



Configuring Directories in an IC VERIFY Master / Substation Setup

An ICVERIFY, Inc. Technical Document
June 16, 2006

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Overview

This technical document is intended to explain the configuration options you have when configuring an IC VERIFY master station / substation environment. Since the master / sub environment is designed to operate over a Microsoft® Windows® network, there are certain network security and sharing considerations to bear in mind. This document will provide guidance and tips for configuring your IC VERIFY software to function properly within your network environment.

The information in this document pertains to the IC VERIFY for Windows product from Version 3.1.0 up to and including Version 4.0 Release 3 (4.0.3).

Prerequisites

Before you perform any of the steps discussed in this document, you should be familiar with the general operations and setup of the IC VERIFY for Windows software application. Review the *ICVERIFY for Windows Setup Guide* for your particular version of software along with this document for complete software setup information, particularly the chapter discussing how to set up an IC VERIFY payment network.

This document will expand on the information contained in the guide and treat the subject of payment networks in much greater detail.

**IC VERIFY
Software
Network
Requirements**

The method used by the IC VERIFY application to perform communications between a master station and its substations necessitates some specific networking requirements:

- On the **master station**:
 - The master station must have "Full Control" permissions to the *data directory* specified in the merchant setup file (the .SET file.)
 - Consequently, if you are operating a multi-merchant environment where multiple setup files reside on the master station, the master station must have "Full Control" permissions to each file's data directory.
 - Remember that each setup file requires its own data directory. Never assign the same data directory to two merchant setups!
 - Lastly, if you are using the request-answer file interface for your transaction processing, the master station must have "Full Control" permissions to the *request file directory*.
- On the **substation**:
 - Each substation must have "Full Control" permissions to both the *request file directory* used by the master station, and all *data directories* used by the master station.

These network requirements exist because both the master station and substation perform read and write operations to various files within the directories.

**Request File
Directories vs.
Data
Directories**

It may be easy to confuse the meaning and usage of the terms *request file directory* and *data directory* as they apply to the IC VERIFY software product. It's important to understand the two and how you need to set them up in your master / substation environment.

- A **request file directory** is used by the master station and substations to exchange transaction requests and responses. A single request file directory is configured per IC VERIFY payment network, and all computers running the IC VERIFY product in that network, meaning the master station and all substations, must have network access to it.
- A **data directory** is used to store current and historical batch files, customer database files, and so on. Each merchant set up in an IC VERIFY payment network must have its own data directory specifically allocated to it, and no two merchant setup files may point to the same data directory. All computers in the payment network must have network access to all the data directories for the merchant profiles supported on the network.

Configuring Directories in an IC *VERIFY* Master / Substation Setup

Directory Locations

Now that you know the usage and necessary permissions of the request file and data directories, you should decide where they will be located. There are essentially two options:

- You may host the request directory and all data directories on the master station if you wish. This is a reasonable option if you are running a smaller payment network or do not have a large file server suitable for file storage.
- You may also host the request directory and all data directories on a file server separate from the master station and all substations. This may be to your advantage if you have a large number of merchant profiles, higher transaction volume, or security guidelines preventing you from establishing direct access to your master station.

How Directories Are Specified In IC *VERIFY*®

The final consideration you need to bear in mind when configuring your IC *VERIFY* payment network is how your master station and substations locate the request file and data directories. The method is different for each directory type. There are two important guidelines governing how to configure your software to locate the directories.

- It's easy to locate the request file directory from both your master station as well as your substations – just browse through your network and find it. The only difference is that on the master stations, you specify the location of the request file directory within the Multi-User Request File Processor application, while on the substation, you specify it from the IC *VERIFY* GUI itself.
- Locating the data directory from the master station is also easy – just use the IC *VERIFY* Setup Application to specify the location in your merchant setup file. However, the substation “inherits” the data directory location from the master station. The only information you configure on the substation is the network drive letter representing where the data directory resides. The remainder of the directory path is retrieved from the setup file on the master station. This can be a little tricky to configure properly, but the examples in this document should help you understand it.

The following sections show you where to specify directories on the master station and substation(s).

Master Station Directory Configuration

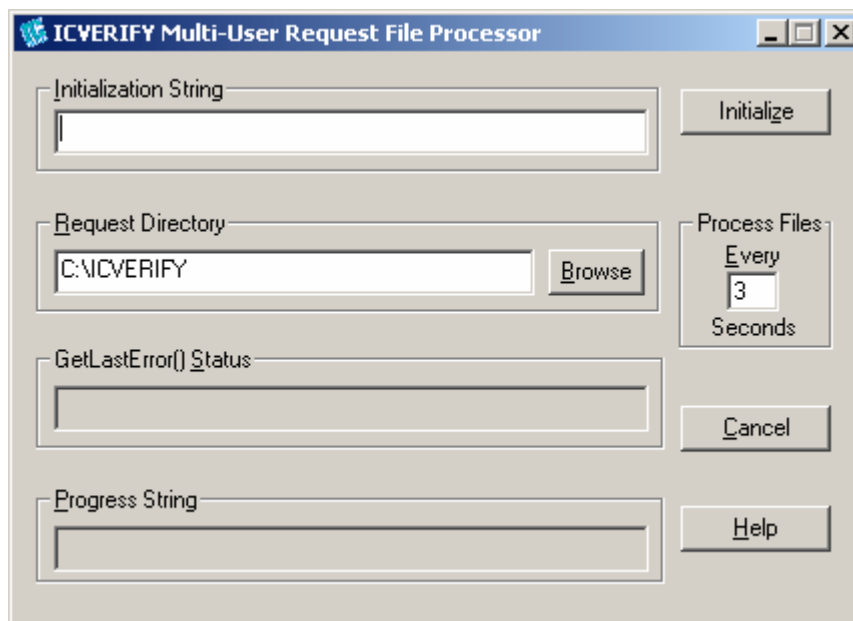
The following screen shots illustrate where you need to specify your directories on the master station.

**Request File
Directory Setup
– IC VERIFY
Master Station**

The first step we'll cover is where you specify your request file directory. Launch the IC VERIFY Multi-User Request File Processor by double-clicking the **ICVMLT32.EXE** application located in your IC VERIFY installation directory. This is the application where you specify the request directory, as you can see in Figure 1. If you are using MSMQ mode exclusively, you can skip this step.

Figure 1

IC VERIFY Master Station – ICVMLT32.EXE GUI



Type in the full path to the request file directory in the **Request Directory** field. You can use either a drive letter (such as c: or k:) or machine name (such as \\dataserver). You may also click **Browse** to search your network for the directory. The Browse feature also allows you to map network drives if necessary.

If you end up mapping a new network drive in order to access the request file directory, make sure the **Reconnect at logon** check box is selected. Otherwise, the next time you reboot your master station PC, your network share will be lost and you won't be able to access the request file directory.

Once you've specified your directory location, follow the instructions in the *ICVERIFY Setup Guide* regarding initialization parameters.

**Data Directory
Setup –
IC VERIFY
Master Station**

The next step is to specify where the data directory is located for each merchant you intend to process on your payment network. The directory setting can be found within the setup or SET file for a given merchant account. To specify the path, launch or log into the IC VERIFY Setup Application. Once in the Setup application, click on the **Merchant Information** tab. Toward the middle of the tab, you'll see a parameter called **Data Disk:\Directory**. See Figure 2.

Figure 2 IC VERIFY Master Station – Setup Application

The screenshot shows the 'ICVERIFY.SET - ICVERIFY Setup' application window. It features a menu bar with 'File', 'Edit', 'View', and 'Help'. Below the menu bar are several tabs: 'Check Guarantee', 'Hardware', 'Options', 'Stored Value', 'Printing Options', 'Terminal Id', 'Merchant Information', 'Credit Cards', and 'Debit Cards'. The 'Merchant Information' tab is currently selected. The main area contains the following fields and values:

- Merchant Name: [Empty text box]
- Merchant Address: [Empty text box]
- Merchant City, State Zip: [Empty text box]
- Merchant Phone #: [Empty text box]
- Offline Group Input File: BATCHIN.DAT
- Offline Group Output File: BATCHOUT.DAT
- Years of History: 9
- Data Disk:\Directory: DATADIR [Browse button]
- AutoSettle (24 Hour Clock): 00
- Type of Business: R
- Business Factor: 00
- Address VERIFY? (Y/N): N
- Maximum Transaction Amount: 20000
- Evaluate Rsp/Y/N/B/L/D/S: Y
- Business Description: [Empty text box]
- Tax Amount Validation? (Y/N): N
- Recurring Payment? (Y/N): N
- Deferred Billing? (Y/N): N
- Debt Payment? (Y/N): N
- SDK Version Used: 0
- CW/CVC/CID Enabled (Y/N): Y
- Maximum Request Pickup Time: 120
- Maximum Wait Time for Answer: 600

Type in the full path to the data directory in the field. Again, you can use either a drive letter (such as c: or k:) or machine name (such as \\dataserver). Depending on your version of software, you may also have a **Browse** button which you can use to search your network for the directory. The Browse feature also allows you to map network drives if necessary.

If you end up mapping a new network drive in order to access the data directory, make sure the **Reconnect at logon** check box is selected. Otherwise, the next time you reboot your master station PC, your network share will be lost and you won't be able to access the directory.

Important Note Think of this parameter in two parts, the first part being the drive letter or machine name, and the second part being the path to the directory on that drive letter. It's important to remember that every substation on your payment network will "inherit" the path portion of the parameter, substitute the drive letter specified on the substation, and attempt to find the data directory in that location. Therefore, you need to make sure the data directory is accessible from both the master station and all substations with the **same** path, less drive letter.

For example, let's say you specify the path as c:\ICVERIFY\DATADIR. That means you must create a network share, accessible to each substation, as <driveletter>:\ICVERIFY\DATADIR. In this example, you'd be required to share the root directory C: in order to keep the paths consistent. Since this may not be good policy for your computer network and information security, you may wish to place the data directory in a different location and share only a portion of the drive on which it is located. See the section [Coordinating Directory Paths](#) for tips on how to do this.

Substation Directory Configuration Now that you've specified your directories from the master station frame of reference, it's time to do the same on the substation. Unlike the master station, on the substation you only use the IC *VERIFY* main Graphical User Interface (GUI) to configure drive settings.

Configuring Directories in an IC VERIFY Master / Substation Setup

**Request File
Directory Setup
– IC VERIFY
Substation**

Now that you've specified your directories from the master station frame of reference, it's time to do the same on the substation. Unlike the master station, on the substation you only use the ICVERIFY main Graphical User Interface (GUI) to configure drive settings.

Launch the ICVERIFY application. Depending on your version of software, you may need to log in. Be sure you log in with a user account that has administrator-level access. Then click **Tools** and **Options**. Select the **Substation** tab. This is where you specify your substation options, including directory location.

The tab may look slightly different depending on the version of software you are running. See Figures 3 and 4.

Figure 3 Substation Tab – IC VERIFY for Windows 4.0 and Up

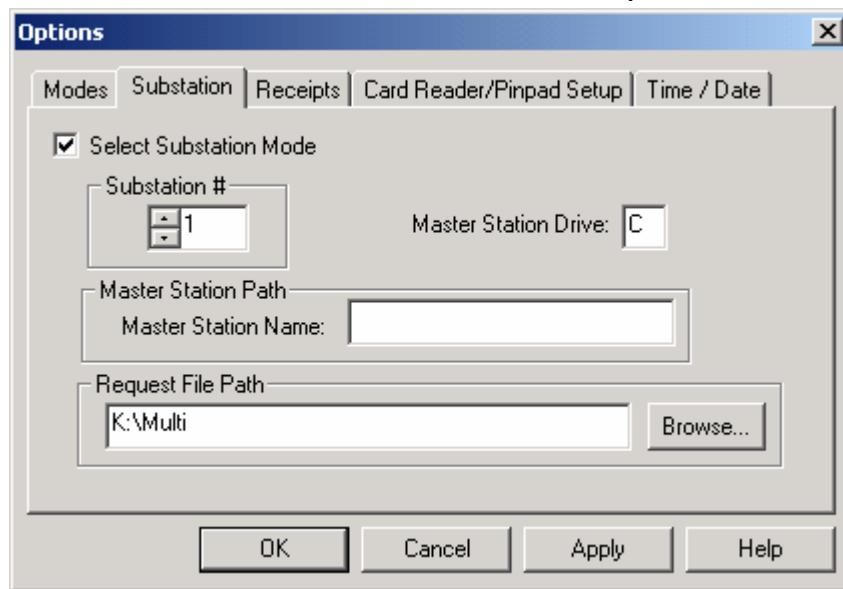
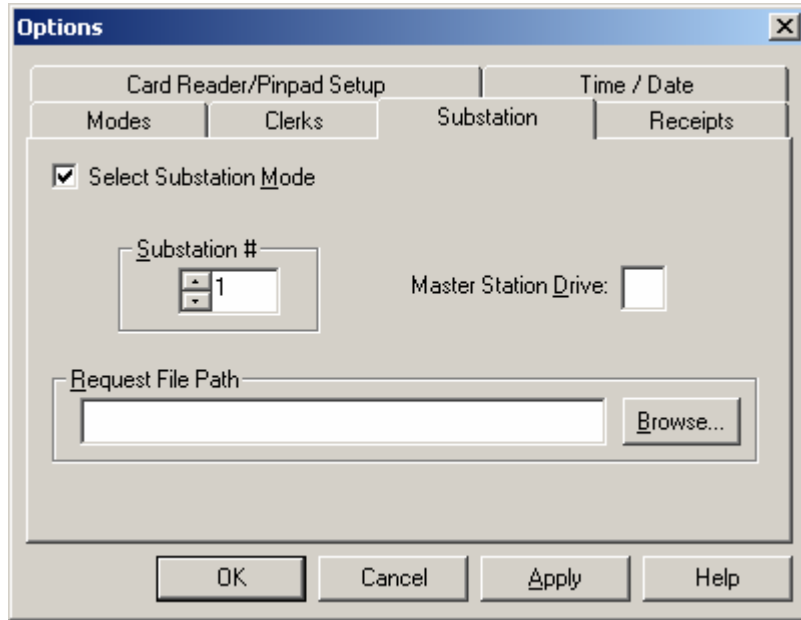


Figure 4

Substation Tab – IC VERIFY for Windows 3.1.x



Depending on your version of software, there are either two or three parameters governing the substation's access to the shared directories. Table 1 discusses each parameter and how to configure it.

Table 1

Substation Parameter Definitions

Parameter	Usage
Request File Path	<p>This parameter specifies the path to the request file directory. Type in the full path including drive letter or machine name. In later versions of software, you can use the Browse... button to search for the directory.</p> <p>If you're using MSMQ on this substation, you can leave this parameter blank.</p>
Master Station Name	<p>The MSMQ subsystem routes transaction requests and responses by identifying computers on your network according to their machine names. If you're using MSMQ on this substation, enter the machine name of your master station in this field.</p> <p>If you're only using request files on this substation, you can leave this parameter blank.</p>

Parameter	Usage
Master Station Drive	<p>This parameter contains the drive letter associated with the network share where your merchant data directory resides. In many cases, the data directory resides on the same computer as the master station software itself; that's why the parameter is named as it is. However, if you've chosen to place your data directory on a network server, you should enter the drive letter that you've mapped to that server on the substation.</p> <p>For example, let's say you have placed the data directory on a network file server called FILESRV in a share called icvdirs. While you're at the substation PC, enter Windows Explorer and map a network drive to \\FILESRV\icvdirs. Enter the drive letter assigned by Explorer in this field.</p>

Important Note Remember that the substation "inherits" the path to the data directory from the merchant SET file located on the master station, and substitutes the drive letter you enter in the **Master Station Drive** parameter for the one in the SET file. This means you must make sure the path in your SET file points to the same location from both the master and substation frames of reference.

Let's continue with the example above where the substation has a drive letter mapped to the network share \\FILESRV\icvdirs, and assume for the sake of argument this is mapped to drive **z:**. Let's also assume that \\FILESRV\icvdirs is also mapped to a network drive on the master station – let's say drive **k:**. In that share a directory exists called `datadir` that is the actual data directory.

The paths used by the master and substation would then be as follows:

Path in merchant SET file to be used by master station:

`k:\datadir`

(This works because `k:` is mapped to \\FILESRV\icvdirs, therefore `k:\datadir` is equivalent to \\FILESRV\icvdirs\datadir.)

Path to be used by substation:

`z:\datadir`

(Enter the drive letter `Z` in the **Master Station Drive** parameter. The pathing works because `z:` on the substation is mapped to the same network share as `k:` on the master station.)

Common Problems If you're having problems getting your substation(s) and master station to interoperate, it may well be due to a problem with your directory pathing. Consult Table 2 for some common symptoms and potential resolution steps.

Table 2 Common Problems and Resolutions

Problem	Resolution
<p>Some of your substations work, but not others.</p>	<p>Make sure you have all your substations pointed to the very same request file directory. Remember that only one request file directory is used for your entire payment network, regardless of how many substations or merchant accounts you're supporting.</p> <p>Are the substations that aren't working configured to use MSMQ? If so, make sure that MSMQ is properly installed on each substation and the master station by checking the installed Windows components via the Windows Control Panel. Also, make sure any and all SET files on the master station are configured to support MSMQ by setting the appropriate parameter in the Options tab of the IC <i>VERIFY</i> Setup application.</p> <p>Finally, make sure that all your substations have full control permissions to the network locations containing your request file directory (if you're not using MSMQ) and your merchant data directory or directories. The substations that aren't working may not have appropriate permissions or access.</p> <p>Make sure any network shares are configured to be reconnected on logon or startup.</p>

Problem	Resolution
<p>Your first substation seems to log onto the master station, but you receive an error like “Cannot create customer database” or something similar.</p>	<p>This means your substation successfully found the master station and read the data directory information from the SET file. However, when the substation substituted the drive letter on the substation for the one in the SET file, the resulting path no longer pointed to the data directory’s location.</p> <p>Depending on where you located the data directory, you may have to tweak the path specified in the SET file to get the substation to work. Remember, the substation will look for the data directory at the exact path defined in the SET file, just as the master station does. The only difference is that the substation will use the drive letter you specified in the Master Station Drive parameter. If you haven’t defined a path that works from both computers, your substation will fail to initialize.</p> <p>You may encounter this issue if you’ve located your data directory on the same computer as your master station. In this case, unless you share the root of the drive, the path from the master station’s frame of reference (let’s say C:\ICVERIFY\DATADIR) will be different from the path from the substation’s frame of reference (for example, Z:\DATADIR if your share point is C:\ICVERIFY.) Consult the section Coordinating Directory Paths for tips on how to resolve this issue.</p>
<p>Some of your merchant accounts process successfully, but not all of them.</p>	<p>Have you placed all your data directories in the same network share? The easiest way to manage a multi-merchant configuration is to place all your data directories in a common network share. Then configure the SET files on the master station to the appropriate directories.</p>

Coordinating Directory Paths

As you’ve seen, the substation and master station will work fine if the path in the SET file works for both of them. But what happens if you want to place a data directory in a location that ordinarily wouldn’t have the same path from each computer’s frame of reference?

Let’s say you are configuring a very simple network of one master station and three substations processing only one merchant setup. You have no separate file server, so you want to place the data directory on the master station PC itself.

In this scenario, you may want to place the data directory in a subfolder off the IC VERIFY installation directory, such as:

```
C:\ICVERIFY\DATADIR
```

However, if you enter that same path in the SET file, you may have a problem. Remember, the path must also work for your substation with the exception of the drive letter. So, if you enter the drive letter **K:** in the **Master Station Drive** parameter on the substation, that means your data directory would need to be available to the substation at the following path:

```
K:\ICVERIFY\DATADIR
```

The only way for that to work is if you share the entire root of the **C:** drive on your master station. If that is an acceptable approach to you, it will work fine. However, if you do not want to open your entire master station to the network, you'll need to tweak your path from the master station to get both the master and all the substations working.

Solving the "Share Problem"

The problem we have to solve is to find a way of sharing only a specific location on the master station PC, while assigning a path to it that will also work on a substation. We will do this by using a little-known MS-DOS command called **SUBST**. **SUBST** allows you to assign a drive letter to either a local or network path. In effect, the drive letter acts as a "substitute" for the path.

To see how **SUBST** works, go to a command prompt and type the following:

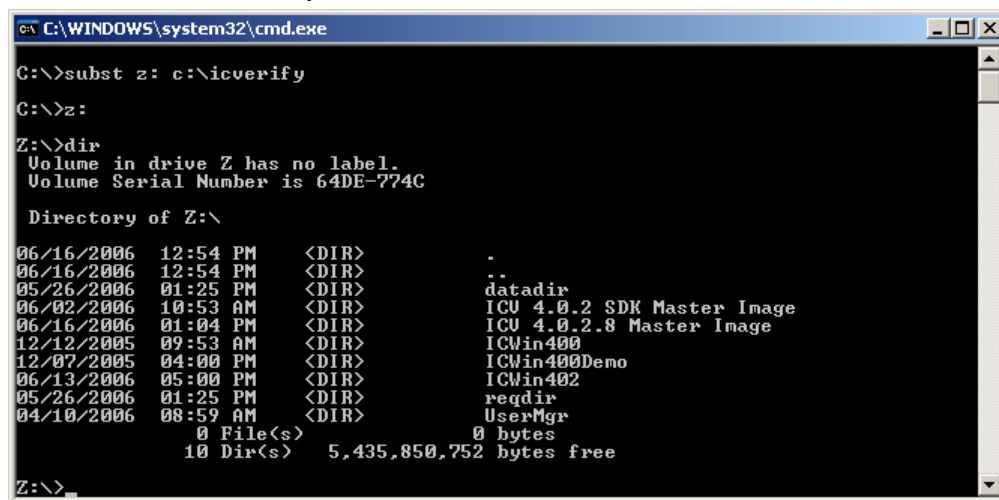
```
subst z: c:\icverify <enter>  
z: <enter>
```

As you'll see in Figure 5, you've now assigned the virtual drive **Z:** to the local path **C:\ICVERIFY**.

In theory, you could now go back to the IC VERIFY Setup application and change your SET file to use the path **z:\DATADIR**, because that maps to **C:\ICVERIFY\DATADIR**. Then, you could share **C:\ICVERIFY** on the master station and map that to a drive on your substation. If you mapped it to the **K:** drive on the substation, and entered the drive letter **K:** in the **Master Station Drive** parameter, your setup would work perfectly because **K:\DATADIR** on the substation is the same location as **z:\DATADIR** on the master – because **z:\DATADIR** is the same as **C:\ICVERIFY\DATADIR** due to your use of the **SUBST** command.

Figure 5

SUBST Command Example



Using SUBST on Startup

In order for our virtual drive map to work every time, we have to configure the master station to assign the drive to the local directory on system startup. This is because a drive letter assigned by SUBST is abandoned with the system shuts down; therefore, it must be re-assigned at boot time.

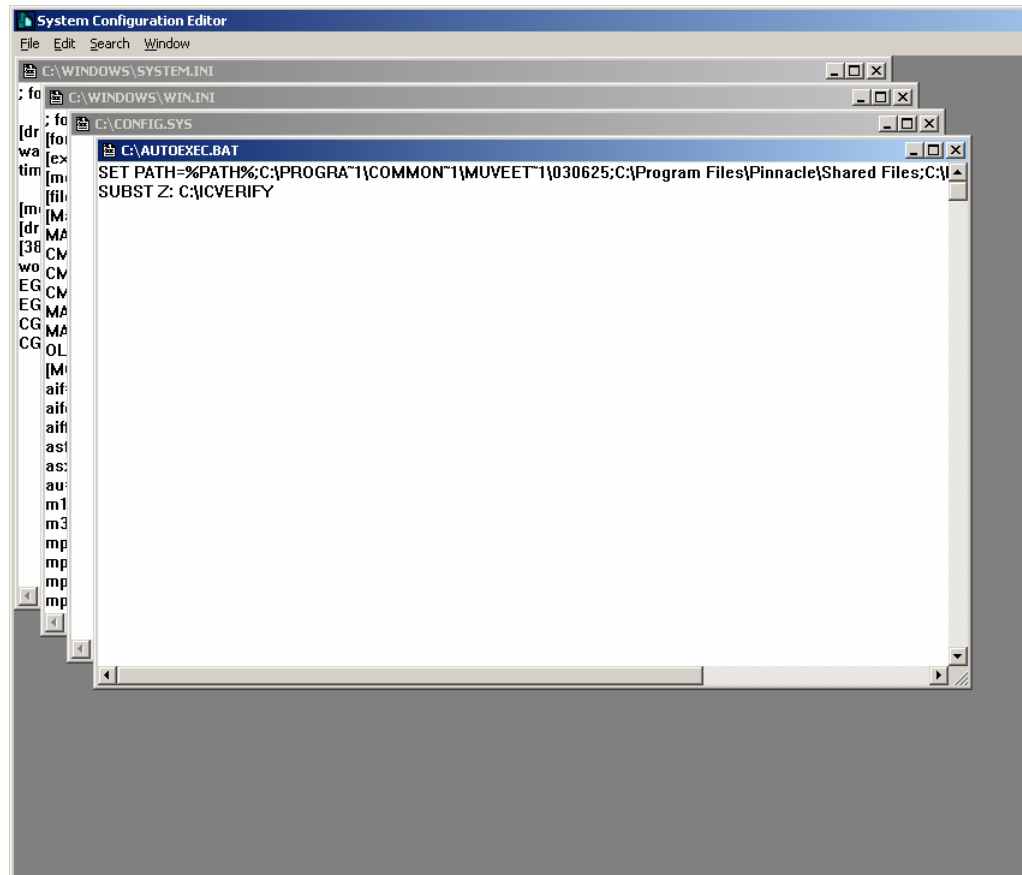
To accomplish this, we need to modify the startup routine of the master station computer to include the SUBST command we used earlier. The method depends on your operating system:

- If you're running Microsoft™ Windows™ 95, 98 or ME, you need to update your AUTOEXEC.BAT startup file.
- If you're running Windows 2000, XP or 2003, you need to update your system registry.

Updating AUTOEXEC.BAT (Windows 95, 98 and ME)

It's not hard to update your AUTOEXEC.BAT file to include the SUBST command. The easiest way is to use the Microsoft System Configuration Editor. Click **Start – Run** and type in **sysedit <enter>**. This launches the System Configuration Editor, as you see in Figure 6.

Figure 6 Microsoft System Configuration Editor



Select the window entitled **C:\AUTOEXEC.BAT** and enter a new line in the file stating:

```
SUBST Z: C:\ICVERIFY
```

(or whatever directory you intend to share to your network, that contains your data directory as a subfolder.)

Then save your files. Reboot your computer and enter Windows Explorer. You should now see a Z: drive listing.

Updating the System Registry (Windows 2000, XP and 2003)

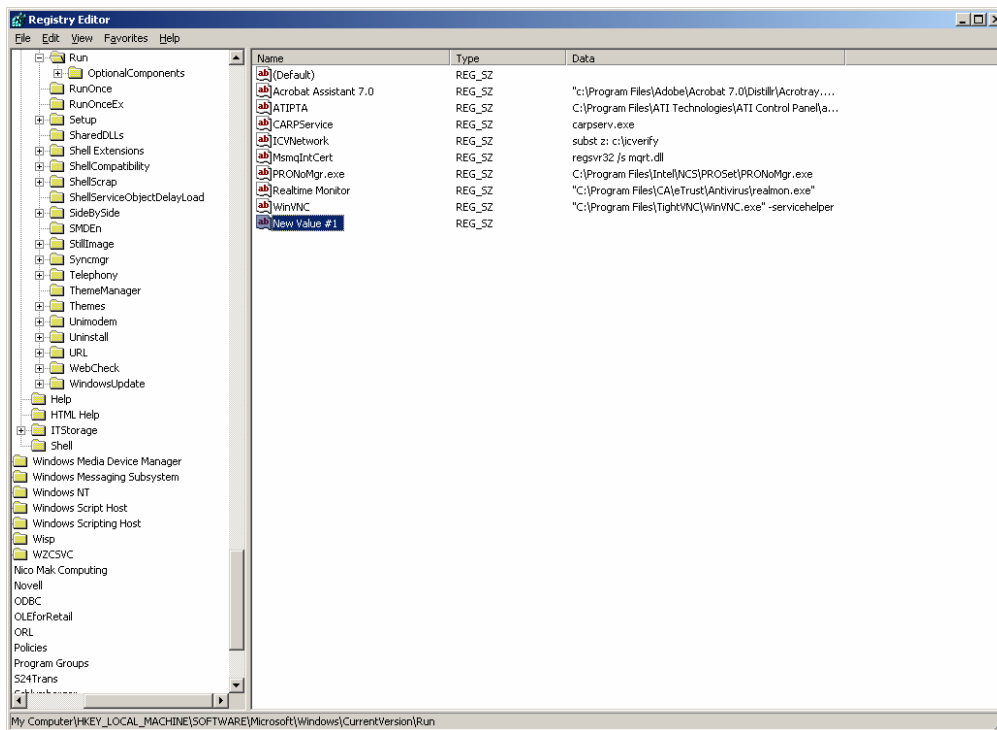
To modify your startup settings in later versions of Windows, you'll need to add an entry to the system registry. Launch the System Registry Editor by clicking **Start - Run** and typing **regedit <enter>**. Then follow the steps in the table following.

NOTE: Be very careful when editing the system registry. DO NOT modify any existing keys or delete any registry folders unless you are sure of what you are doing. You may render your computer inoperable if you do.

Step	Action
1.	Navigate to the following folder: HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows\CurrentVersion\Run
2.	The right-hand pane of the Registry Editor window shows the current applications and commands that your computer executes on startup. We need to add to the list. Point the mouse to a blank area of the pane and right-click. Select New - String Value .
3.	Modify the name of the string value from New Value #1 to something IC <i>VERIFY</i> -related. For the sake of this procedure, use the name ICV Virtual Drive . See Figure 7.

Figure 7

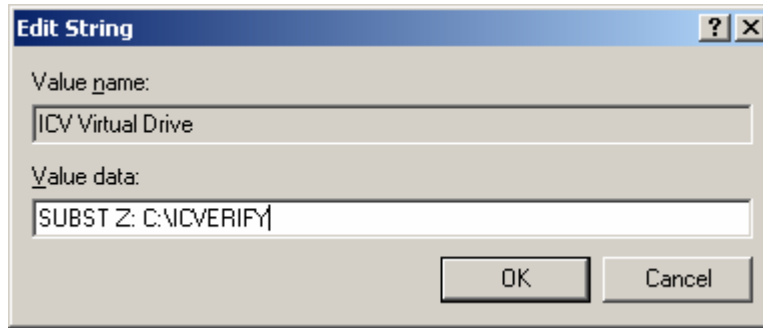
Microsoft System Registry Editor – Adding a Registry Key



Step	Action
4.	<p>Now we need to assign a value to the ICV Virtual Drive key. Right-click on the key name and select Modify. A dialog box will pop up with a text entry field. Enter your SUBST command in this field as follows:</p> <pre>SUBST Z: C:\ICVERIFY</pre> <p>This is the command we will use for this example. You should change the drive letter and path according to your real-world requirements. See Figure 8.</p> <p>When you've entered your SUBST command, click OK.</p>

Figure 8

Microsoft System Registry Editor – Modifying a Registry Value



Step	Action
5.	Close the Windows Registry Editor and restart your PC. Enter Windows Explorer. You should now see a Z: drive listing.

Finalizing the Setup

Now that we've created a virtual drive at the parent directory of our data directory, we need to share it and configure our SET file to use the new drive and path. You can accomplish this by the following steps:

- First, enter Windows Explorer on the master station. Highlight the directory you mapped to your virtual drive (**not** the virtual drive itself.) In other words, in our example, you would highlight C:\ICVERIFY rather than z:. Select **Sharing...** and share the folder to your network with full control permissions to the accounts your substations will use to log on.
- Next, launch the IC VERIFY Setup application on the master station. Enter the **Merchant Information** tab and change the **Data Disk:\Directory** parameter to be the path to the data directory from the virtual drive. In other words, change the parameter to read z:\DATADIR instead of c:\ICVERIFY\DATADIR. Save the SET file and re-launch ICVMLT32.EXE.
- Finally, go to your substation. Map a network drive in Windows Explorer to the new share on your master station. (Let's say you assign drive K: to the share.) Launch the IC VERIFY GUI. Enter the **Substation** tab in the **Options** menu. Enter **K** in the **Master Station Drive** field, and set your other parameters as necessary. Activate your substation.

That's all there is to it!