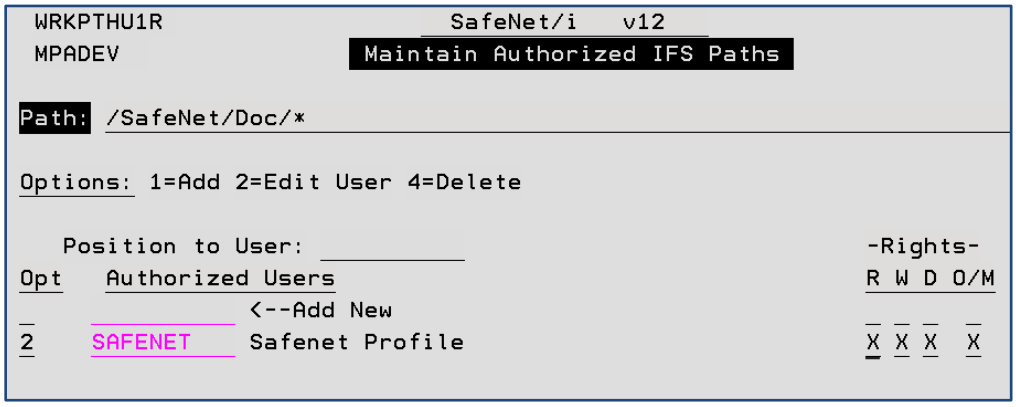
WHO has access to specific Paths

Use **Option 6 – Work with Path to User Authorizations** or use the **WRKPTHUSR** command

Key in the path or **ENTER** to search for the path



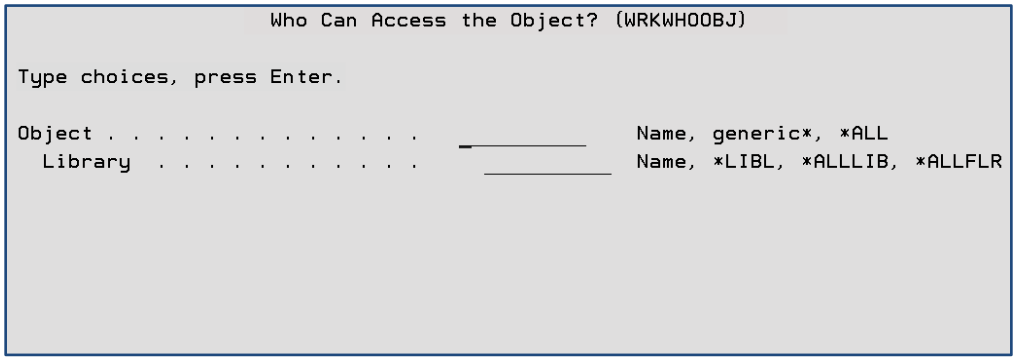
Key in the path or scroll through the list and select the one you want



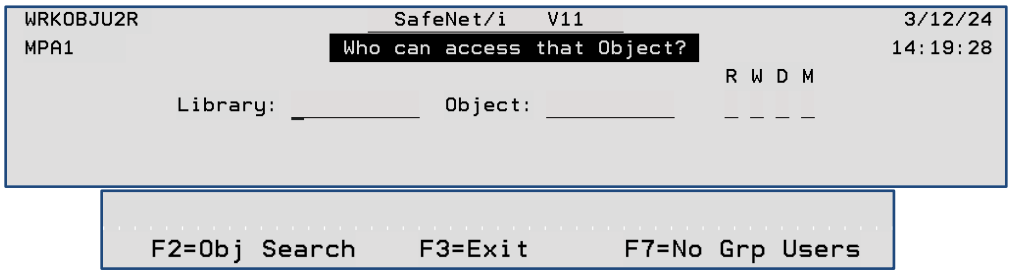
From here you can use *Options* to work with the users

WHO can access a specific Object and HOW do they access it

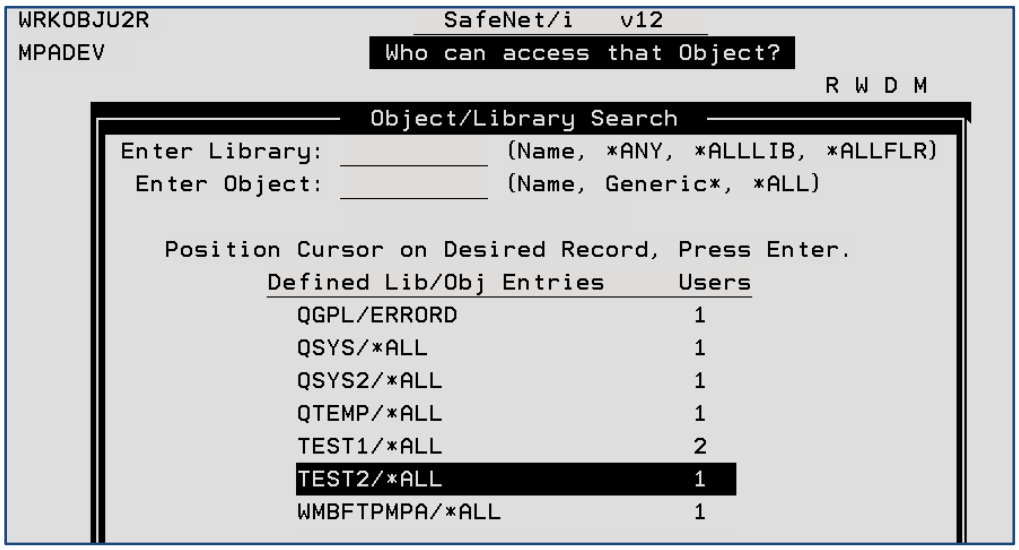
Use **Option 8 – Who can access that Object?** or use the **WRKWHOOBJ** command



Key in the object name or **ENTER** to move to the object search screen

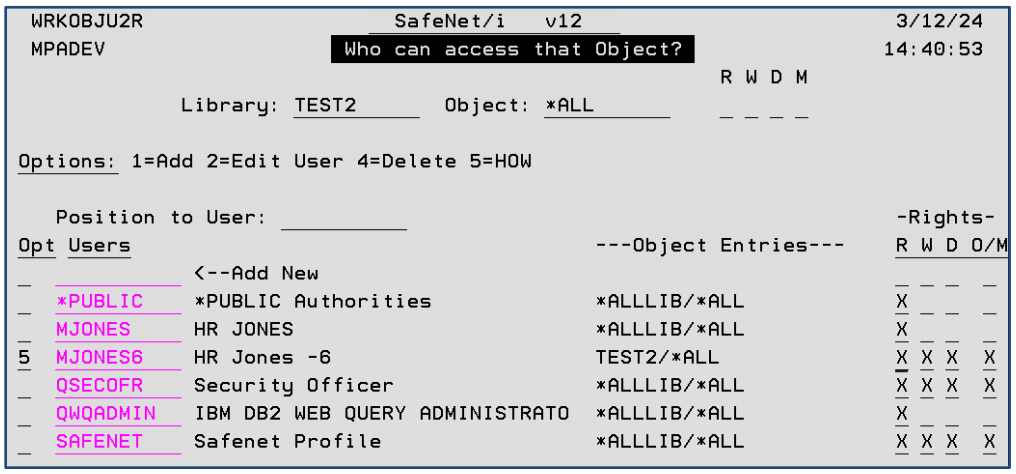


Use **F2** to perform an object search



One user has specific authority to the object TEST2/*ALL

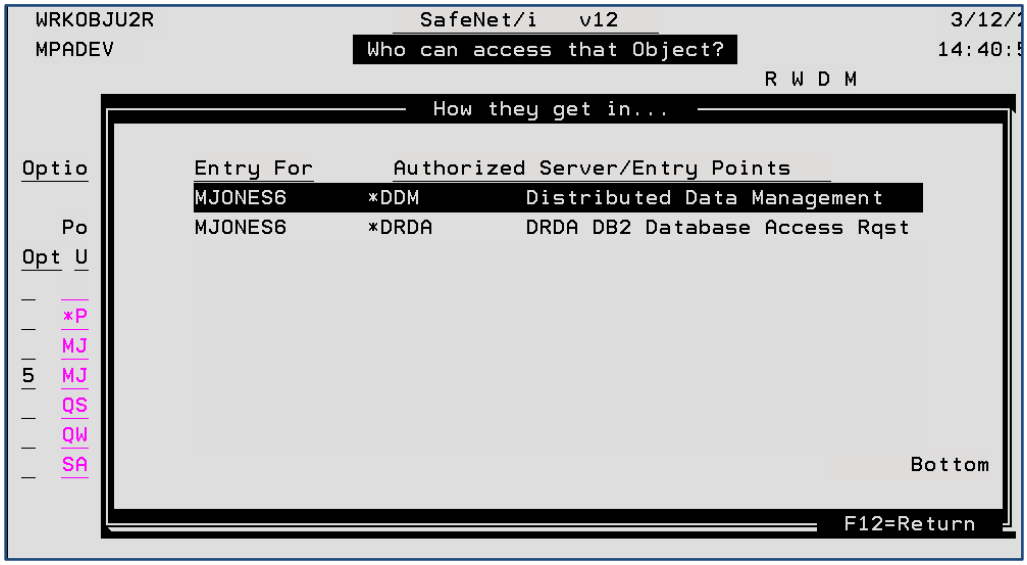
ENTER to display details



User MJONES6 has **specific authority** and object rights to TEST2/*ALL

The other users listed have access to this object through *ALLLIB/*ALL

Option 5 will display **HOW** this user gets to the object – which server function gives them access to the system so they can then access this object

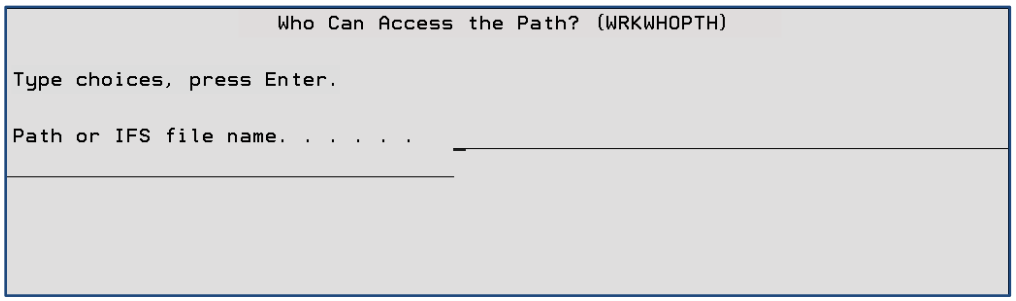


These are the server authorities given to this user

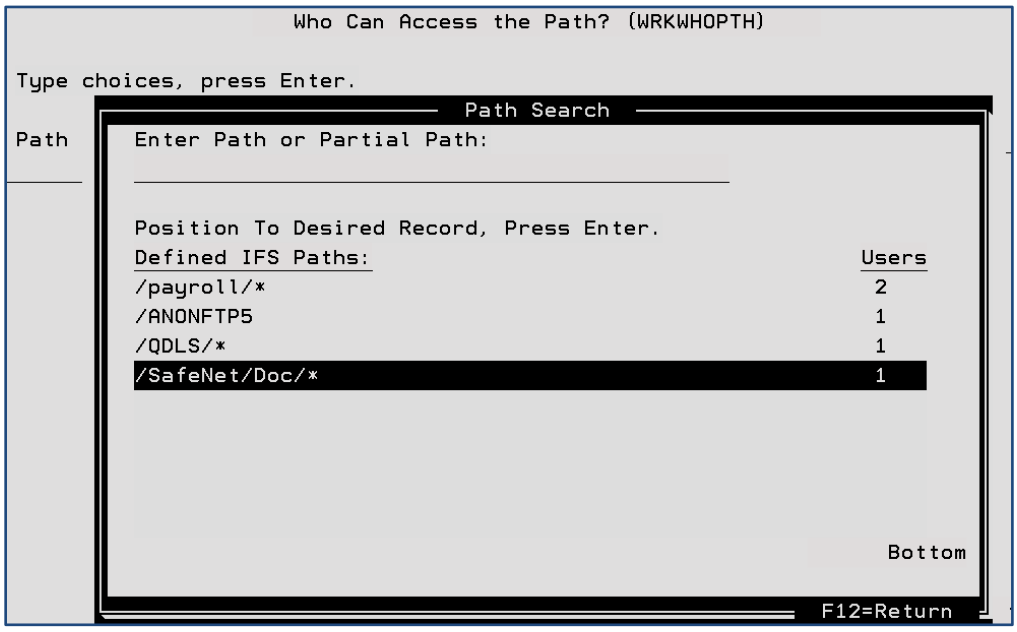
WHO can access a specific IFS Path and HOW do they access it

Use **Option 9 – Who can access that IFS Path?** or use the **WRKWHOPTH** command

Key in the path or press **ENTER** to move to the Path Search screen

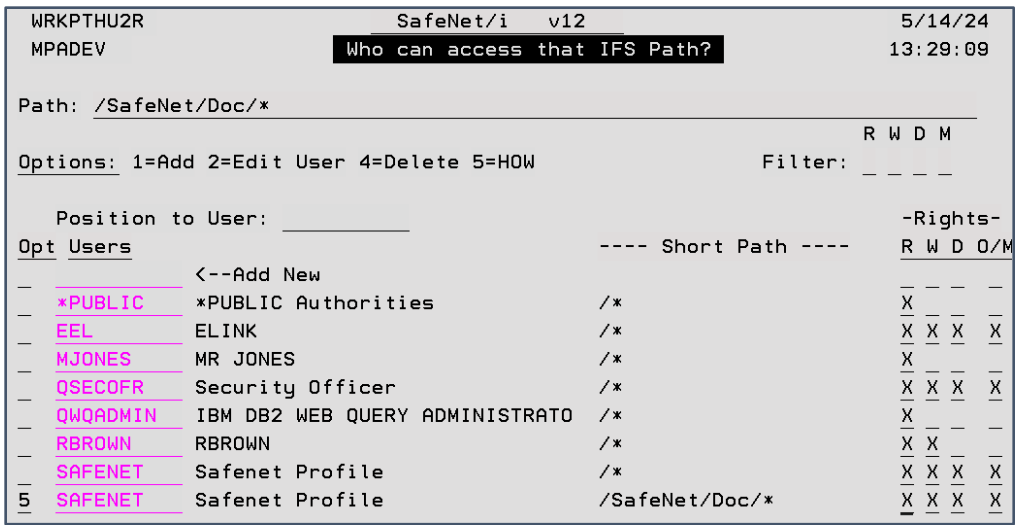


Enter the path or scroll down to select a path



One user has specific authority to this path

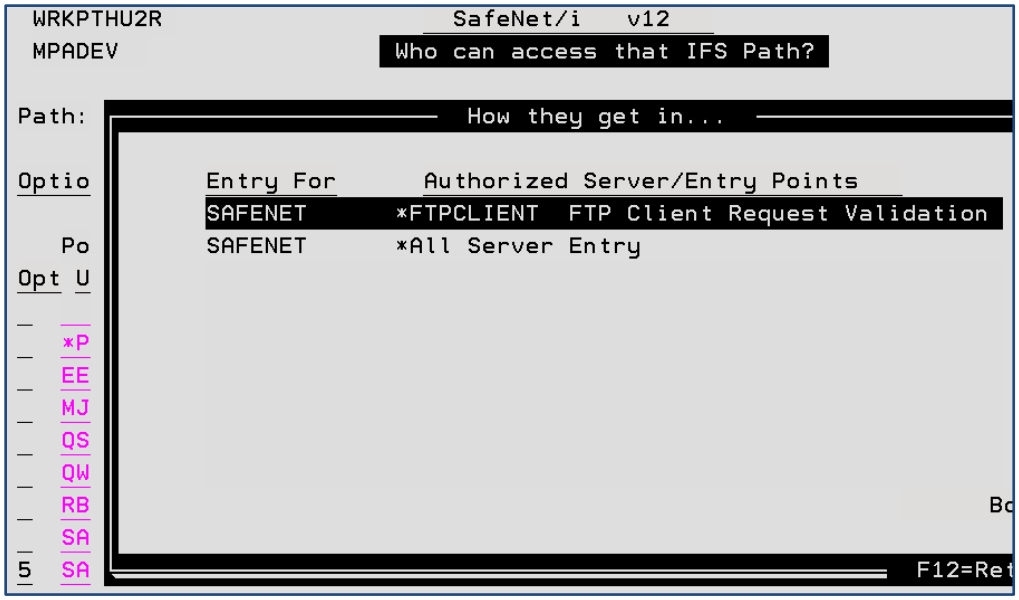
ENTER to display details



User SAFENET has specific authority and object rights to the */SafeNet/Doc/** path

The other users listed have access based on their authority to /*

Option 5 will display **HOW** this user gets to this IFS path – which server function gives them access to the system so they can then access this path



These are the server authorities given to this user

Chapter 8 - BACKUP, ARCHIVING AND PURGING TRANSACTIONS

Log file Purge and Archiving (STRPRGARC command)

When **SafeNet/i** is logging client requests, the information is kept in the TRAPOD file in library PCSECDTA. At times this file may grow to a considerable size. This function deletes the records in the TRAPOD file and optionally archives the transactions to file TRAPARCW.

The default library for the archive file TRAPARCW is PCSECDTA. If you want the archived records to be archived to a different library, use the CHGARCLIB command to specify the library you want to use. Make sure you set this accordingly before you start your purge processes.

There are two ways to purge the TRAPOD file:

1. Standard purge using retention days or purge-through date

2. Archive TRAPOD records and generate a report

   This allows you to specify the number of days to retain records or a purge-through date, and provides the capability to archive the records to an alternate file and member. You can also print a report listing either all of the purged records or only those records that were rejections.

When using **SafeNet/i** with Transaction Journaling active you can also purge old journal receivers at the same time. See additional information on journaling in Chapter 8 of this guide.

Review the STRPRGARC command, parameters *RMVRCUS* and *RRMVSTAT*. Use **F9** to display all parameters.

To perform a standard purge

1. Backup the TRAPOD file to tape, if desired.

   If you do not use save-while-active, you will need to issue the **ENDTRP** command **BEFORE** beginning the backup and the **STRTRP** command **AFTER** the backup.

2. Select **Option 6** from the Special Jobs Menu (SN2) or use the **STRPRGARC** command.

3. Enter **the number of days** to retain information in the TRAPOD file or **enter the date** to purge through. The default is to retain the information for thirty days.

4. You can direct the processing of the purge to a specific job queue.

   If you leave the default value of *JOBD, then the default job queue for your job will be used.

   If you choose to use a different job queue, you can enter the name here. You must have the job queue's library name in your job's library list when you use this option.

5. If you ended logging prior to performing a backup, issue the **STRTRP** command to restart logging.

You can use the following command instead of the menu option:

STRPRGARC DAYS(060) ARC(*NO)

This will purge the TRAPOD file and retain 60 days of data. The number of days must be entered as three characters, i.e., 020 for 20 days.

There will be no archiving of purged records with the *ARC(*NO)* parameter.

To purge the log and archive the records

1. Select **Option 6** from the Special Jobs Menu (SN2) or use the **STRPRGARC** command.

2. Enter **the number of days** to retain information in the TRAPOD file or **enter the date** to purge through. The default is to retain the information for thirty days.

3. Make sure *Archive purged records* is set to ***YES**

4. Set *Print purged records* and *Only print rejections* to whichever option you wish

5. Use **F10** to display *Additional Parameters*

6. Select ***YES** or ***NO** for *Remove deleted records*

   ***YES** requires that transaction logging be turned off

You can use the following command instead of the menu option:

STRPRGARC DAYS(060) ARC(*YES) PRT(*YES) PRTR(*NO) RMVDEL(*NO)

This will purge the TRAPOD file and retain 60 days of data; archive the records; print a report listing all records, not just rejections.

All archived records are transferred to a file named TRAPARCW. Each time the archive command is run, a new file member is added to this file. It is recommended that for auditing purposes you save the archive file to tape; when saved, remove the members.

If you wish to create the TRAPARCW file in a library other than PCSECDTA, use the CHGARCLIB command to specify that library name.

Journaling Purge Consideration

If you are also journaling network requests and wish to purge the associated journal receivers, use parameters *RMVRCVS* and *RRMVSTAT* on the STRPRGARC command.

Press **F9** to display these additional parameters.

Automating the log file purge

To automatically purge the log file, archive the purged records and generate the transaction report, use the following command or add it to the system job scheduler:

SBMJOB CMD(PCSECLIB/STRPRGARC DAYS(XXX) JOB(SECPRG)

XXX is the number of days to retain records (060 = 60 days retention)

Automating the One Step Security Report

To automatically run the security report without purging or archiving any records, use the following command:

PRTSECRPT

There are no parameters required for this command.

If you run this command without parameters, it will generate the report using the full log file content.

To submit this command to batch type:

SBMJOB CMD(PCSECLIB/PRTSECRPT)

For additional selection criteria for this report, use the Network Transaction Analysis Reports Menu, (SN4) **Option 1 - Print Security Report by User**.

Automating and Running the Security Report and the Log File Purge Together

Use this method to automate both the **SafeNet/i** *Security Report* and the *Log File Purge.*

For this example, the purge is being done on Mondays and Thursdays. You may use any schedule you wish; however, make sure your purge is retaining enough days for reporting purposes.

Each of these commands provides parameters to print either only rejections or all transactions. Review these parameters and change as required.

Monday

1. Run purge and retain 5 days, print report of all rejected, purged records

   STRPRGARC DAYS(005)

2. Run security report - it will print rejections for the last 5 days (Thursday through Monday)

   PRTSECRPT

Thursday

1. Run purge and retain 4 days, print purged rejected records

   STRPRGARC DAYS(004)

2. Run security report - it will print rejections for the last 4 days (Monday through Thursday)

   PRTSECRPT

This example runs the Log File Purge and retains only 1 day of data in the file.

Saturday

1. Run security report and see entire contents of log

   PRTSECRPT

2. Run purge and retain 1 day

   STRPRGARC DAYS(001)

Note: It is a good idea to run these commands back-to-back and at off-peak hours to minimize performance impact.

Daily Backup Procedure

Modify your daily backup procedure to follow these guidelines.

Note: If you utilize the *Save-while-active* function for your backups, you may skip all of these steps and continue with your backups.

1. Enter command **CHGSPCSET LOGALL(*NO)**

   This prevents **SafeNet/i** from attempting to log requests

2. Issue the **ENDTRP** command within **SafeNet/i**

   This will end the transaction logging program and subsystem

3. Perform your normal backup steps

If you skipped Step 1, skip Step 4 also.

4. **CHGSPCSET LOGALL(*YES)** to begin logging

5. Issue the **STRTRP** command to re-start the transaction logging subsystem and program

Remember to include the **SafeNet/i** data library, PCSECDTA, as well as the optional **SafeNet/i** Journal or Archive libraries in your daily backup procedure. See commands CHGARCLIB and CHGJRNLIB.

Chapter 9 - JOURNALING SAFENET/i ACTIVITY

Journaling Security Files and Network Transactions

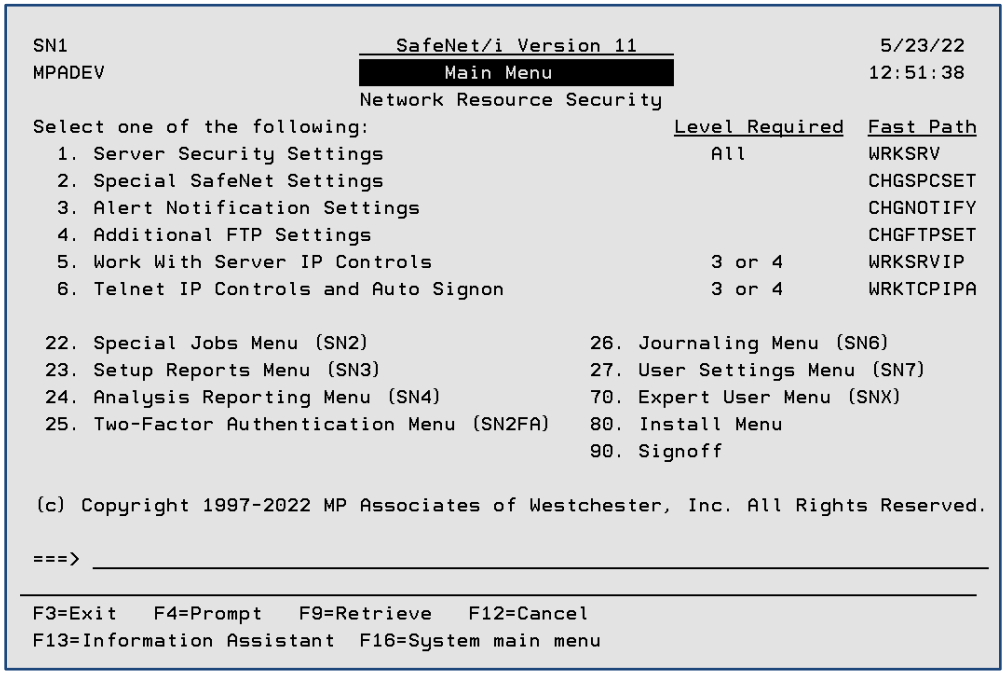
SafeNet/i can provide additional security and reporting capabilities through the use of journals.

There are two types of journal functions available for **SafeNet/i**:

1. Journal all the **SafeNet/i** security control files and data areas

2. Journal all network transactions. You may choose to log all the network transactions to the standard TRAPOD file, to a journal receiver or both the journal and the physical file

All Journal Management processes can be accessed via the Journaling Control Menu (SN6)



To start the journal processes select **Option 1 – Work with SafeNet Journal Control Settings** or use command CHGSPCSET

1. For network transaction journaling, set *Record All Transactions* (*LOGALL* parameter) to one of the following:

   *FILE
   *JOURNAL
   *BOTH
   *NONE

   ***Note*:** If you select option *JOURNAL, there will be NO entries recorded into the standard TRAPOD file. If you wish to re-build the standard transactions from the journal receivers into the TRAPOD file format for reporting, you must use menu *Option 7 – Convert SafeNet Transaction Journals*.

2. For **SafeNet/i** security and control file journaling, set *Journal SafeNet Sec Changes* (*JRNSEC parameter*) to either *YES or *NO

Journaling Library

When you activate either of the journaling types, a new library will be created on your system. The default name of this new library is PCSECJRN.

To specify a library other than PCSECJRN for **SafeNet/i** journals and journal receivers, use the **CHGJRNLIB** command.

Before issuing the **CHGJRNLIB** command, be sure to end **SafeNet/i** journaling with the **ENDSAFEJRN** command.

This library will contain all the journals and journal receivers required for **SafeNet/i**.

- To **view** the Journals and Receivers in library PCSECJRN, use **Option 2 - Work with SafeNet Journals in Library** on the Journaling Control Menu (SN6)

  This option utilizes the standard IBM i commands for working with journals and receivers.

- To **manage** the Journal Receivers in library PCSECJRN, use **Option 3 – Manage/Purge TRAPOD Transaction Journals** and **Option 4 – Manage/Purge SafeNet Security Journals** on the Journaling Control Menu (SN6)

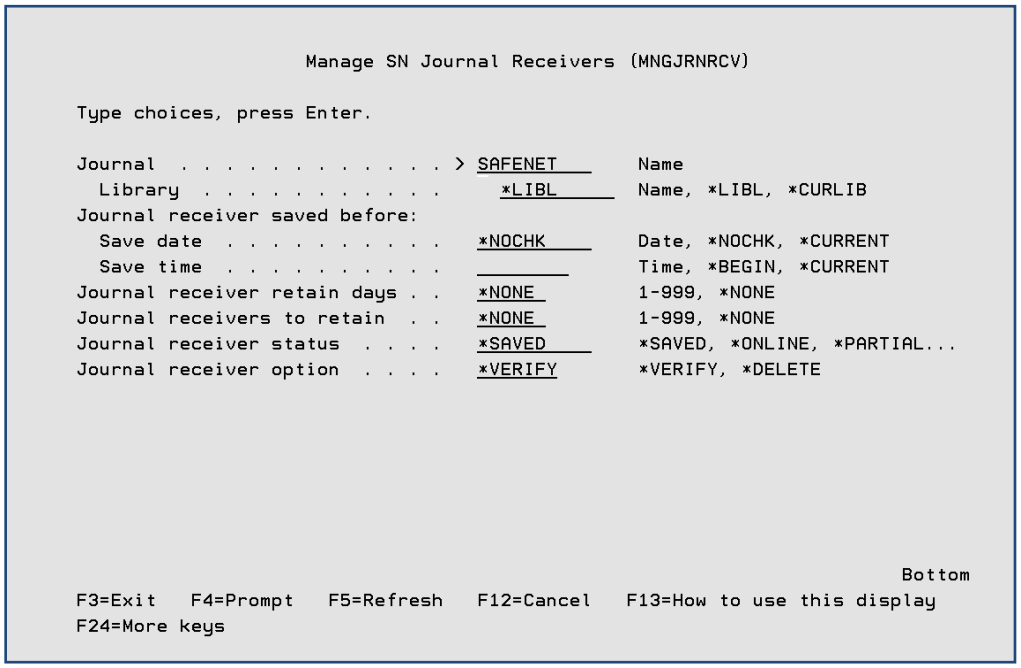
Verify or Delete Journal Receivers – STRPRGARC command

- For the Network Transaction Journal, we have included an automated process to purge old journal receivers via the STRPRGARC command, found on the Special Jobs Menu (SN2), **Option 6 - Purge/Archive Log File - TRAPOD**.

  Using the STRPRGARC command you can have the receiver entries purged just as you would normally purge the TRAPOD file or you can just leave the receivers on your system for future use.

- For the **SafeNet/i** Security Journals, you will have to remove any unwanted journal receivers using **Option 4 – Manage/Purge SafeNet Security Journals** on the Journaling Control Menu (SN6) or use the **MNGJRNRCV** command. Specify a purge-thru date or number of days to retain.

  There is no automated management tool provided for the **SafeNet/i** Security journal receivers.

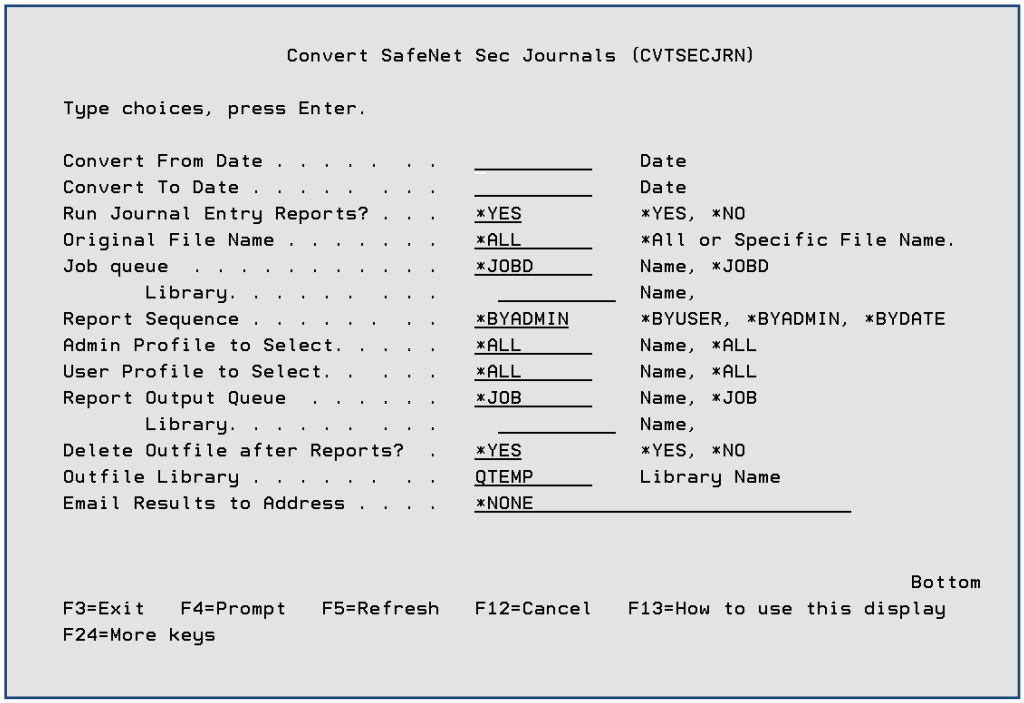


Convert and Print SafeNet/i Security Journals – CVTSECJRN command

Use this command to convert **SafeNet/i** Security Journal Receiver entries to a usable format and request optional reports.

The Convert Security Journal Command (CVTSECJRN) allows you to extract all the **SafeNet/i** Security File Journals into regular database output files for reporting and/or to track changes made to SafeNet security files for a given time frame. Any output files will be placed in the OUTFILE library specified. All the output files will have the letter "J" prefixed to the original file name.

From the Journaling Control Menu (SN6), use **Option 6 – Convert SafeNet Security Journals and Reporting** or use the **CVTSECJRN** command



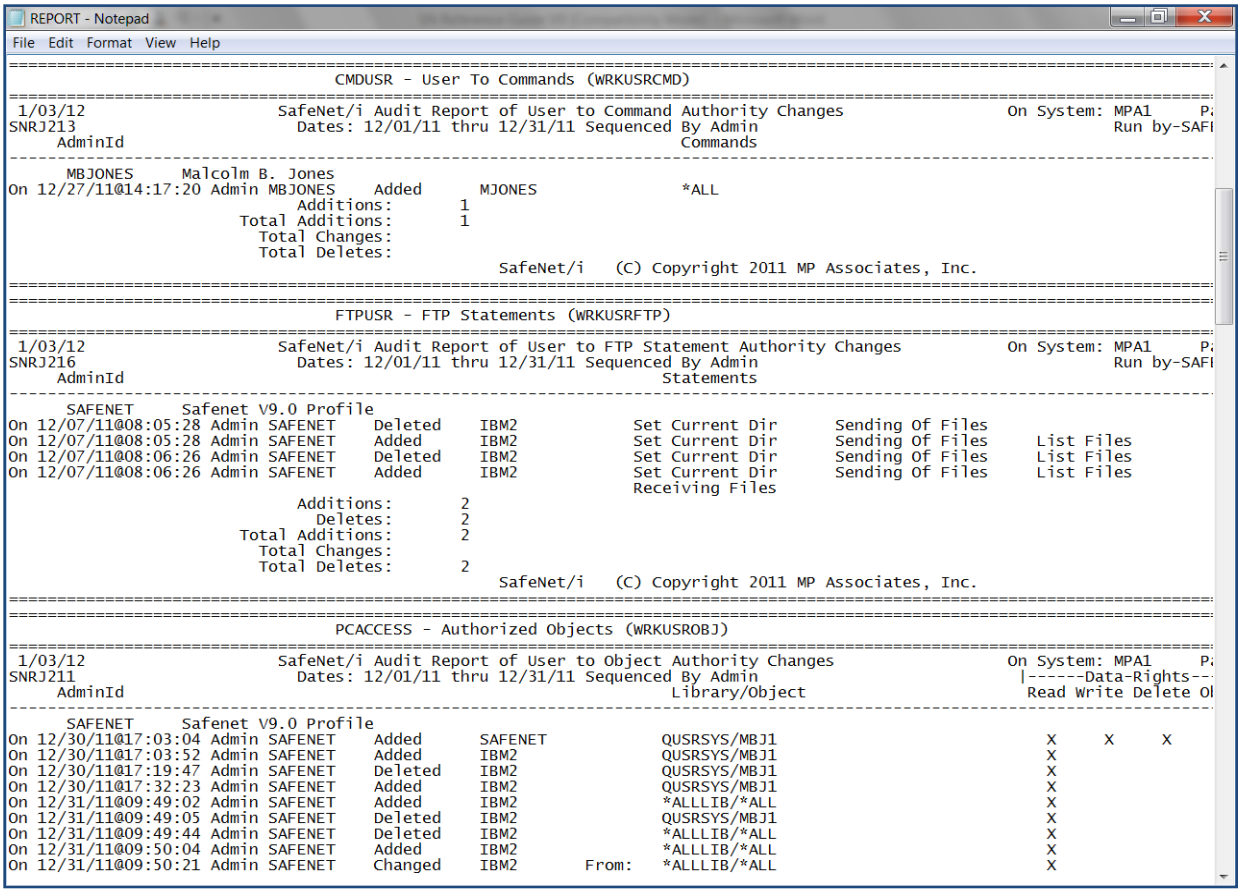
Additionally you can generate reports of any changes made by using the CVTSECJRN Reports option. Selection options allow you to specify a specific file, administrator or user to generate reports for. In addition, you can email the result reports to any valid email address.

Using this command in conjunction with **SafeNet/i** security journaling, it is possible to automatically generate a daily report of any **SafeNet/i** security setting changes made and have it automatically email you the results.

We have provided you with a sample CL program to demonstrate how you can generate a daily report.

See source file QSAFESRC in library PCSECLIB member RUNDLYJRN. Modify as required.

Sample Security Audit Report



REPORT - Notepad

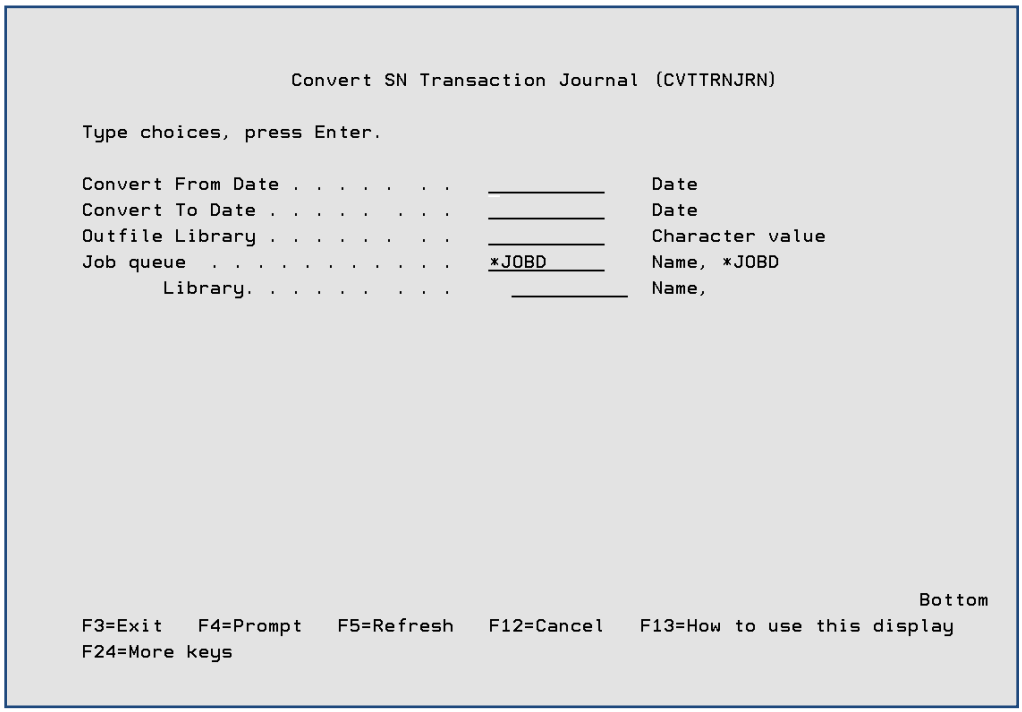
File Edit Format View Help

```
                                CMDUSR - User To Commands (WRKUSRCMD)

 1/03/12                    SafeNet/i Audit Report of User to Command Authority Changes                  On System: MPA1     P
SNRJ213                       Dates: 12/01/11 thru 12/31/11 Sequenced By Admin                                Run by-SAFE
     AdminId                                                                  Commands

      MBJONES     Malcolm B. Jones
On 12/27/11@14:17:20 Admin MBJONES    Added      MJONES              *ALL
                                Additions:       1
                          Total Additions:       1
                            Total Changes:
                            Total Deletes:
                                                 SafeNet/i   (C) Copyright 2011 MP Associates, Inc.

                                FTPUSR - FTP Statements (WRKUSRFTP)

 1/03/12                    SafeNet/i Audit Report of User to FTP Statement Authority Changes            On System: MPA1     P
SNRJ216                       Dates: 12/01/11 thru 12/31/11 Sequenced By Admin                                Run by-SAFE
     AdminId                                                                Statements

      SAFENET     Safenet V9.0 Profile
On 12/07/11@08:05:28 Admin SAFENET    Deleted    IBM2           Set Current Dir      Sending Of Files
On 12/07/11@08:05:28 Admin SAFENET    Added      IBM2           Set Current Dir      Sending Of Files     List Files
On 12/07/11@08:06:26 Admin SAFENET    Deleted    IBM2           Set Current Dir      Sending Of Files     List Files
On 12/07/11@08:06:26 Admin SAFENET    Added      IBM2           Set Current Dir      Sending Of Files     List Files
                                                                Receiving Files
                                Additions:       2
                                  Deletes:       2
                          Total Additions:       2
                            Total Changes:
                            Total Deletes:       2
                                                 SafeNet/i   (C) Copyright 2011 MP Associates, Inc.

                                PCACCESS - Authorized Objects (WRKUSROBJ)

 1/03/12                    SafeNet/i Audit Report of User to Object Authority Changes                   On System: MPA1     P
SNRJ211                       Dates: 12/01/11 thru 12/31/11 Sequenced By Admin                              |------Data-Rights---
     AdminId                                                                 Library/Object                  Read Write Delete Ob

      SAFENET     Safenet V9.0 Profile
On 12/30/11@17:03:04 Admin SAFENET    Added      SAFENET            QUSRSYS/MBJ1                              X     X     X
On 12/30/11@17:03:52 Admin SAFENET    Added      IBM2               QUSRSYS/MBJ1                              X
On 12/30/11@17:19:47 Admin SAFENET    Deleted    IBM2               QUSRSYS/MBJ1                              X
On 12/30/11@17:32:23 Admin SAFENET    Added      IBM2               QUSRSYS/MBJ1                              X
On 12/31/11@09:49:02 Admin SAFENET    Added      IBM2               *ALLLIB/*ALL                              X
On 12/31/11@09:49:05 Admin SAFENET    Deleted    IBM2               QUSRSYS/MBJ1                              X
On 12/31/11@09:49:44 Admin SAFENET    Deleted    IBM2               *ALLLIB/*ALL                              X
On 12/31/11@09:50:04 Admin SAFENET    Added      IBM2               *ALLLIB/*ALL                              X
On 12/31/11@09:50:21 Admin SAFENET    Changed    IBM2       From:   *ALLLIB/*ALL                              X
```

Convert Network Transactions Journal Receivers – CVTTRNJRN command

Use this option to convert the network transactions journal receiver entries to a usable format.

From the Journaling Control Menu (SN6), use **Option 7 – Convert SafeNet Transaction Journals for Reporting** or use the **CVTTRNJRN** command



You must specify a date range to select and a library name to contain the converted file. The file will be called JTRAPOD. It is in the same format as the original TRAPOD file normally used for transaction logging.

If you wish to use the converted file for additional reporting, you must first either copy it to a new archive member (file TRAPARCW) or copy the records back into the TRAPOD file.

Important: If you copy the records directly back into the TRAPOD file, you must make sure you are not duplicating or replacing the existing records in the TRAPOD file. Confirm that the date range you select will not include records that are currently in your TRAPOD file or you may duplicate existing transaction records.

If you use the TRAPARCW archive file:

1. Add a new member to the file.

2. Copy the records from the converted JTRAPOD file to the new member in TRAPARCW file.

   Note: You **MUST** name the new member as follows:

   AYYYYMMDD

YYYY	=	the year of transactions
MMDD	=	MonthDay of the last transaction in the file

3. You can use the PRTSECRPT command to print a normal **SafeNet/i** security report from the converted transaction journals by simply specifying the archive member name in parameter ARCMBR.

Chapter 10 - SPECIAL SAFENET CONSIDERATIONS

This section contains information on procedures that will help you manage and automate certain **SafeNet/i** functions.

Excluding an Exit Point from SafeNet/i Checking

You can flag a specific exit point so that it is always excluded from **SafeNet/i** processing.

Use of this option will open up a security exposure on your system, so we do not recommend that you use this before consulting with **SafeNet/i** support staff. However, you may find that your system requires that a specific exit program be excluded.

To exclude an exit point from **SafeNet/i** checking, follow these steps EXACTLY:

1. At the command line, run the following commands

   ADDLIBLE PCSECLIB
   ADDLIBLE PCSECDTA

2. Update the exit point exclusion code by running a file maintenance program. You can run this program by entering the following on the command line

   CALL ACTEPXCL

3. Find the exit point on the list that place a **2** next to it. On the detail screen that follows, code the exclusion code with the letter X and press **ENTER**.

4. Bring your system to a restricted state by ending all subsystems.

5. When the system reaches restricted state, deactivate **SafeNet/i** by running **Option 50** from the INSTALL menu.

6. When **SafeNet/i** is deactivated, you can then immediately reactivate it using the same **Option 50** from the INSTALL menu.

7. Resume normal processing by starting your controlling subsystem. At this point, the selected exit point will no longer be linked to the **SafeNet/i** product.

Restoring an Exit Point to SafeNet/i Checking

If it becomes necessary to once again have **SafeNet/i** linked to the exit point that has been excluded, you can do so by following the exact same procedure as excluding the point, outlined on the previous page, EXCEPT that at step #3, remove the letter X and leave the exclusion code blank.

When you start your controlling subsystem, **SafeNet/i** will be re-connected to the exit point.

When you restore an exit point, **SafeNet/i** will re-set the server security level to 1. Use **Option 1** on the SafeNet/i Main Menu (SN1) or the **WRKSVR** command to check the security level of the server and change it to the level you require.

*Adding Support for PWFS0200 *Filesrv*

The new File Server format (PWFS0200) will not be activated unless

- You are currently at IBM i OS V7R3 or above and this is the first time **SafeNet/i** has been installed on the system

OR

- If installing this update to a system where a previous version of **SafeNet/i** is installed and you OPTIONALLY want to utilize the new PWFS0200 format, perform these steps:

1. Be at IBM i OS V7R3 or above
2. De-activate **SafeNet/i**
3. Call the program ADDNEW0200. This will duplicate the WRKUSRSRV entries for any users with PWFS0100 formats, and create new PWFS0200 format entries for each defined user. It will also set the current security settings for PWFS0200 equal to the settings that were for PWFSs0100.

   ```
   ADDLIBLE PCSECDTA
   CALL PCSECLIB/ADDNEW0200
   ```

4. Re-activate **SafeNet/i**

5. Use the WRKSRV command to verify the upgrade to PWFS0200 (Use F4 in WRKSRV to view the format names)

6. Restart IBMi NetServer via iSeries Navigator

Spool File Exit Point Processing

With release Level 10.34 (PTF level PCPTF1034) **SafeNet/i** documentation for the Spool File Exit Point needs clarification.

Please note that this exit point is only available to customers who have the IBM i OS release level 7.2 installed.

When implementing the Spool file Exit Program, please keep the following items in mind:

If the user has *SPLCTL or *JOBCTL i OS is in place. **SafeNet/i** cannot intercept the request. As a result, **SafeNet/i** cannot override the rules already in place in the IBM I OS. These requests will not even be logged by **SafeNet/i**

If the user does NOT have *SPLCTL or *JOBCTL, normal **SafeNet/i** processing and logging will occur as follows

a) If *SPOOL Server security is at Level 3 AND the user is authorized to the *SPOOL Server, the user will have access to ALL output queues and ALL spool files, If not authorized to *SPOOL Server, requests will be rejected. This is probably a configuration that most **SafeNet/i** customers will NOT WANT TO ADOPT and is not recommended by Kisco Information Systems.

b) Is *SPOOL Server security is at Level 4, the user must be authorized to the *SPOOL Server AND the Library/OUTQ as defined in WRKUSROBJ. If not authorized to the *SPOOL Server and OUTQ, request will be rejected. This is the recommended configuration. However, customers must keep in mind rule #1 as stated above.

Resetting Level 5 within SafeNet/i

When an installation has a user exit program in place that **SafeNet/i** does not recognize, the exit point will automatically be set to Level 5 (unsupported). To allow **SafeNet/i** to support this server you must do the following:

1. Remove your user exit program from the registration facility in i OS.

   Type WRKREGINF and press **ENTER**

   Locate the exit point and remove your exit program.

   Important: Do not remove any program called from PCSECLIB.

   You may have several servers set to Level 5. You must remove each one. Then, using the DSPNETA or CHGNETA command, verify that your IBM i network attributes DDMACC and PCSACC are both set to *OBJAUT.

   If these attributes are not initially set to *OBJAUT, **SafeNet/i** will flag several exit points to Level 5.

2. Type the following:

   CALL PCSECLIB/DELST5CL and press **ENTER**

3. From the SafeNet/i Main Menu (SN1) select **Option 1 - Server Security Settings** or use **WRKSRV** command.

   Press F3 to exit **without making any changes**

4. Using the IBM i console, you must place the system in a restricted state with the **ENDSBS *ALL *IMMED** command, or any other site-specific shutdown process.

5. De-activate **SafeNet/i**

   From the Install Menu select **Option 50 - Activate/De-Activate SafeNet/i**

   Follow the instructions to de-activate the program found in Chapter 13 in this guide, 'De-activating and Removing **SafeNet/i**'.

6. Re-activate **SafeNet/i**

   Select **Option 50 - Activate/De-Activate SafeNet/i**

7. Restart your system

Pre-Power Down Program Point

You can create a power down CL program to be called whenever the PWRDWNSYS command is issued. **SafeNet/i** will call this program and log the request whenever the command is processed.

To use this feature, create a CL program called PWRDWNCL and place it in library QGPL.

Profile Swapping

Profile Swapping allows you to assign an alternate or a "swapped" user profile to be interrogated by **SafeNet/i** and passed to i OS for security lookups.

You can select different ‘Swap to’ profiles for a user, based on the Server function utilized when that user connects to IBM i. This provides a more granular security approach when utilizing the Swap Profile function of **SafeNet/i.**

When profile swapping is in use, any incoming network transactions or jobs are assigned the alternate profile (the 'Swap to' profile) and passed as this alternate profile to i OS. The operating system then performs all security related checking as if the request came from the 'Swap to' profile and not the original profile. The job in i OS retains its original user name.

All authority checking by **SafeNet/i** is performed using the original profile name.

Alternate Profile Swapping is controlled using the **CHGSPCSET** command or from SafeNet/i Main Menu, (SN1) *Option 2*. Set the *SWAPU* parameter to one of these values:

- ***NO**

  Do not swap profiles within **SafeNet/i**

- ***OPT**

  SafeNet/i will swap profiles if the original user has an alternate swap profile set up in **SafeNet/i**

- ***RQD**

  Requires that a swap profile must be set up for the original profile in **SafeNet/i**, or all requests are rejected.

Setting up a Swap Profile

Make sure that you have set the *SWAPU* parameter on the **CHGSPCSET** command to allow profile swapping. Then follow these steps to set up your alternate profiles.

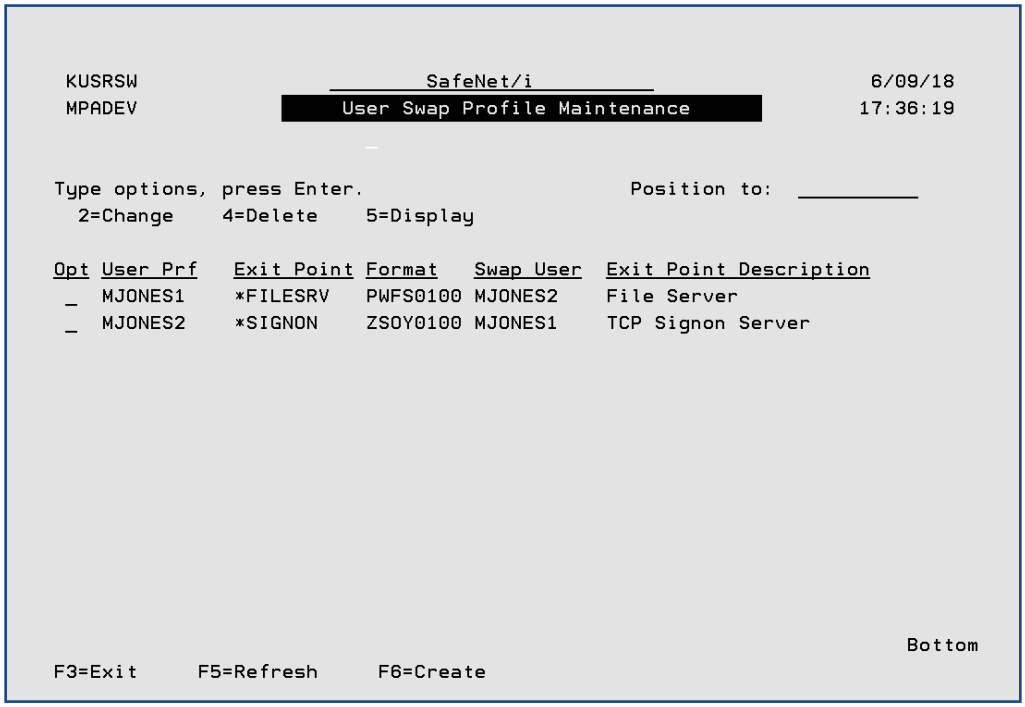
1. From the User Settings Menu, (SN7) select **Option 8 – Work with Swap Profiles** or use the **WRKSWPPRF** command

2. Enter the **user profile** to work with.

   You can type the user profile or type *ALL for a complete list of swap profiles.

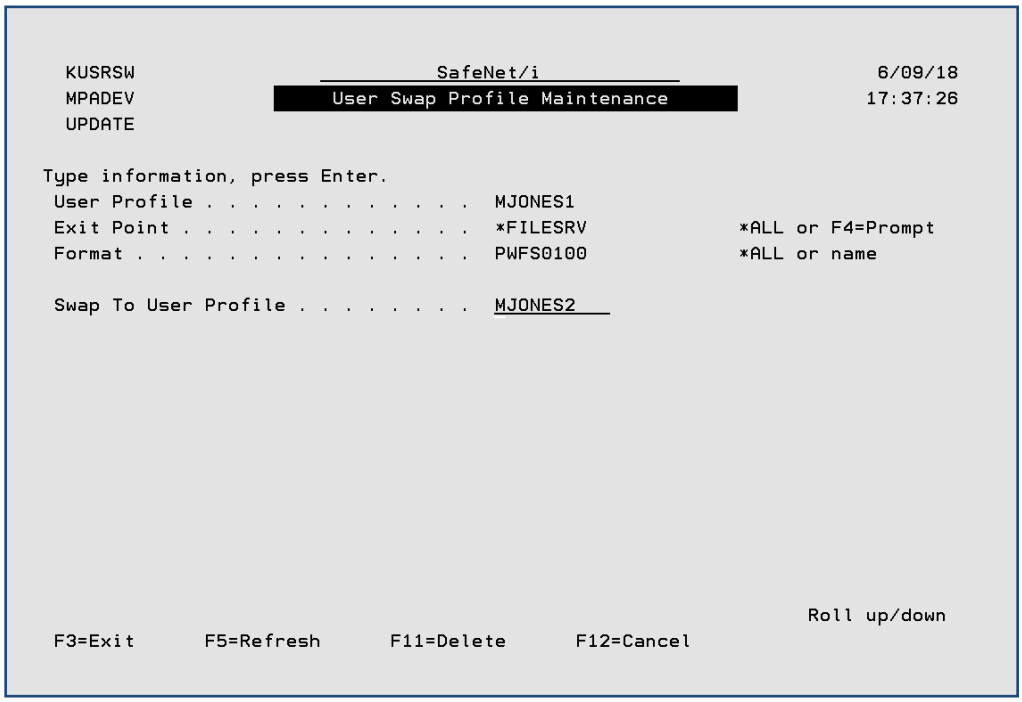
   Press **ENTER**

   The *User Swap Profile Maintenance* screen appears



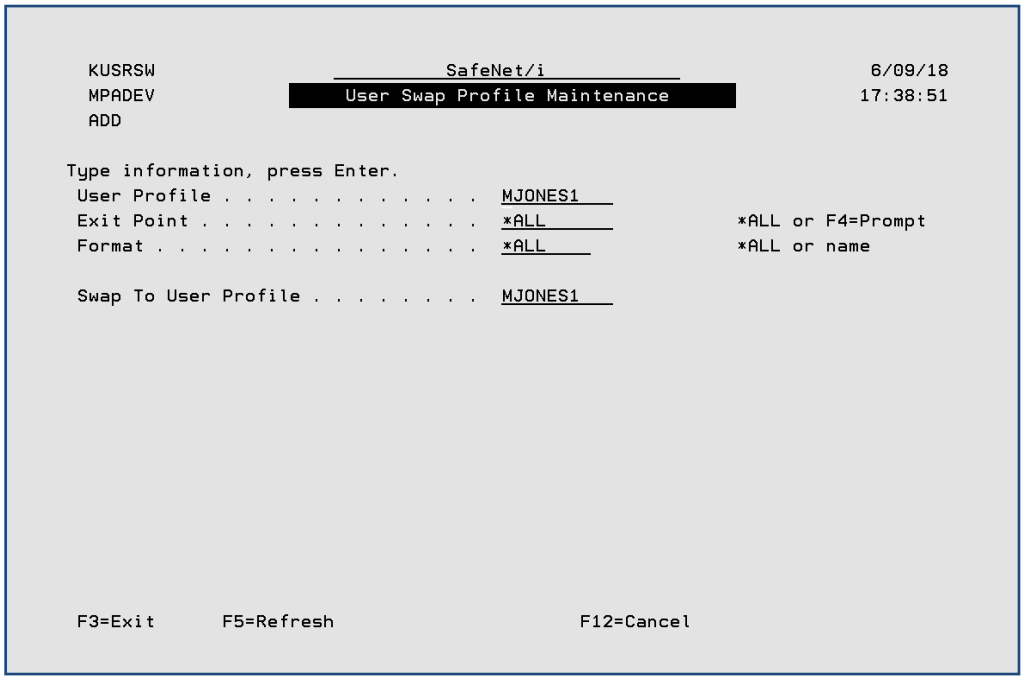
   Use **Option 2** to change an existing Swap Profile

Update the *Swap-To User Profile*



ENTER

Press F6 to add a new Swap Profile



3. On the *User Swap Profile Maintenance* screen, enter

   - User Profile to Swap
   - Exit Point and Format
   - Swap-to Profile

   ENTER

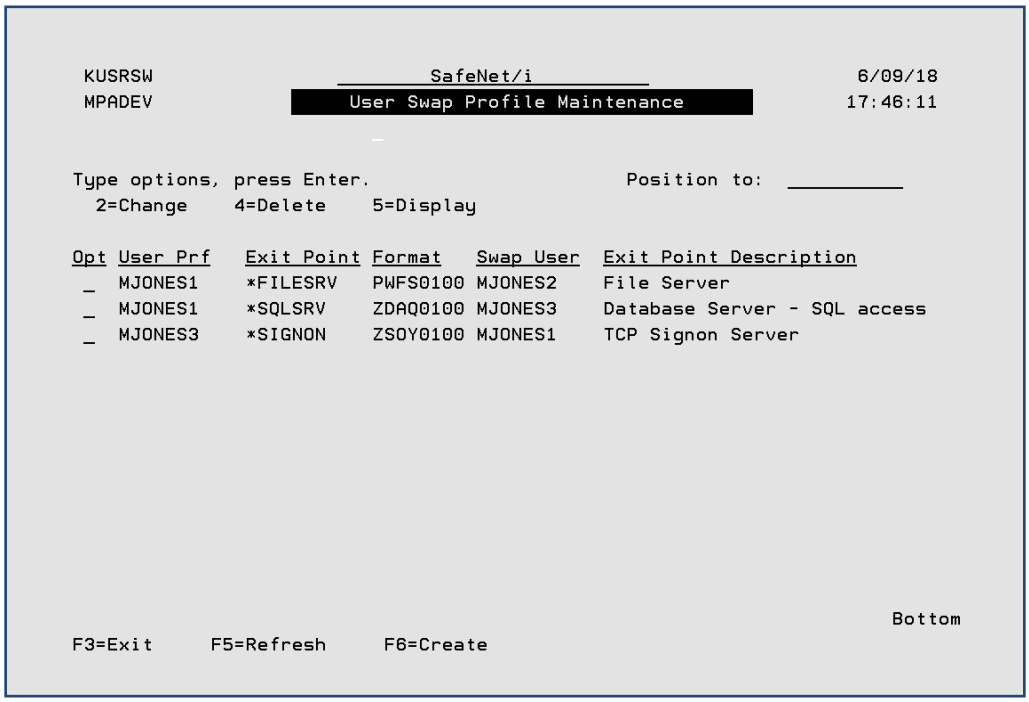
Whenever a user connects to the IBM i through a client/server connection, after **SafeNet/i** checks the original profile, i OS will do all security checking on the ‘Swap to’ profile.

In this example:

MJONES1 swaps to MJONES2 when connecting via the *FILESRV function

MJONES1 swaps to MJONES3 when using the *SQLSRV function

MJONES3 swaps to MJONES1 when using the *SIGNON function



Files Contained in SafeNet/i

These files are available for you to use for any additional reporting requirements you may have. All are located in library PCSECDTA.

ERRORD File

Contains all error codes (accepted/rejected) associated with **SafeNet/i**.

FIXEDIPS

Contains fixed IP client addresses (static addresses)

IBMFLR File and **IBMFLRL** (Long paths to IBM folders)

Contains all IBM supplied folder names. You may add additional folder names to this file for automatic READ and/or WRITE authority as required.

JRNFILES

Contains the names of files in **SafeNet/i** that are journaled when using the journaling feature within **SafeNet/i**

MACNAMES

Contains MAC addresses with names of associated DHCP clients

TRAPARCW File

Contains any archived transactions if the STRPRGARC command was utilized

TRAPOD File

All logged network requests are placed in this file. This file will grow significantly over time, depending on network traffic. Be sure to pay close attention to its size and establish a schedule to purge records.

This file can also be used for additional user-developed reporting. See IBM OS/400 Servers and Administration for additional information and record layouts.

Extra Security for TRAPOD

SafeNet/i provides an option for imposing extra security on the TRAPOD file to prevent anyone from altering the file.

By default the TRAPOD file is secured by the SAFENET authorization list. As such, the only users who have full access to the file are **SafeNet/i** administrators plus any other users with *ALLOBJ authority.

Normally, this should be sufficient security since all of these users fall into the category of security officers.

However, if you need an extra level of security for this file in order to satisfy audit requirements, you can use the SETTRAP command to activate additional security for the TRAPOD file.

The SETTRAP command will toggle this extra security on or off. To activate the additional security us this command:

SETTRAP SECSTS(*ON)

When the extra security is turned on, **SafeNet/i** administrators will no longer have direct access to the TRAPOD file. They will be limited to using **SafeNet/i** tools which do not permit data manipulation, only purging.

Users with all object authority will still have access, but this should limit the pool of users to very few for your installation.

To deactivate this extra security, use the following command:

SETTRAP SECSTS(*OFF)

This will re-establish security based on the SAFENET authorization list.

Note: Journaling the TRAPOD file is also an option for extra security. See Log File options in command CHGSPCSET.

SafeNet/i Commands

Commands	Description
ADDSNADM	Maintain SafeNet Administrators
ADDSNUSR	Allows batch maintenance of **SafeNet/i** users
ADDUSRCMD	Allows batch maintenance of users to commands
ADDUSRFTP	Allows batch maintenance of users to FTP
ADDUSROBJ	Allows batch maintenance of users to objects
ADDUSRSQL	Allows batch maintenance of users to SQL
ADDUSRSVR	Allows batch maintenance of users to servers
CHGARCLIB	Change the name of the library to use for TRAPOD archived records
CHGFTPSET	Change FTP special settings
CHGJRNLIB	Change the library to use for **SafeNet/i** journals and journal receivers
CHGNOTIFY	Changes status of Alert Notification
CHGSPCSET	Change **SafeNet/i** special settings
CHGTELNET	For Kerberos and Telnet security setting override
CPYSNUSR	Copy settings from one **SafeNet/i** user to another
CVTTRNJRN	Extract all the **SafeNet/i** Network Transactions journals into regular DB files for reporting
CVTSECJRN	Extract all the **SafeNet/i** Security File journals into regular DB files for reporting
ENDTRP	Ends the transaction logging program
LOGTOSAFE	Adds custom transactions to TRAPOD log file
MNGJRNRCV	TRAPOD
MNGJRNRCV	SAFENET
IPPING	Performs IP Address ping check
PCREVIEW	Starts the on-line transaction review process
PCTESTR	Starts the on-line transaction testing program
RMVSNUSR	Removes a user from all **SafeNet/i** enrollments
RMVSNUSR1	Removes all profiles not defined to OS400. Excludes profiles beginning with '*' (*Public)
RMVUSRCMD	Removes user's authorities to CL commands

Commands	Description
RMVUSRFTP	Removes user's authorities to FTP
RMVUSROBJ	Removes user's authorities to objects
RMVUSRSQL	Removes user's authorities to SQL
RMVUSRSRV	Removes user's authorities to server functions
SETSAFENET	OPTION(A) – Activates **SafeNet/i**
SETSAFENET	OPTION(B) – Deactivates **SafeNet/i**
SETVER	Used to change the license code level of **SafeNet/i**
SNDHCPPRG	Purge expired DHCP lease information
SNEXESUM	Generate Executive Summary report
STRPRGARC	Starts archive purge/security report of log file
STRTRP	Starts the transaction logging program and SBS
WRKDFTSRV	Select servers to include in Security Report
WRKSIGNON	Work with TELNET sign-on parameters
WRKSNADM	Maintain **SafeNet/i** Administrators
WRKSNSUSR	Work with **SafeNet/i** Super Users
WRKSNUSRS	Work with User Matrix
WRKSNDHCP	Work with current DHCP activity
WRKSRV	Work with server security settings
WRKSRVIP	Work with server IP controls - manage users and IP addresses at the server level
WRKSWPPRF	Work with Swap Profiles
WRKTCPIPA	Work with TCP/IP address control
WRKUSRCMD	Work with user to CL commands
WRKUSRFTP	Work with user to object FTP statement security
WRKUSRIP	Work with user to IP address entries
WRKUSROBJ	Work with user to object security
WRKUSRPTH	Work with User to IFS path security
WRKUSRSEC	Work with user security. Permits access to all security screens for an individual user without entering several different commands

Commands	Description
WRKUSRSQL	Work with user to object SQL statement security
WRKUSRSRV	Work with user to server security

Print Commands

Commands	Description
PRTCLUSG	Reports command usage and auto-enrollment
PRTFTPUSG	Starts the FTP transaction and testing program
PRTIPUSG	Reports User to IP Address usage and auto-enrollment
PRTMACINF	Print MAC Address and Static IP Address
PRTOBJUSG	Starts the object transaction and testing program
PRTPTHUSG	Starts the IFS path transaction and testing program
PRTSECRPT	Print security report
PRTSNADM	Print the list of **SafeNet/i** Administrators
PRTSNUSG	Print ALL usage reports for a user
PRTSNSUSR	Print the list of **SafeNet/i** Super Users
PRTSQLUSG	Reports SQL statement usage and auto-enrollment
PRTSRVSTS	Print Server Status listing
PRTSRVUSG	Reports server usage and auto-enrollment
PRTTCPIPA	Print the TCP/IP address controls listing
PRTUSRALL	Prints all the setup reports for a user
PRTUSRIP	Print User to IP Address Authorizations with Accept/Reject Status
PRTUSRSRV	Prints the User to Server Authorization report
PRTUSROBJS	Prints the User to Object Authorization report
PRTUSRSQL	Prints the User to Authorized SQL Statement report
PRTUSRFTP	Prints the User to Authorized FTP Statement report
PRTUSRCMD	Prints the User to Authorized Command report

PRTUSRPTH	Prints the User to Long Paths report
PRTUSRSWP	Prints the Swap Profile listing

Menu Fast Path Commands

Commands	**Description**
SN1	**SafeNet/i** Main Menu
SN2	Special Jobs Menu
SN3	Reports Menu
SN4	Network Transaction Analysis Reports
SN5	DHCP Control and Reports Menu
SN6	Journaling Control Menu
SN7	User Settings Menu
SNX	Fast Path Expert Menu

SafeNet Lite Commands

Commands	**Description**
NSL	Main Menu
NSL2	Transactions and Reporting

Chapter 11 - Using Alert Notifications

The **SafeNet/i** Alert Notification feature continually monitors network activity for possible malicious activity. Alerts will be generated whenever a transaction is rejected via **SafeNet/i**.

Using Alert Notifications, you can have **SafeNet/i** issue Alert messages. Alert messages can be sent to a system message queue, a distribution list, an email address or a text message device using SMS.

Note: If you use a distribution list for alert notification instead of a regular email address, the Distribution List ID Qualifier **MUST** be your IBM i system name.

In addition, you must have set up SMTP mail options on the IBM i.

Alert Types

There are two types of alert notification available. We recommend using **summarized** alerts after the initial installation and setup. Using summarized alerts, you can prevent a flood of e-mails in the event of a large number of rejected transactions being processed by **SafeNet/i**.

1. **Summarized alerts** - you can receive a message that gives summarized information regarding **SafeNet/i** rejections. For example, "There have been six (6) rejections by **SafeNet/i** since 01/01/99 at 12:00:00".

   This process starts the SAFELOGING subsystem**,** which contains a pre-start job called ALERTWATCH. SAFELOGING runs from the *BASE memory pool and uses very little system resources. You can set the time interval between alerts; by default 30 minutes is used.

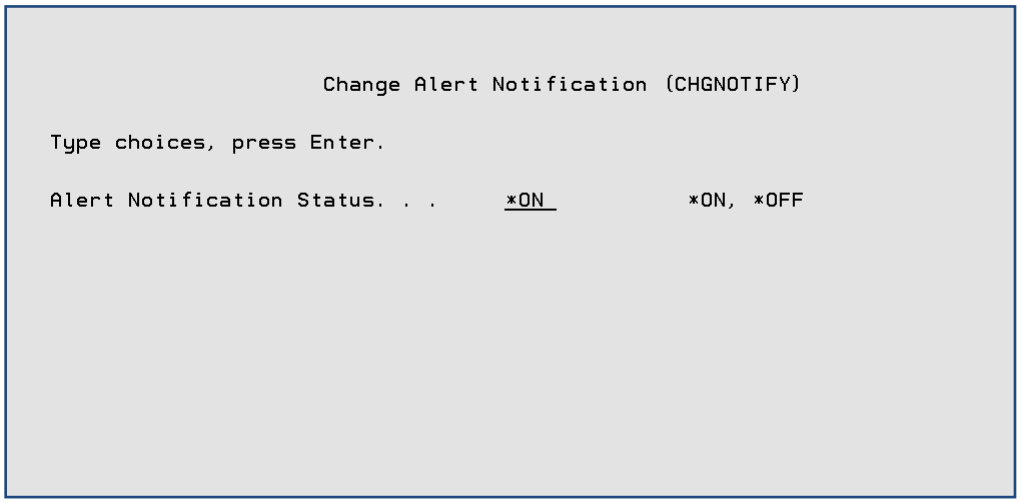
   When you specify summary alerts via e-mail, **SafeNet/i** will include a list of the summarized alerts in the form of an e-mail attachment text file. This attachment provides information regarding the nature of the alerts being reported and eliminates the need to access the system for details.

2. **Detailed alerts** - you can specify that **SafeNet/i** send detailed alert messages. Every **SafeNet/i** rejection will generate a message that describes the user, server and date/time that a request was rejected.

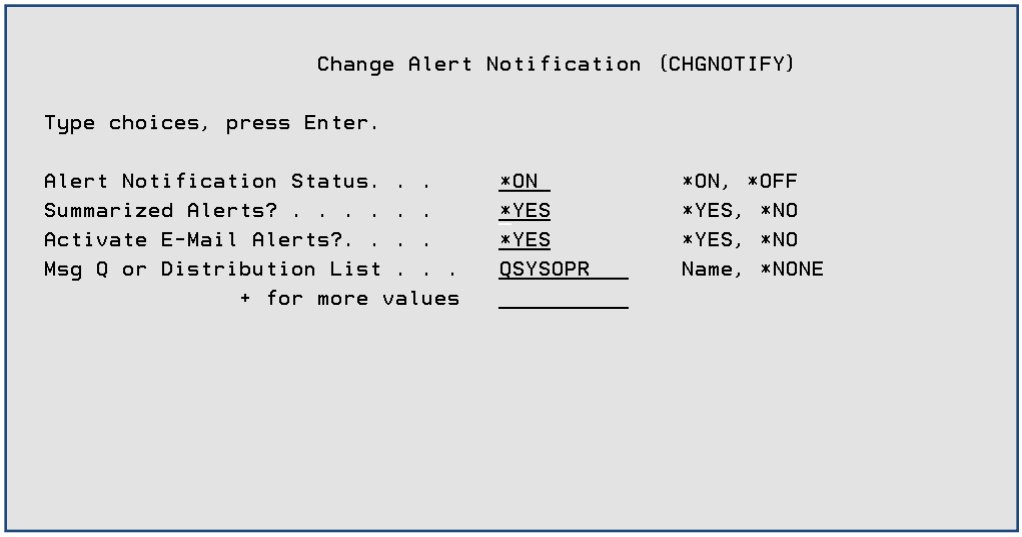
   This option does not start the ALERTWATCH program, since it is not required when detailed messages are specified.

Activating SafeNet/i Alert Notification

1. From the SafeNet/i Main Menu (SN1) select **Option 3 - Alert Notification Settings** or use the **CHGNOTIFY** command and **press F4**.



2. **Type *ON** for parameter *ALERT* to activate alert notification, then **ENTER.**



3. Enter ***YES** to receive summarized alerts or ***NO** for detailed alerts.

4. Enter ***YES** to receive alerts as e-mail or ***NO** to receive alerts as workstation messages only.

   Your system must be configured for SMTP before e-mails can be used.

5. **Enter the message queue(s) and/or e-mail distribution list(s)** that should receive these alerts. You can send alerts to both message queues and distribution lists, or directly to a specific Internet email address.

   The alerts are not sent to message queues in *BREAK mode. To receive these alerts immediately, make sure the user message queue is in *BREAK mode. (See CHGMSGQ command in the IBM CL Manual)

6. You can enter **individual e-mail addresses** to receive alerts in addition to, or instead of, message queues and distribution lists.

7. To send the alert to a phone or text device using SMS, use the following format and the telephone number. This is based on your cellular carrier.

   Here are examples of the most common cell service providers:

   AT&T: 10digitphonenumber@txt.att.net

   Cingular: phonenumber@cingularme.com

   Nextel: phonenumber@messaging.nextel.com

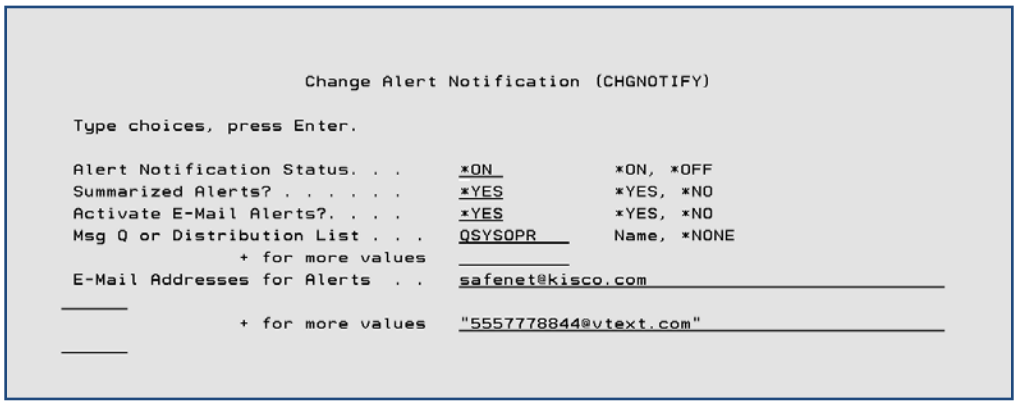
   Sprint: phonenumber@messaging.sprintpcs.com

   T-Mobile: phonenumber@tmomail.net

   Verizon: phonenumber@vtext.com

   Virgin Mobile: phonenumber@vmobl.com

   If you are not sure about the carrier, contact the cell phone user and find out from them. If it is not one of the above, some research with the service provider may be required.



   Use the '+' sign to enter additional values.

8. Press **ENTER** to display the parameter to set the *Summarized Alert Interval*

   If the *Summarized Alerts* parameter is set to ***YES**, you can specify the number of minutes between alerts. You will receive notification when each interval expires, indicating the number of rejections since the last notification.

Creating a Distribution List

Use the **CRTDSTL** command to create a distribution lists for **SafeNet/i** alerts if required.

Using Twilio® SMS Messages for Alerts

New in **SafeNet/i** Version 11.55, you can use **Kisco Connect** with Twilio® SMS messaging to send alerts.

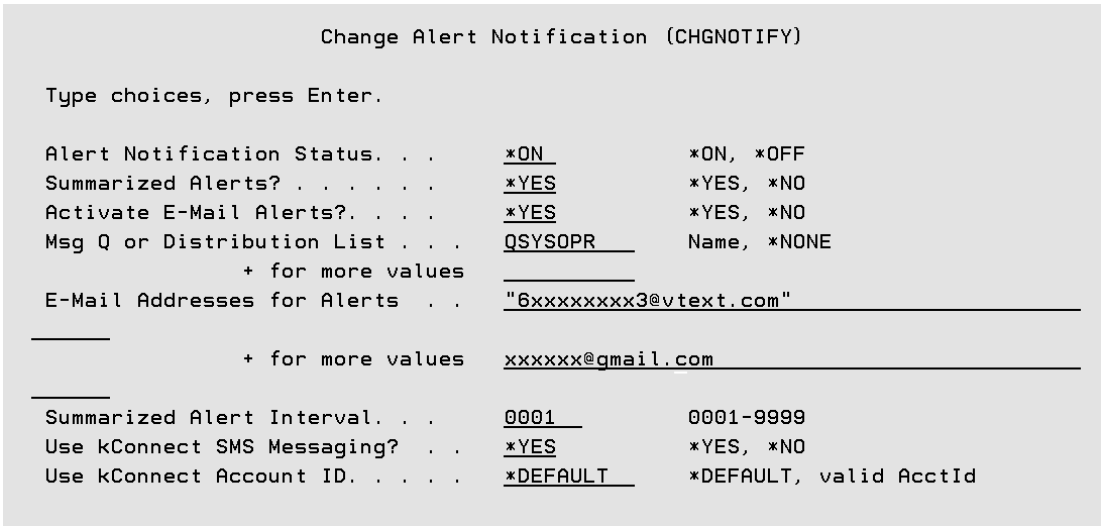
Please visit the Kisco Systems website for information on Kisco Connect and how to obtain the software.

Once Kisco Connect is installed on your system, you can use it within SafeNet/i.

From the SafeNet Main Menu (SN1) select **Option 3 – Alert Notification Settings** or use the **CHGNOTIFY** command and F4

From this screen, Twilio® SMS messaging can be turned **ON** or **OFF**.

You can specify a different Twilio® account for SafeNet/i alerts if you want to use something other than the *DEFAULT account.



Chapter 12 - DHCP CONTROLS AND REPORTING

Dynamic Host Configuration Protocol

DHCP allows clients to obtain IP network configuration, including an IP address, from a central DHCP server. DHCP servers control whether the addresses they provide to clients are allocated permanently or leased for a specific period of time. When the server allocates a leased license, the client must periodically check with the server to re-validate the address and renew the lease.

The DHCP client and server programs handle address allocation, leasing and lease renewal.

If you are using DHCP on your IBM i this gives you a way to control it. If you are not using DHCP, you can still use these options to review other activity.

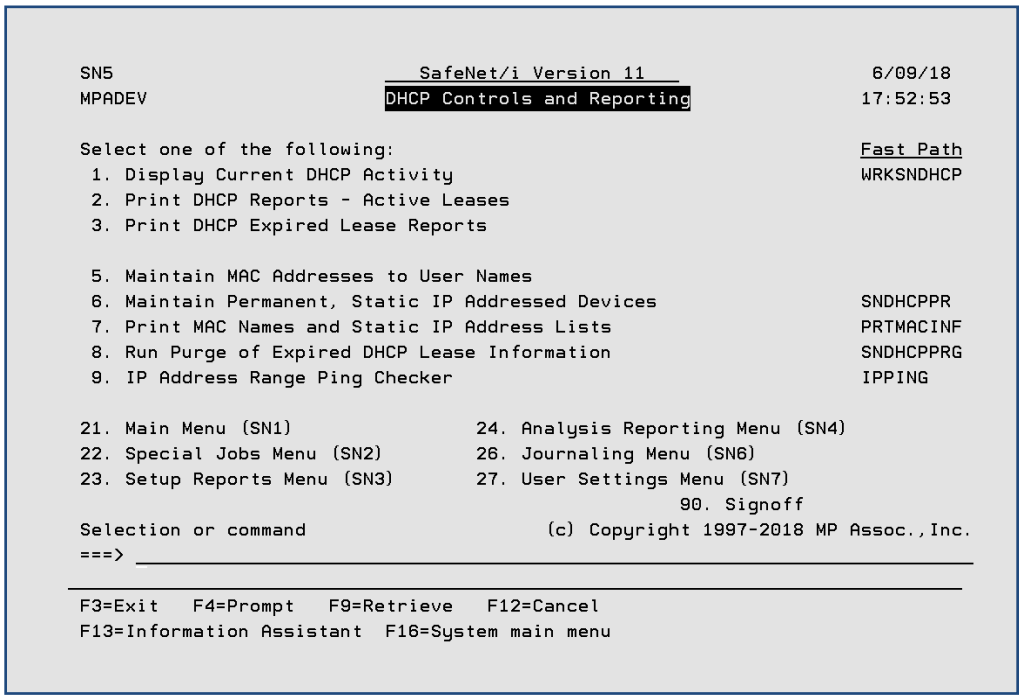
To use the IBM i as a DHCP server, refer to the relevant i OS manual and/or System i Navigator.

Working with DHCP

DHCP functions are performed from the DHCP Control and Reports Menu (SN5).

From the SafeNet/i Main Menu (SN1) select **Option 25 – DHCP Menu**

The *DHCP Control and Reports Menu* appears.



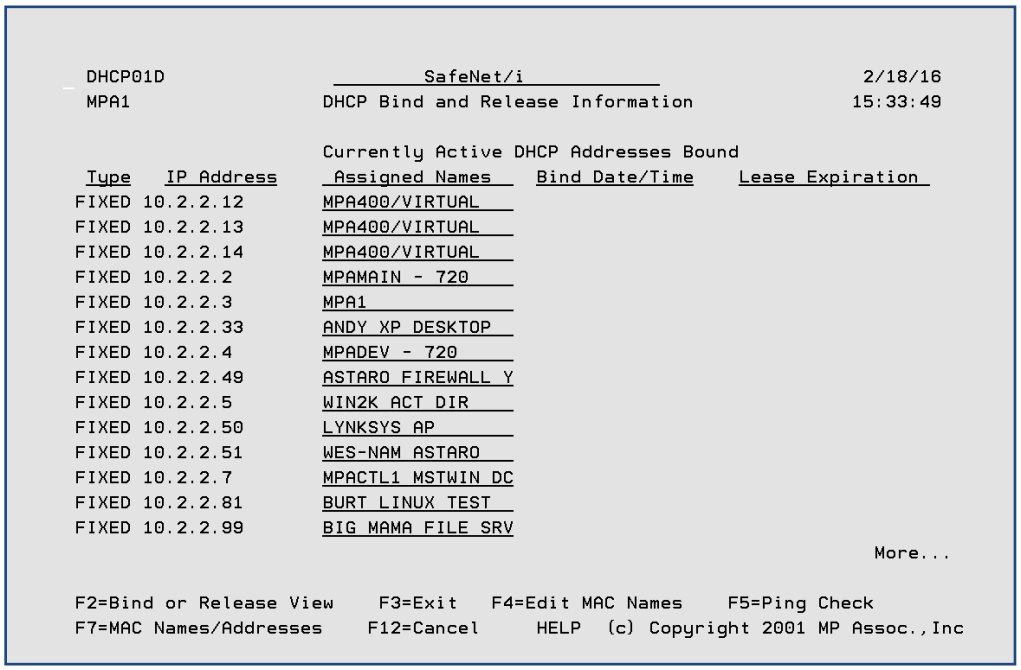
The DHCP functions provide the ability to maintain MAC addresses and device names, set IP addresses and ping IP addresses.

From the DHCP Control and Reports Menu (SN5) you can also run reports for active and expired leases, MAC names and IP address lists.

Current DHCP Activity

To see current status, from the DHCP Control and Reports Menu (SN5) select **Option 1 – Display Current DHCP Activity**

This screen displays bind and release information



Use function keys to switch views:

- F2 switches between the *Currently Active DHCP Addresses Bound* and *Expired or Released DHCP Addresses* screen

  The *Expired or Released* addresses list contains information gathered since the last time the list was purged.

- F7 switches between *MAC addresses* and the assigned names

  You will notice that the devices with fixed IP addresses do not change as you toggle between the two displays.

- F4 puts you in edit mode and allows you to revise the assigned names

  Move your cursor to the name you want to change in the *Editable Names* column. Press **ENTER** to record the change.

To use this function make sure you are looking at the *Currently Active DHCP Addresses Bound* screen. Use F2 if necessary to switch.

- F5 pings the addresses

  This will ping all the IP addresses that are displayed. The responses will flash at the bottom of the screen. When the process has completed, you will see a *Ping Status* column indicating the results of the pings.

  If you are looking at the active addresses, you will ping those. If you are looking at expired or released addresses, all of those will be pinged.

  Be aware that pinging the expired or released addresses can take a very long time depending on the last time the list was purged.

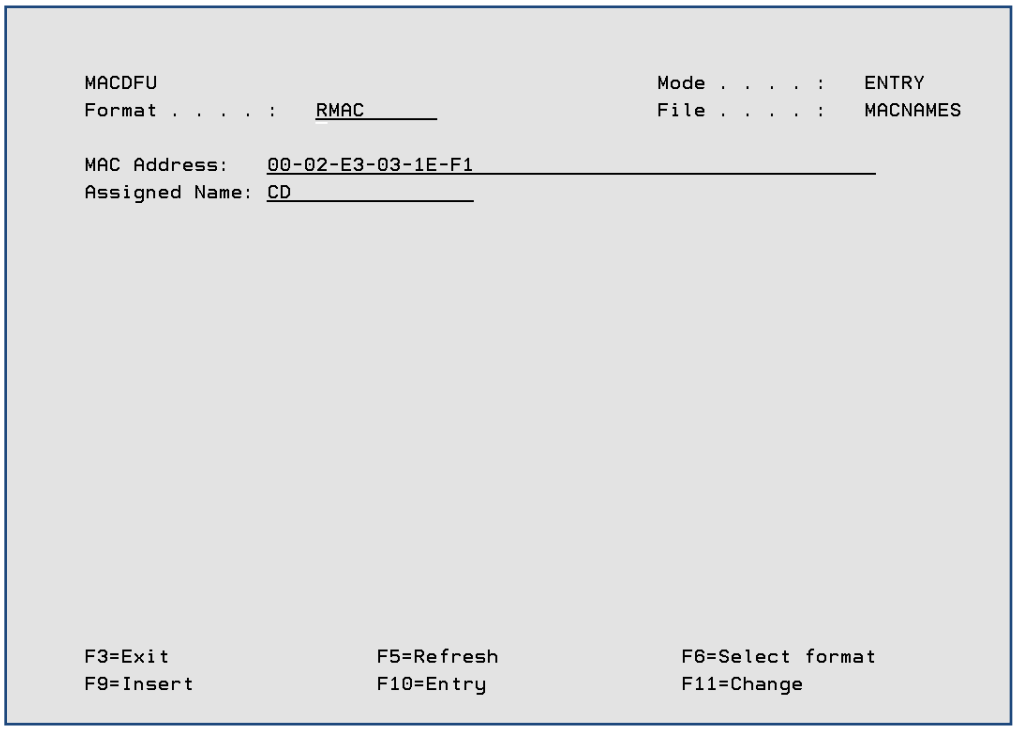
  The number of packets and time-to-wait are controlled by two data areas: PINGPKTS and PINGTIME in PCSECDTA.

  The default is one packet and one second wait. You can change these data areas manually if required.

Maintaining MAC Addresses

From the DHCP Control and Reports Menu (SN5) select **Option 5 – Maintain MAC Addresses to User Names**

This operates as a standard IBM i DFU program.



Press **F9** to use insert mode when editing

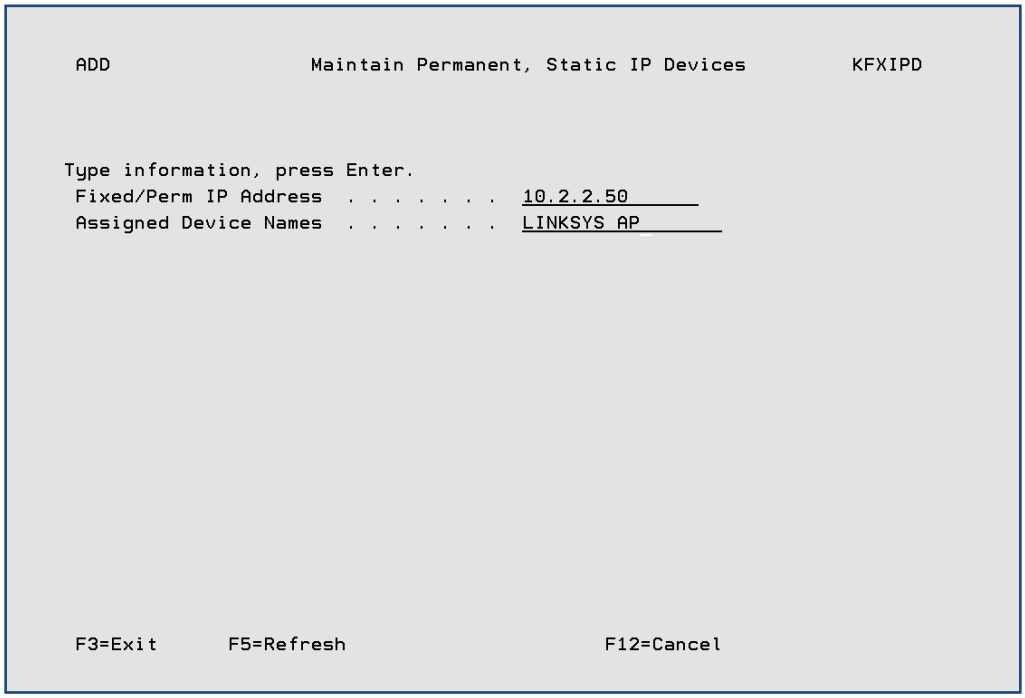
Press **F23** to delete the MAC address and name

Fixed IP Addresses

To assign IP addresses to devices, from the DHCP Control and Reports Menu (SN5) select **Option 6 – Maintain Permanent, Static IP Addressed Devices** or use the **SNDHCPPR** command

Even if you are not using DHCP on your IBM i, you can use this option to do PING checks for network troubleshooting.

Press **F6** to add an IP address

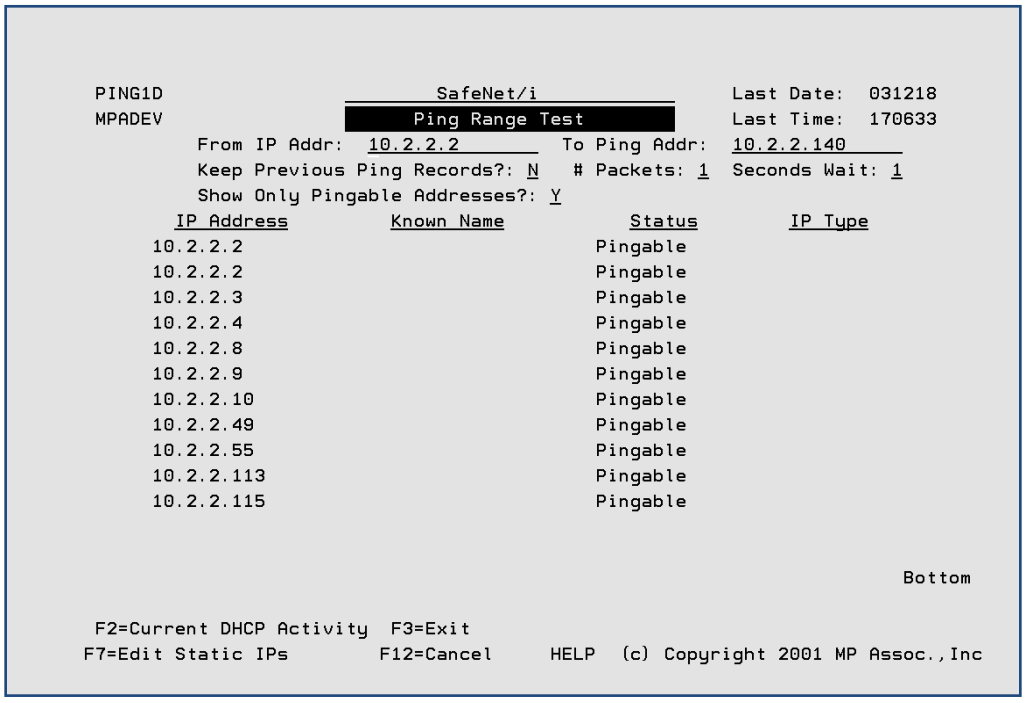


If you enter a DHCP IP address you will receive an error message. This is for fixed IP addresses only.

Purging Expired DHCP Lease Information

The *Expired or Released DHCP* address information is cumulative and will remain in the system until you purge it.

From the DHCP Control and Reports Menu (SN5) select **Option 8 – Run Purge of Expired DHCP Lease Information**

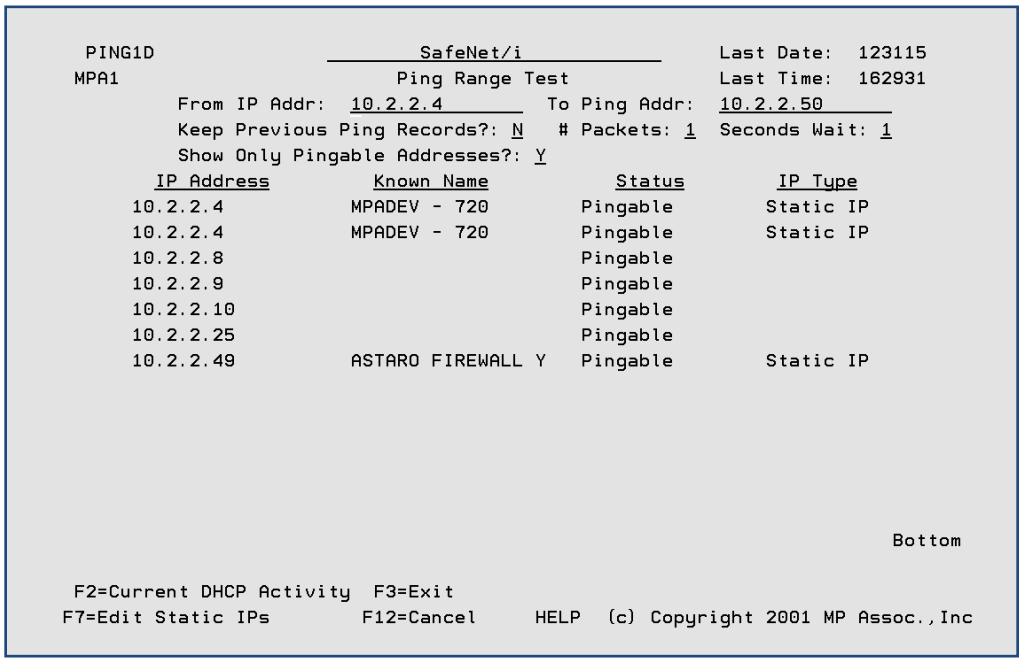


Enter the date and time to purge through. When you **ENTER** the log of expired DHCP leases will be cleared.

Ping Checker

You can use this option to ping a single IP address or a range of addresses.

From the DHCP Control and Reports Menu (SN5) select **Option 9 – IP Address Range Ping Checker**



Enter the range of IP addresses that you want to ping.

You must re-type at least one of the IP addresses to refresh the data entry fields.

Press **ENTER** and you will begin to see replies flash on the bottom of the screen.

When all the IP addresses have been pinged the *Status* column will display the results of the pings.

Chapter 13 - PROBLEM DETERMINATION

If **SafeNet/i** is not working properly, there are a few general things to check.

Error Message Received on the IBM i

1. Did you perform an IPL after the initial **SafeNet/i** installation?

   It is necessary to IPL your IBM i after completing the installation steps. If you do not IPL your system, you will experience unpredictable results.

   Recovery: IPL your system then try **SafeNet/i** again.

2. Is the PTF level on your IBM i current?

   Compare your PTF level with **SafeNet/i** required levels.

   Recovery: Install the latest cumulative PTF package if necessary.

3. Is your client application current on service packs or fixes?

   Check to make sure you have the most recent level of fixes for your client.

   Recovery: Apply latest service pack or fix package

4. Is this the first time you are using this client application?

   If this is the first time you are using this particular application, it may be that your server functions are not set up properly.

   Recovery: Check **SafeNet/i** request logs for errors and correct. Use on-line testing program to verify your settings are correct.

5. Have you made changes to server function Security Levels or user authority tables?

   If a particular request was working, and now it is not, make sure you have not inadvertently disabled a server function or revoked authorities from a user.

   Recovery: Double check changes against the request log, use the on-line transaction program to test your authority settings.

Error Message Received on the Client

If you receive an error message indicating a problem with a client or a communications request, or an exit program rejection and **SafeNet/i** is active:

Check the request log for a 'REJECTED' response

1. Use the date and time along with the user ID to find the request that was rejected. Use **PCREVIEW** or check the Security Report.

2. When you find the request that was rejected, the log will indicate the reason for the rejection. You will find a list of error codes and their descriptions at the end of this chapter.

3. If you need to make changes to authorities you can test your changes with the on-line transaction program before you implement them. See Chapter 7 in this guide, 'Testing your Security Settings.'

If the request does not appear in the log or the Review screen

These steps should help you determine if the problem is network related, client related or **SafeNet/i** related.

1. Try the same request with a user ID that has rights to all servers and has all object and all folder authority. User profile QSECOFR is set up with all rights in **SafeNet/i** by default.

2. Check the log file for the request and response.

3. Make changes to authorities if necessary.

4. Try the request again with the original client or with the on-line transaction program.

5. Try a different client or user ID.

If you are unsure that SafeNet/i is the source of the problem

1. Reset the Security Level in **SafeNet/i** by following these directions:

    - From the SafeNet/i Main Menu select **Option 1 – Work with Server Security Settings** or use **WRKSRV** command

    - If you know which server function the request is using, change the server's Security Level to 1. If you cannot determine which server function the request is attempting to access, set all the servers to Security Level 1.

    - Try the client request again

    - If the request is successful, change the server (or servers) back to the original Security Level, Logging Level All. This will log all the client requests.

2. Try the client request again.

    - If the request is successful, run the request log report and review the client request.

    - If the request is rejected, check PCREVIEW to view the actual transaction.

    - Make the required authority table changes. Test your changes with the on-line transaction program.

    - Try the client request again and review the logs again.

Verify most recent IPL

If you receive a message on the IBM i about a **SafeNet/i** or PCSECLIB program, or you still cannot resolve a client error or client application error, check to see if the system was IPL'd since you:

- Initially installed **SafeNet/i**

- Applied PTFs to **SafeNet/i**

If not, you must IPL your system for the changes to take effect.

If you still cannot resolve the problem

1. Check all the joblogs for the jobs in the subsystems:

   QSYSWRK
   QSERVER

2. You may have to change the QDFTJOBD job description to capture the joblogs of certain jobs initiated by client requests.

   CHGJOBD QDFTJOBD LOGLVL(4 00 *SECLVL) LOGCLPGM(*YES)

   Note: Remember to change this back to its default when you have resolved the problem or you may generate an excessive number of joblogs.

   CHGJOBD QDFTJOBD LOGLVL(4 00 *NOLIST) LOGCLPGM(*NO)

3. End then start both subsystems:

   QSYSWRK
   QSERVER

4. Try the client request again

5. Check for joblogs and errors

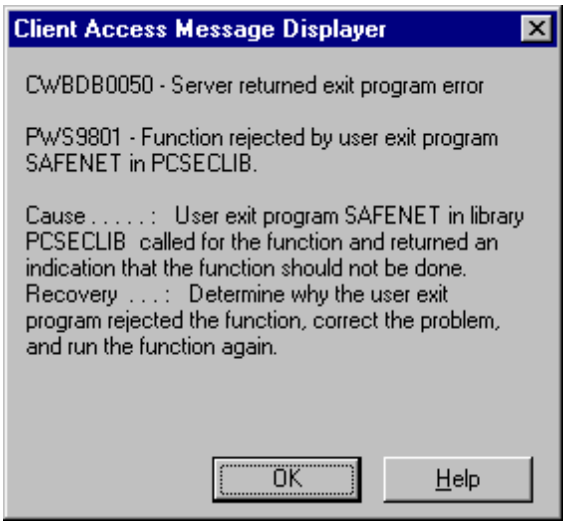
6. You may have to end and re-start QSYSWRK and QSERVER to force joblog creation.

   Also try **ENDTCPSVR *ALL, ENDHOSTSVR *ALL;** then **STRTCP** and **STRHOSTSVR *ALL.**

To determine if the problem is with the server or a client, try this process with another client application that may access the same server.

Examples of Client Error Messages

Some common error messages you may see on a Windows client:



This message was received on the client when the server function was set to Level 2 - Function Disabled/No Access.

This message was received on the client when the user was not authorized to the server.

This message was received on the client when the user was not authorized to the SQL Select statement.

Error Codes which Appear in the Log

1	Accepted	
0	Rejected	Reason unavailable
A	Rejected	Server is turned off
B	Rejected	No authority to server
C	Rejected	No authority to object
D	Rejected	No authority to library
E	Rejected	Invalid Data Rights authority
F	Rejected	Invalid Object Management Rights
G	Rejected	Unauthorized path statement
H	Rejected	No authority to SQL statement
I	Rejected	Incoming commands *OFF
J	Rejected	No authority to Root Directory
K	Rejected	Unauthorized FTP Logon
L	Rejected	Unauthorized FTP Command
N	Rejected	Unauthorized REXEC Logon
O	Rejected	Unauthorized TFTP Logon
P	Rejected	Unauthorized IP Address
Q	Rejected	Invalid Op-Specific Request

R	Rejected	Auto-signon requires password
S	Rejected	TELNET requires password
T	Rejected	Encrypted password required
U	Rejected	No devices available
V	Rejected	Unauthorized CL command
X	Rejected	Error with Swap Profile
Y	Rejected	Error during Profile Swap
Z	Rejected	User/Server Reject Code (Specific *REJECT in WRKUSRSRV)
@	Rejected	Time of Day control
#	Rejected	Function requires **SafeNet/i** regular Admin authority
$	Rejected	Function requires **SafeNet/i** Super Admin authority
%	Rejected	FTP Encryption is required
c	Rejected	No authority to Spool File
d	Rejected	No authority to OUTQ
e	Rejected	Exclusion rule found
!	Alert Event	User defined alert

Additional Troubleshooting Tips

PCREVIEW Command

Use the PCREVIEW commands to easily view historical network transactions. You can select various filters to display only the records from the log file you are interested in. From this screen you can request details of the information.

TRAPOD File

When testing network requests through **SafeNet/i** you can see each transaction being written to the **TRAPOD** file in library PCSECDTA.

Use the operating system command DSPPFM (Display Physical File Member) to look at the contents of the **TRAPOD** file. Type **B** on the *Control line* and press **ENTER**. This will take you directly to the bottom of the file and enable you to see the last request recorded in the file.

As a network request is processed by **SafeNet/i**, a record is written to the **TRAPOD** file. The name of the **SafeNet/i** program that processed the request is in position 1-10; the status of the request is in position 11 (1= Accepted, all others are rejections); the user profile is in position 12-21.

The rest of the record contains specific information based on the request type. Detailed information is available in IBM's TCP/IP Configuration and Reference Guide or the specific licensed program manual.

Chapter 14 - DE-ACTIVATING AND REMOVING SAFENET/i

You must be signed on as a Super Admin in **SafeNet/i** to perform any Activate/De-Activate processes. See 'SafeNet Administrator' in Chapter One of this guide.

De-activating SafeNet/i

Under some circumstances you may want to de-activate **SafeNet/i**. It may be necessary when troubleshooting network problems to make sure they are not being caused by an application such as **SafeNet/i**, or when you need to remove **SafeNet/i** from your system.

If after you have de-activated **SafeNet/i** you still have problems with network requests or connections, you may want to IPL your IBM i or **ENDSBS *ALL** to uncover any autostart jobs or other IPL-initiated i OS activities that may still be allocating **SafeNet/i** objects and programs. This is not required if you do not need to de-allocate all the **SafeNet/i** programs.

Once you have been successful in isolating your network problem, you can re-activate **SafeNet/i**.

Before de-activating

Optionally, rather than de-activating **SafeNet/i** you can remove one or more exit points if required.

For example, if you have a problem with the *FILESRV server function use the **WRKREGINF** command to:

1. Locate the IBM i exit point for the *FILESRV server function
2. Remove the **SafeNet/i** exit program
3. Stop and restart the file server

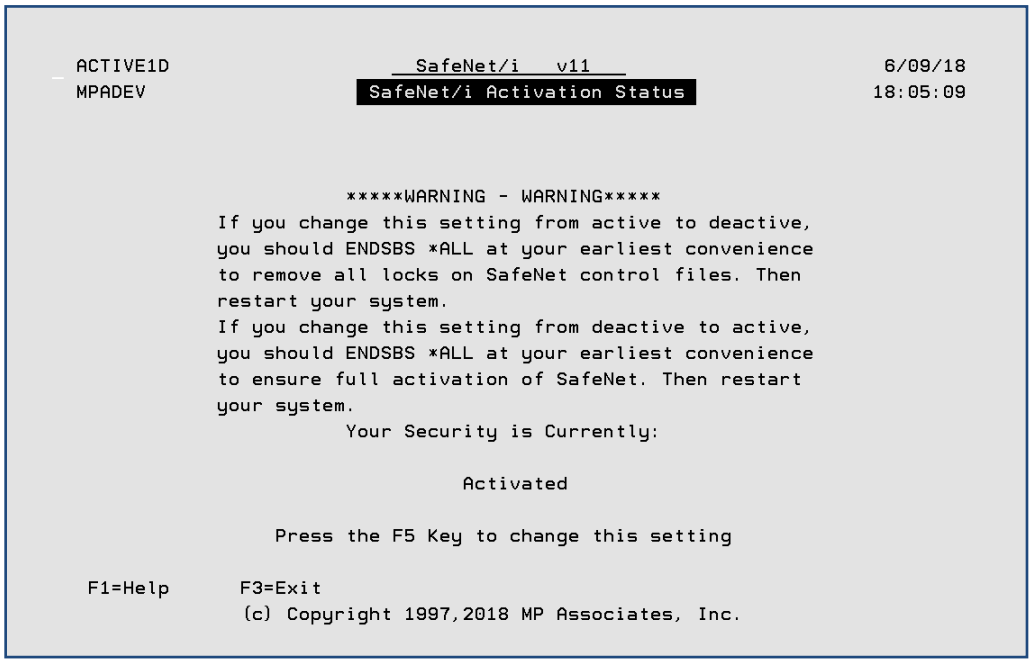
This will prevent the IBM i file server job from using **SafeNet/i** but continue to protect the other server jobs in IBM i with **SafeNet/i**. This way you can eliminate a performance problem or IBM i problem from one server but continue to protect your other access points with **SafeNet/i**.

To activate or de-activate SafeNet/i:

Remember, you must be a **SafeNet/i** Super Admin to perform this step.

1. From the Install Menu select **Option 50 - Activate/De-Activate SafeNet/i**

   The *Server Activation Control* screen is displayed, indicating the current setting.



2. **Press F5** to change the setting and return to the Install Menu.

3. After performing these steps, end all subsystems then restart them to maintain security integrity.

4. Try your network request again. If **SafeNet/i** is active, and your request is not successful, review your request log and correct the problem based on the error code on the report.

Removing SafeNet/i from your system

If it becomes necessary to completely remove **SafeNet/i** from your IBM i, follow these steps.

1. Sign on to the system as QSECOFR or SAFENET.

2. De-activate **SafeNet/i**.

   Follow the instructions on the previous pages to de-activate the program.

3. Exit all **SafeNet/i** menus

4. Remove PCSECLIB and PCSECDTA from your jobs library list

5. Put your system into a Restricted state.

   ENDSBS *ALL *IMMED

6. After all the jobs have ended, restart your system. You can use

   STRSBS QCTL

7. Delete library PCSECLIB and PCSECDTA

8. Delete the SAFENET authorization list from your system

SafeNet/i is now completely removed from your system.

Appendix A - SERVER FUNCTION DESCRIPTIONS

Newer Servers

This server support, provided by IBM with Client Access (now IBM Access Client Solutions - ACS) beginning with OS/400 Version 3 Release 1, services optimized clients: Optimized OS/2 (32 bit applications) and Windows XP, Windows 7, Windows 8, Windows 10.

Additional servers are supplied by IBM for each new release of i OS.

Central Server - Client Management

Description: Central Server - client mgmt - 100

The central server provides the ability to update the client management database on the IBM i. IBM i Access for Windows uses this function when new or existing IBM iAccess clients attach to the server.

Server Identifier:	*CNTRLSRV	
Format Name:	ZSCS0100	
Levels Supported:	Basic	(Levels 1, 2)
	Intermediate	(Level 3)
Limitations:	None	
Recommended Setting:	Level 1, Log All	

Notes:

1. At Level 3 users must be authorized to the server function.

2. Level 4 is not required or supported.

Central Server - Conversion Map

Description: Central Server - conversion map - 100

The central server provides support for retrieving conversion maps for clients that need them. These conversion maps are usually used on the client for ASCII to EBCDIC conversions and EBCDIC to ASCII conversions.

Server Identifier:	*CNTRLSRV	
Format Name:	ZSCN0100	
Levels Supported:	Basic	(Levels 1, 2)
	Intermediate	(Level 3)
Limitations:	None	
Recommended Setting:	Level 1, Log All	

Notes:

1. At Level 3 users must be authorized to the server function.

2. Level 4 is not required or supported.

Central Server - License Management

Description: Central Server - license mgmt - 100

The license management support provided by this server is very similar to the support in the original license management server for IBM i Access for Windows clients. The initial request from a client checks out a license for each IBM i Access for Windows user and the server remains active until the client is no longer communicating with the IBM i.

Server Identifier:	*CNTRLSRV	
Format Name:	ZSCL0100	
Levels Supported:	Basic	(Levels 1, 2)
	Intermediate	(Level 3)
Limitations:	None	
Recommended Setting:	Level 1, Log All	

Notes:

1. At Level 3 users must be authorized to the server function.

2. Level 4 not required or supported.

DB2 for IBM i Database Access Request - DRDA

Description: DRDA DB2/400 Database Access Request

This server is used whenever a client requests a DRDA conversation connection.

Where used:	Rumba Access DB2 for IBM i™ DB2 for OS/390™ DB2 Connect™ And more . . .	
Server Identifier:	*DRDA	
Format Name:	*DRDA	
Levels Supported:	Basic Intermediate	(Levels 1, 2) (Level 3)
Limitations:	None	
Recommended Setting:	Level 3, Log All	

Notes:

1. At Levels 3 and 4 users must be authorized to the server function.

Database Server - Data Base Access - 100

Description: Database Server - data base access - 100

This server function manipulates data base files on the IBM i. It allows operations to data base files, such as: create physical file, add database file member, delete file.

Where used: IBM i Access for Windows
- *Access to IBM i database through ODBC interface*
- *File transfers*

Used by ODBC*, Microsoft Access* and Microsoft Query* for object manipulation

Used by functions
Create source physical file
Create database file, based on existing file
Add, clear, delete database file member
Override database file
Delete database file override
Delete file

Server Identifier: *NDB

Format Name: ZDAD0100

Levels Supported:

Basic	(Levels 1, 2)
Intermediate	(Level 3)
Advanced	(Level 4)

Limitations: None

Recommended Setting: Level 4, Log All

Notes:

1. At Levels 3 and 4 users must be authorized to the server function.

2. Supports generic (wildcard) object names.

Database Server - Data Base Access - 200

Description: Database Server - data base access - 200

This server function enables the addition of library list entries.

Where used: IBM Client Access for Windows for Windows95
- *Access to IBM i database through ODBC interface*
- *File transfers*

Used by various ODBC, DRDA™, SQL packages such as Microsoft Access, Microsoft Query, etc.

Server Identifier: *NDB

Format Name: ZDAD0200

Levels Supported:

Basic	(Levels 1, 2)
Intermediate	(Level 3)
Advanced	(Level 4)

Limitations:
- Does not support generic library names
- Does not support long object names

Recommended Setting: Level 4, Log All

Notes:

1. At Levels 3 and 4 users must be authorized to the server function.

2. At Level 4 the user must be granted authority for each library to add to the library list.

Database Server - Entry

Description: Database Server - Entry - 100

This server function is used at server initiation request. It is the request that always comes first. All other database server requests come after a request to this entry point.
This is called whenever a new connection to the database server is started and a new QZDASOINIT job is initiated to service client database requests, such as calling a stored procedure.

Where used: IBM i Access for Windows
- *Access to IBM i database through ODBC interface*
- *File transfers*

Server Identifier: *SQL

Format Name: ZDAI0100

Levels Supported: Basic (Levels 1, 2,)
Intermediate (Level 3)

Limitations: None

Recommended Setting: Level 3, Log All

Notes:

1. At Level 3 users must be authorized to the server function.

2. **ALL DATABASE SERVER REQUESTS REQUIRE THIS SPECIFIC SERVER TO BE ACCESSIBLE**. A request to this server precedes all other kinds of database server requests.

3. Level 4 is not required or supported.

Database Server - Object Information - 100

Description: Database Server - object information - 100

This server function is used for requests to retrieve information about certain objects from the data base server.

Where used: IBM i Access for Windows
- *Access to IBM i database through ODBC interface*
- *File transfers*

Server Identifier: *RTVOBJINF

Format Name: ZDAR0100

Levels Supported:

Basic	(Levels 1, 2)
Intermediate	(Level 3)
Advanced	(Level 4)

Usage: Used to retrieve information for the following objects:

- Library (or collection)	- SQL package
- File (or table)	- SQL package statement
- Field (or column)	- File member
- Index	- Record format
- Relational database (or RDB)	- Special columns

Limitations: You must restrict access to the user's default library list through user profile parameter changes or i OS object security.

Recommended Setting: Level 4, Log All

Notes:

1. List retrievals from *USRLIBL automatically allowed.

2. Data rights enforced.

3. At Levels 3 and 4 users must be authorized to the server function.

4. At Level 4 the user must be authorized to the OBJECT/LIBRARY.

Database Server - Object information - 200

Description: Database Server - object information - 200

This server function is used for requests to retrieve additional information about certain objects from the data base server, such as primary and foreign key information.

Where used: IBM i Access for Windows
- *Access to IBM i database through ODBC interface*
- *File transfers*

Server Identifier: *RTVOBJINF

Format Name: ZDAR0200

Levels Supported: Basic (Levels 1, 2)
Intermediate (Level 3)

Usage: Used for requests to retrieve information for the following objects:

- Foreign keys
- Primary keys

Limitations: - You must restrict access to the user's default library list through user profile parameter changes.

Recommended Setting: Level 3, Log All

Notes:

1. At Level 3 the user must be authorized to the server function.

2. Level 4 is not required or supported.

Database Server - SQL Access

Description: Database Server - SQL access - 100
Database Server – SQL access – 200 (for V4R1 and above)

This server function is used when certain SQL requests are received for the data base server.

The QIBM_QZDA_SQL2 exit point takes precedence over the QIBM_QZDA_SQL1 exit point. If a program is registered for the SQL2 exit point, it will be a called, and a program for the SQL1 point will not be called.

Where used: IBM i Access for Windows
- *Access to IBM i database through ODBC interface*
- *File transfers*

Used by all network SQL statement processing

Server Identifier: *SQLSRV

Format Name: ZDAQ0100
ZDAQ0200

Levels Supported:		
	Basic	(Levels 1, 2)
	Intermediate	(Level 3)
	Advanced	(Level 4)

Recommended Setting: Level 4, Log All

Notes:

1. At Levels 3 and 4 users must be authorized to the server function.

2. At Level 4 the user must be authorized to the OBJECT/LIBRARY and the SQL statement. Data authority requirements are determined by the authorized SQL statements for the user.

Data Queue Server

Description: Data Queue Server - 100

A data queue is an IBM i object that can be used by any 'client' application program to access a data queue that resides on the IBM i. Applications can use data queue to pass data between jobs. Multiple client jobs can send or receive data from a single data queue.

Server Identifier:	*DATAQSRV	
Format name:	ZHQ00100	
Levels Supported:	Basic	(Levels 1, 2)
	Intermediate	(Level 3)
	Advanced	(Level 4)
Limitations:	None	
Recommended Setting:	Level 1, Log All	

Notes:

1. At Levels 3 and 4 users must be granted access to the server function.

2. At Level 4 users must be granted access to specific data queues and libraries.

3. Supports generic (wildcard) data queue names. (DATAQ* = all data queue names starting with the letters DATAQ)

DHCP Address Binding Notify

Description: DHCP Address Binding Notification - 100

This server assigns IP addresses to specific client hosts.

Where used:	Any device on a TCP/IP network whenever it requests an IP address from the IBM i when the IBM i is set to be the local network DHCP server	
Server Identifier:	*DHCPB	
Format name:	DHCA0100	
Levels Supported:	Basic	(Level 1)
Limitations:	None	
Recommended Setting:	Level 1, Log All	

DHCP Address Release Notify

Description: DHCP Address Release Notification - 100

This server releases an IP address from its specific client host assignment binding.

Where used:	Any device on a TCP/IP network whenever it requests an IP address from the IBM i when the IBM i is set to be the local network DHCP server	
Server Identifier:	*DHCPR	
Format name:	DHCR0100	
Levels Supported:	Basic	(Level 1)
Limitations:	None	
Recommended Setting:	Level 1, Log All	

File Server

Description: File Server – 100

This File Server point has been deprecated. If you need to use this point, please contact Kisco Support.

The file server function allows clients to store and access information, such as files and programs, on the IBM i in various formats. The IBM i OS file server interfaces with the integrated file system on the IBM i. It provides file serving capabilities equivalent to shared folders, but also allows clients to access information in any of the file systems within the operating system.

Where used: IBM i Access for Windows
- *Access to entire file system*
- *Windows Explorer and other applications*

Server Identifier: *FILESRV

Format Name: PWFS0100

Levels Supported:

Basic	(Levels 1, 2)
Intermediate	(Level 3)
Advanced	(Level 4)

Recommended Setting: Level 4, Log All

Notes:

1. When set to Levels 3 or 4, each IBM i Access for Windows user must be specifically authorized to this server to access their shared folder and update functions.

2. To grant authority to all folders and all file systems use:

Library or Folder	Object or Sub-Folder
*ALLFLR	*ALL

To enter *ALLFLR/ *****ALL you must be signed on as QSECOFR.

Proper Data Rights must be selected also.

3. At Level 4, to authorize a user for access to a non-IBM folder within the QDLS file system (shared folders), you must enter two records in the OBJECT/USER security file.

Example 1: A user requires access to a folder called PERSONNEL within QDLS.

Network Request: /QDLS/PERSONNEL

Entries Required:

	Library or Folder	Object or Sub-Folder	Read
Entry #1	QDLS	PERSONNEL	X
Entry #2	PERSONNEL	*ALL	X

Example 2: You can add specific folder names in place of *ALL to further extend the directory path.

Network Request: /QDLS/PERSONNEL/PAYROLL/SALARY

Entries Required:

	Library or Folder	Object or Sub-Folder	Read
Entry #1	QDLS	PERSONNEL	X
Entry #2	PERSONNEL	*ALL	X
Entry #3	PAYROLL	SALARY	X
Entry #4	SALARY	*ALL	X

4. This is a typical IBM i Access for Windows user security set up if automatic read to IBM folders is not enabled (found on Special Jobs Menu, Option 2):

Library or Folder	Object or Sub-Folder	Read
QDLS	QIWSFLR	X
QIWSFLR	*ALL	X

5. If you choose to use *SHORT path support, **SafeNet/i** does not support the full long file names or lower case names. **SafeNet/i** will truncate each request to a maximum of 10 characters and convert it to upper case.

Use *LONG PATH support instead!

To allow access to file systems **Qopensys, Qfilesys.400 and home**, key in the first 10 positions of each file system name only.

Example:

Network Request: /Qfilesys.400/QSYS.LIB/PAYROLL.LIB/SALARY.FIL

Entries Required:

	Library or Folder	Object or Sub-Folder	Read
Entry #1	QFILESYS.4	QSYS.LIB	X
Entry #2	QSYSLIB	PAYROLL.LI	X
Entry #3	PAYROLL.LI	SALARY.FIL	X

SafeNet/i will convert all requests to uppercase, then check the first ten characters in each directory name for a match.

Note: When native libraries or objects are accessed via the file server, .LIB, .file, etc. are added to the end of the name. You must enter the .LIB or .file in the user to object control file. If the same user accesses these same objects through another server also, (SQL, for example) you must also enter the authorities without the .LIB and .file.

Example:

For the path through the file server: home/TEST.LIB/abc.file you must enter:

Library	Object	Auth
home	TEST.LIB	X
TEST.LIB	*ALL	X

For SQL or other access you also need:

Library	Object	Auth
TEST	*ALL	X

File Server

Description: File Server - 200

This function was added under OS V7.3. It is similar to the PWFS0100 point and adds additional information and controls.

Where used: Any time the IFS is accessed via a network client

Server Identifier: *PWFS0200

Format Name: VLRQ0100

Levels Supported:	Basic	(Level 1, 2)
	Intermediate	(Level 3)
	Advanced	(Level 4)

Usage Notes/Limitations:

Available only with iOS 7.3 and above

By default this point is not activated within **SafeNet/i**. If you require the additional function provided by this point, you can activate it at any time.

Please contact **SafeNet/i** support for activation instructions.

FTP Client Request Validation

Description: FTP Client Request Validation

This function is used whenever the IBM i is a client, issuing FTP commands to a remote system.

Where used:	IBM i command lines, interactive and batch jobs can initiate an FTP client request	
Server Identifier:	*FTPClient	
Format Name:	VLRQ0100	
Levels Supported:	Basic	(Level 1, 2)
	Intermediate	(Level 3)
	Advanced	(Level 4)

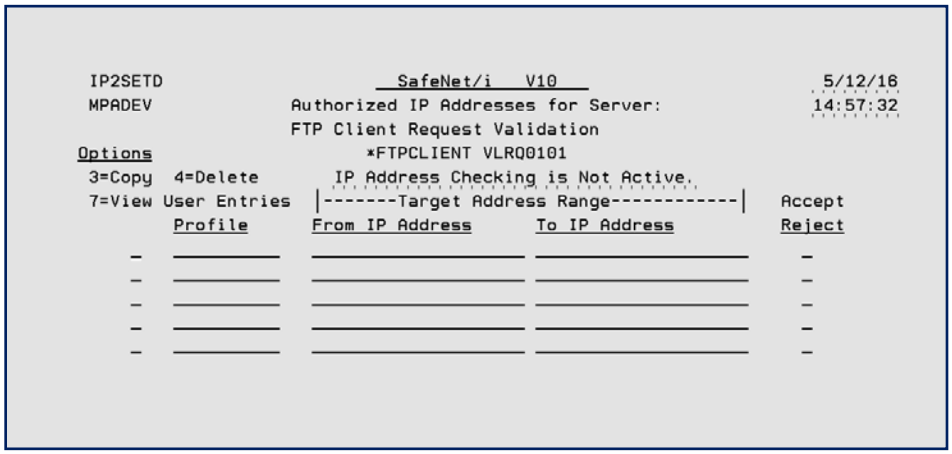
Usage Notes/Limitations:

At Level 3 or Level 4 you can implement IP address controls. This will allow you to limit what target addresses/systems an FTP client can connect to.

Use the WRKSRV command to setup the valid source AND target IP addresses by user. You must set up valid target addresses using the WRKSRV (Work with Server Settings) command.

Using WRKSRV, find the *FTPCLIENT server point. Position your cursor on the *FTPCLIENT point line, and press F7.

This will present the correct target IP address maintenance screen:



Recommended Setting: Level 4, Log All

Important Note:

When the FTP Client point is set to Level 4, only the GET and PUT FTP sub-commands are required. The other commands, when using the FTP Client, are for the TARGET SYSTEM ONLY (sent to/run on the target system).

When authorizing users to the GET/PUT sub-commands, the assumed object authority is reversed from authorities required for the FTP Server point and the same objects.

See the following examples.

Using FTP Client:

- Sending an object to a remote system
  An FTP PUT of object ABC in an FTP Client session requires *READ authority to object ABC on the local machine.
- Get an object from a remote system
  An FTP GET of object ABC in an FTP Client session requires *OBJMGT authority to the object ABC on the local machine.

Using FTP Server:

- Send an object to local system
  An FTP PUT of object ABC in an FTP Server session requires *OBJMGT authority to the object ABC on the LOCAL machine.
- Get an object from the local system
  An FTP GET of object ABC in an FTP Server session requires *READ authority to the object ABC on the LOCAL machine.

FTP Logon Server

Description: FTP Logon Server 1 - 100

This server is used any time the IBM i answers an FTP start request from another system or user. It is available in OS/400 versions V3R7 through V4R1

This FTP 100 point is not registered by default within **SafeNet/i**. See FTP Logon 300 for the default FTP server.

If you need to use the FTP 100 server point specifically, please contact **SafeNet/i** Support for assistance.

Optionally you can use **SafeNet/i** and the FTP Logon Server to update a user's previous signon date. See the *SIGNONDATE* parameter in command CHGFTPSET for details.

Where used:	Internets and Intranets MS Windows DOS And most other operating systems	
Server Identifier:	*FTPLOGON	
Format Name:	TCPL0100	
Levels Supported:	Basic Intermediate	(Level 1, 2) (Level 3)
Limitations:	None	
Recommended Setting:	Level 3, Log All	

FTP Logon Server

Description: FTP Logon Server 2 - 200

This server is used any time the IBM i answers an FTP start request from another system or user. It is available in OS/400 versions V4R2 and above.

This FTP 200 point is not registered by default within **SafeNet/i**. See FTP Logon 300 for the default FTP server.

If you need to use the FTP 200 server point specifically, please contact **SafeNet/i** Support for assistance

Where used:	Internets and Intranets MS Windows DOS And most other operating systems	
Server Identifier:	*FTPLOGON2	
Format Name:	TCPL0200	
Levels Supported:	Basic Intermediate	(Level 1, 2) (Level 3)
Limitations:	None	
Recommended Setting:	Level 3, Log All	

FTP Logon Server

Description: FTP Logon Server 3 – 300

This server is used any time the IBM i answers an FTP start request from another system or user.

This is the default and primarily supported FTP Logon point for all OS levels V5R1 and above.

Optionally you can use **SafeNet/i** and the FTP Logon Server to update a user's previous signon date. See the *SIGNONDATE* parameter in command CHGFTPSET for details.

Where used:	Internets and Intranets MS Windows DOS And most other operating systems	
Server Identifier:	*FTPLOGON3	
Format Name:	TCPL0300	
Levels Supported:	Basic Intermediate	(Level 1, 2) (Level 3)
Limitations:	None	
Recommended Setting:	Level 3, Log All	

FTP Server Request Validation

Description: FTP Server Request Validation

This function is used whenever the IBM i receives an FTP command it must act upon.

Where used:	Internets and Intranets MS Windows And most other operating systems	
Server Identifier:	*FTPSERVER	
Format Name:	VLRQ0100	
Levels Supported:	Basic Intermediate Advanced	(Level 1, 2) (Level 3) (Level 4)
Limitations:	None	
Recommended Setting:	Level 4, Log All	

Notes:

1. At Level 4, users must be authorized to the directory path (WRKUSRPTH) or the objects (WRKUSROBJ) and the FTP statements they require.

2. Only at Level 4 are 'ANONYMOUS' logons allowed. This is in conjunction with the special FTP security settings. See Chapter 4 in this guide, 'Setting up FTP' (**CHGFTPSET** command).

3. You can limit FTP connections from specific IP Addresses.

   You can activate IP Controls via the WRKSRV command and can define those IP addresses using the WRKSRVIP command.

   You can also review 'Setting up TCP/IP Address Controls' in Chapter 3 of this guide.

4. This point does not support IP address controls directly. IP address controls for *FTPSERVER are implemented at the *FTPLOGON server level. If a user is not allowed to connect through the *FTPLOGON server (either by not being authorized to the server or is rejected due to an invalid IP address at the *FTPLOGON level), the user will never reach the *FTPSERVER server point.

Network Print Server - Entry

Description: Network Print Server - entry - 100

This server function is used when the network print server is started.

Server Identifier:	QNPSERVR	
Format Name:	ENTR0100	
Levels Supported:	Basic	(Levels 1, 2)
	Intermediate	(Level 3)
Limitations:	None	
Recommended Setting:	Level 3, Log All	

Notes:

1. At Level 3 users must be granted access to the server function.

2. Level 4 is not required or supported.

Network Printer Server - Spool File

Description: Network Print Server - spool file - 100

This server function is used after the network print server receives a request to process an existing spooled output file.

Server Identifier:	QNPSERVR	
Format Name:	SPLF0100	
Levels Supported:	Basic	(Levels 1, 2)
	Intermediate	(Level 3)
	Advanced	(Level 4)
Limitations:	Level 4 grants spool file management rights to the owner of the spool file only.	
Recommended Setting:	Level 4, Log All	

Notes:

1. At Levels 3 and 4 users must be granted access to the server function.

2. Level 4 requires no special set up. (see Limitations above)

3. No specific object authorizations required.

Pre-Power Down

Description: Pre-Power Down Server

This program is called whenever the PWRDWNSYS or ENDSYS command is issued

Where used:	Any interface, command line or program that can issue the PWRDWNSYS or ENDSYS command	
Server Identifier:	PWRDWN	
Format Name:	PWRD0100	
Levels Supported:	Basic	(Level 1)
Limitations:	None	
Recommended Setting:	Level 1	

Notes:

1. To use the pre-power down program call, create a CL program called PWRDWNCL.

Remote Command and Distributed Program Call Server

Description: Remote Command/Program Call - 100

The remote command and distributed program call server is provided to allow client users and applications to issue IBM i CL commands and call programs.

Server Identifier: *RMTSRV

Format Name: CZRC0100

Levels Supported:

Basic	(Levels 1, 2)
Intermediate	(Level 3)
Advanced	(Level 4)

And special global control setting

Limitations: **SafeNet/i** does not check Library/Object security on imbedded command strings

Recommended Setting: Level 4, Log All

Notes:

1. For X-1002 Remote Command Call, the same rules apply here as for *DDM commands. You must use the Special Jobs Menu to allow or reject remote commands entering via this server. In addition, see Note 3 below.

One setting controls both *RMTSRV X-1002 and *DDM command servers.

2. Used by System i Navigator for system object access.

   Each GUI request from system object access triggers a program call. Most are in QUSRSYS or QGY libraries. By allowing QGY/*ALL and QUSRSYS/*ALL Read Data Rights, you let users access GUI interfaces.

3. At Level 4 you must authorize each user to the CL commands they may issue through this server.

REXEC Logon Server

Description: REXEC Logon Server 1 - 100

This server is used to validate a client request to start the REXEC Server. It is available in all versions of i OS.

This REXEC Logon 100 point is not registered by default with **SafeNet/i**. See REXEC Logon 200 for the default REXEC Logon server.

If you need to use the REXEC Logon 100 server point specifically, please contact **SafeNet/i** Support for assistance

Where used:	Windows and OS/2 Desktop Add-in Applications Other Clients using REXEC Applications	
Server Identifier:	*REXLOGON	
Format name:	TCPL0100	
Levels Supported:	Basic Intermediate	(Levels 1, 2) (Level 3)
Limitations:	None	
Recommended Setting:	Level 3, Log All	

REXEC Logon Server

Description: REXEC Logon Server 2 - 200

This server is used to validate a client request to start the REXEC Server. It is available in OS/400 versions V5R1 and above.

This REXEC Logon Server 200 is the default registered REXEC point in **SafeNet/i**.

Where used:	Windows and OS/2 Desktop Add-in Applications Other Clients using REXEC Applications	
Server Identifier:	*REXLOGON2	
Format name:	TCPL0300	
Levels Supported:	Basic Intermediate	(Levels 1, 2) (Level 3)
Limitations:	None	
Recommended Setting:	Level 3, Log All	

REXEC Request Validation Server

Description: REXEC Request Validation Server

This server is initiated whenever a client issues a REX statement to the IBM i.

Where used:	Windows and OS/2 Desktop Add-in Applications Other Clients using REXEC Applications	
Server Identifier:	*REXSERVER	
Format name:	VLRQ0100	
Levels Supported:	Basic	(Levels 1, 2)
	Intermediate	(Level 3)
	Advanced	(Level 4)
Limitations:	None	
Recommended Setting:	Level 3, Log All	

Usage Notes:

This point does not support IP address controls directly. IP address controls for *REXSERVER are implemented at the *REXLOGON server level. If a user is not allowed to connect through the *REXLOGON server (either by not being authorized to the server or is rejected due to an invalid IP address at the *REXLOGON level), the user will never reach the *REXSERVER server point.

ShowCase™ Validation Server

Description: Showcase Validation Server

This server is initiated by a client utilizing the Showcase™ product with the proper exit point added to i OS.

Please follow the instructions from Showcase™ to properly register the ShowCase Exit Program. You MAY have to use the ADDEXITPGM command to add the exit point for ShowCase™ to your IBM i Server.

Where used:	Any client utilizing Showcase™ Application	
Server Identifier:	*SHOWCASE	
Format name:	SRCS0100	
Levels Supported:	Basic	(Levels 1, 2)
	Intermediate	(Level 3)
	Advanced	(Level 4)
Limitations:	None	
Recommended Setting:	Level 4, Log All	

****Important Notes on setting up a user for ShowCase****

Although Showcase uses SQL statements to access i OS data, **SafeNet/i** does NOT verify the SQL statement authority. **SafeNet/i** ONLY verifies the user to server and user to objects. The SQL Statement is NOT interrogated for authority. If the user issues a SELECT statement, the object authority required is *READ. If the user issues a DELETE statement, data *DELETE authority is required.

You DO NOT have to set up SQL statement authority for the Showcase users.

Spooled File Security

Description: Spooled File Security - 100

The spooled file security exit point allows **SafeNet/i** to control access to spooled files in specific output queues.

This is a system-wide setting. Once an exit program is assigned to the exit point all system spool file activity will call the exit program if the user profile does not have *SPLCTL or *JOBCTL special authorities. If the **SafeNet/i** security level for this server is at level 3 or higher, **SafeNet/i** will perform additional security lookups.

Where used:	During any access to spooled files, whether remote or via the 5250 command line.	
Server Identifier:	*SPLAUT	
Format Name:	SPSY0200	
Levels Supported:	Basic	(Level 1, 2)
	Intermediate	(Level 3)
	Advanced	(Level 4)
Limitations:	This exit point is available on IBM i V7.1 and above	
Recommended Setting:	Level 1 Log All – unless additional output queue control is required by your installation	

Usage Notes:

Exit point QIBM_QSP_SECURITY gives **SafeNet/i** the ability to control access to spooled files in individual output queues.

1. If the user has *SPLCTL or *JOBCTL special authority, iOS security is in place. **SafeNet/i** cannot intercept the request.

2. If the user does NOT have *SPLCTL or *JOBCTL special authority, normal **SafeNet/i** processing and logging will occur.
    a. If *Spool Server Security is at Level 3 AND the user is authorized to the *SPLAUT Server, then the user will have access to all OUTQs and all spool files. If not authorized to *Spool Server, the request will be rejected.

b. If *Spool Server Security is at Level 4, the user must be authorized to the *SPLAUT Server AND the Library/OUTQ as defined in WRKUSROBJ. If not authorized to the *Spool Server and OUTQ, the request will be rejected

3. At Level 1, the default, all spooled file activity will be logged for those users without *SPLCTL or *JOBCTL special authorities.

3. At Level 2, no access to ANY OUTQ except spool file creations

4. At Level 3, the user must be authorized to the *SPLAUT exit point server in **SafeNet/i**

5. At Level 4, Level 3 rules apply. In addition, the user must have authority to the output queue and library and have the specific data or management rights assigned (Read, Write, Delete, etc.)

   For instance, if the user is trying to delete a spooled file in the output queue, they must have Delete Rights to the OUTQ/LIB assigned with WRJUSROBJ.

   Example: A user is trying to delete a spool file in QGPL/QPRINT OUTQ

   - Spooled File Security Server set to Level 1
     a. If logging for server point is on, record is logged; otherwise, accept and continue

   - Spooled File Security Server set to Level 3
     a. Check for the specific user-to-server *SPLAUT (WRKUSRSRV); check group profiles for specific *SPLAUT entry
     b. If found, accept

   - Spooled File Security Server set to Level 4
     a. Perform Level 3 checks
     b. Check specific user-to-object QGPL/QPRINT entry and check required Read or Management authority
     c. Check group profiles to specific object entry (QGPL/QPRINT) and check required authority

Notes and Exclusions:

The exit programs will be called at the beginning of each IBM i spool command or API, except under any of the following conditions:

1. The job or thread has spool control (*SPLCTL) special authority. The special authority may originate from the user profile, group profile, or adopted authority.
2. The job or thread has job control (*JOBCTL) special authority and the spooled file resides on an output queue with OPRCTL(*YES). The special authority may originate from the user profile, group profile, or adopted authority.
3. The command or API is executed in a system job (including SCPF), a subsystem monitor job, or any job that is running under one of the following system user profiles:

QUATPROF	QNETSPLF
QCLUMGT	QNFSANON
QCOLSRV	QNTP
QDBSHR	QPEX
QDBSHRDO	QPM400
QDFTOWN	QRJE
QDIRSRV	QSNADS
QDLFM	QSPL
QDOC	QSPLJOB
QDSNX	QSRVAGT
QFNC	QSYS
QGATE	QTCP
QLPAUTO	QTFTP
QLPINSTALL	QTSTRQS
QMSF	

Special Notes regarding Spooled File Security

IBM has implemented the Spooled File Security exit point differently than other exit points.

Using IBM iOS security, where **SafeNet/i** is not installed on a system, if the user does NOT have *SPLCTL or *JOBCTL, that user would be rejected from doing spool file ops by iOS. This would be a normal rejection by IBM iOS.

If **SafeNet/i** is installed and the Spooled File Security point is set to Level 1, a user without *SPLCTL or *JOBCTL would still be rejected by iOS, as a normal response by IBM iOS.

If **SafeNet/i** is at Level 1 and the user DOES HAVE *SPLCTL or *JOBCTL the user would have access. This is also a normal IBM iOS response, but in this case there is no logging at Level 1.

If SafeNet is at Level 3 or 4, and the user DOES NOT have *SPCTL or *JOBCTL, **SafeNet/i** rules and logging are in effect.

If **SafeNet/i** is at Level 3 or 4 and the user HAS *SPLCTL or *JOBCTL, **SafeNet/i** does not see the request and iOS takes care of the authority.

To summarize, **SafeNet/i** can only manage users who do NOT have the required special authorities of *SPLCTL or *JOBCTL.

If you want **SafeNet/i** to manage and LOG user spool requests, then you must REMOVE the *SPLCTL and *JOBCTL special authorities from the User Profiles you want to log and manage through **SafeNet/i**.

If you don't want **SafeNet/i** to manage and/or log any user spool actions, give users *SPLCTL and *JOBCTL special authorities.

TCP Signon Server

Description: TCP Signon Server - 100

The sign-on server provides security for clients that use TCP/IP communications support. This security function prevents access to the IBM i for users with expired passwords or allows entry to only specific users.

Server Identifier:	*SIGNON	
Format Name:	ZSOY0100	
Levels Supported:	Basic	(Level 1, 2)
	Intermediate	(Level 3)
Limitations:	None	
Recommended Setting:	Level 1, Log All	

Notes:

1. Level 3 requires specific authority to the server function.

2. Level 4 is not required or supported.

TCP Sockets - Accept

Description: Exit point for APIs that accept sockets connections

Control access by user ID and IP address. Allow only known system users to accept connections from specific IP addresses by using IP controls in conjunction with Level 3 user-to-server authorizations.

Server Identifier:	*TCPACCEPT	
Format Name:	ACPT0100	
Levels Supported:	Basic	(Level 1)
	Intermediate	(Level 3)
	Advanced	(Level 4)
Limitations:	None	
Recommended Setting:	Level 3 with IP Controls	

Notes:

1. If you set this point to Level 4 with IP controls active be sure you properly authorize all IBM profiles, such as QSYS, QTCP, QSECOFR to ALL IP addresses and to this server, or your system may reject all connection attempts.

2. At Level 3 with IP controls active any IP authorization found are considered optional.

3. At Level 4 with IP controls active, IP authorization entries in WRKUSRIP are mandatory

TCP Sockets - Connect

Description: Exit point for APIs or programs that connect to another IP address

Control usage of this function by using both user ID and IP address controls. You can specify both an IP address and optionally a remote port number that can be used to highly control who and where an application can connect.

Server Identifier:	*TCPCONNECT	
Format Name:	CONN0100	
Levels Supported:	Basic	(Level 1)
	Intermediate	(Level 3)
	Advanced	(Level 4)
Limitations:	None	
Recommended Setting:	Level 4 with IP Controls	

Notes:

1. If you set this point to Level 4 with IP controls active be sure you properly authorize all IBM profiles, such as QSYS, QTCP, QSECOFR to ALL IP addresses and to this server, or your system may reject all connection attempts.

2. At Level 3 with IP controls active any IP authorization found are considered optional.

3. At Level 4 with IP controls active, IP authorization entries in WRKUSRIP are mandatory

TCP Sockets - Listen

Description: Exit point for applications that use the TCP Listen API

Control access by user ID. Allow only known users to listen for connections,

Server Identifier:	*TCPLISTEN	
Format Name:	LSTN0100	
Levels Supported:	Basic	(Level 1)
	Intermediate	(Level 3)
	Advanced	(Level 4)
Limitations:	None	
Recommended Setting:	Level 3 with IP Controls	

Notes:

1. If you set this point to Level 4 with IP controls active be sure you properly authorize all IBM profiles, such as QSYS, QTCP, QSECOFR to ALL IP addresses and to this server, or your system may reject all connection attempts.

2. At Level 3 with IP controls active any IP authorization found are considered optional.

3. At Level 4 with IP controls active, IP authorization entries in WRKUSRIP are mandatory

TELNET Device Initialization
TELNET Device Termination

Description: TELNET Device Initialization - *TELNETON
TELNET Device Termination - *TELNETOFF

The TELNET servers provide for security when using TCP/IP and TELNET clients. This point allows the restriction by IP address and password type. Auto-sign-on can also be configured. TELNET Device Termination allows for session logging and device management upon session termination. *TELNETOFF is dependent upon the setting of *TELNETON.

Where used:	Any TN5250 (TELNET client) MS Windows IBM i Access for Windows	
Server Identifier:	*TELNETON *TELNETOFF	
Format Name:	INIT0100 TERM0100	
Levels Supported:	Basic Intermediate	(Level 1, 2) (Level 3)
Limitations:	See Chapter 3 in this guide, 'TELNET, TCP/IP Address Controls'	
Recommended Setting:	Level 3, Log All	

Notes:

1. Level 3 requires correct IP addressing in control file (WRKTCPIPA *TELNET)

TFTP Server Request Validation

Description: TFTP Server Request Validation

Clients utilizing TFTP (Trivial File Transfer Protocol), such as the IBM Net Station use this server.

Where used:	IBM Net Station Boot	
Server Identifier:	*TFTPSRVR	
Format name:	VLRQ0100	
Levels Supported:	Basic	(Levels 1, 2)
	Intermediate	(Level 3)
Limitations:	None	
Recommended Setting:	Level 3, Log All	

User Profile Servers

Description: **Add User Profile**
Change User Profile
Delete User Profile
Restore User Profile

These servers are called each time a user profile command is issued.

Where used: Any interface or command line that can issue a user profile associated i OS command

Server Identifier:	**Format:**
*CHGPRF	CHGP0100
*CRTPRF	CRTP0100
*DLTPRFA	DLTP0100
*DLTPRFB	DLTP0200
*RSTPRF	RSTP0100

Levels Supported: Basic (Levels 1)

Limitations: None

Recommended Setting: Level 1, Log All

Notes:

1. This point simply logs which user profile was affected, who performed the action, and when it was done.

Legacy Servers

These servers have been provided by IBM since PC Support/400 became available. Support for these original servers was designed for and is still used to service the original clients: DOS, Extended DOS and OS/2.

Distributed Data Management

Description: Distributed Data Management - 100

Security checking is performed when a remote user or system accesses an IBM i file or issues an incoming remote command via DDM. The remote user must be authorized to perform the operation (open, close, read or write, for example) or the DDM request is rejected.

Server Identifier: *DDM

Format Name: *DDM

Levels Supported:

Basic	(Levels 1, 2,)
Intermediate	(Level 3)
Advanced	(Level 4)

Plus special setting for remote command processing
CL command authority checking is performed at Level 4

Limitations:
- See the Special Jobs Menu for incoming remote commands
- Cannot check authority of files, objects or commands imbedded in the command string

Recommended Setting: Level 4, Log All

Notes:

1. Commands are allowed only if specified from Special Jobs Menu, *Option 2* (**CHGSPCSET** command). DDM commands, NOT file requests, can be stopped by saying "NO" to *Allow DDM Commands* parameter. The **SafeNet/i** default is "YES" to allow commands. Review existing requirements prior to changing this setting. At Level 4, users must be authorized to commands.

2. Does not support *SPC type transactions

3. For Version 4 of **SafeNet/i**, if *DDM is set to Level 4, you must authorize each user to the CL commands they may issue to the IBM i.

4. Most IBM i systems, by default, use the QUSER profile for the communications conversation. QUSER must have authority to all files that are being accessed and must be authorized to the *DDM server function.

To change from QUSER as the default, a change to the default communications entry must be made in the QCMN subsystem description. See your system administrator for assistance.

Original Data Queue Server

Description: Original Data Queue Server - 100

A data queue is an IBM i object that is used by IBM i application programs for communications. Applications can use data queues to pass data between jobs. Multiple IBM i jobs can send or receive data from a single data queue.

Server Identifier:	*DQSRV	
Format Name:	DTAQ0100	
Levels Supported:	Basic	(Levels 1, 2)
	Intermediate	(Level 3)
	Advanced	(Level 4)
Limitations:	None	
Recommended Setting:	Level 1, Log All	

Notes:

1. At Levels 3 and 4 users must be granted access to the server function.

2. At Level 4 users must be granted access to specific data queues and libraries.

3. Supports generic (wildcard) data queue names. (DATAQ* = all data queue names starting with the letters DATAQ)

Original Transfer Function Server

Description: Original File Transfer Function - 100

The Client Access transfer function transfers data between the IBM i system and a personal computer.

Server Identifier: *TFRFCL

Format Name: TRAN0100

Levels Supported:

Basic	(Levels 1, 2)
Intermediate	(Level 3)
Advanced	(Level 4)

Recommended Setting: Level 4, Log All

Notes:

1. Specific users must be granted access to the server function at Levels 3 and 4.

2. Users must be granted access to specific files and libraries at Level 4.

3. Supports generic (wildcard) file names. (FI* = all file names starting with the letters FI)

4. Full control of library, object and data rights allowed.

5. At Level 4, to select or extract a list of objects from within a library, you must enter the name of the library and use *ALL in the *Object or Sub-Flr* column. The user will need Read data rights to the library.

Example 1: To get a list of all files in *USRLIBL there must be an entry for the user requesting the list:

Library or Folder	Object or Sub-Folder	Read
*USRLIBL	*ALL	X

Example 2: To get a list of all files in the library PAYROLL enter:

Library or Folder	Object or Sub-Folder	Read
*PAYROLL	*ALL	X

6. CRTFILE(*YES) CRTMBR(*YES)

To do a “REPLACE” with a CREATE FILE(*YES) or a CREATE MEMBER(*YES), Existence Rights must be given to the user for the FILE/LIBRARY being created.

To do a “REPLACE” with a CREATE FILE(*NO) or CREATE MEMBER(*NO), Delete and Write Data Rights must be specified to the object.

Original License Management Server

Description: Original License Management Server - 100

The license management server ensures valid licenses are available for Client Access, IBM and non-IBM licensed applications when requested from a client. The license management server performs this process every time a Client Access client requests a license for an application, typically upon session initiation. When a Client Access client disconnects from the IBM i, the license is released and is available for another client to use.

Server Identifier:	*LMSRV	
Format Name:	LICM0100	
Levels Supported:	Basic	(Levels 1, 2)
	Intermediate	(Level 3)
Limitations:	None	
Recommended Setting:	Level 1, Log All	

Notes:

1. At Level 3 the user must be authorized to the server function.

2. Level 4 is not required or supported.

Original Message Server

Description: Original Message Server - 100

The message function server allows users to communicate with each other by sending messages. Users can communicate with other users at IBM i workstations or with users at personal computers that are attached to the IBM i system.

The message function server routes messages sent from PC users to the appropriate user and receives messages for PC users and sends them to the PC workstation.

Server Identifier:	*MSGFCL	
Format Name:	MESS0100	
Levels Supported:	Basic	(Levels 1, 2)
	Intermediate	(Level 3)
Limitations:	None	
Recommended Setting:	Level 1, Log All	

Notes:

1. At Levels 3 and 4, the user must be authorized to the server function.

2. Generic (wildcard) names are supported for Level 4.

Original Remote SQL Server

Description: Original Remote SQL Server - 100

The remote SQL server processes requests that are received from Client Access products that are using the high-level language remote SQL API. The API allows applications running on the clients to run SQL statements on a remote IBM i system. The databases accessed may be either SQL database files or native IBM i database files.

Server Identifier:	*RQSRV	
Format Name:	RSQL0100	
Levels Supported:	Basic	(Levels 1, 2)
	Intermediate	(Level 3)
	Advanced	(Level 4)
Limitations:	ODBC support on Windows 3.1 and Client Access for DOS with Extended Memory clients **DO NOT** use this server	
Recommended Setting:	Level 4, Log All	

Notes:

1. Levels 3 and 4 require the user to be authorized to the server function.

2. Level 4 checks SQL statements and Object/Library for authority.

3. User must have authority to SQL statement and Object/Library.

Original Virtual Print Server

Description: Original Virtual Print Server - 100

The virtual print server is used to print data from PC application programs on IBM i printers.

Server Identifier: *VPRT

Format Name: Always Blanks

Levels Supported:

Basic	(Levels 1, 2)
Intermediate	(Level 3)
Advanced	(Level 4)

Limitations: None

Recommended Setting: Level 3 or 4, Log All

Notes:

1. At Levels 3 and 4 users must be authorized to the server function.

2. At Level 4, for each printer that is opened the user must have authority to the printer.

   *Example 1***:** To grant authority to all printers that begin with the letters PRT in library QUSRSYS enter:

Library or Folder	Object or Sub-Folder	Read
QUSRSYS	PRT*	X

   Example 2: To grant authority to only the PAYROLL printer, enter:

Library or Folder	Object or Sub-Folder	Read
QUSRSYS	PAYROLL	X

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