Application Note
AN-xxxx
Setup of an Ad-Hoc network using UAY-MMC85M wireless cards
(A How to Guide)

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Revision History

Date	Author	Revision	Description
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Table of Content

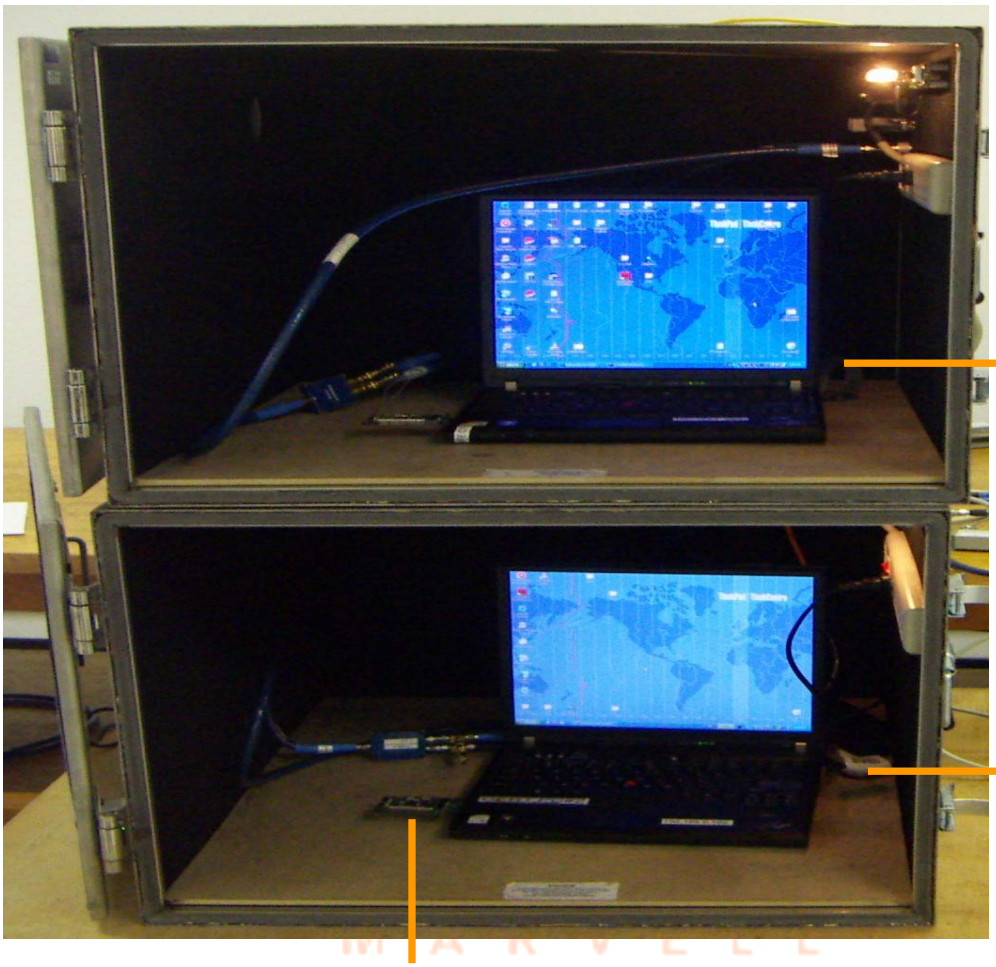
How to: Setup of an Ad-Hoc network using UAY-MMC85M wireless cards

Overview

This document describes the procedure of setting up an ad-hoc network using Marvell UAY-MMC85M PCI Express WLAN client mini cards. Marvell configuration utility is used to configure and setup the Ad-Hoc network for testing purposes.

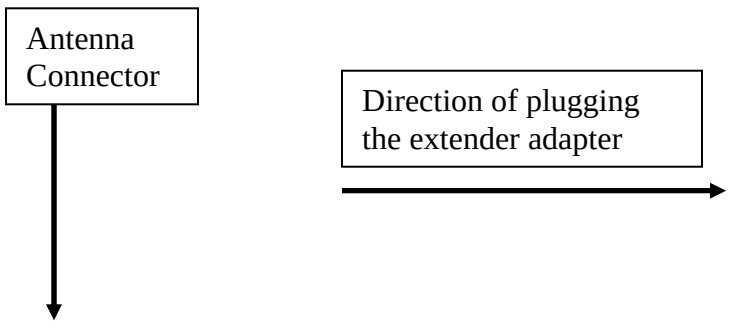
Ad-Hoc test Setup

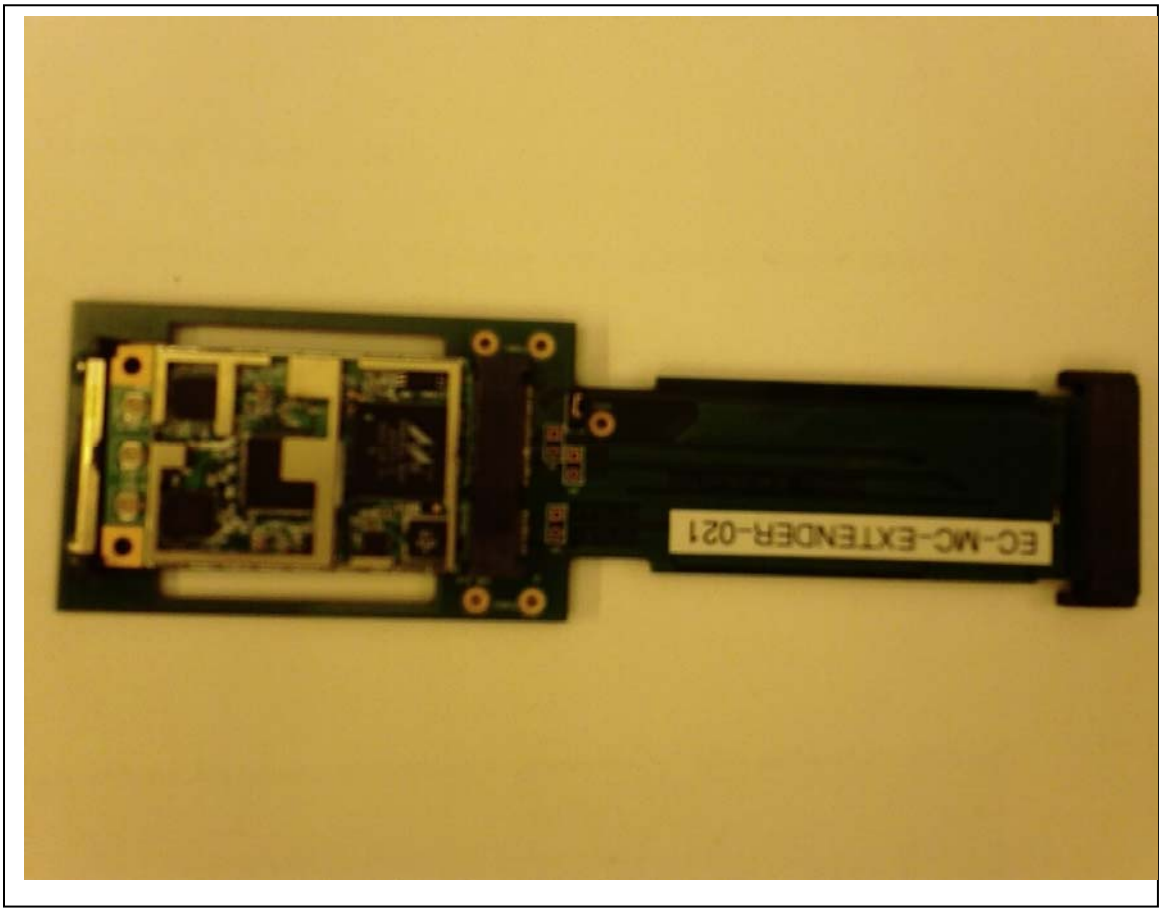
The Ad-Hoc test setup consists of two laptops **Master** and **Slave**.



Each laptop uses a MC85 extender assembly. The MC85 extender assembly consists of:

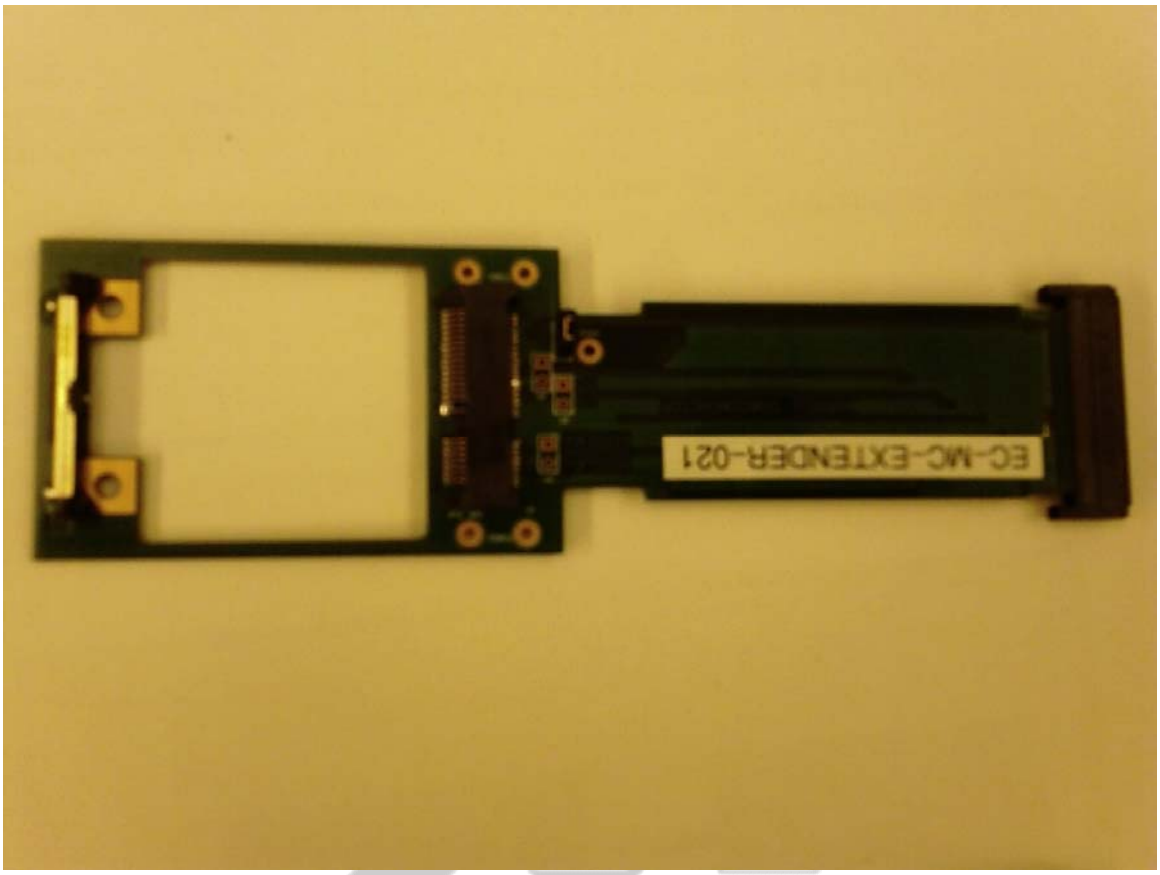
1. MC85 PCIe card
2. PCIe extender adapter





MC85 extender assembly

MC85 card



PCIe extender adapter

The PCIe extender adapter is plugged in both the laptops to create an Ad-Hoc network.

1] Marvell Configuration Utility

1.1] Overview

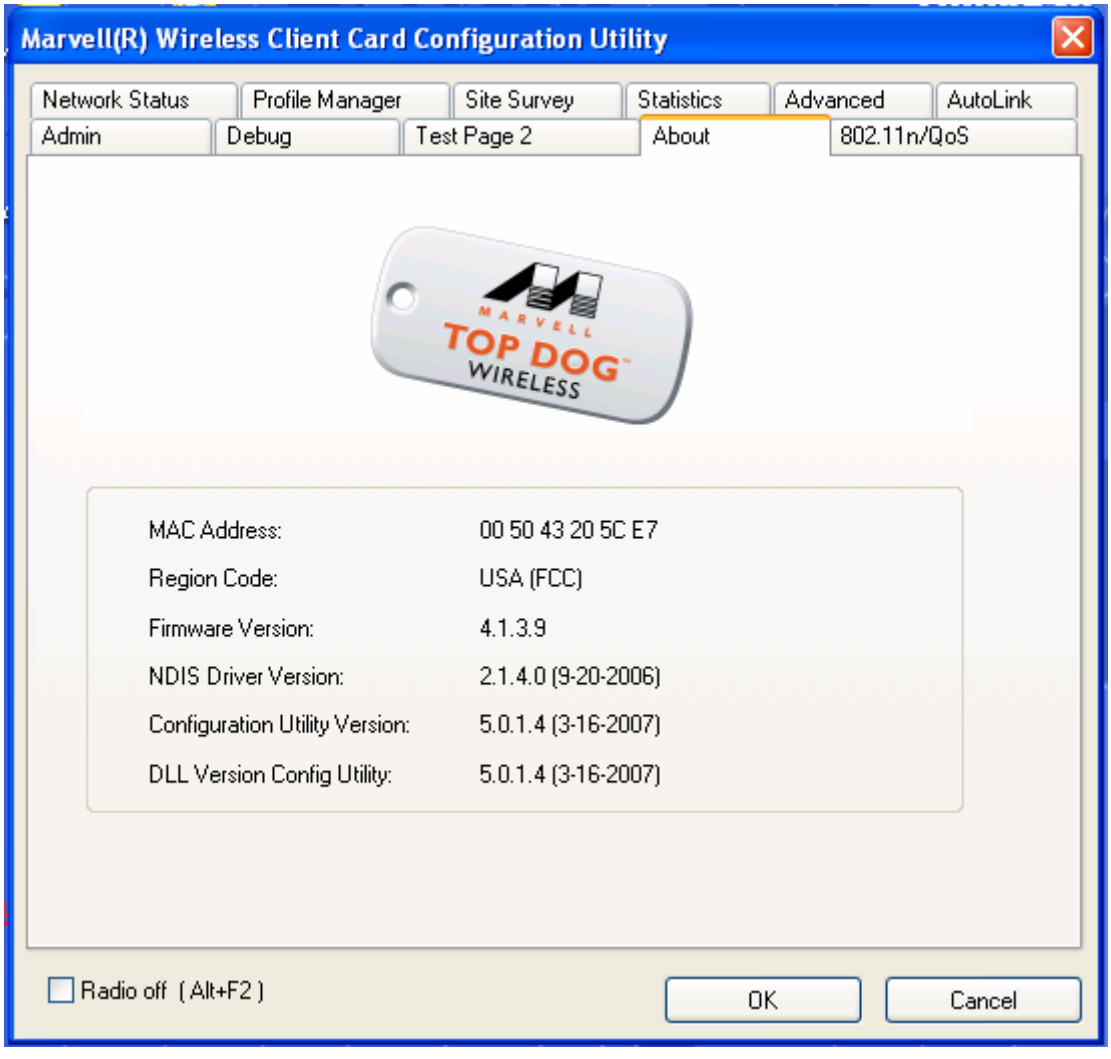
The Marvell Client Card Configuration utility is a Windows based application that allows configuration and management of the Marvell high throughput client cards. The configuration utility sets up profiles, and performs other wireless network management tasks. The Marvell Client card configuration utility comes in an executable file. Running the executable file opens up the setup window. Following the instructions on screen will install the configuration utility. For details on installing the Marvell Client card configuration utility, please refer page 41.

Note:
For windows XP and Windows Server 2003, it is preferable to use the Marvell configuration utility when using Marvell client cards. Windows Zero Config and Marvell Configuration Utility cannot be used at the same time. In such a case, it is preferable to disable or manually stop the services running Windows Zero Config utility. Please refer page 54, on how to manually stop the Windows Zero Config service.

1.2] Settings on the Marvell Client Configuration Utility

1.2.1] *About* tab details

The **About** tab in the Configuration utility should display the same settings on both the **Master** and **Slave** laptops, as seen in the snap shot below, except for the MAC address.



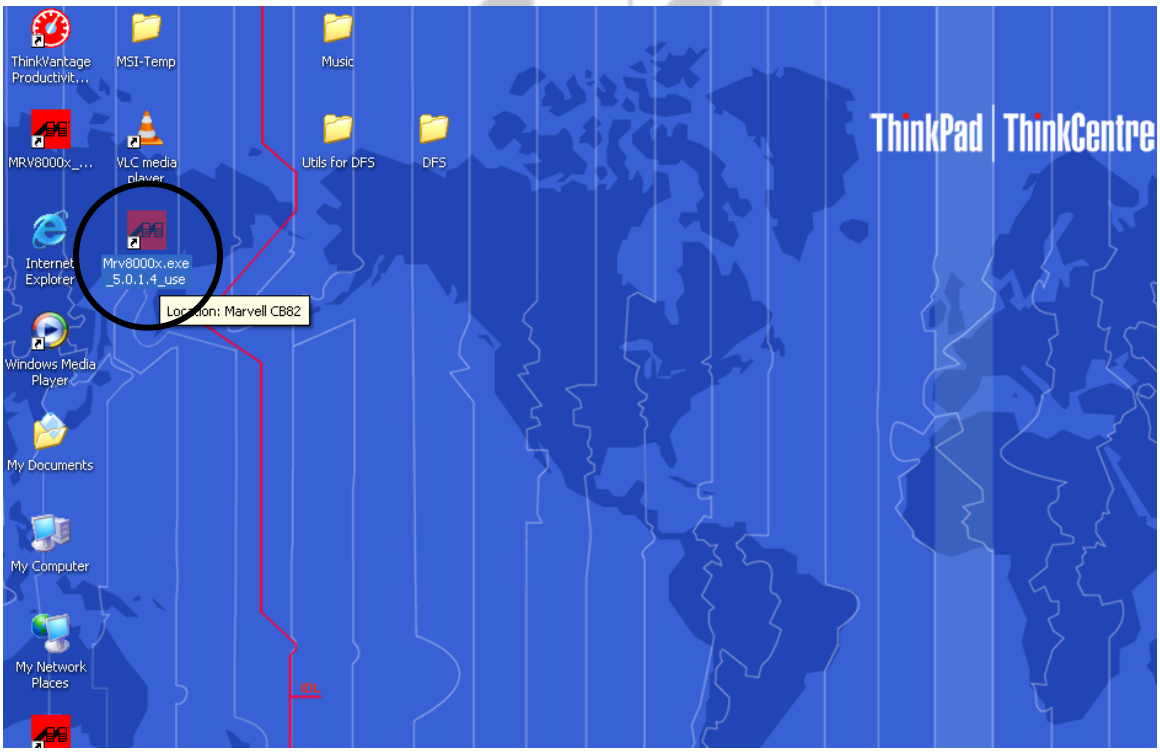
1.2.2] Creating the Profile

This section provides the requisite settings to bring up the Ad-Hoc setup using UAY-MMC85M cards. The profile is created with the proper settings for the Ad-Hoc setup. This is done using the **Profile Manager** tab in the Marvell GUI. Following steps provide the details on creating a new profile.

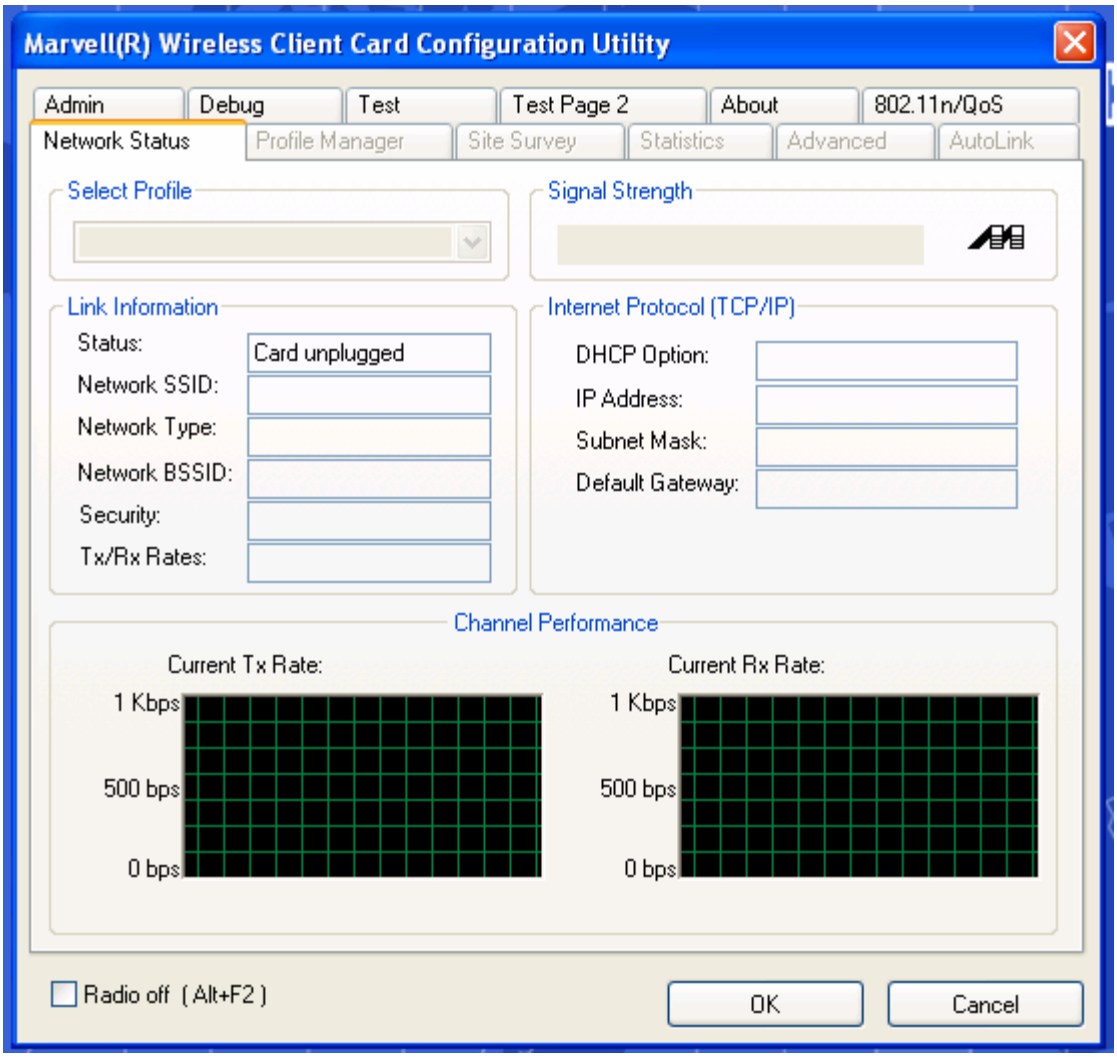
Please note that the profile *dfs120* and *dfs60* have already been created. Please refer pages 10 - 13 and 20 on how to select the pre-configured profile.

Note: The steps below help you to create a new profile only if needed.

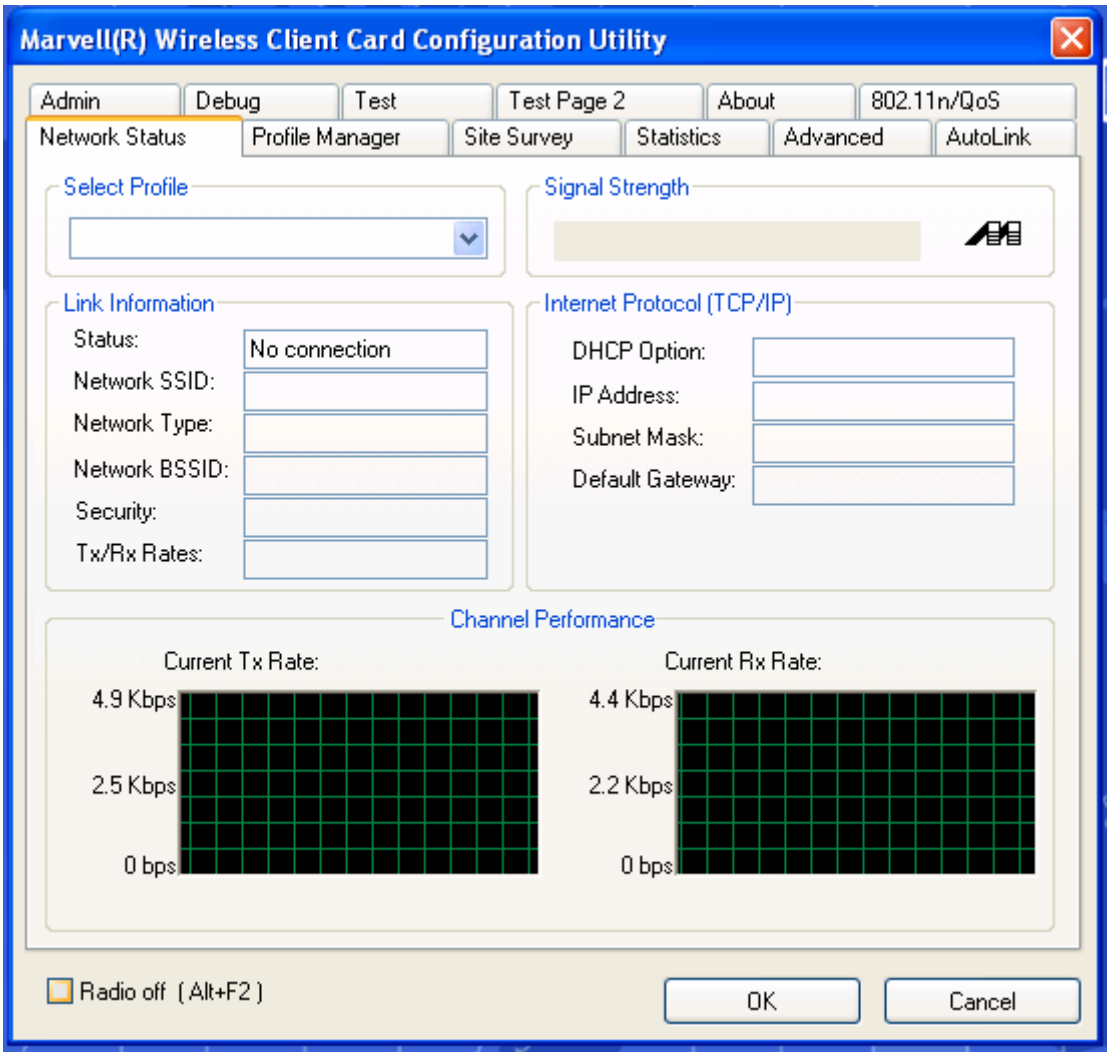
1. Double click on the Marvell GUI icon (encircled) on the desktop.



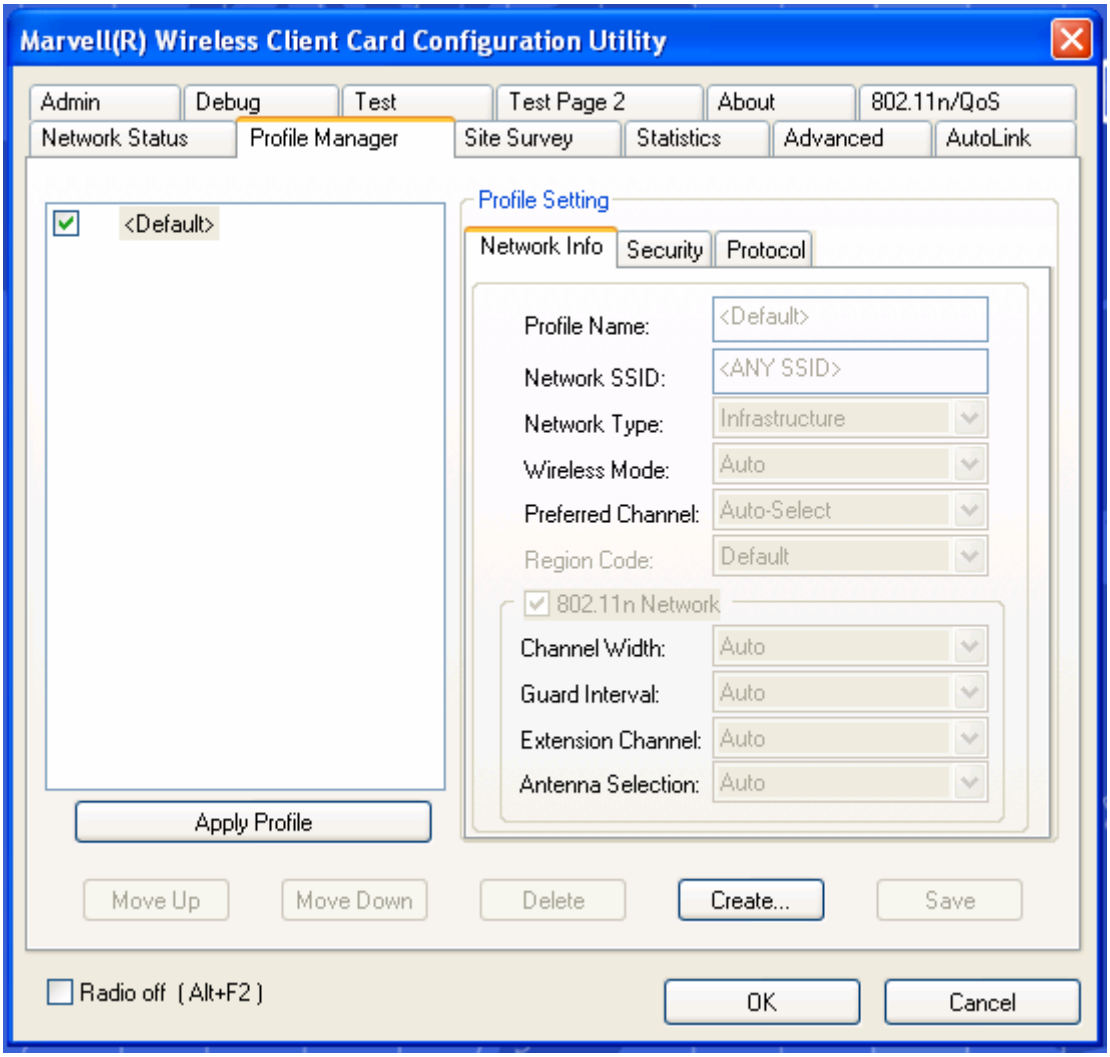
2. The Network Status tab shows status as *Card unplugged*.



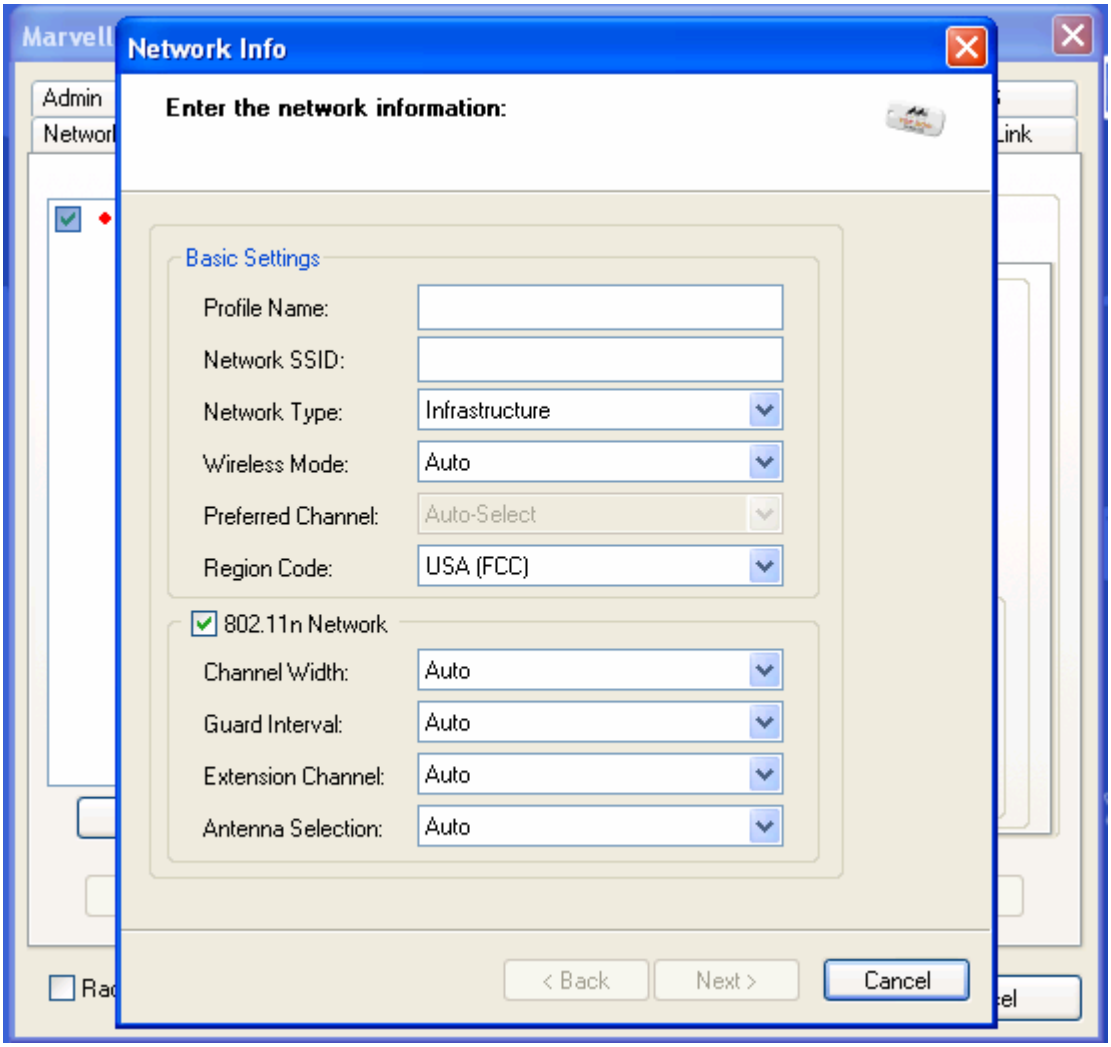
3. Plug in the extender adapter card. The **Network Status** tab now shows ***No connection***.



4. Click on the **Profile Manager** tab.



5. Click ***Create*** button.



6. Enter the following information in Basic Settings
    a. Profile Name: dfs120

The profile name should be changed to dfs60, when testing is carried out on channel 60

    b. Network SSID: dfs120

The network SSID should be set to dfs60, when testing is carried out on channel 60.

    c. Network Type: Ad-Hoc

d. Wireless Mode: 802.11a
e. Preferred Channel: 120

The preferred channel should be set to channel 60 when testing is carried out on channel 60.

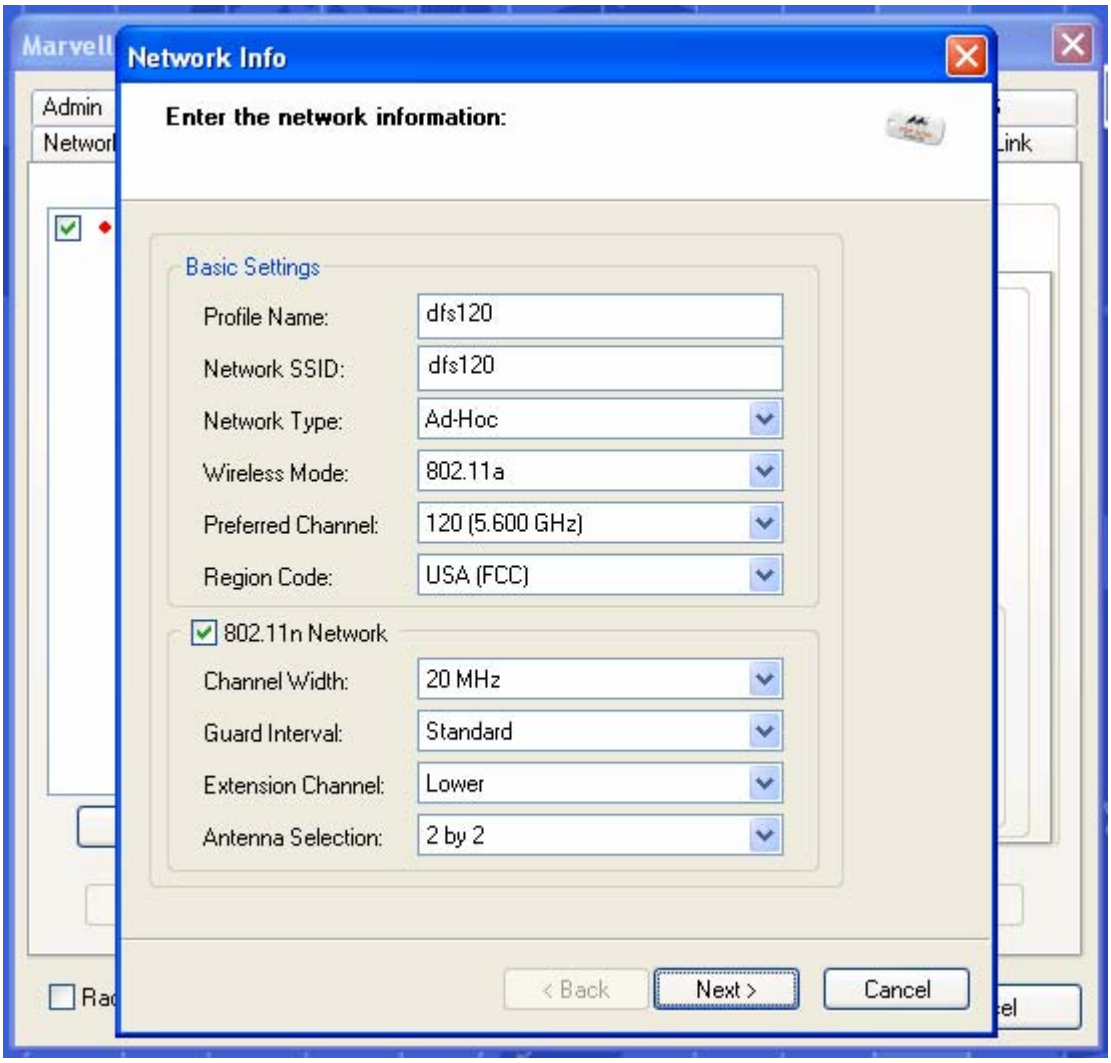
f. Region Code: USA (FCC)
g. Channel Width: 20 MHz

Channel width should be set to 40 MHz, when testing the 40MHz test cases.

h. Guard Interval: Standard
i. Extension Channel: Lower

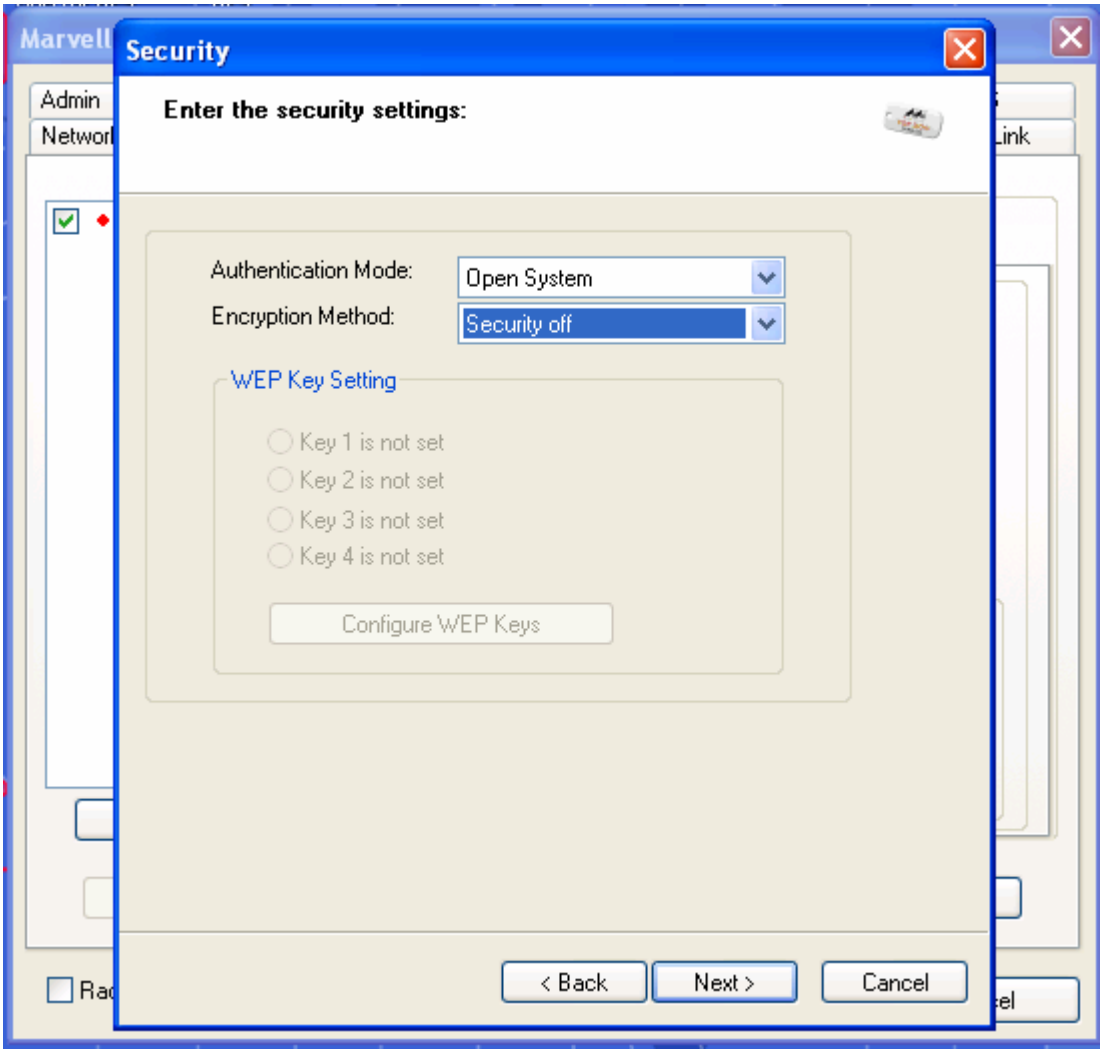
The extension channel should set to upper, when channel 60 is being used.

j. Antenna Selection: 2 by 2


Network Info
Enter the network information:
Basic Settings
Profile Name:
dfs120
Network SSID:
dfs120
Network Type:
Ad-Hoc
Wireless Mode:
802.11a
Preferred Channel:
120 (5.600 GHz)
Region Code:
USA (FCC)
802.11n Network
Channel Width:
20 MHz
Guard Interval:
Standard
Extension Channel:
Lower
Antenna Selection:
2 by 2
< Back
Next >
Cancel

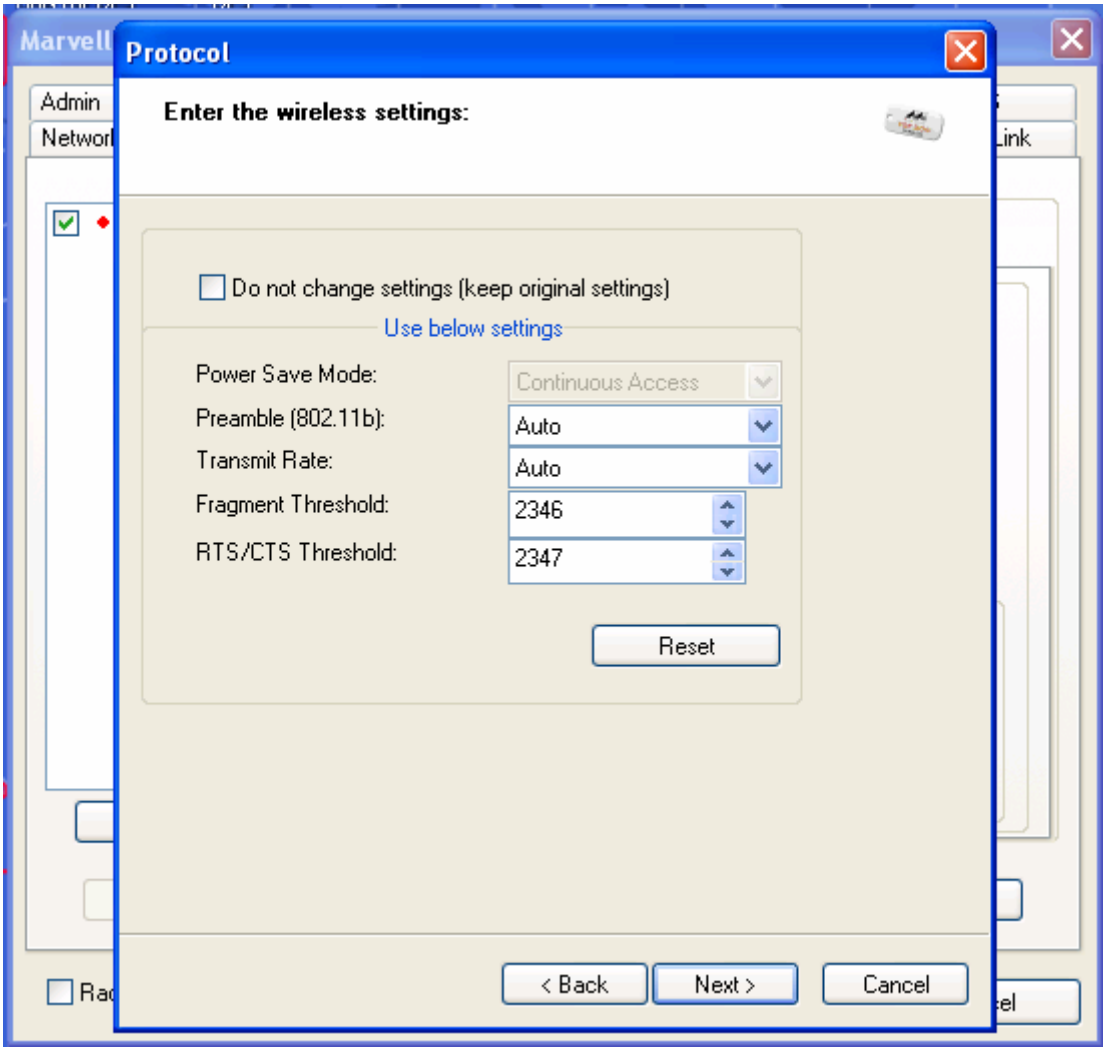
7. Click **Next**.

8. On the **Security** window, leave the settings to default.
    a. Authentication Mode: Open System
    b. Encryption Method: Security Off



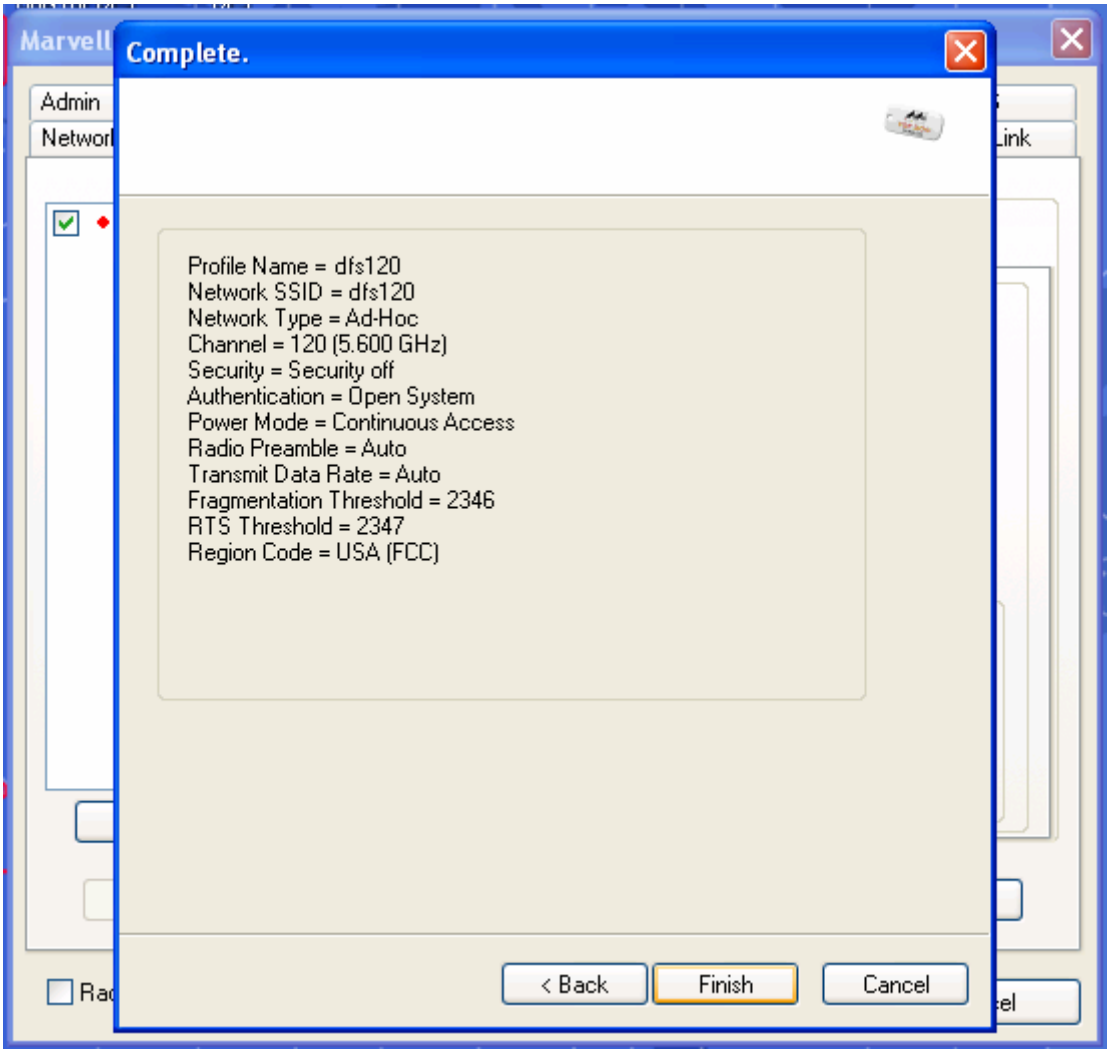
9. Click **Next**.

10. On the **Protocol** window
    a. Uncheck the Do not change settings (keep original settings) box.
    b. Leave rest of the settings as default.

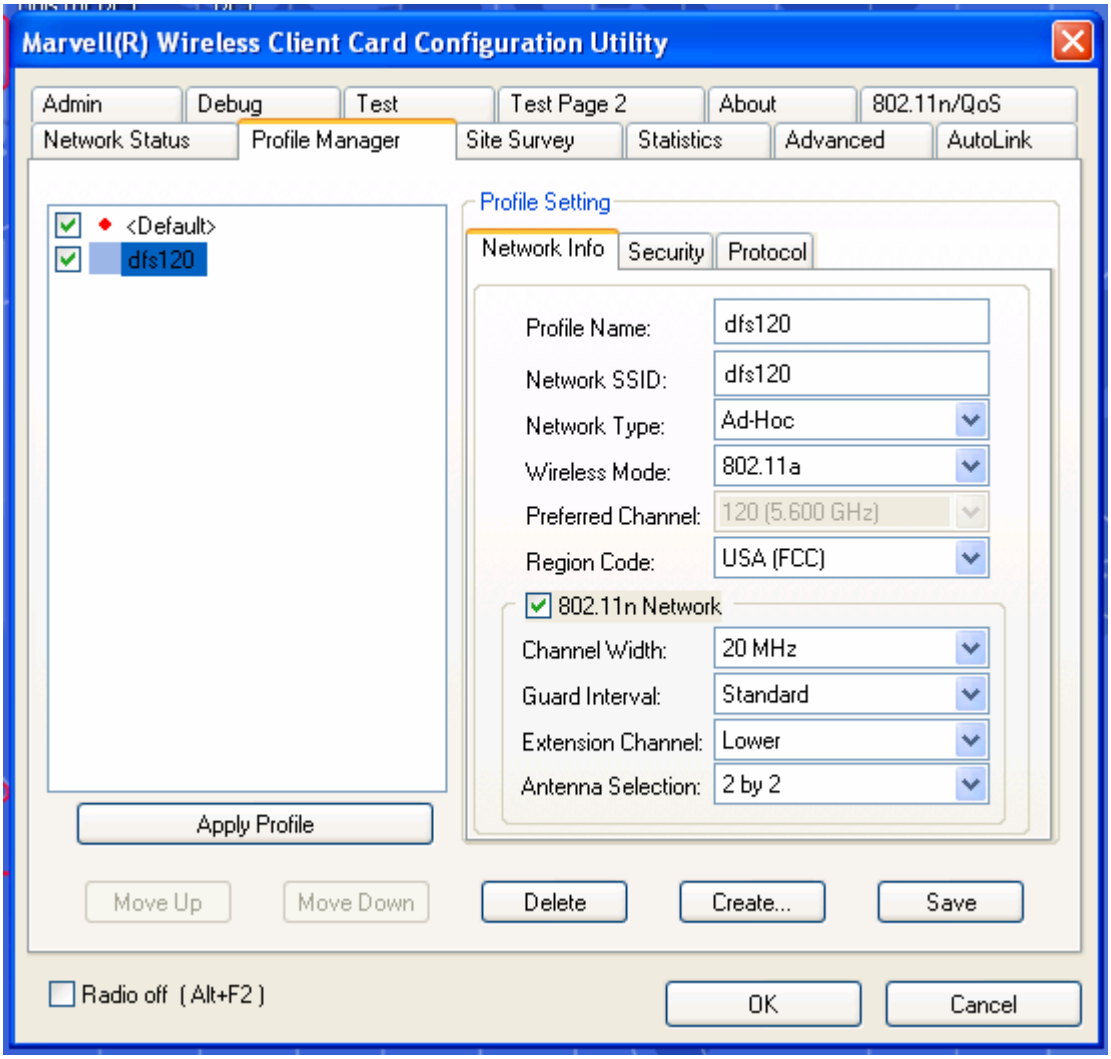


11. Click **Next**.

12. Click **Finish**.

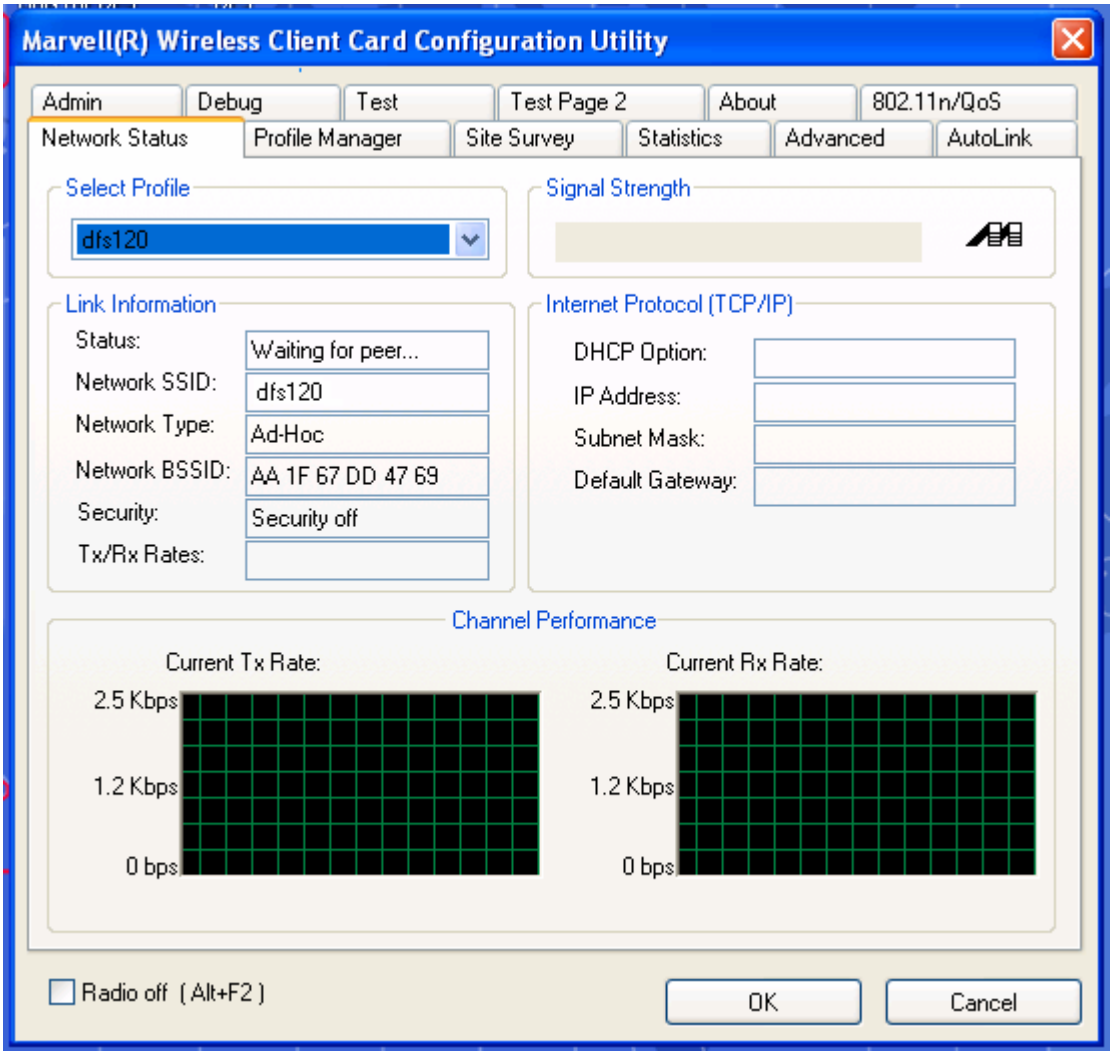


13. The new profile dfs120 is seen in the left hand column.
14. Select the profile dfs120 by clicking on it.



15. Click on **Apply Profile** button to apply the dfs120 profile.
16. Click on the Network Status tab, to see the selected profile.

17. The *Status* field in the **Link Information** section shows "***Waiting for Peer.***"



18. Unplug the card from the laptop.
19. Follow the steps **1 - 18** to create the profile on **Slave** laptop.

2] Bringing up the Setup

This section provides the details on

1. Drivers for UAY-MMC85M cards
2. Steps to use the **Dbgview.exe utility** to see radar detection and other logs.
3. Steps to bring up the Ad-Hoc setup

2.1] Driver for UAY-MMC85M cards

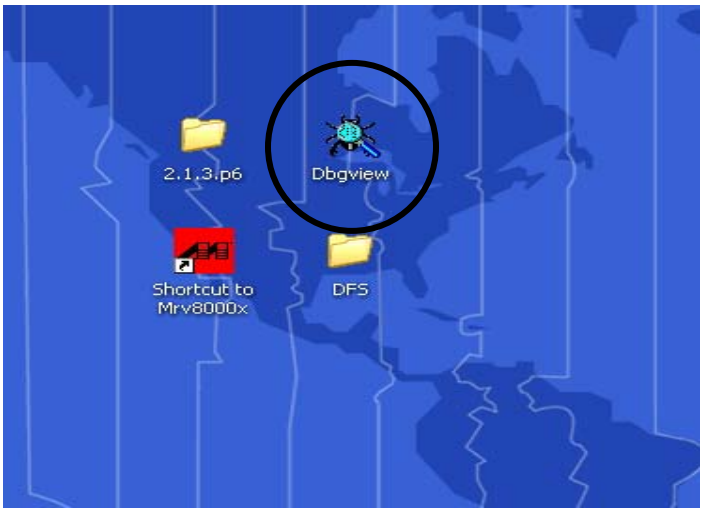
The UAY-MMC85M has two versions of the same driver. These drivers are used for the following purpose:

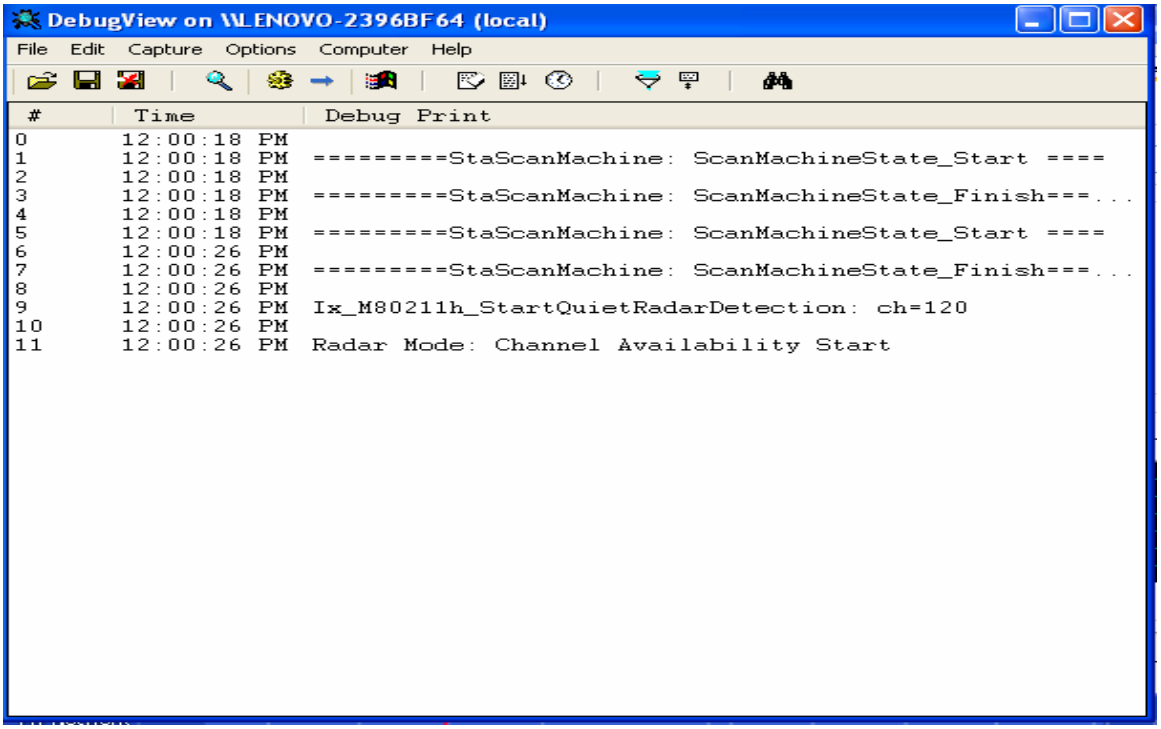
1. To detect the radar in test mode
   This driver version is used to detect the radar pulses, but not switch channels. This mode is known as test mode and used to count the number of radar pulses detected.

2. To detect the radar and switch channel
   This driver version is used to detect the radar pulses and switch to a new channel. In this case the UAY-MMC85M switches channels anytime it detects radar. This is used to determine the moving and closing time of the channel switching.

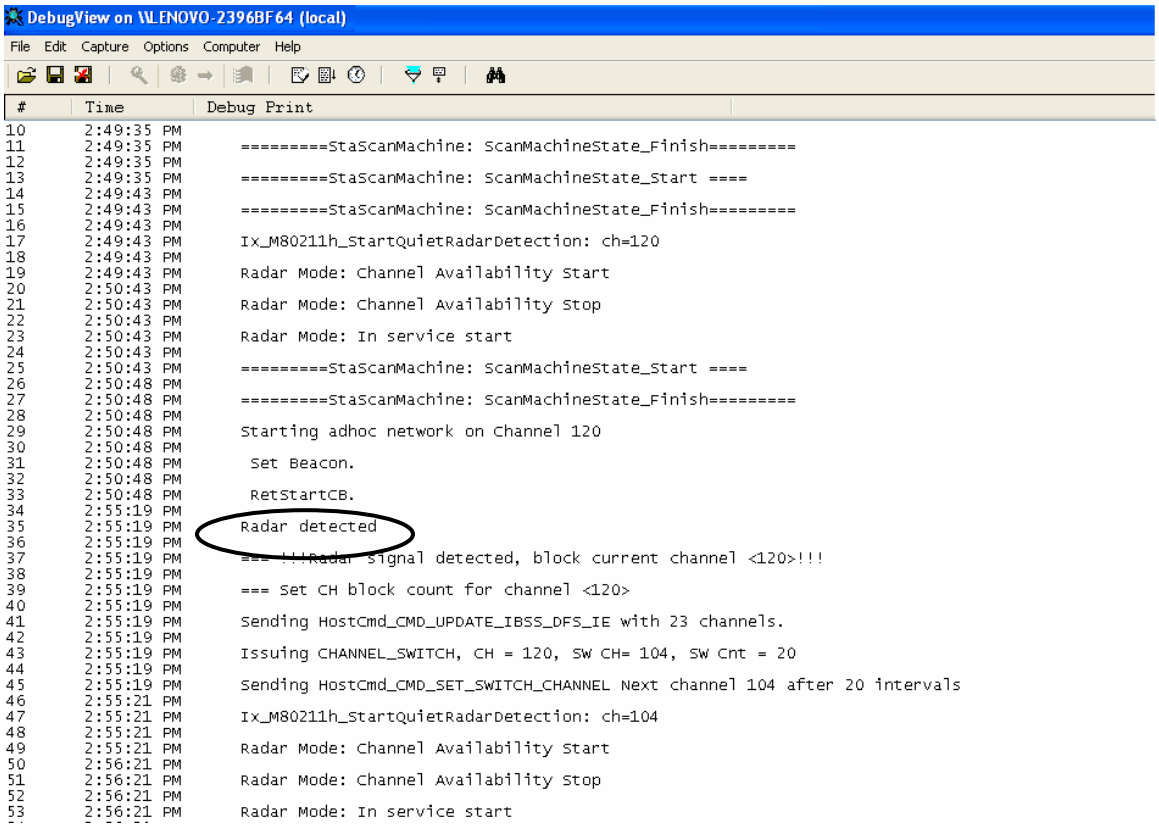
2.2] Dbgview Utility

The current logs of the setup are displayed in the Dbgview utility window. It displays when the channel availability check has started on a particular channel and whether it has detected the radar or not. It also displays the channel switching process on the master and the new channel, the master has switched to. The Dbgview icon is encircled below.

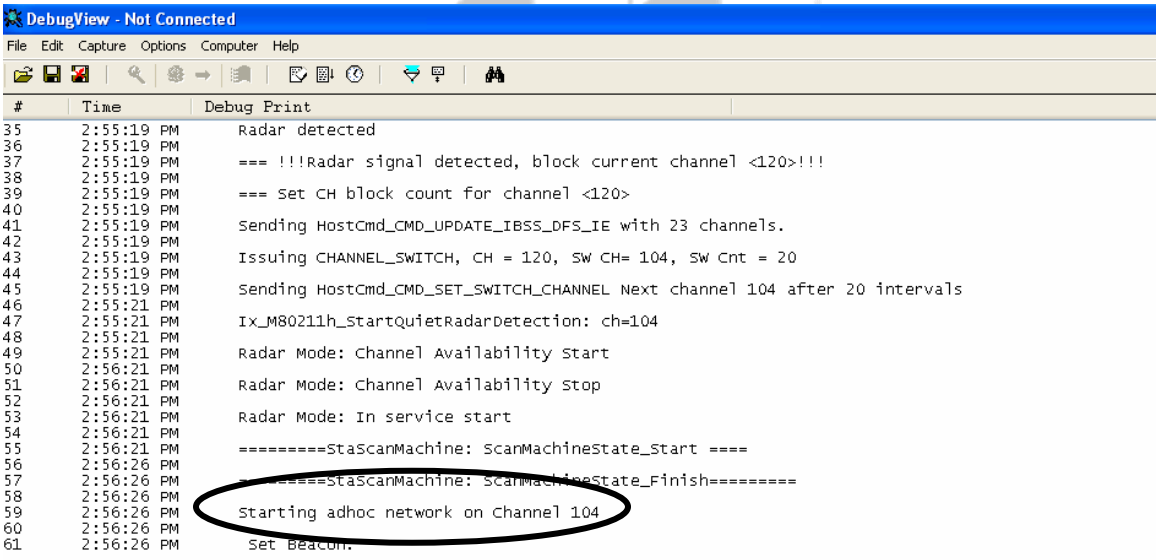

2.1,3.p6
Dbgview
Shortcut to Mrv8000x
DFS


DebugView on \\LENOVO-2396BF64 (local)
File Edit Capture Options Computer Help
Time Debug Print
0 12:00:18 PM
1 12:00:18 PM =========StaScanMachine: ScanMachineState_Start ====
2 12:00:18 PM
3 12:00:18 PM =========StaScanMachine: ScanMachineState_Finish===...
4 12:00:18 PM
5 12:00:18 PM =========StaScanMachine: ScanMachineState_Start ====
6 12:00:26 PM
7 12:00:26 PM =========StaScanMachine: ScanMachineState_Finish===...
8 12:00:26 PM
9 12:00:26 PM Ix_M80211h_StartQuietRadarDetection: ch=120
10 12:00:26 PM
11 12:00:26 PM Radar Mode: Channel Availability Start

When the radar is detected the Dbgview window shows the **Radar detected** message on the master.



After the radar detection, the master switches to a new channel and starts the Ad-Hoc network on the new channel. The message **Starting adhoc network on channel** will be seen in the Dbgview window.

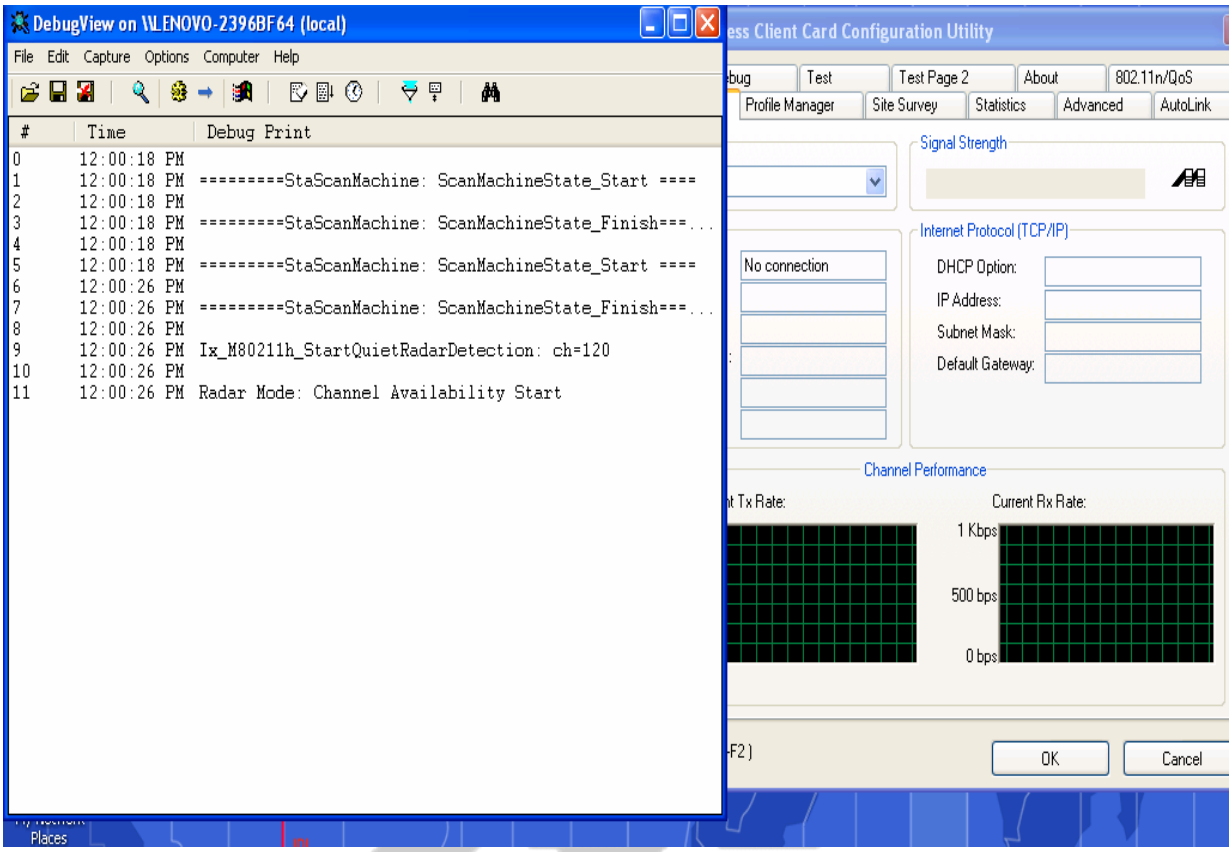


2.3] Ad-Hoc Setup bring up

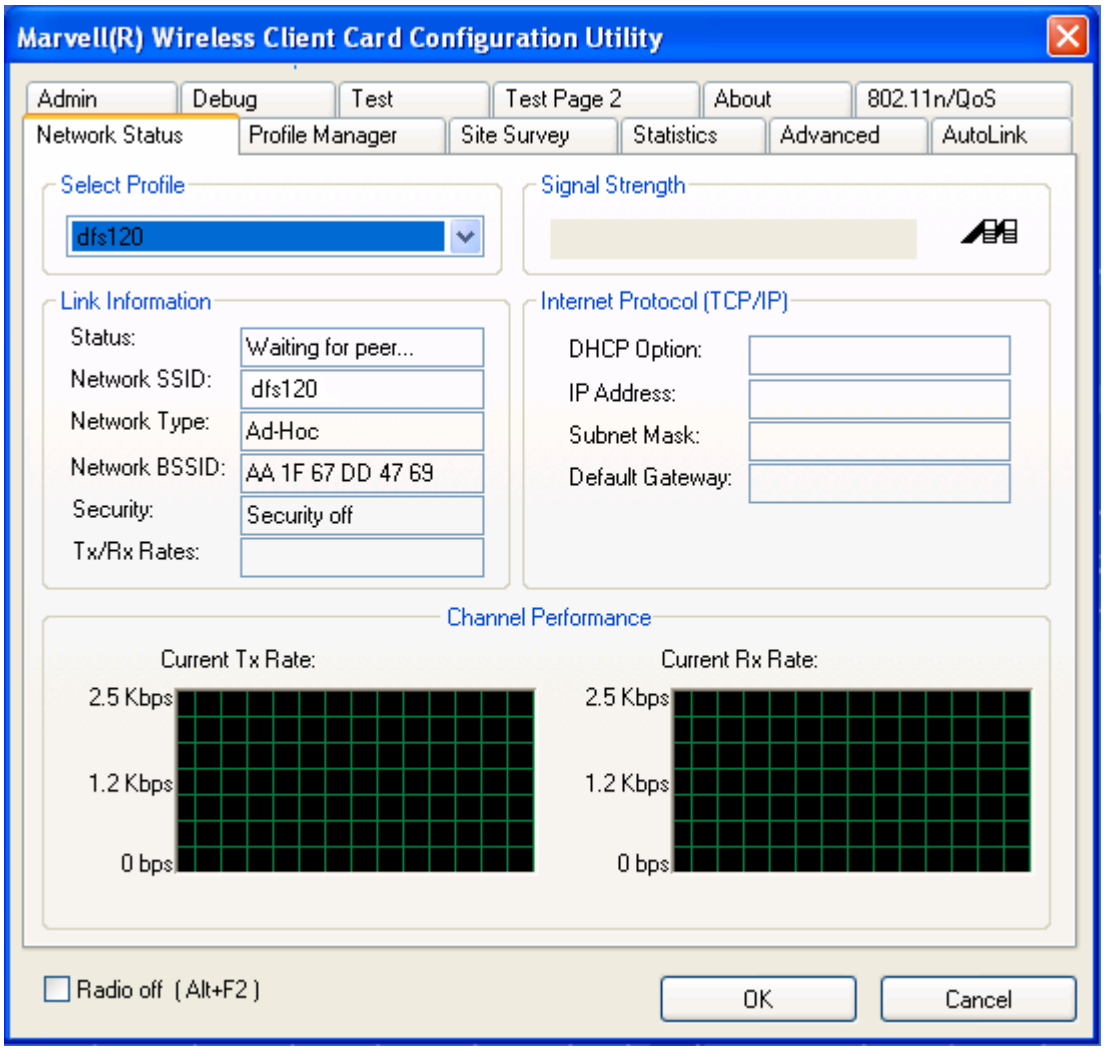
2.3.1] Using UAY-MMC85M switch mode driver

The following section provides steps to bring up the setup to test the master for radar detection purposes. Please remember to use the test mode driver for these detections. In case of finding the channel move time, the closing time, it is advised to use the channel switch mode driver. The procedure below describes the steps to change the drivers.

1. On the **Master** laptop, double click on the **Dbgview.exe** icon to open it.
2. Double click on the **Marvell GUI** icon to open the GUI window.
3. Plug in the UAY-MMC85M master PCIe extender assembly in the laptop. The laptop screen should look like below.

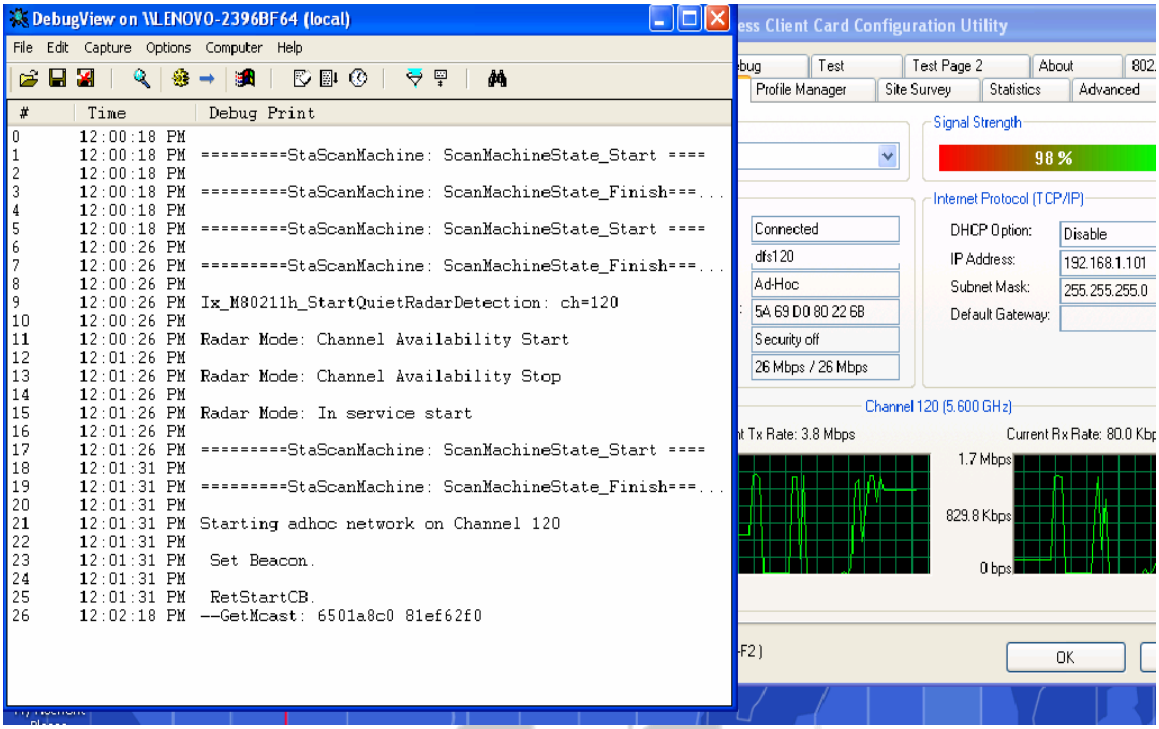


4. The UAY-MMC85M driver starts the CAC and after a period of at least 60 seconds, brings up the UAY-MMC85M card, if no radar activity is seen in the channel 120. The **Waiting for peer** status is seen in the Marvell GUI.



5. Now follow steps 1, 2 and 3 on **Slave** laptop to bring up the slave UAY-MMC85M.

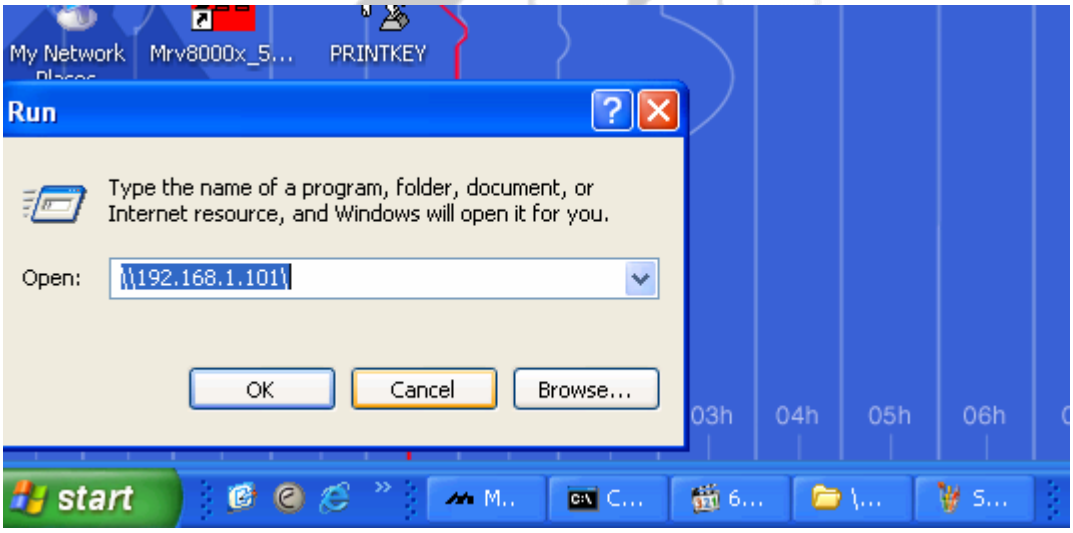
6. The association between the master and slave takes place. The **Network Status** tab shows the *Status* as **Connected**.
   The status on the Marvell GUI should be seen as below. Please refer the ***page 37, section 3.1,*** in chapter **Debugging Ad-Hoc Setup** if there are problems in association.



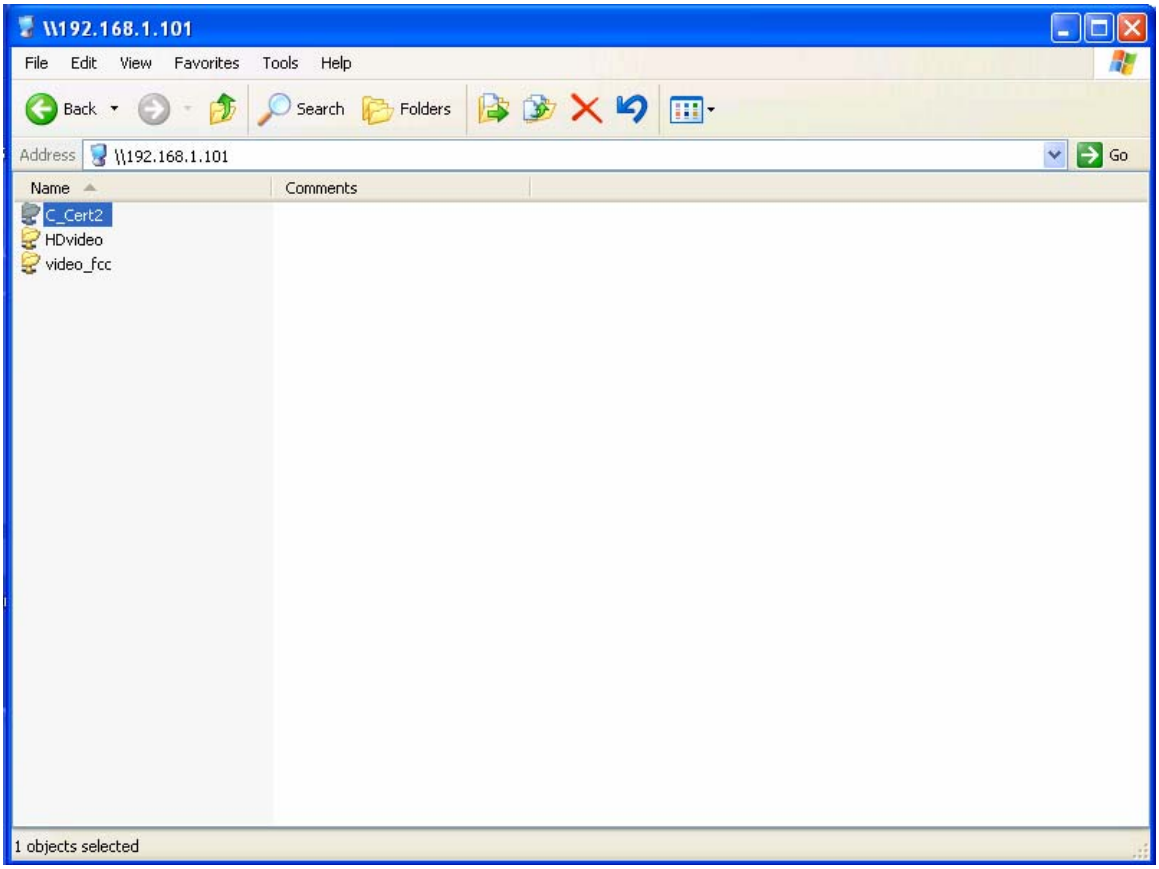
7. Once the Ad-Hoc network is created, ping the **Master** laptop from the **Slave** laptop. The ping should succeed.

8. On the **Slave** laptop's desktop, double click on the **Shortcut to mplayerc** to run it.

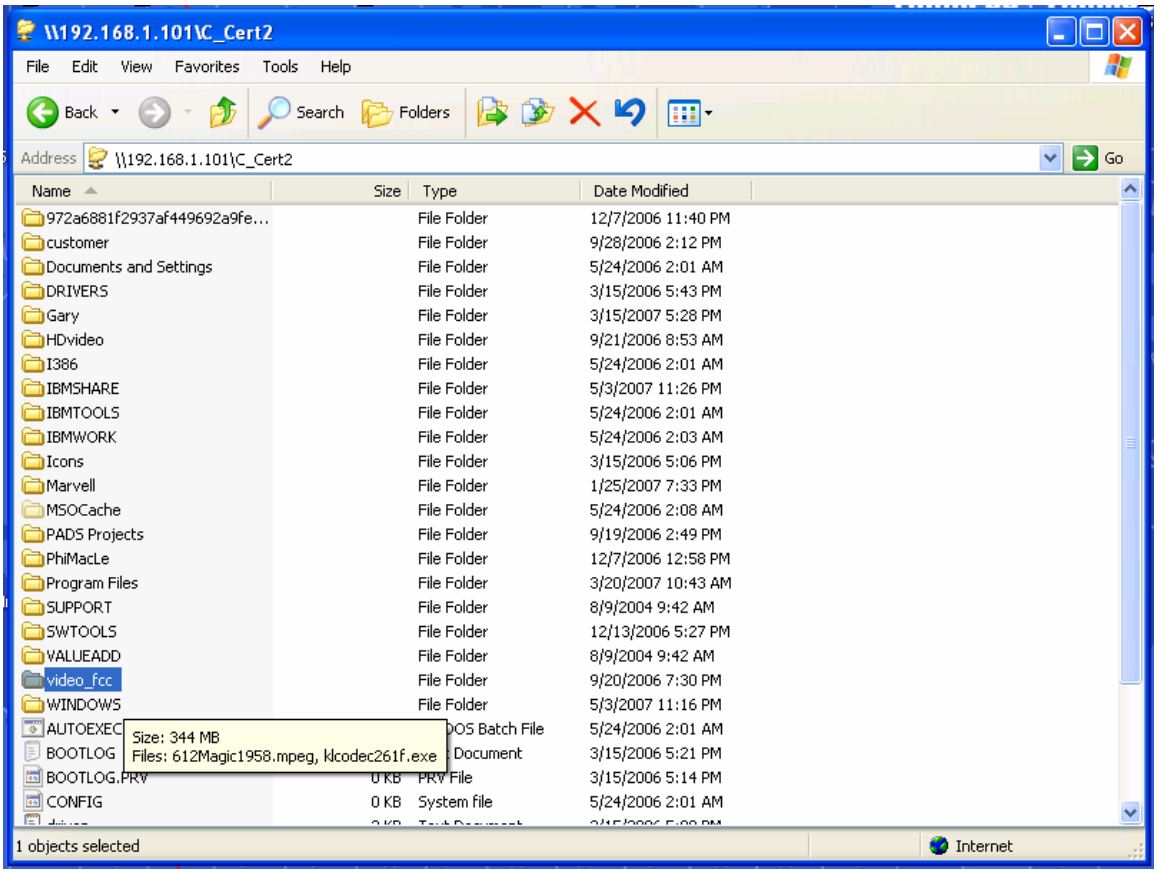
9. On the slave laptop, go to **Start -> Run** and type the *Ip address of the master*. This will enable the slave's access to the hard drive of the master.



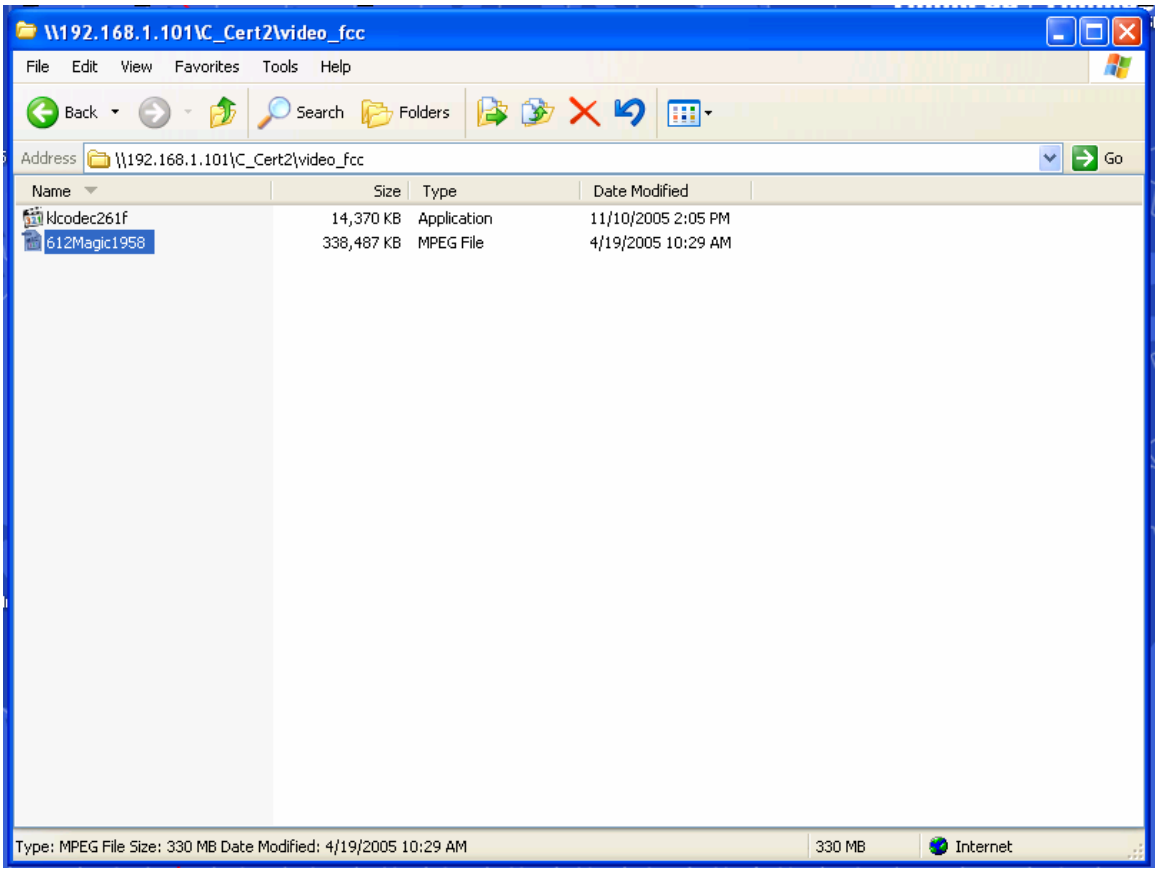
10. Select the **C-Cert** folder and double click on it to open it.



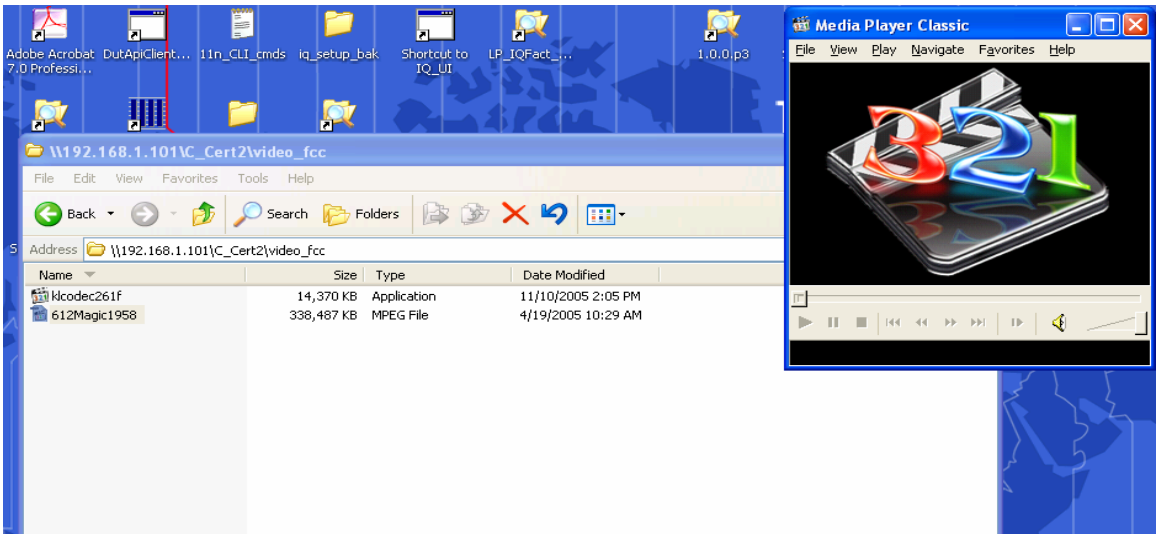
11. Select **video_fcc** folder and double click on it to open it.


\\192.168.1.101\C_Cert2
File Edit View Favorites Tools Help
Back Search Folders
Address \\192.168.1.101\C_Cert2
Go
Name Size Type Date Modified
972a6881f2937af449692a9fe... File Folder 12/7/2006 11:40 PM
customer File Folder 9/28/2006 2:12 PM
Documents and Settings File Folder 5/24/2006 2:01 AM
DRIVERS File Folder 3/15/2006 5:43 PM
Gary File Folder 3/15/2007 5:28 PM
HDvideo File Folder 9/21/2006 8:53 AM
I386 File Folder 5/24/2006 2:01 AM
IBMSHARE File Folder 5/3/2007 11:26 PM
IBMTOOLS File Folder 5/24/2006 2:01 AM
IBMWORK File Folder 5/24/2006 2:03 AM
Icons File Folder 3/15/2006 5:06 PM
Marvell File Folder 1/25/2007 7:33 PM
MSOCache File Folder 5/24/2006 2:08 AM
PADS Projects File Folder 9/19/2006 2:49 PM
PhiMacLe File Folder 12/7/2006 12:58 PM
Program Files File Folder 3/20/2007 10:43 AM
SUPPORT File Folder 8/9/2004 9:42 AM
SWTOOLS File Folder 12/13/2006 5:27 PM
VALUEADD File Folder 8/9/2004 9:42 AM
video_fcc File Folder 9/20/2006 7:30 PM
WINDOWS File Folder 5/3/2007 11:16 PM
AUTOEXEC DOS Batch File 5/24/2006 2:01 AM
BOOTLOG Document 3/15/2006 5:21 PM
BOOTLOG.PRV 0 KB PRV File 3/15/2006 5:14 PM
CONFIG 0 KB System file 5/24/2006 2:01 AM
Size: 344 MB
Files: 612Magic1958.mpeg, klcodec261f.exe
1 objects selected
Internet

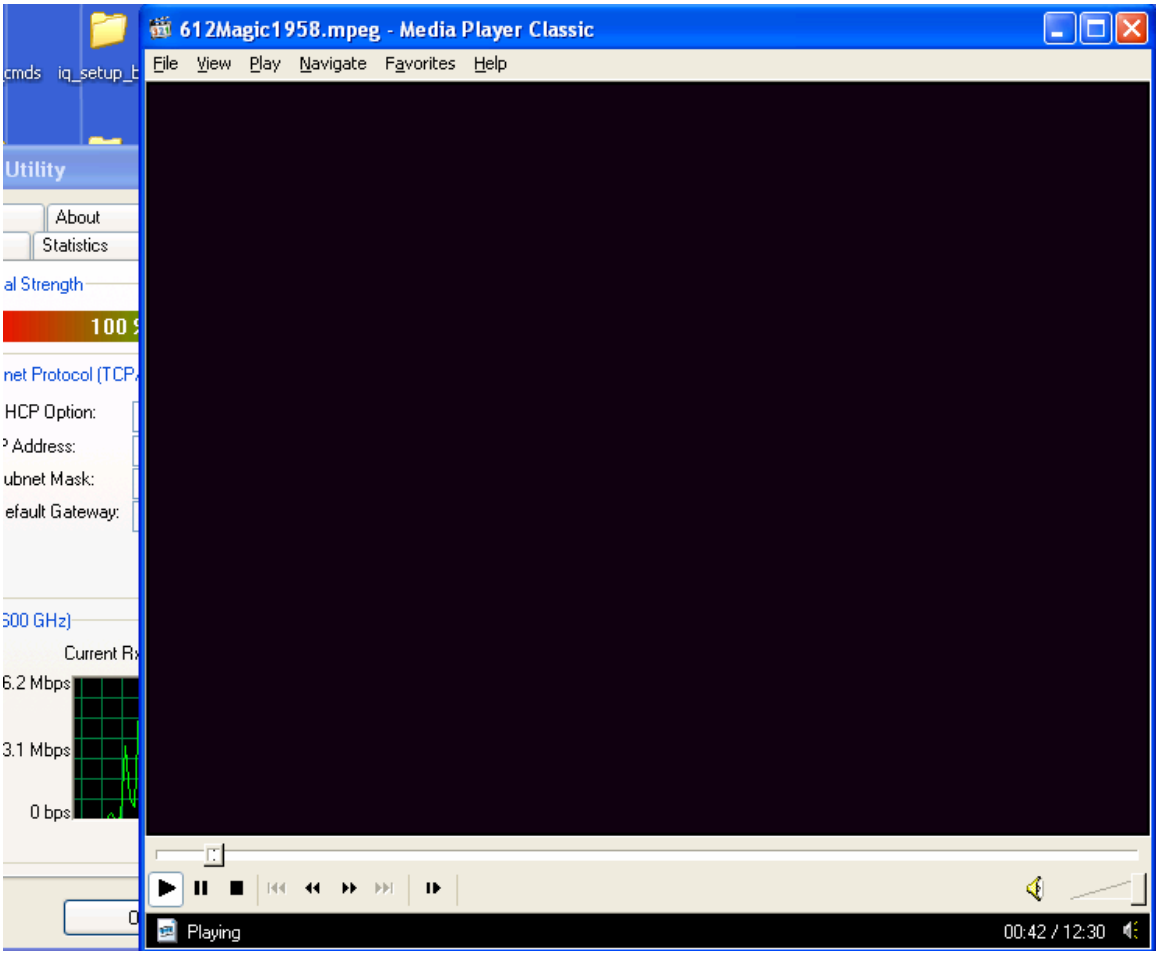
12. Select the file **612Magic1958**.



13. Drag and drop the file on the opened media player window.



14. The video clip should start playing.

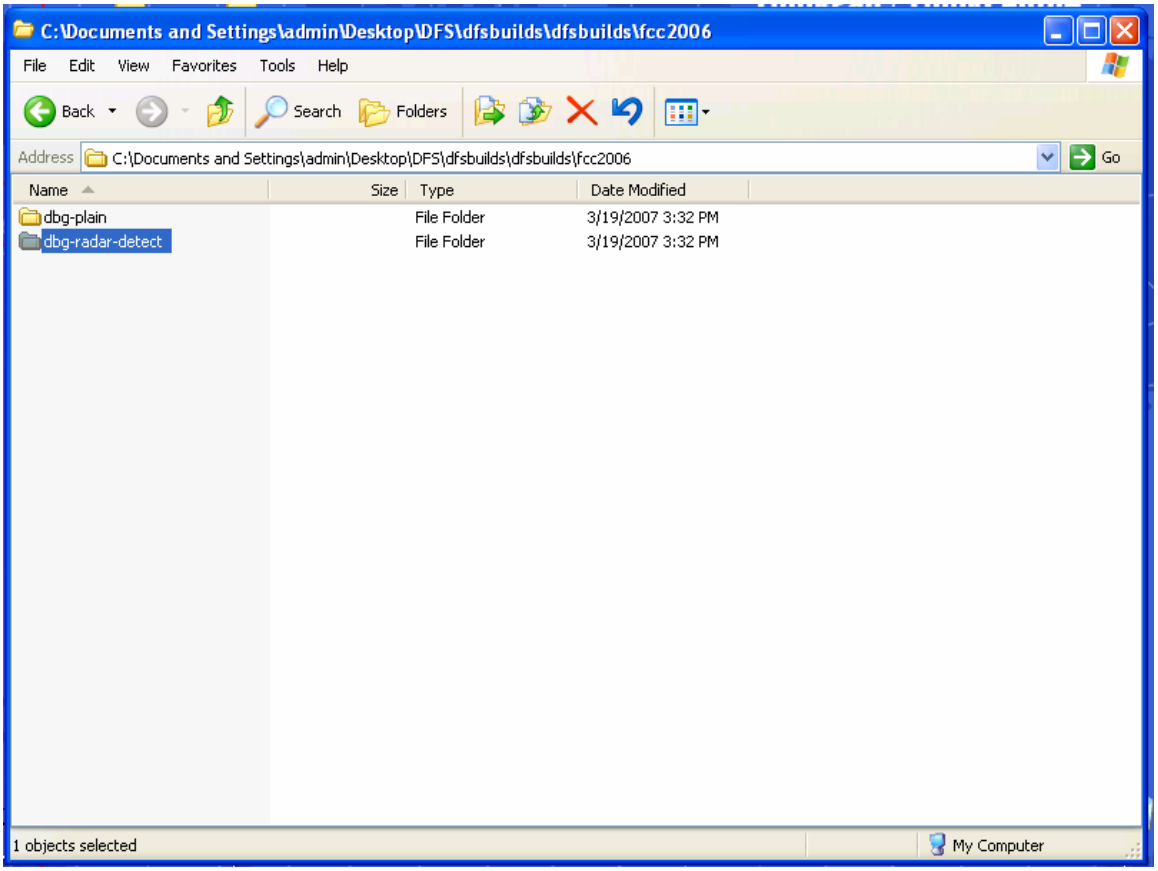


15. Now all the requisite tests in which the master has to switch channel can be performed.

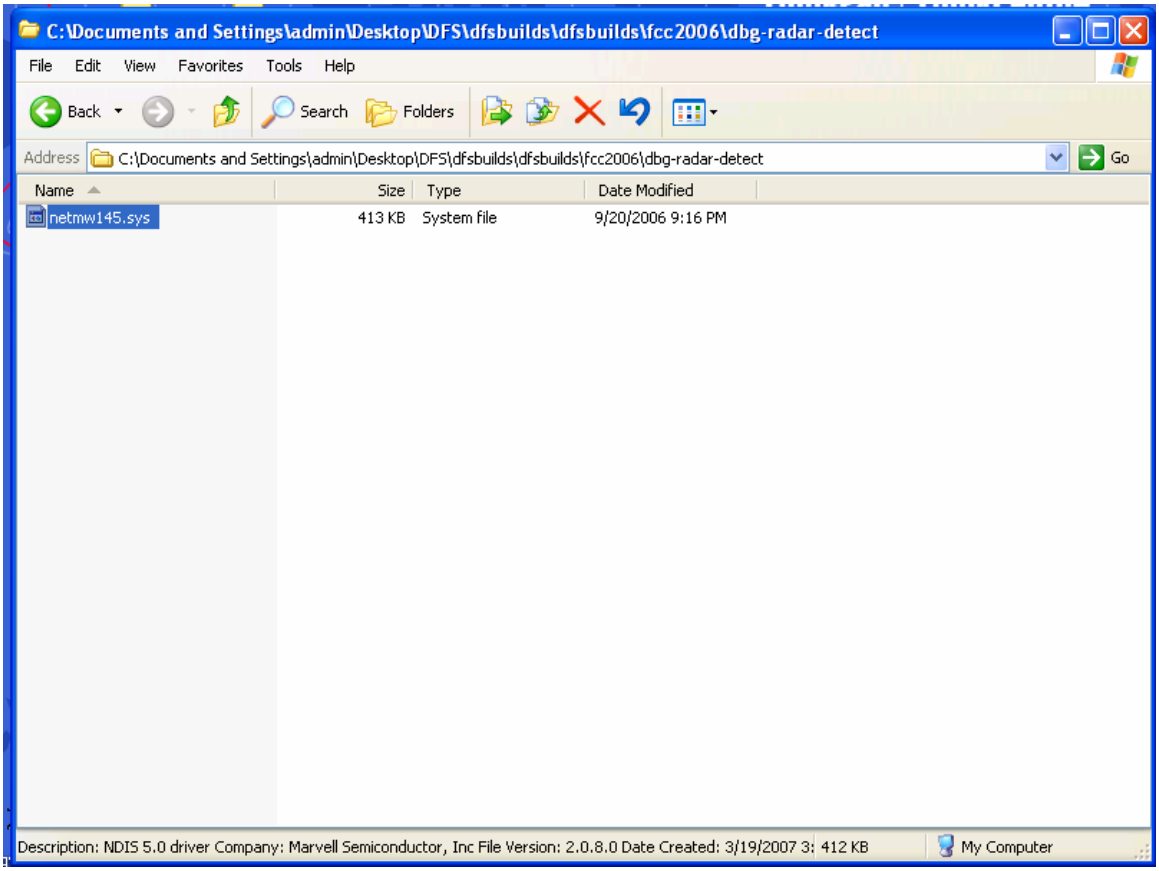
2.3.2] Changing UAY-MMC85M driver

In the previous section, the UAY-MMC85M would switch channel whenever radar was detected in the operating channel. The following section provides steps to change the driver so that the master/slave would just detect the radar. This means that UAY-MMC85M will not switch the channel and give a count of the number of radar detections. The procedure below describes the steps to change the drivers.

1. Open the folder C:\Documents and Settings\admin\Desktop\DFS\dfsbuilds\fcc2006.



2. Open the folder dbg-radar-detect.

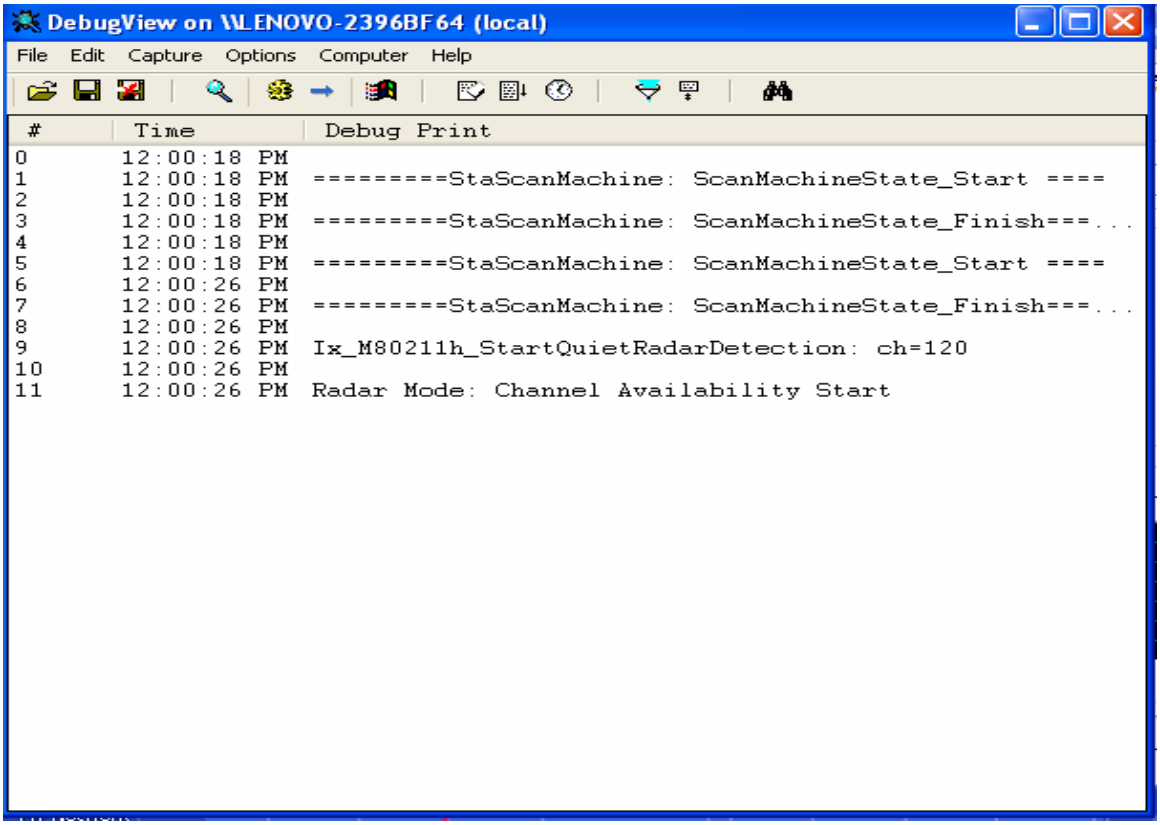


3. Select the file **netmw145.sys** and press **Ctrl C** to coy the file.
4. Go to **C:\Windows\system32\drivers** and paste the copied file.
5. Unplug and plug the UAY-MMC85M master assembly. The UAY-MMC85M master / slave now has the test mode driver.
6. All the tests to count the number of radar detects can be carried out. The radar detection count and logs will be seen on the **Dbgview.exe** window.

3] Debugging Ad-Hoc Setup

3.1] Slave does not associate with the Master

Sometimes the Slave would not join the Ad-Hoc network and would start the radar mode channel availability process. This can be seen when a message shown below is seen in the Dbgview window.



When such messages are seen in the Dbgview window on the slave, do the following:

1. Unplug the Master and the Slave UAY-MMC85M assemblies.
2. Plug in the Master assembly first.
3. Wait for the CAC time period, until the Dbgview window in Master shows the message **Starting adhoc network on channel**.
4. Plug back the Slave assembly and wait for association to take place.

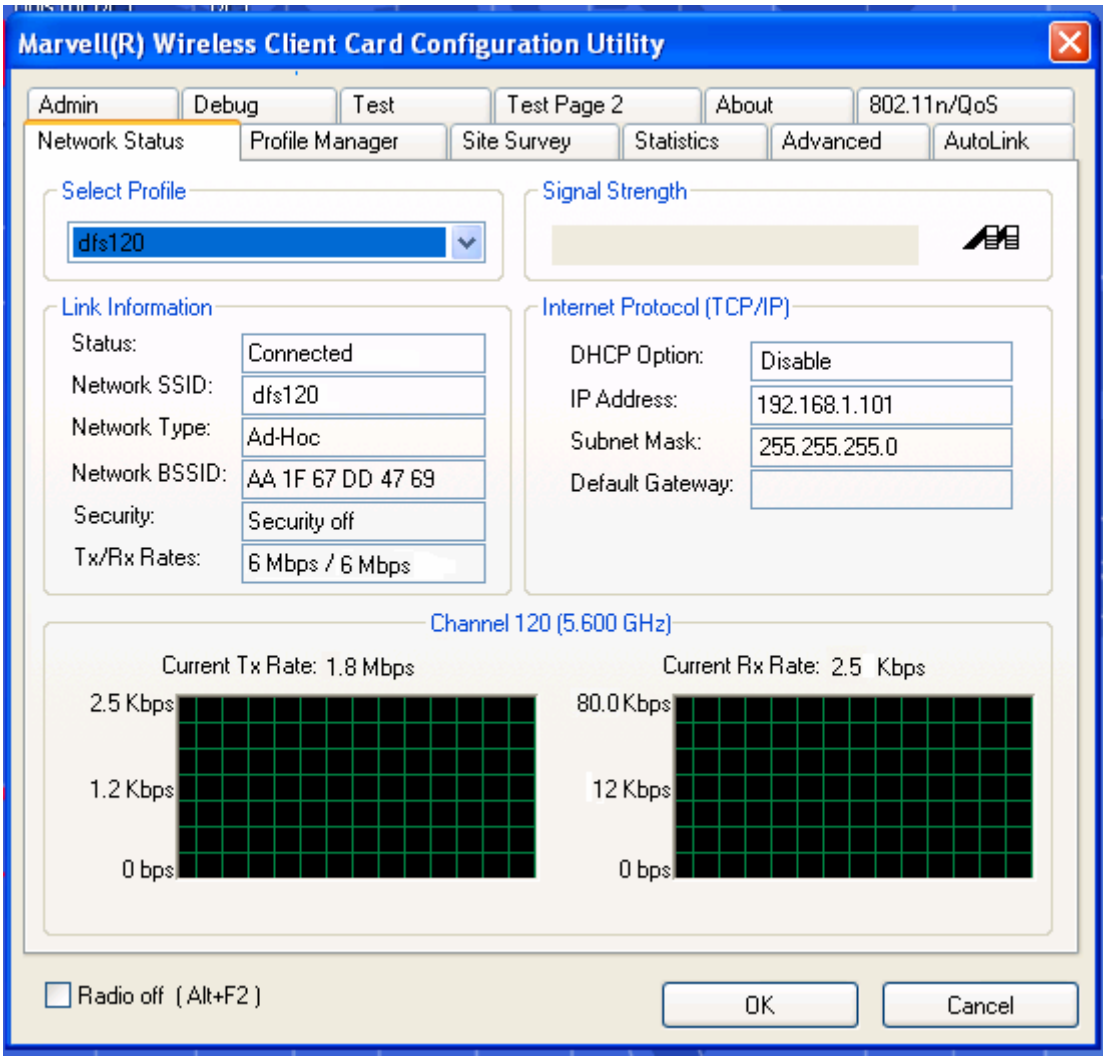
5. Please follow the steps 1-4 a couple of times, in case association does not take place.

3.2] Link Instability

Sometimes the link between the Master and Slave can be quite unstable. In such a case, please look for any loose connections in the setup. Please confirm that all the pads have correct attenuation.

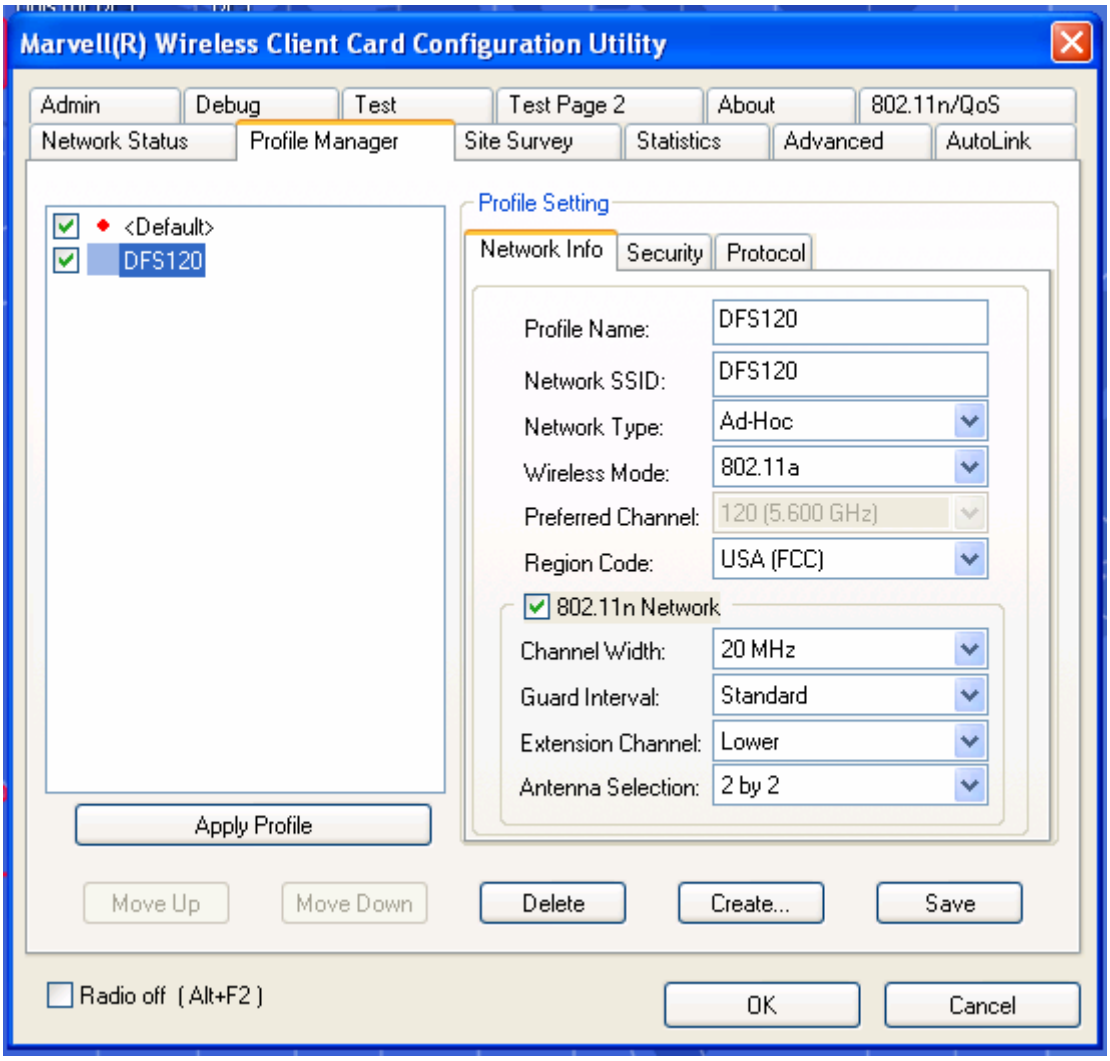
3.3] Video cannot be played

This can happen due to improper channel loading. In such cases, look at the **Tx/Rx Rates** as seen in the **Network Status** tab below. If the rates stabilize around 6Mbps, the video file cannot be played, even though the ping between the master and slave is successful. It is preferred to unplug both the UAY-MMC85M extender assemblies and plug them back starting with the Master assembly.

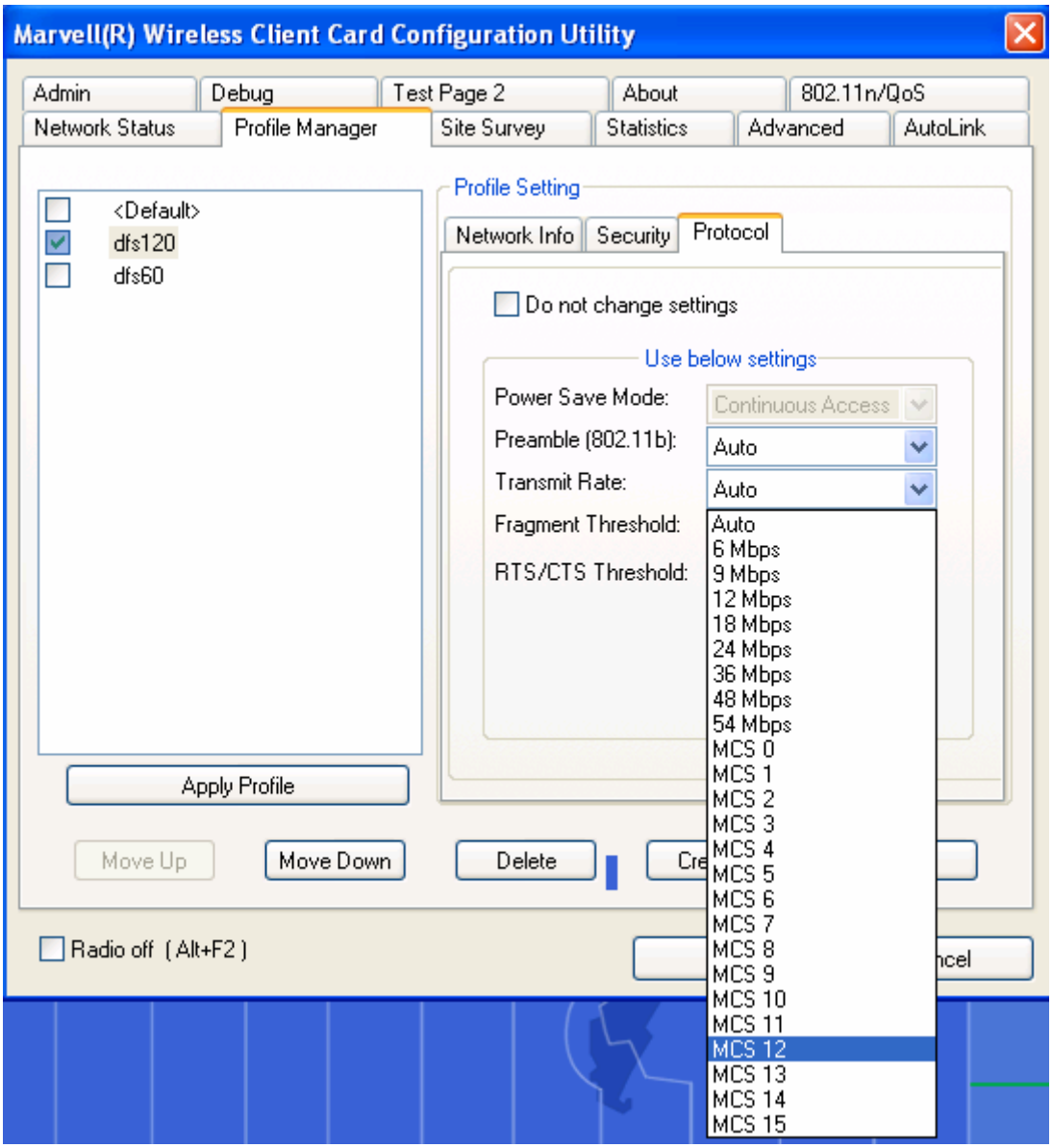


In case unplugging and plugging the assemblies does not increase the **Tx/Rx Rates**, do the following:

1. Go to the Profile manager tab on the Master.
2. Select the **Default** profile and click **Apply**.
3. Select the **dfs120** profile.



4. Click on the **Protocol** tab.
5. From the drop down menu of **Transmit Rate**, select **MCS12**.



6. Click on **Save**.
7. Click on Apply Profile.
8. Follow steps 1 – 7 on the Slave.

APPENDIX A

Federal Communications Commission (FCC) Compliance

This device complies with Part 15 of the FCC Rules and Regulations. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio-frequency energy and, if not installed and used in accordance with these instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in any particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to correct the interference by one of more of the following measures:

1) Reorient the antenna.
2) Increase the separation between the affected equipment and the unit.
3) Connect the affected equipment to a power outlet on a different circuit from that which the receiver is connected to.
4) Consult the dealer and/or experienced radio/TV technician for help.

FCC ID: UAY-MMC85M
MODEL: MC-85

IMPORTANT NOTE:
Intentional or unintentional changes or modifications must not be made unless under the express consent of the party responsible for compliance. Any such modifications could void the user's authority to operate the equipment and will void the manufacturer's warranty. To comply with FCC RF exposure requirements, the following antenna installation and device operating configurations must be satisfied. The antenna for this unit must have a separation distance of at least 20 cm from all persons. Furthermore, it must not be co-located or operating in conjunction with any other antenna or transmitter.

APPENDIX B

Setting up UAY-MMC85M

This section provides step by step procedure on how to install the UAY-MMC85M driver, the Marvell Client Configuration Utility (Marvell GUI) and the settings required on the Marvell GUI in order to set up the UAY-MMC85M to operate in Ad-Hoc mode.

The UAY-MMC85M apparatus consists of a PCIe card (UAY-MMC85M) and a PCIe extender adapter board. The UAY-MMC85M is a PCIe card. This card is plugged into the PCMCIA slot with PCIe interface of the laptop using a PCIe-to-PCIe adapter extender card. The figure below shows the assembly.

1] UAY-MMC85M Driver Installation

This section explains how to install both the UAY-MMC85M client card and the driver for Marvell high throughput client cards in a client card slot of a Windows XP based PC computer. The client card driver must be installed before installing the Marvell Configuration Utility.

1.1 Installing the Client Card

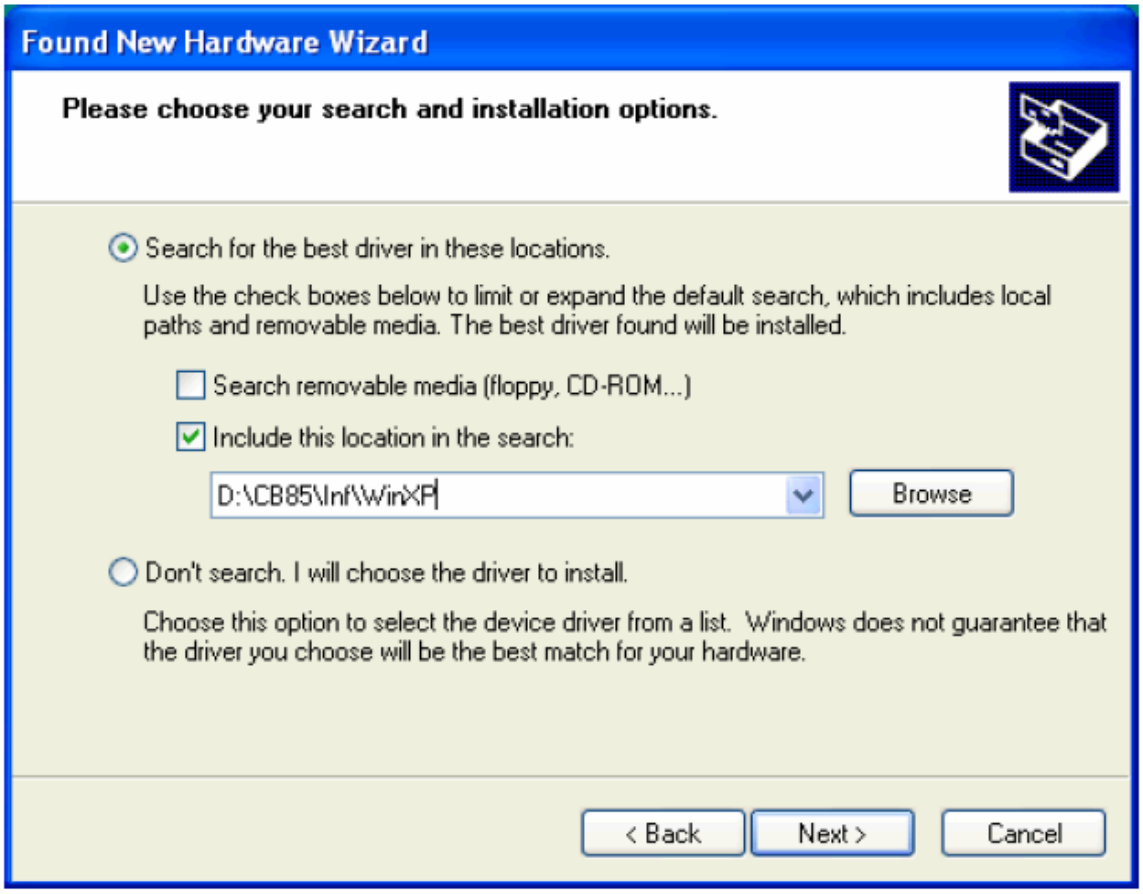
To install the client card:

1. Turn the computer off.
2. Insert the extender adapter (connector end toward the computer) into an available client card slot
3. Turn the computer on.

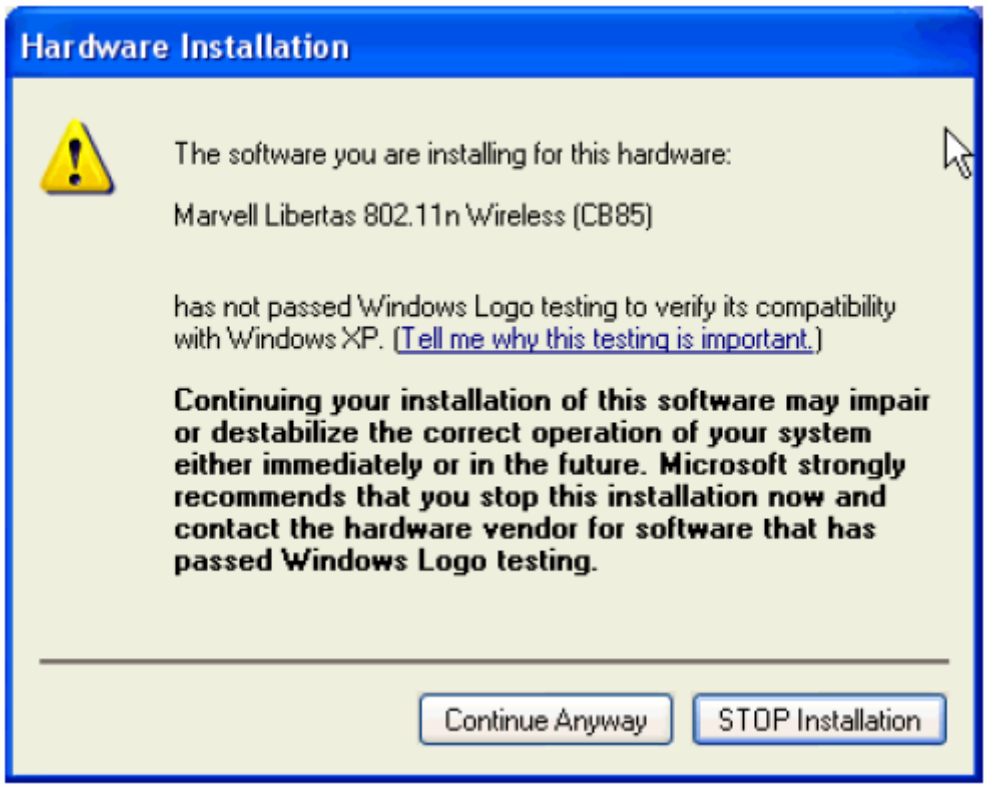
1.2 Installing the Windows XP driver

When the computer detects the client card extender, the Found Hew Hardware Wizard dialog box is displayed.

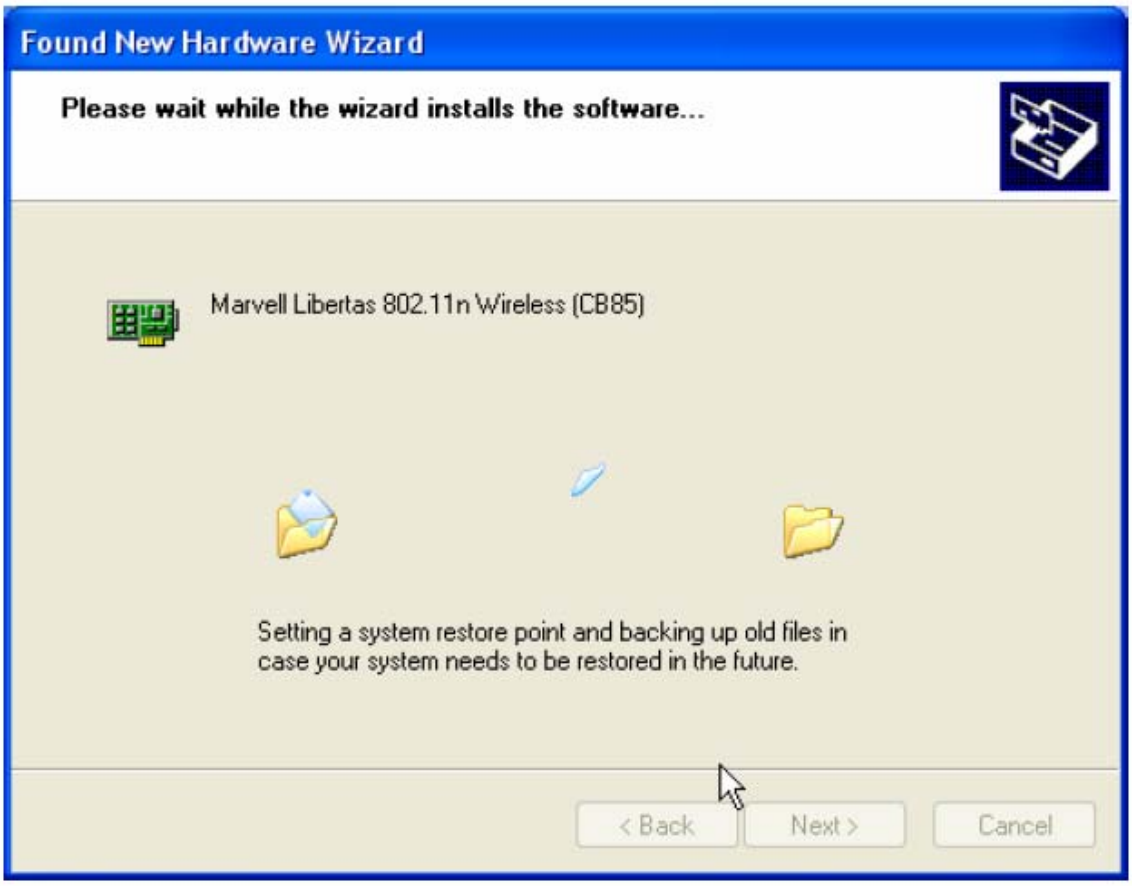
1. Select Install from a list or specific location (Advanced).
2. Click **Next** to continue.
   The Please choose your search and installation options dialog box is displayed.



3. Enter the path of the directory that contains the driver.
4. Click **Next** to continue
5. If the **Hardware Installation** dialog box displays a warning that the software has not passed Windows Logo Testing, click **Continue Anyway**.



The Please wait while wizard installs the software dialog box is displayed.



6. Click **Next** to continue.

The Completing the Found New Hardware Wizard dialog box is displayed.

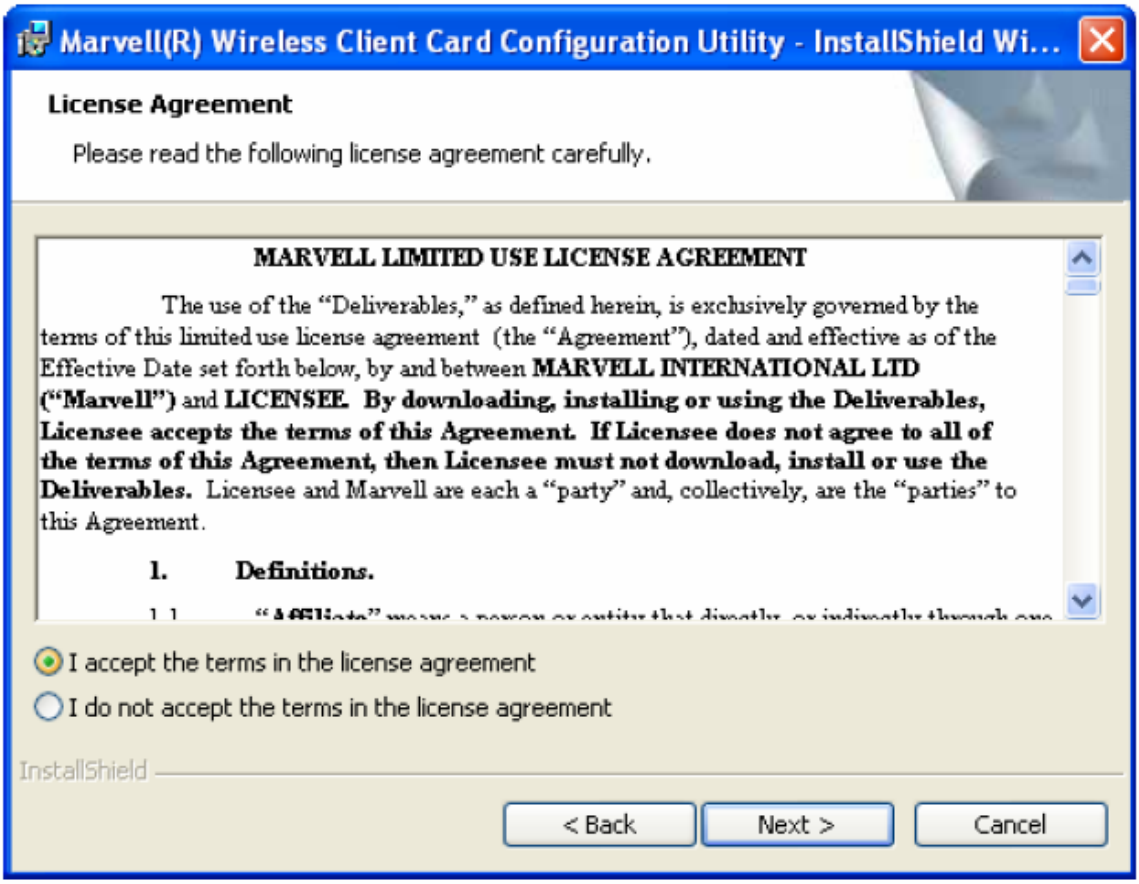
7. Click Finish to complete the installation.

2] Configuration Utility Installation

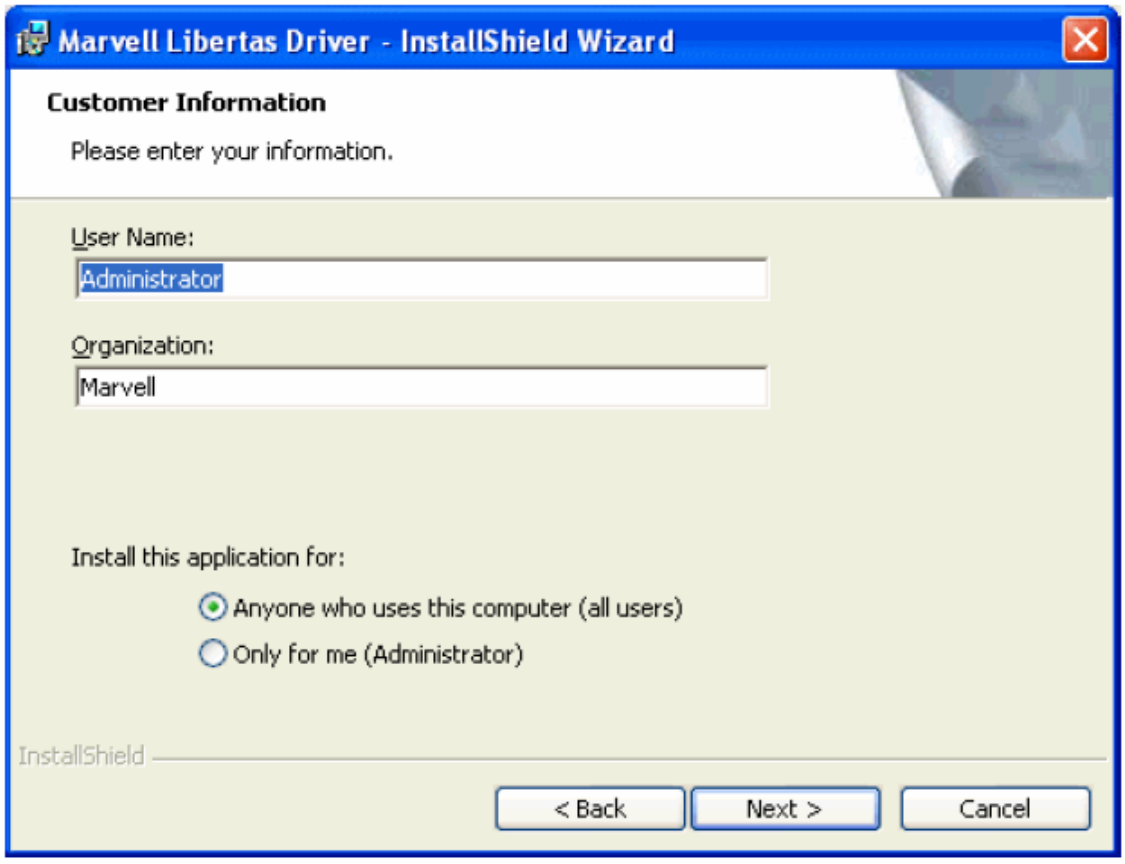
This section provides a step by step procedure to install the configuration utility.

1. Power on the computer
2. Navigate the drive where the Marvell Client Card Configuration Utility files are located.
3. Change to the directory **\Utils**.
4. Double-click Setup.exe.
   Windows starts the utility setup program.

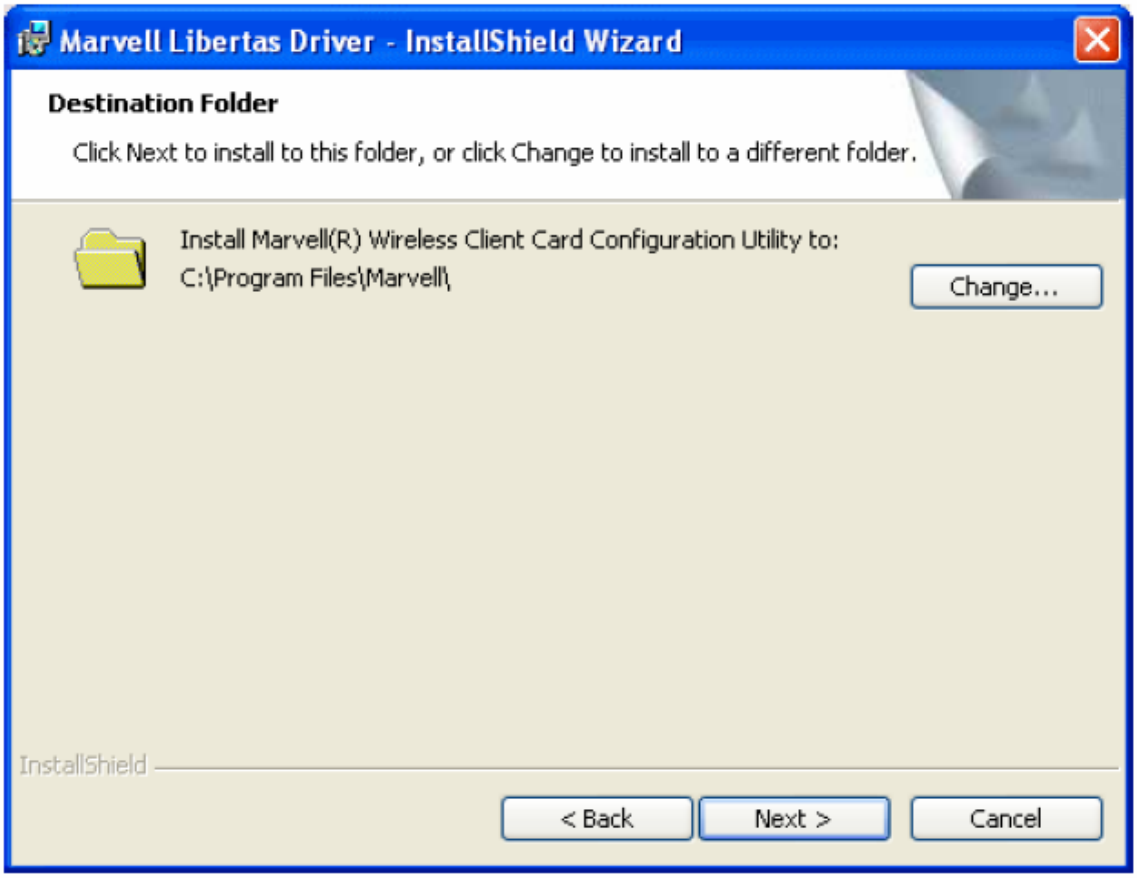
5. Click **Next** to continue.
   The **License Agreement** dialog box is displayed.



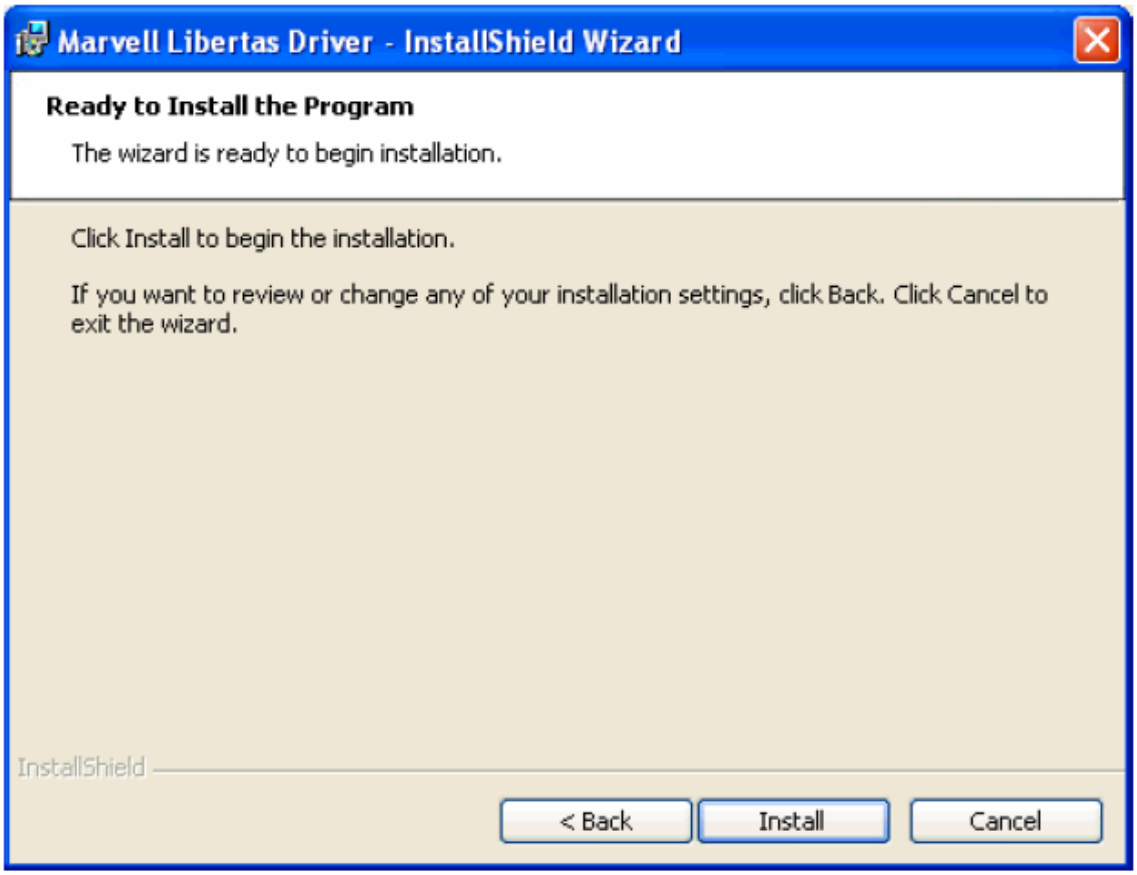
6. Select I accept the terms in the license agreement.
7. Click **Next** to continue.
   The **Customer Information** dialog box is displayed.



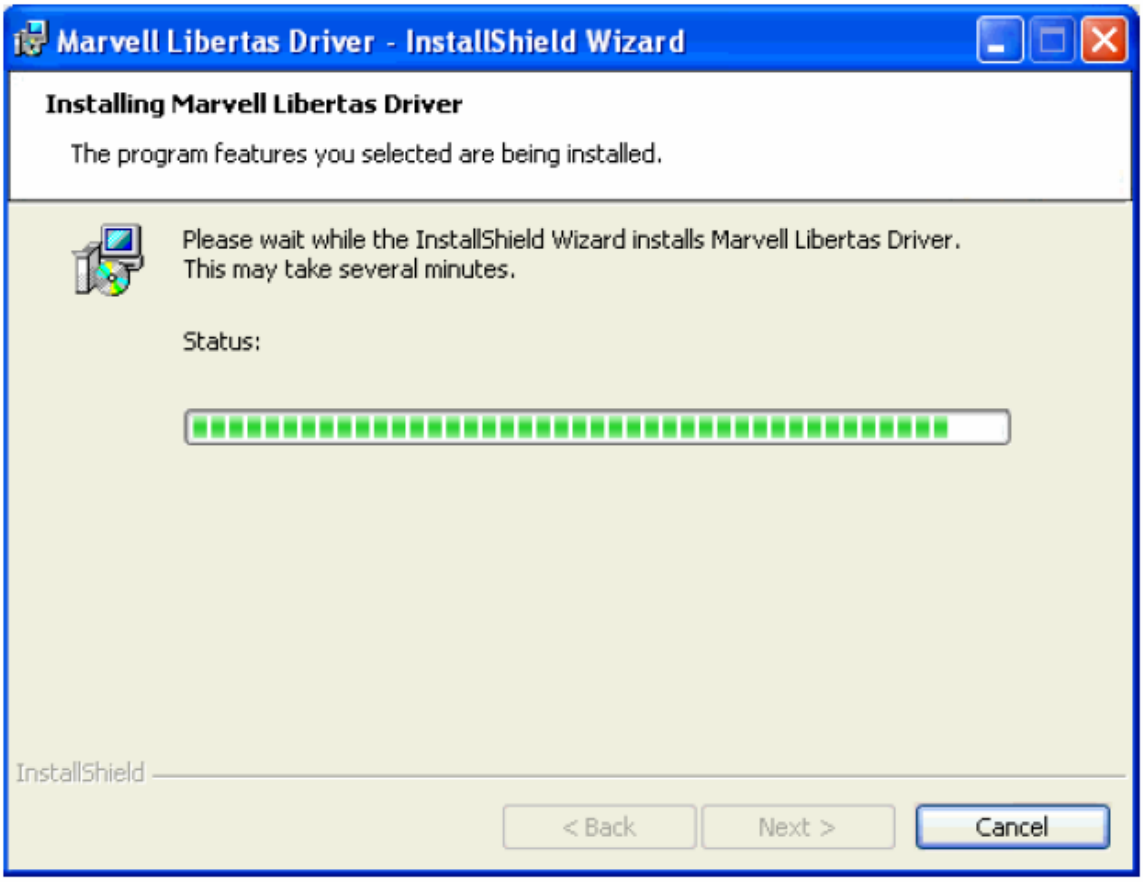
8. Enter User Name and Organization.
9. Click **Next**.
   The **Destination Folder** dialog box is displayed.



10. Click **Next** to install the Marvell Configuration Utility in the default folder or enter a different path before clicking **Next**.
    The **Ready to Install the Program** dialog box is displayed.

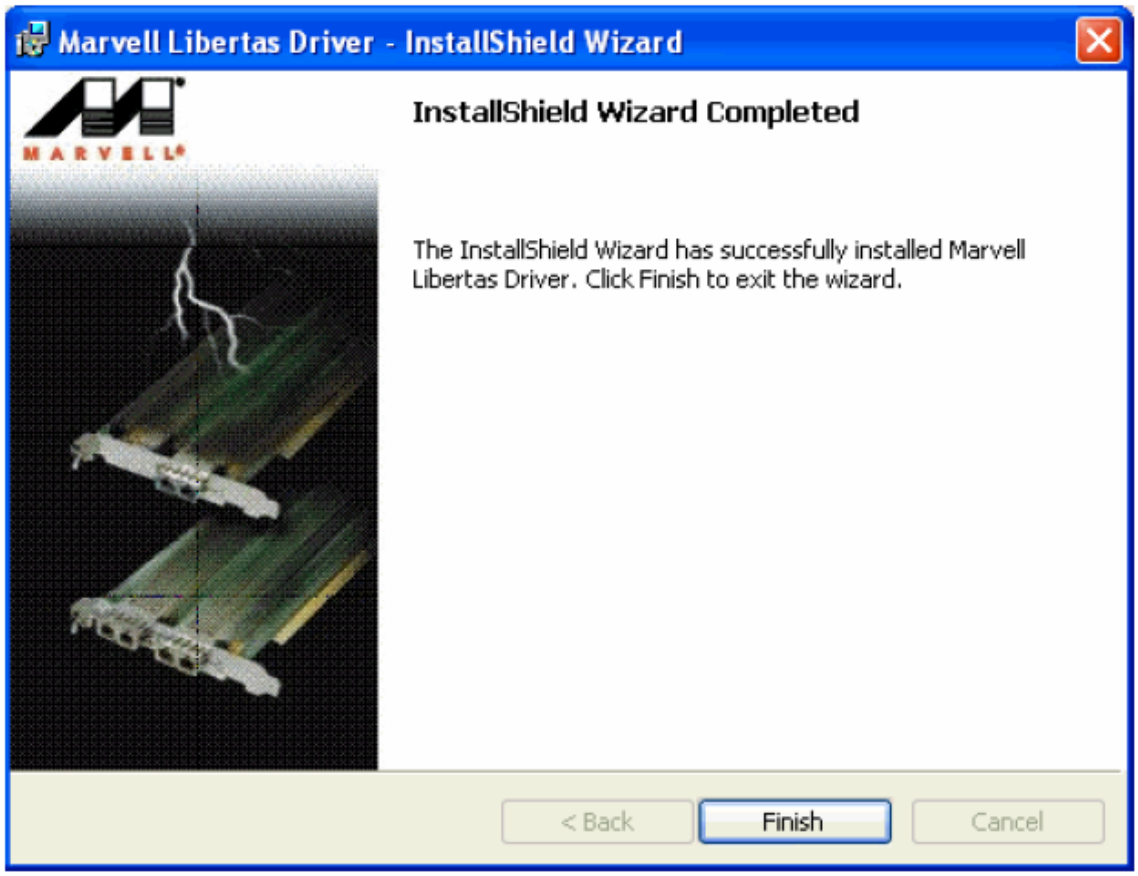


11. Click **Install** to start the installation.
    The **Installing Configuration Utility** dialog box is displayed.



Installation is in progress.

When the Setup Wizard finishes, the **Installation Complete** dialog box is displayed.



12. Click **Finish** to complete the installation of the Marvell Configuration Utility. The installation program for the Marvell Odyssey Client launches automatically.

APPENDIX C

Disabling Windows Zero Config

For windows XP and Windows Server 2003, it is preferable to use the Marvell configuration utility when using Marvell client cards. Windows Zero Config and Marvell Configuration Utility cannot be used at the same time. In such a case, it is preferable to disable or manually stop the services running Windows Zero Config utility. The snapshots below show how to manually stop the Windows Zero Config service.

1] Disabling Windows Zero Configuration Utility

To disable the Windows Zero Configuration Utility (if not disabled previously):

1. From the Control Panel, click **Network Connections**.
2. Right-click the icon for the Marvell client card and select **Properties**.
3. Click the **Wireless Networks** tab.
4. Clear the **Use Windows to configure my wireless settings** check box to disable the Windows Zero Configuration Utility.