

Application Note



4200 Series- Implementing File Security under the Windows 2000 Operating System

Reference: 051-1

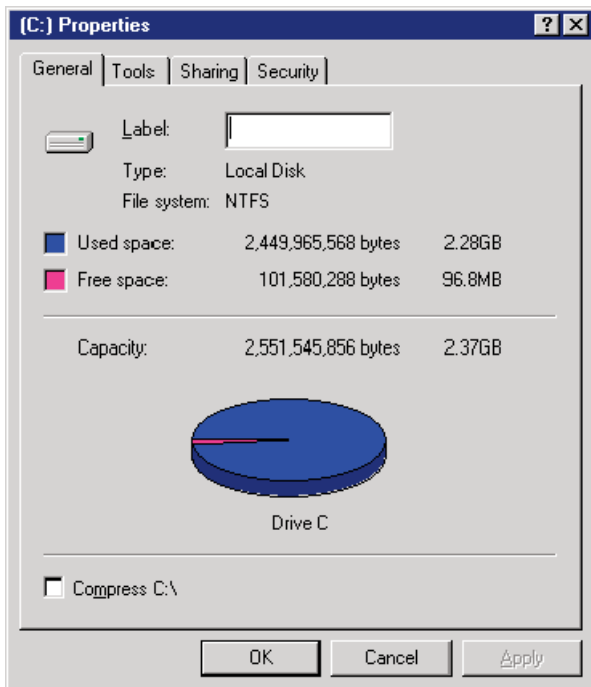


This application note explains how to implement a file security system on a Windows 2000 controlled 4200 Series test system. The method described will prevent the system operators from making any unauthorized edits to a test program whilst still allowing them to test boards.

NTFS Filing System

In order to implement a suitable file security system, the hard disk of the PC controller must be converted to the NTFS filing system. Some 4200 series controllers are supplied with the hard disk formatted using the FAT or FAT32 filing systems, these must be converted to NTFS by using the Windows 2000 "Convert" program. Before running this please ensure that a backup of any important files is made (e.g. test programs).

To determine the current disk format, right-click on the hard drive icon(s) in "My Computer" and select "Properties". The File System will be shown under the General Tab of the Properties box. If this displays NTFS, conversion will not be necessary.



To convert from FAT/FAT32 to NTFS, the command below is run from a Windows command line prompt. You may be prompted to reboot the system to complete the process. The command syntax is:

```
CONVERT C: /FS:NTFS
```

MTL Program Formats

There are two formats of the program used by 4200 series testers. The MTL programs created by CAPG are ASCII files; these can easily be edited using the MTL editor or a simple text editor such as "Notepad". The second file format is the "Object" (.OBJ) file. This is a compiled binary file, which can not be edited, but may be used to test the board. Object files are used for the system self check and calibration programs where it is important to protect the contents of the files against any unauthorised changes.

By using the facilities in the Windows 2000 operating system for setting file and login permissions, we can implement a protected system that ensures that the Operator only has access to the OBJ file whereas the Programmer is allowed access to both OBJ and MTL files.

This document assumes that the program files are stored in the following directories:

MTL files: C:\IFR\USERS\PROGRAMMER

OBJ files: C:\IFR\RELEASED

Applying File and Login Permissions

Windows 2000 allows different file and directory access permissions to be set for each group of users. To allow the test programs to be protected against unauthorised edits, we will create a new "Group" called "4220 Programmers" and add the "Programmer" login to it. Only members of this group will have access to the MTL source files.

The procedure outlined below explains step by step how to implement this.

1. Login to the local "administrator" account.
2. Run the "Users & Passwords" tool from the "Start" button.
Start > Settings > Control Panel > Users & Passwords
3. Click on the Advanced Tab and then click the Advanced button
4. Right-click on the Groups icon in the left-hand windowpane. Select "New Group" and create a group called "4220 Programmers". Close the window.
5. Right-click on the Users icon in the left-hand windowpane and select "New User". Create a user called "Programmer" and close the window.
6. Double-click on "Programmer" in the right-hand windowpane to open the properties dialog box.
7. Select the "Member of" tab.
8. Click the "Add" button and add the "4220Programmers" group.
9. Click "OK" to exit Programmer Properties window.
10. Exit the "Local Users and Groups" window by clicking the "X" in the top right-hand corner of the window.
11. Click "OK" to exit the "Users & Passwords"
12. Using the Windows Explorer, find and highlight the "C:\IFR\USERS\PROGRAMMER" folder. Right-Click the folder and select the "Properties" tab.
13. In the properties sheet, select the "Security" tab.
14. In "Select Users & Groups" window, double-click the "4220Programmers" group, then click "OK".
15. Back in the "Programmer Properties" window, select "4220Programmers" with the left-hand button, then click on the "Allow" "Full Control" box.
16. Set the permissions to "Full Control".
17. Deselect the "Allow inheritable permissions from parent" box.
18. In the security box, click on the "Remove" option.
19. Click "OK" to close the properties window.

Moving the MTL Source Files

As we have protected the C:\IFR\USERS\PROGRAMMER directory, we should now move the MTL source files into this directory to prevent unauthorised editing. Alternatively you can protect the existing directory that contains the programs (ie C:\IFR\USERS\OPERATOR) by repeating steps 12 to 19 above.

Testing the New Permissions

To test the new login permissions, carry out the actions below:

1. Logout from the Administrator account and login as "Programmer". Check that files in the C:\IFR\USERS\PROGRAMMER directory can be edited.
2. Logout and login using the usual operator login account. Check that the MTL files in the C:\IFR\USERS\PROGRAMMER directory can NOT be edited.

This completes the security implementation, now we must create the Object file programs.

Creating the Object Files

To create Object file programs:

1. Login as "Programmer"
2. Start MTL
3. Load an MTL test program LOAD "C:/ifr/users/programmer/1234.mtl";
4. Create the Object File OBJECT "C:/ifr/released/1234.obj";

To avoid typing the complete file path when loading the MTL program, either change the MTL shortcut to point to the C:\ifr\users\programmer directory OR add this path into the MTL Path using the 42xx Software Environment tool.

Any MTL library files (e.g. APPS.OBJ) that are referenced by the test program must be available in Object file format. An error message will be generated if this is not the case and the Object file will not be created.

Where there are large numbers of programs to convert, the MTL Batch command may be used to speed up the process. The example on the next page shows a script file that can be used with the Batch command to convert a group of programs.

Note that Object files can only be used with the same version of MTL that was used to create them originally. If the version of MTL software installed on a test system is changed, new Object files must be created. The Batch command was included to simplify this process.

Final Testing

Login as "Programmer". Start MTL and load a program. Check that it can be edited and the changes are correctly saved back to disk.

Now logout and login as "Operator". Start MTL, load a program and check that it runs. Attempting to edit the program should result in an error message.

```
(* "creobj.txt" MTL Script File to create object files *)
(* Copy and Add extra sections for each program *)
(* Run the script from the MTL prompt by Typing: *)
(* BATCH "creobj.txt"; *)
:Filename String;
Filename := "cancelfault"
load "C:/IFR/USERS/PROGRAMMER/"+filename, temp ;
object "C:/IFR/RELEASED/"+filename, temp ;

Filename := "checkcal"
load "C:/IFR/USERS/PROGRAMMER/"+filename, temp ;
object "C:/IFR/RELEASED/"+filename, temp ;

Filename := "conlog"
load "C:/IFR/USERS/PROGRAMMER/"+filename, temp ;
object "C:/IFR/RELEASED/"+filename, temp ;

Filename := "cont"
load "C:/IFR/USERS/PROGRAMMER/"+filename, temp ;
object "C:/IFR/RELEASED/"+filename, temp ;
( Copy and Add extra sections for each additional program*)
(*)

Filename := ""
load "C:/IFR/USERS/PROGRAMMER/"+filename, temp ;
object "C:/IFR/RELEASED/"+filename, temp ; *)
NEW;
```

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