

Advantech DiagAnywhere

User Guide

History: Ver1.0 – 2006/10/04

Ver1.1 – 2007/01/03

Ver1.2 – 2007/04/25

Ver1.3 – 2007/05/20

Ver1.4 – 2009/11/14

Ver1.5 – 2010/10/15

Ver1.6 – 2010/11/01, add Network Setting

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1. Introduction

The “DiagAnywhere”, an abbreviation of “Diagnostic Anywhere”, is a networking solution for remotely monitoring and controlling other Windows based devices. Currently, the “DiagAnywhere” includes the utility on client side and the server on the other. The main technology is based on Microsoft .NET Framework for the client. For this reason, the PCs for using this solution must have the Microsoft .NET Framework installed for Win32 platform.

The “DiagAnywhere” solution offers the functionalities as below:

- UDP broadcast search on LAN. (Same domain)
- Change network setting of the device. (Same domain)
- Remote agent search on WAN. (Cross domain)
- Windows based or password based authentication.
- Remote monitoring. (Up to **24** devices for the utility)
- Remote controlling.
- Grouping favorite devices.
- File transfer.
- Screen capturing.
- Control action recording.
- Group devices time synchronization.
- Devices health check.
- Remote shutdown and wake up devices that have ATX power

The “DiagAnywhere” server can only run on Advantech’s **TPC, UNO, AMAX, APAX, ADAM, IPPC, PEC** and **MIC** Windows based devices. The supported platforms include Windows XP, Windows eXP and Windows CE.

The “DiagAnywhere” utility can run on Win32 and Win64 platform with Microsoft .NET Framework (2.0 or later) installed.

However, the server can accept only one connection from the utility at a time and other connection will be rejected if there is a connection alive.

2. DiagAnywhere Server

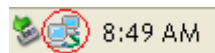
2.1. Installation

Currently, “DiagAnywhere” server has few different versions as below:

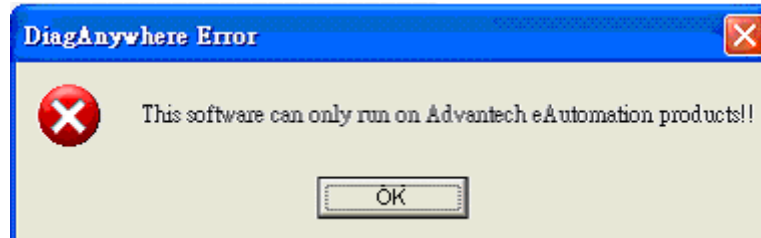
- Win32 version
- WinCE version for X86 CPU
- WinCE version for ARM CPU

For different Advantech devices, you have to choose the suitable install package.

After installation, the “DiagAnywhere” server will be registered for automatically running on startup. Please reboot the system after installation and the server will run on next startup. You can find the icon within the system tray after the server running.

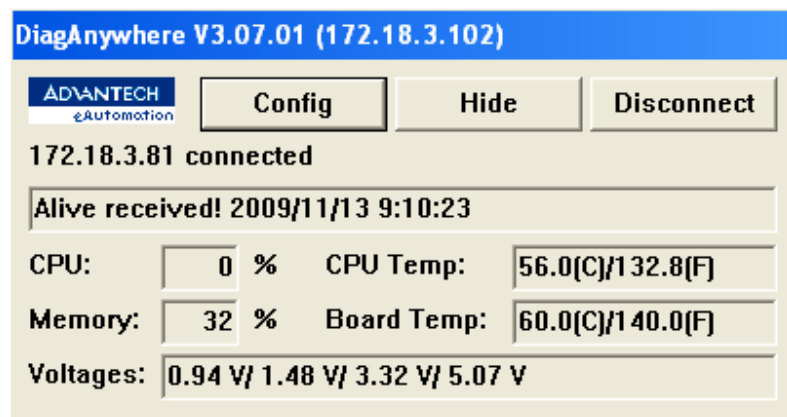


If you see the following message when running the server, it means the device you are using is not one of Advantech’s **TPC, UNO, AMAX, APAX, ADAM, IPPC, PEC** and **MIC** Windows based devices.



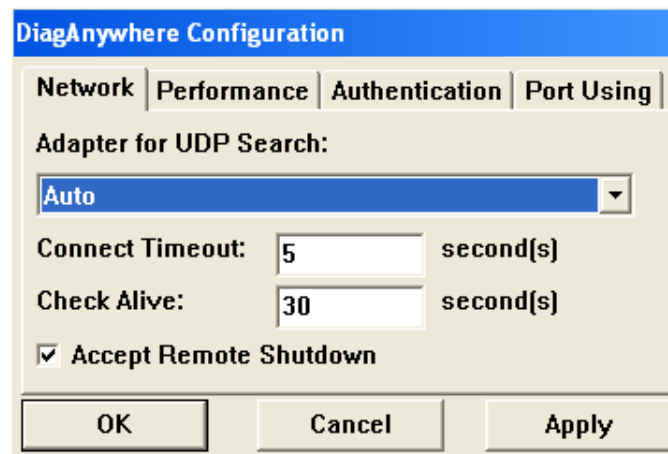
2.2. Configuration

For configuring the “DiagAnywhere” server, just click on the icon within the system tray, then the main window will popup.



After press the “Config” button, the “DiagAnywhere Configuration” dialog will popup with four tab pages.

2.2.1. Network



2.2.1.1. Adapter for UDP Search

If this field set to “Auto”, the server will automatically bind the first available network adapter for UDP searching. You can also select other adapter to force the server to bind to.

2.2.1.2. Connection Timeout

This field is the timeout value to receive the first packet after remote utility connecting to the server. If no packet received within the timeout value, the server will close the connection

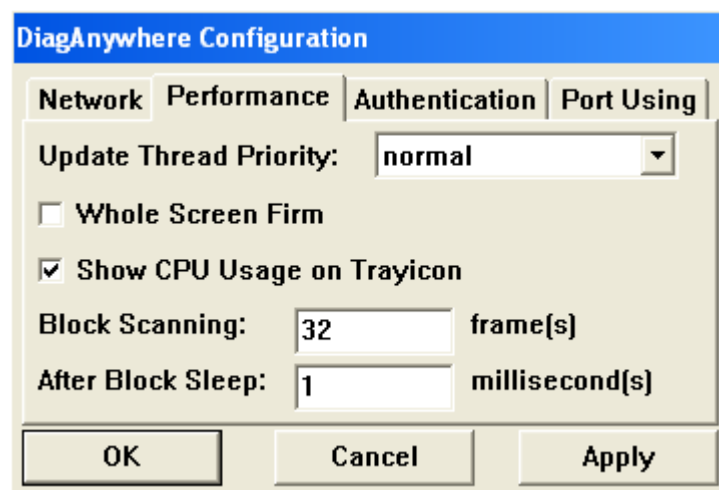
2.2.1.3. Check Alive

This field is the time interval for alive checking. If no packet received within the check interval, the server will send a check packet to remote. If no response received, the server will close the connection.

2.2.1.4. Accept Remote Shutdown

This field is enabled when the system supports shutdown command. You can check this field to allow remote utility to shutdown this device, or uncheck this field to deny the action. Before check this field, you must make sure the device has ATX power that will allow the utility can wake up the device remotely.

2.2.2. Performance



2.2.2.1. Update Thread Priority

If you want to change the update thread priority, you can change this field. There are three options as below

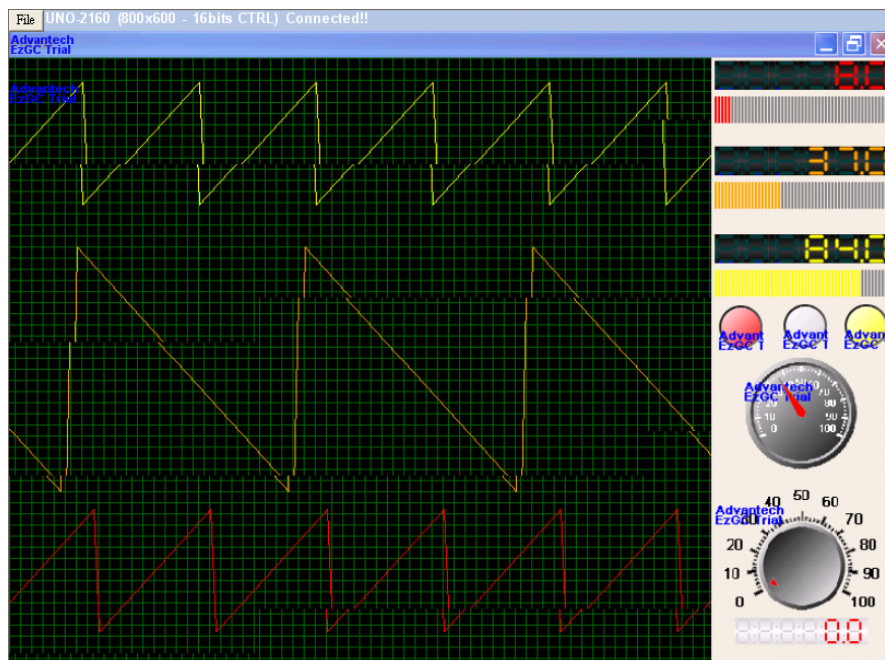
- above normal
- normal
- below normal

With higher priority, the server will consume more CPU usage.

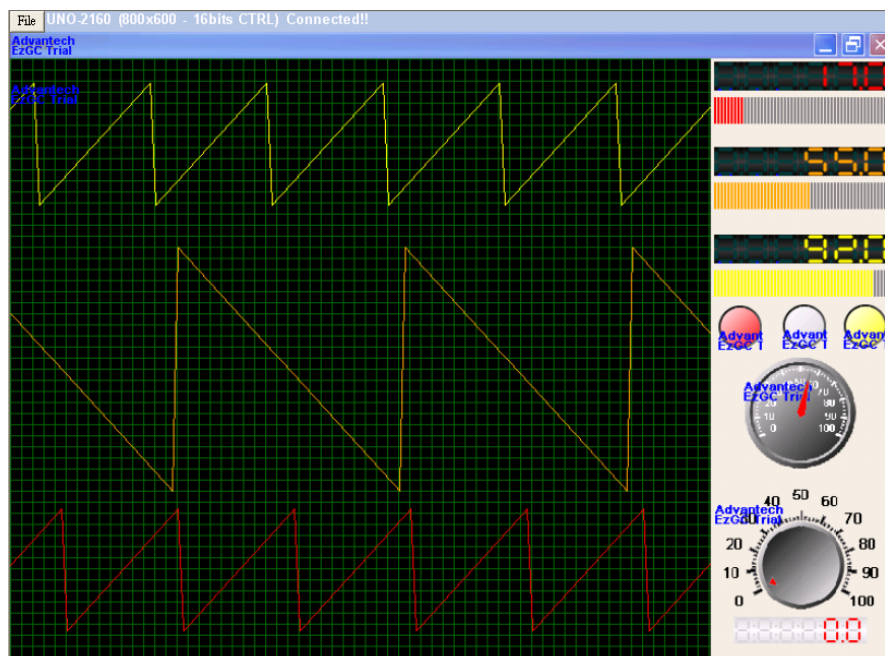
2.2.2.2. Whole Screen Firm

If this field is checked, the server will capture the whole screen and then send frames from the buffered image; otherwise, the server will capture the screen frame by frame (The frame size will be 32x32 or 32x40 or 64x64 for different resolution).

When the “Whole screen firm” is not checked, on the utility, you will see a little bit fragmentarily view if the remote server is very busy on screen display.

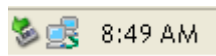


When the “Whole screen firm” is checked, on the utility, you will see the complete screen shot without fragment. **However, this function will consume higher CPU using on the server side.**

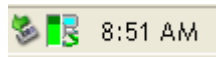


2.2.2.3. Show CPU usage on Trayicon

If this field is checked, the CPU usage will be shown on the trayicon. Normally, if the CPU usage is under 5 %, the trayicon is shown as below.



If the CPU usage is over 5 %, the trayicon will be shown with a progress bar that indicates the usage.



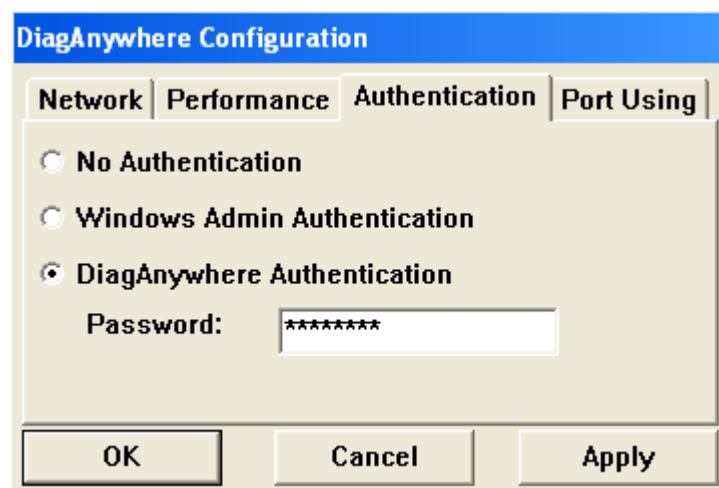
2.2.2.4. Block Scanning

This field is the total scanning frames at a time. In other words, the server will continuously scan the total frames as a block without any delay. If this value is higher, the update rate is faster, however, the CPU consuming is higher.

2.2.2.5. After Block Sleeping

This field is the time delay after a block of frames scanned. If this value is lower, the update rate is faster, however, the CPU consuming is higher.

2.2.3. Authentication



2.2.3.1. No Authentication

If this field checked, there will be no authentication when remote utility tries to connect to this server.

2.2.3.2. Windows Admin Authentication

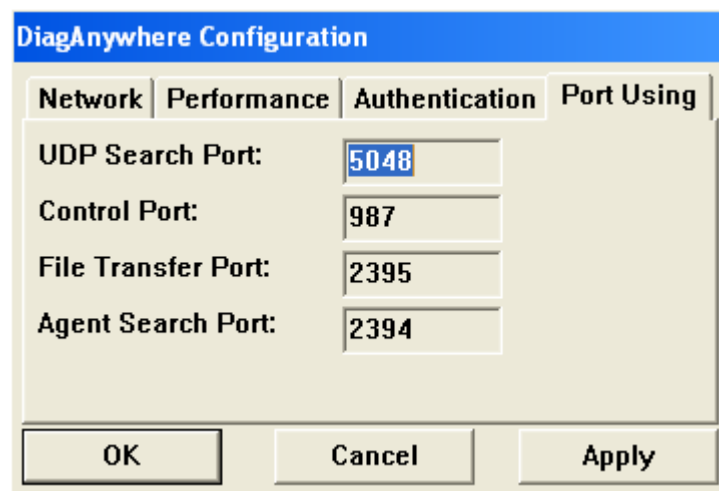
If this field checked, this will enable the Windows based authentication when remote

utility tries to connect to this server.

2.2.3.3. DiagAnywhere Authentication

If this field checked, this will enable the password based authentication when remote utility tries to connect to this server. You have to set the password on the text box.

2.2.4. Port using



The image shows a 'DiagAnywhere Configuration' dialog box with four tabs: 'Network', 'Performance', 'Authentication', and 'Port Using'. The 'Port Using' tab is selected. It contains four text input fields with the following labels and values:

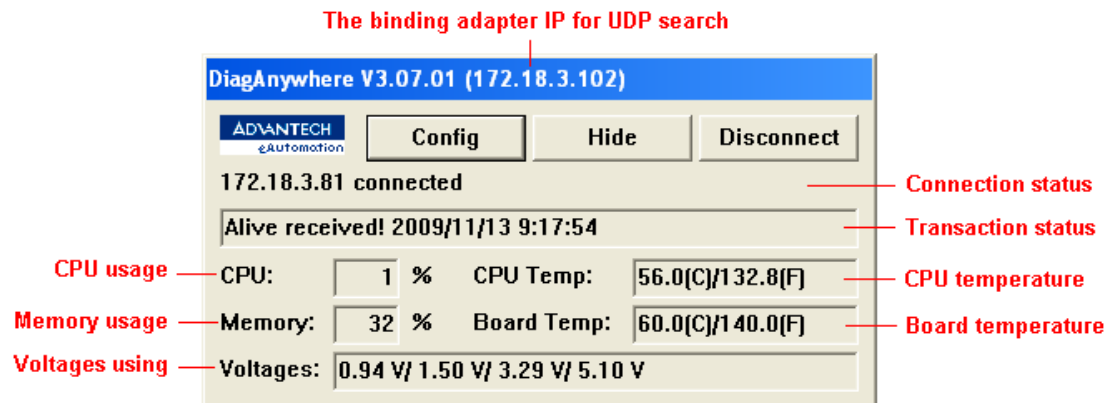
| Label | Value |
|---------------------|-------|
| UDP Search Port: | 5048 |
| Control Port: | 987 |
| File Transfer Port: | 2395 |
| Agent Search Port: | 2394 |

At the bottom of the dialog box are three buttons: 'OK', 'Cancel', and 'Apply'.

This page shows the current communication ports using. If you want to change those ports to match your network environment, please see the Appendix.

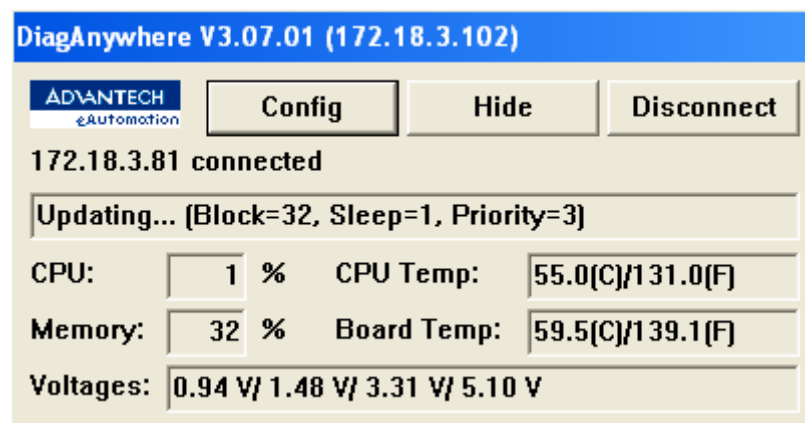
2.3. Normal operation

For viewing the “DiagAnywhere” activity, just click on the icon within the system tray, then the main window will popup.



Normally, the “Connection status” will show “Waiting for connection...” which means no any connection at the moment.

If the connection builds up, you will see the “Connection status” and “Transaction status” changed.



If you want to minimize the server into the system tray, just press the “Hide” button.

If you want to disconnect the current connection manually, just press “Disconnect” button.

If you want to terminate the server, just press “Exit” button. However, you cannot terminate the server if there is a connection alive. You have to disconnect the connection and then terminate the server.

3. DiagAnywhere Utility

3.1. Installation

Before install the “DiagAnywhere Utility”, please make sure the Microsoft .NET framework 2.0 has been installed in your computer.

3.2. Starting the Utility

On the “Desktop”, you can find a short cut for “DiagAnywhere Utility”.

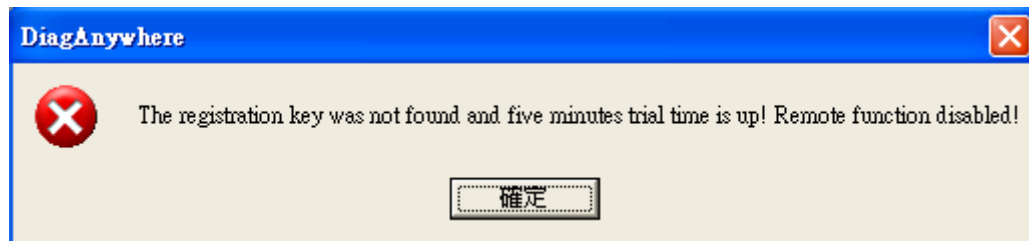


You can also run the utility from “Start”->”Programs”->”Advantech Automation”->”DiagAnywhere”->”DiagAnywhere Utility”.

After running the utility, if you see the following message, it means you have not registered your DiagAnywhere. Please input the 16 characters registration number, or you will have only five minutes trial time for the utility.



After running for five minutes without registration, you will see following message when press any device related functions. For those connected windows will become blank.



After running the utility, you see the following screen.



The following sections will describe the functionality for the utility.

3.3. Normal Functions of the Utility

3.3.1. File

- **New Favorites**

This function will clear the buffered favorites data and create blank favorites. The “Favorites” is the devices groups you can setup and save for future using.

- **Open Favorites**

This function will open previously saved favorites data.

- **Save Favorites**

This function will save current favorites data into a XML file.

- **Exit**

This function will terminate the utility.

3.3.2. Tools

- **Search the LAN**

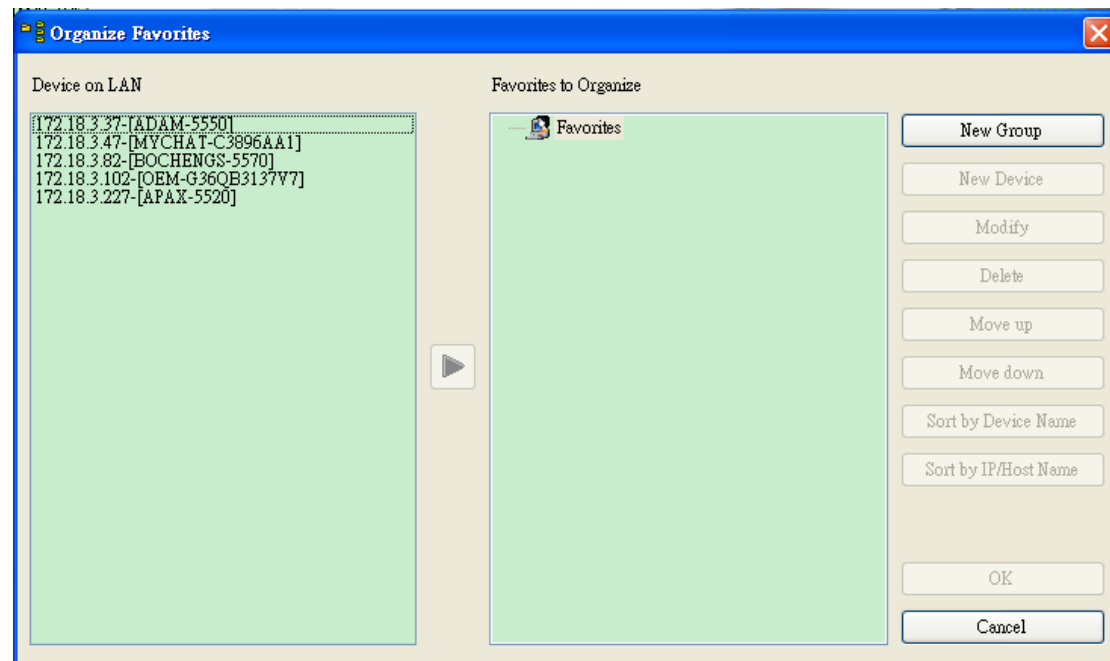
This function will use UDP broadcast to search devices on the LAN in current domain.

- **Refresh the LAN**

This function will refresh network adapters on the local machine.

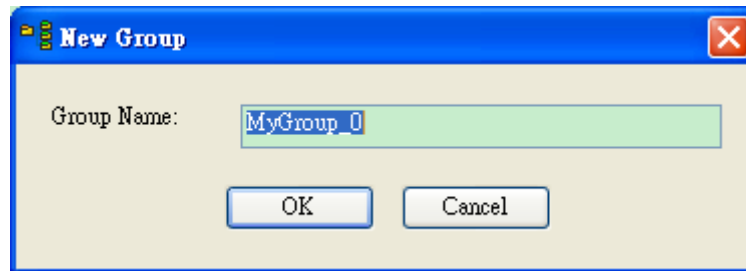
- **Organize Favorites**

This function will pop up a dialog for editing the favorites.

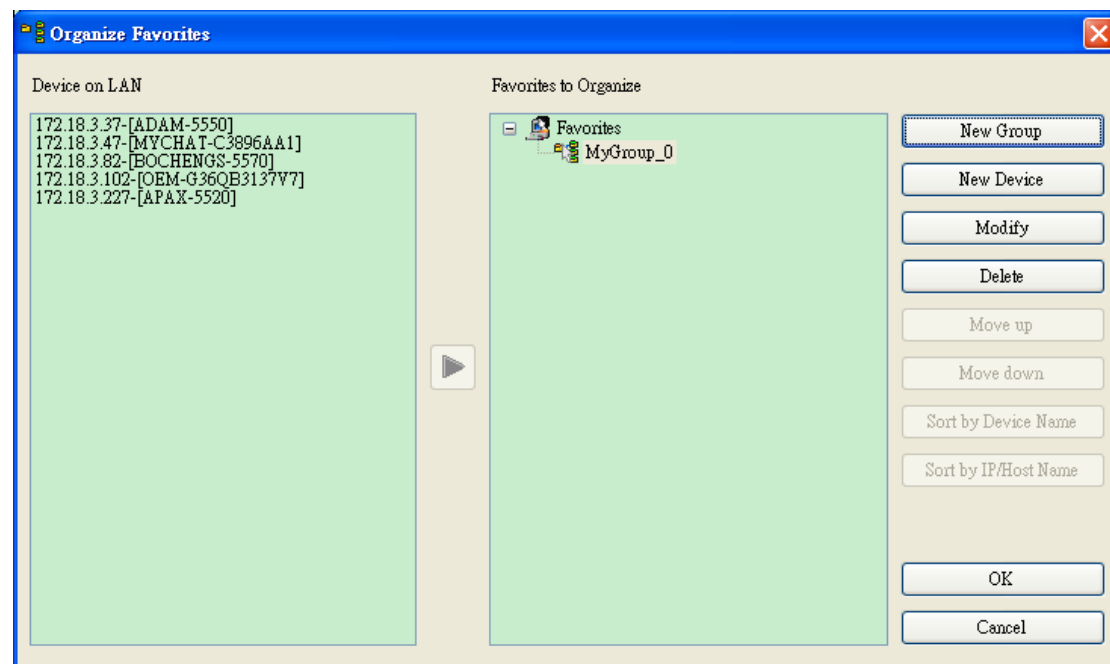


The left hand side list shows the devices searched from the LAN. The right hand side shows the favorites you are going to edit.


To organize the favorites, you have to add new group by pressing the “New Group” button. In the following dialog, input the group name and press “OK”.

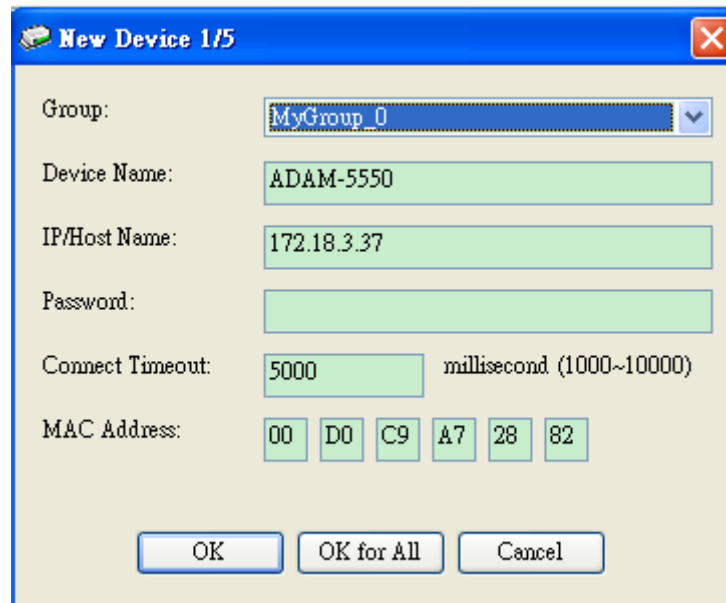


You will see the group added under the “Favorites” root node.



Now, you can press “New Device” to add a new device manually into selected group. Or you can press the “Modify” button to modify to edit the selected group node. Or you can press the “Delete” button to erase the selected group node.

For adding the devices in the “Device on LAN” list into Favorites, you can click on left hand side list to select one or more devices and then press  button to add selected devices into favorites. For each selected device, the following dialog will pop up for editing device information. If you press “OK for All”, the devices will be automatically added into the first selected group with the first setup password and timeout values. The process will run until all selected devices are added, and only stop when conflict occurs. The MAC address must be filled in if this device is going to apply the WOL (Wake on LAN) function.



New Device 1/5

Group: MyGroup_0

Device Name: ADAM-5550

IP/Host Name: 172.18.3.37

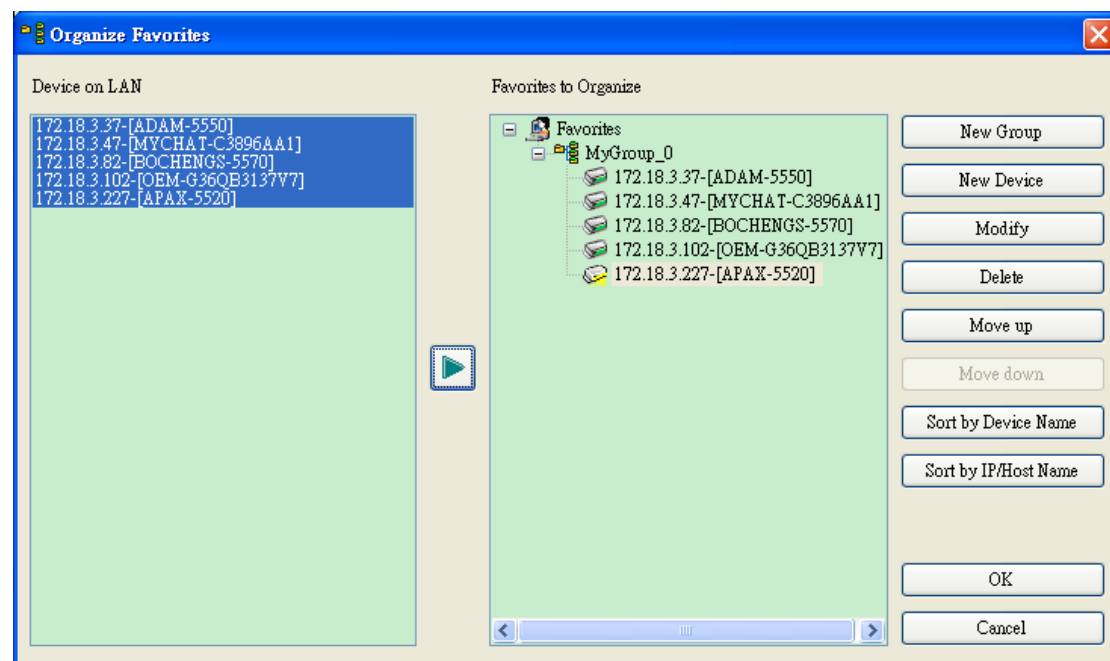
Password:

Connect Timeout: 5000 millisecond (1000~10000)

MAC Address: 00 D0 C9 A7 28 82

OK OK for All Cancel

After adding the devices into favorites, you will see the device nodes are added under the group node.



Organize Favorites

Device on LAN

- 172.18.3.37-[ADAM-5550]
- 172.18.3.47-[MYCHAT-C3896AA1]
- 172.18.3.82-[BOCHENG-5570]
- 172.18.3.102-[OEM-G36QB3137V7]
- 172.18.3.227-[APAX-5520]

Favorites to Organize

- Favorites
 - MyGroup_0
 - 172.18.3.37-[ADAM-5550]
 - 172.18.3.47-[MYCHAT-C3896AA1]
 - 172.18.3.82-[BOCHENG-5570]
 - 172.18.3.102-[OEM-G36QB3137V7]
 - 172.18.3.227-[APAX-5520]

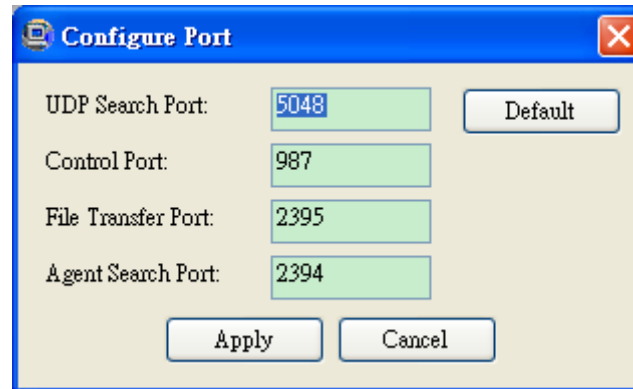
New Group New Device Modify Delete Move up Move down Sort by Device Name Sort by IP/Host Name OK Cancel

You can select a device node in favorites and press “Move up” or “Move down”

button to change the order of that device in the group. You can also press the “Sort by Device Name” or “Sort by IP/Host Name” to sort the devices. After editing, press “OK” to confirm the modification of favorites.

- **Configure Port**

The function will pop up a dialog for configuring the port



Those ports are used for communicating with server. Before applying the change, you have to change the port setting on the server as well.

- **Remote Device**

There are two options under this function.

- Screen Snapshot
- File Transfer

Two options will work only when there is a connection has been built up to the server.

3.3.3. Setup

- **Load Last Favorites on Startup**

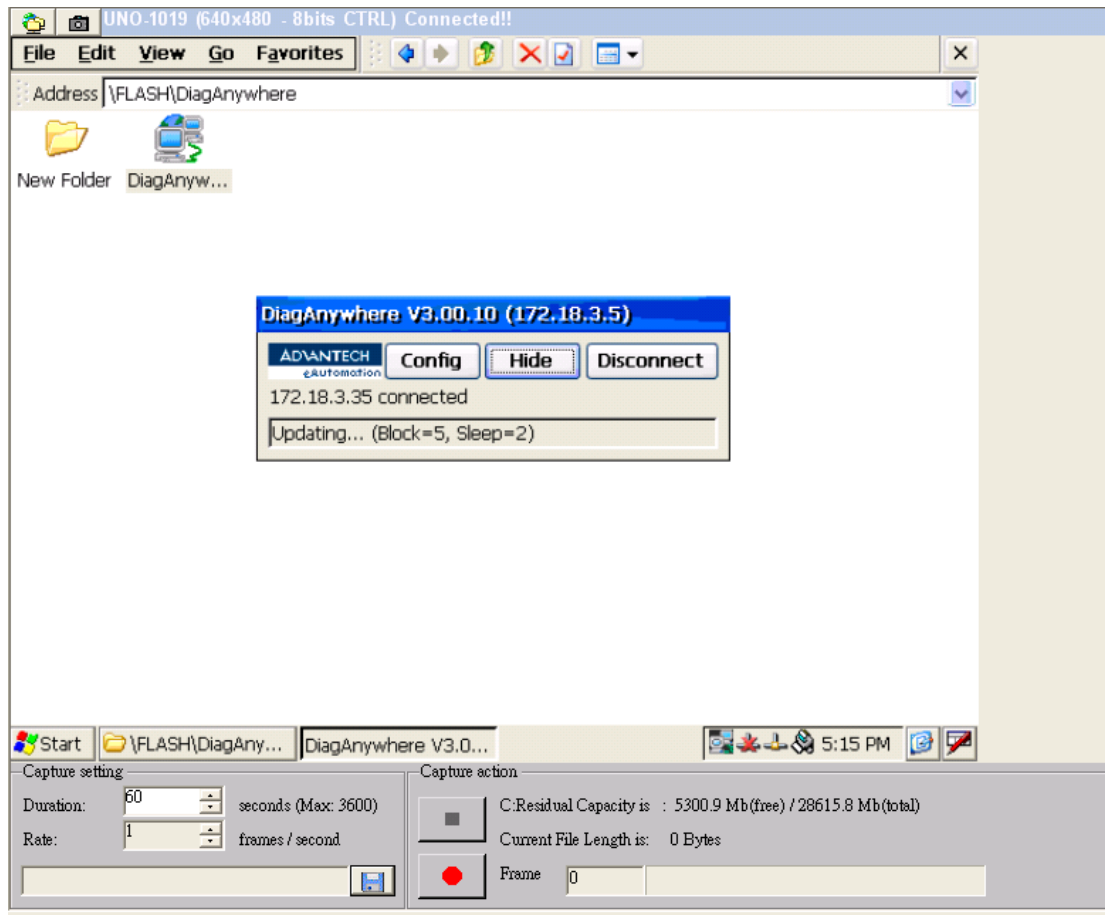
This function will make the utility to load the last favorites you saved in previous using on every startup.

- **Maximize Window on Diagnosis**

This function will show full screen control window when a single device is clicked. Otherwise, the window will be display on the right hand side panel.

- **Enable Recorder on Diagnosis**



This function will show the recording function panel on the bottom of the control window when a single device is clicked.



In the “Capture setting” group box, you can setup the “Duration” from 1 to 3600 seconds and the “Rate” for 1 frame or 2 frames per second. And you have to press the



button to choose the file name to save the recorded data before recording.

When setup is done, you can press  button to record or press  button to stop terminate recording. During the recording, all the action you make on the device will be recorded into the AVI file.

- **Send Mouse Move on Diagnosis**

This function will send the mouse move to the server when the mouse cursor is moving inside the vision frame.

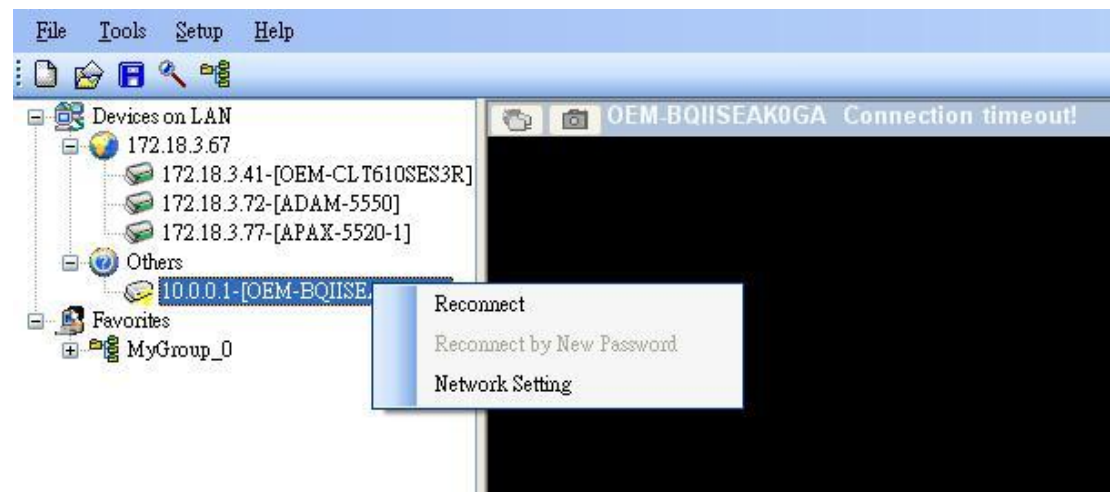
- **Draw High Quality on Diagnosis**

This function will make the utility to draw high quality on the vision frame

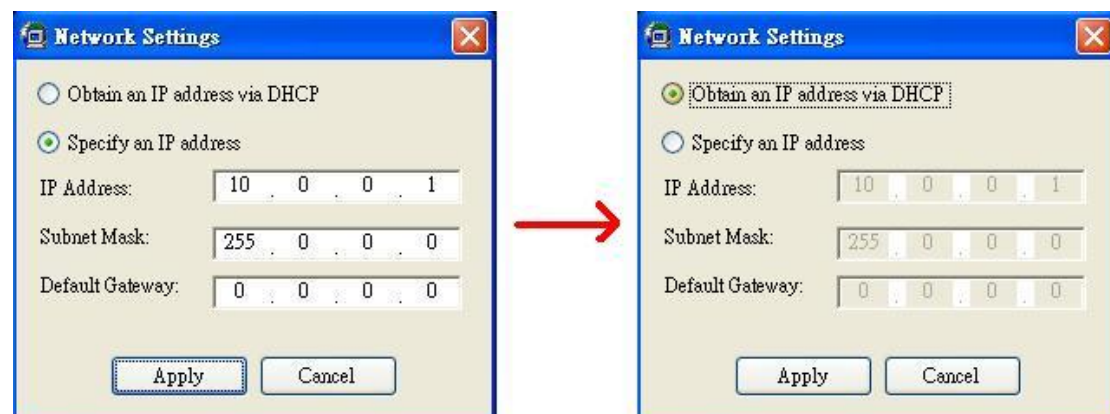
3.4. Powerful Functions of the Utility

3.4.1. Change Network Setting of Remote Device

When you search the LAN and found an un-connectable device, you can click on that device node, and press the mouse right button after connection timeout. You will see a pop up menu as below.



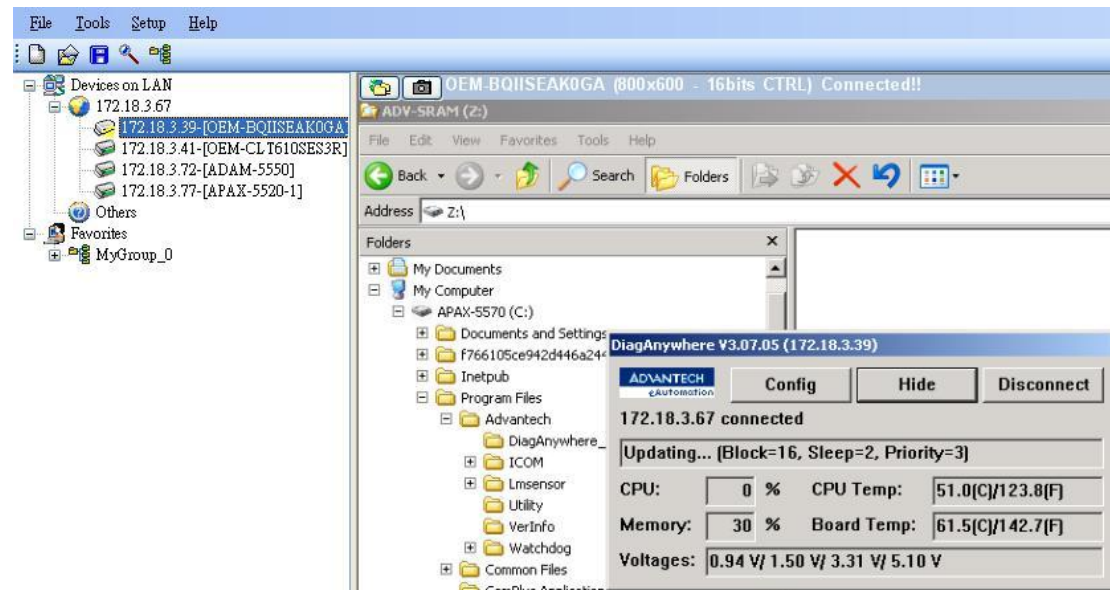
Click on the “Network Setting”, you will see a pop up dialog as the left hand side of below. Try to change the network setting, for example, change it to DHCP as the right hand side of below, then press “Apply”.



If the network setting is OK, you will see a pop up message as below. You may need to wait for 5 or more seconds until the network setting takes effect.

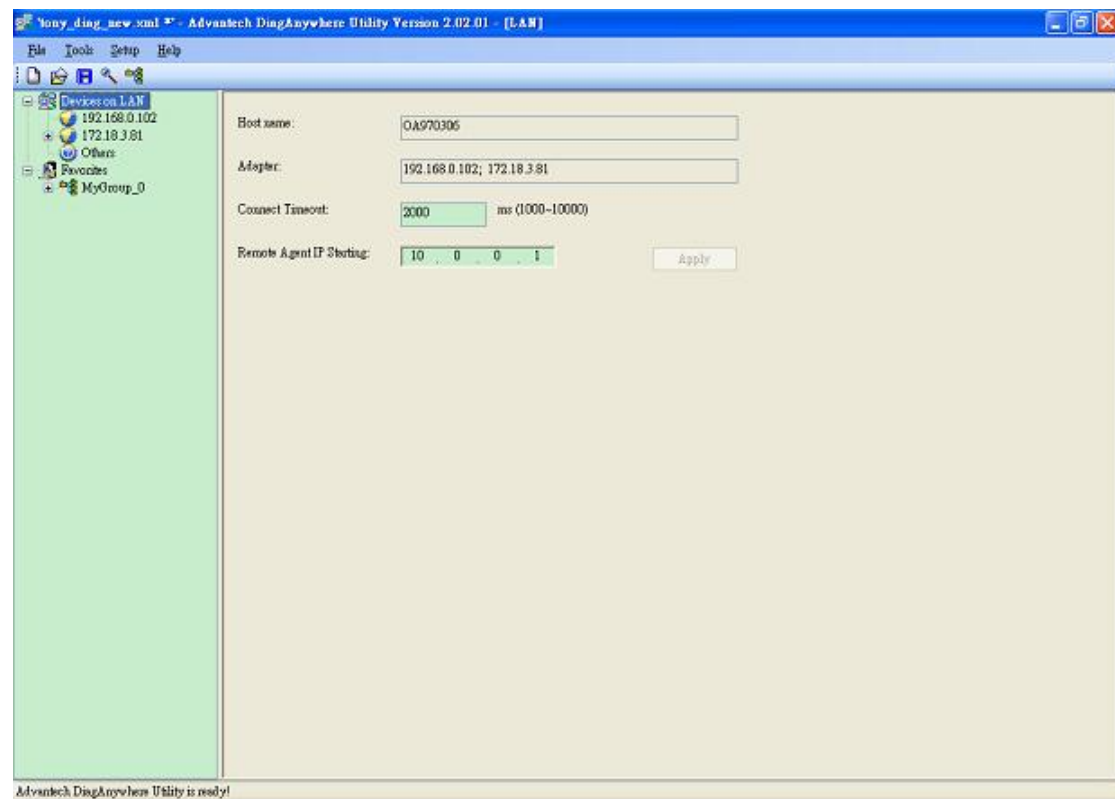


Try to search the LAN again, you will find the device with connectable IP. Simply click on that device node and you can connect to it now.



3.4.2. Search Devices by Remote Agent

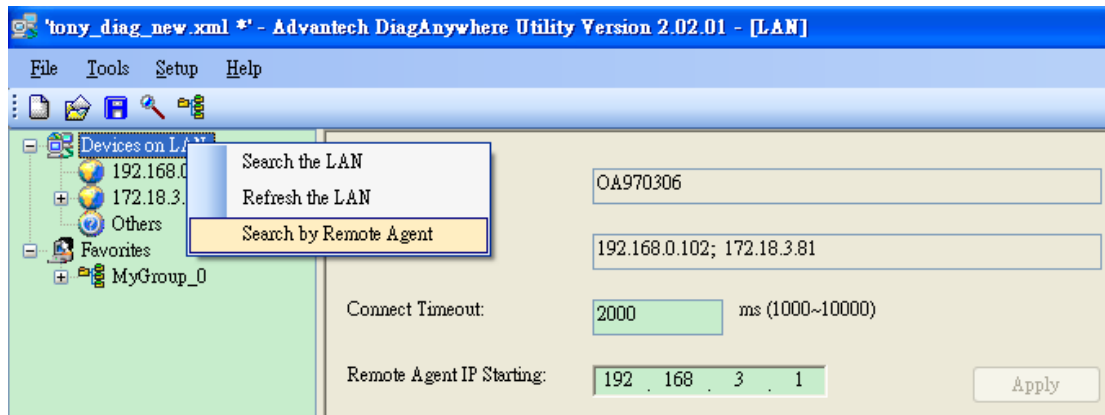
When you click on the “Devices on LAN” root node in the left hand side list, you will see the following screen.



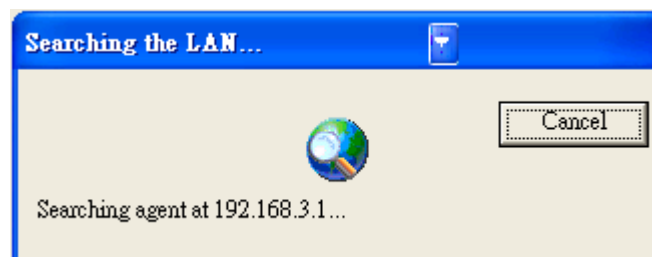
In the right hand side panel, you can modify the “Connect Timeout” value from 1000 to 10000 ms and this value will be applied for all device connections.

Another important field is the “Remote Agent IP Starting”. For example, the PC you are using to run the utility has the IP “192.168.1.1”, and you have devices on other domain such as “192.168.3.*”. The “Search the LAN” function uses UDP broadcast that cannot send the packet from “192.168.1.*” to “192.168.3.*”. By solving this problem, each “DiagAnywhere server” also plays the role of agent. You can setup the “Remote Agent IP Starting” field, for example “192.168.3.1”, then press “Apply” button.

On the left hand side list, click on the “Device on LAN” node and press the mouse right button, you will see a pop up menu as below.



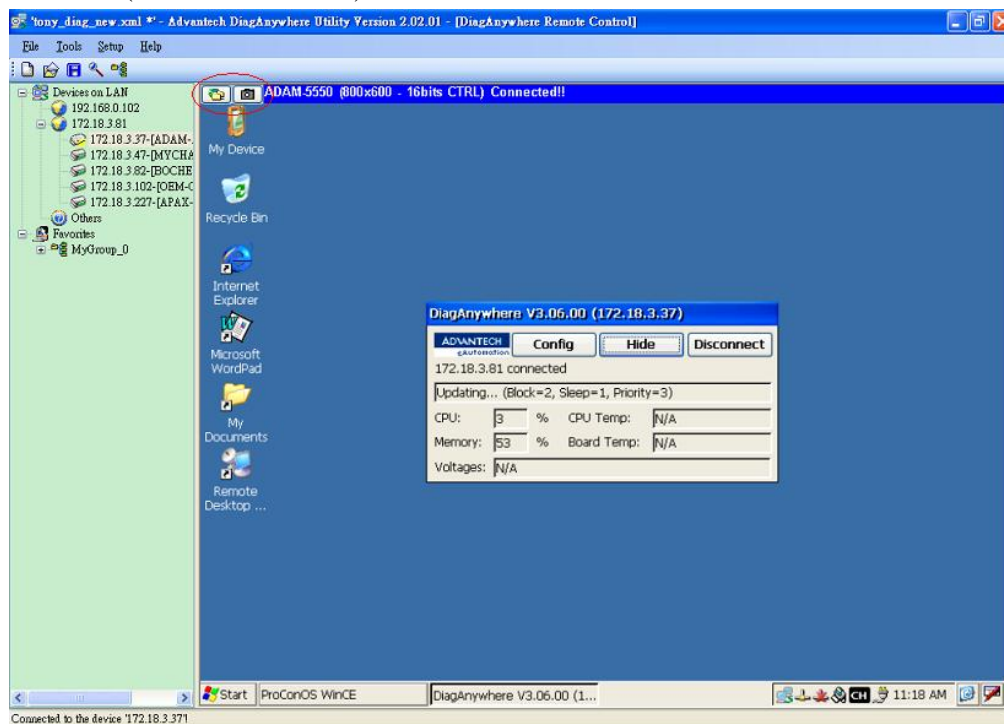
After press the “Search by Remote Agent”, you will see a dialog start scanning from “192.168.3.1”.




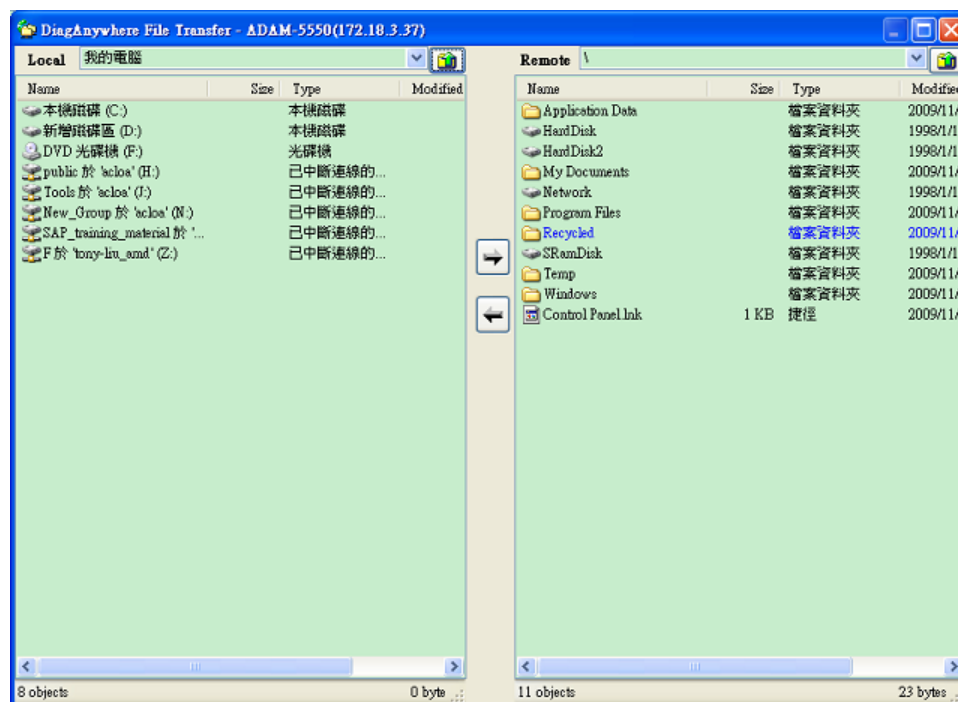
If the IP has no response within “Connect Timeout” value, then the try will go to next IP “192.168.3.2” until a device is found, or reach the last IP “192.168.3.254”, or the “Cancel” button is pressed.

3.4.3. File Transfer

When you connect to a single device, you will see two buttons on the top-left side of the window. (See the red circle)




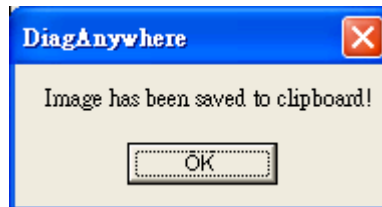
If you want to transfer file from you PC to the remote device or from remote device to your PC, you can press the  button. A file explorer dialog will pop up.



Then you can transfer files by using this dialog.

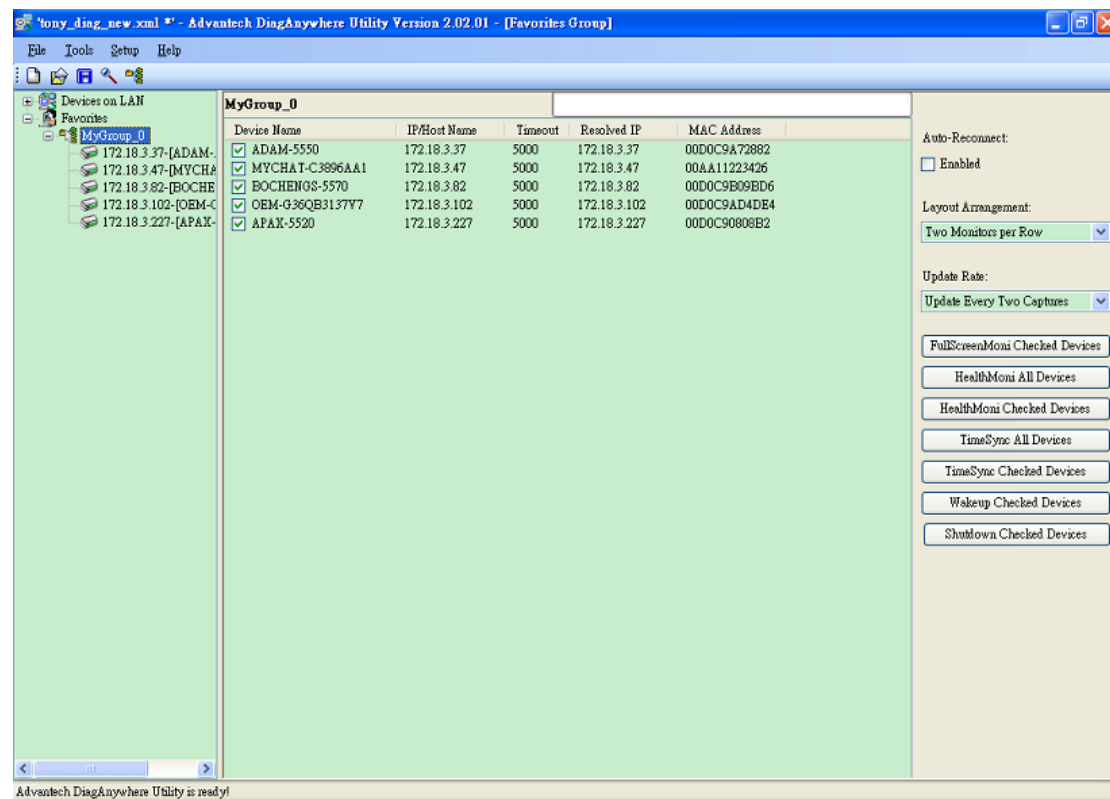
3.4.4. Screen Capture

If you want to capture the remote screen, you can press the  button and the following dialog will pop up. The remote screen image will be saved into clipboard in original resolution.



3.4.5. Group Monitoring, Time Synchronize and Health Check

In the left hand side tree, press any group node under the “Favorites” node, you will see the following screen.



3.4.5.1. Group Monitoring

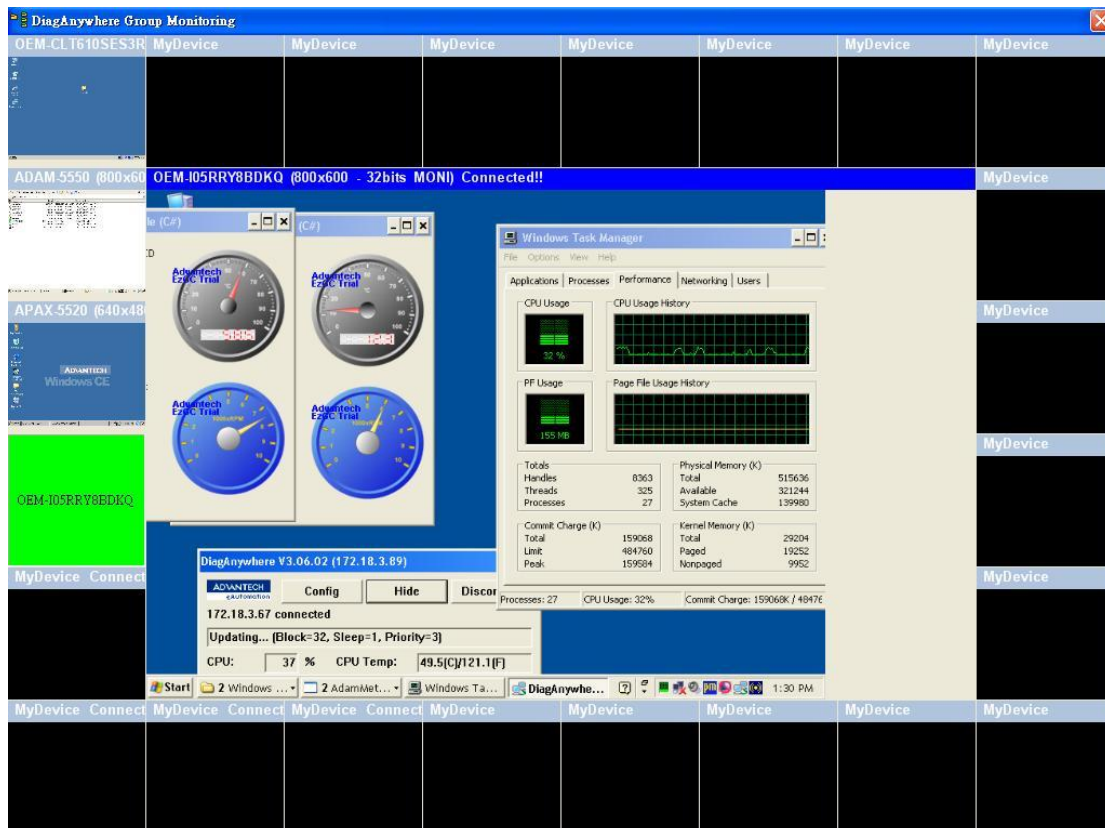
In the right hand side panel, each device has a check box with it. You can check or uncheck the device for displaying device in the “full screen monitoring” window. The maximum total is **24** devices for “Full Screen Monitoring”. In other word, you may have 30 devices in the group, but you can only choose at most **24** devices for full screen group monitoring.

You can enable the Auto-Reconnect function by check the “Auto-Reconnect” field.

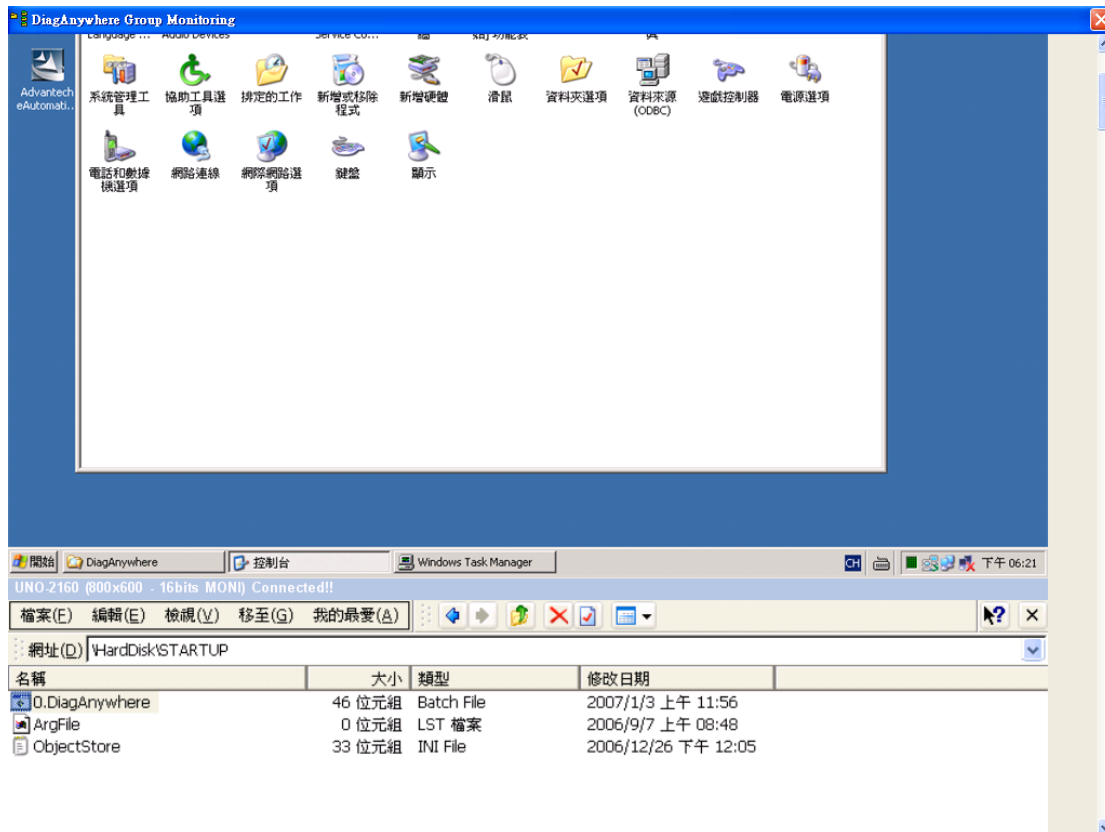
However, this function only works for registered version.

You can change the “Update Rate” to reduce the CPU consuming. “Update Every Four Captures” will consume fewer CPU loading than “Update Every One Capture”. You can change the “Layout Arrangement” to make the group monitoring suitable for you. There are seven different arrangements as below. To run the monitoring function, just press the “Full Screen Monitoring” button.

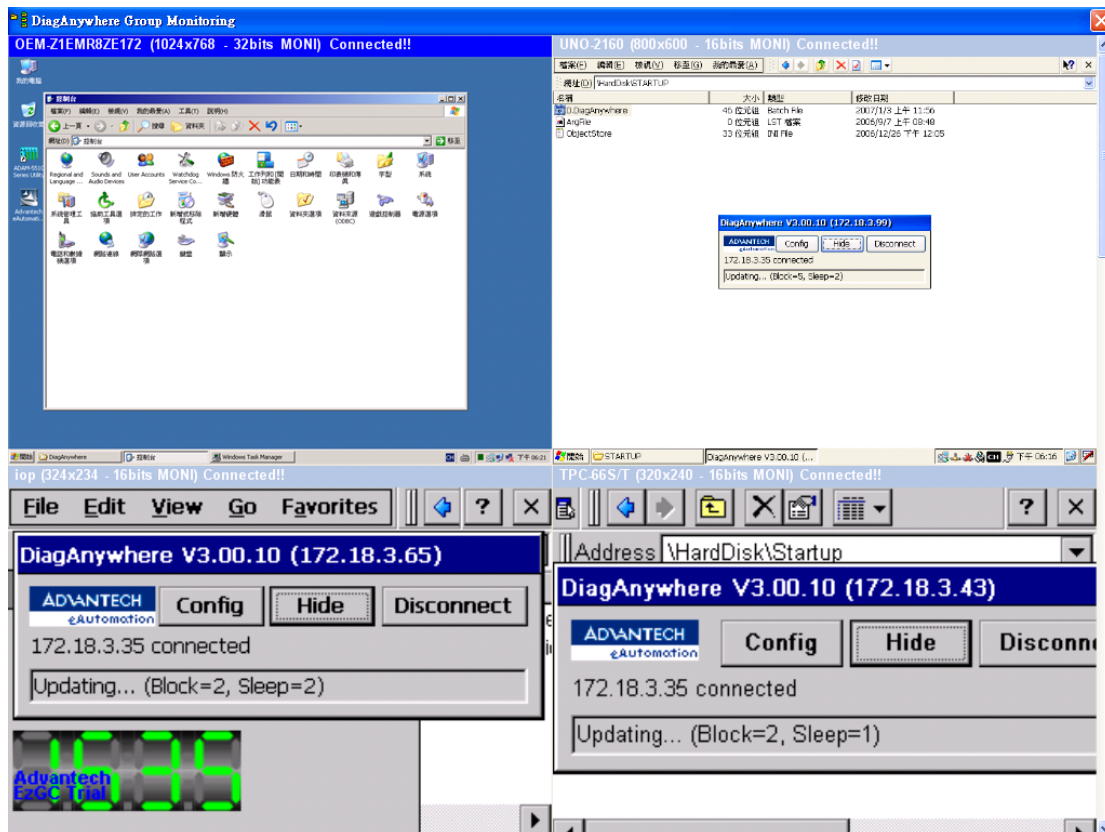
● Smart Arrangement



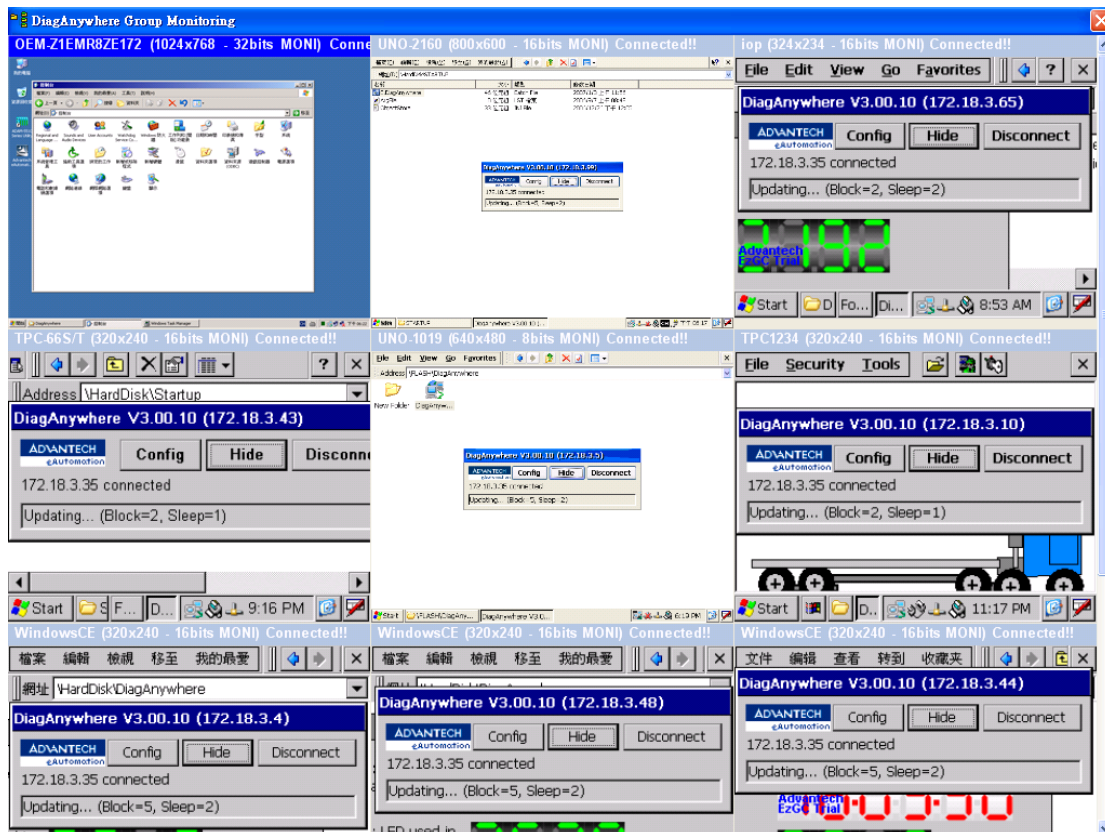
● One Monitor per Row



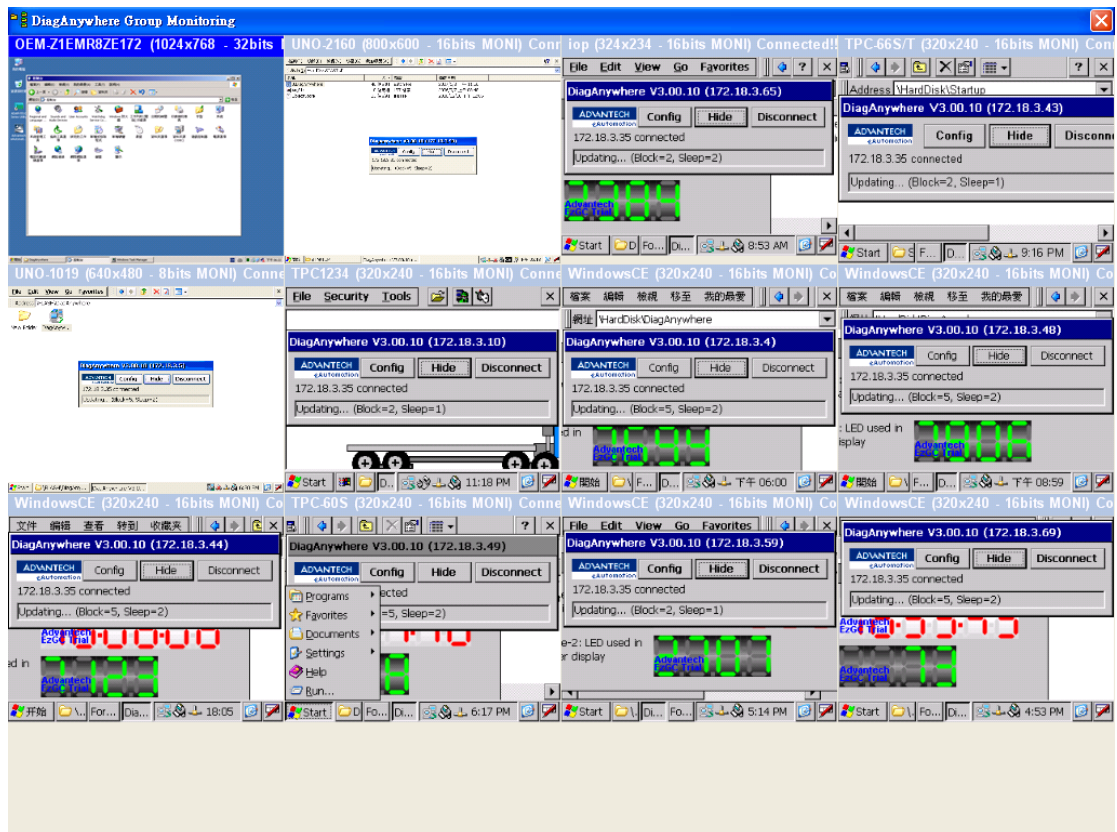
● Two Monitors per Row



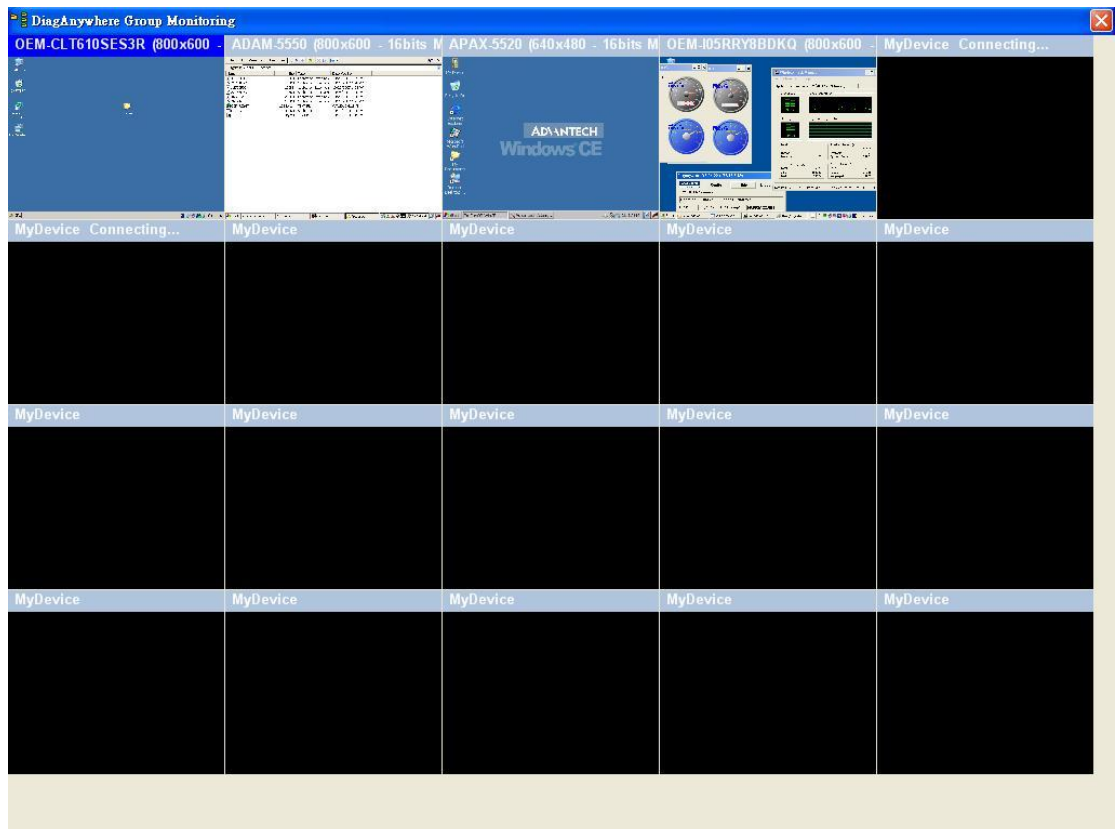
● Three Monitors per Row



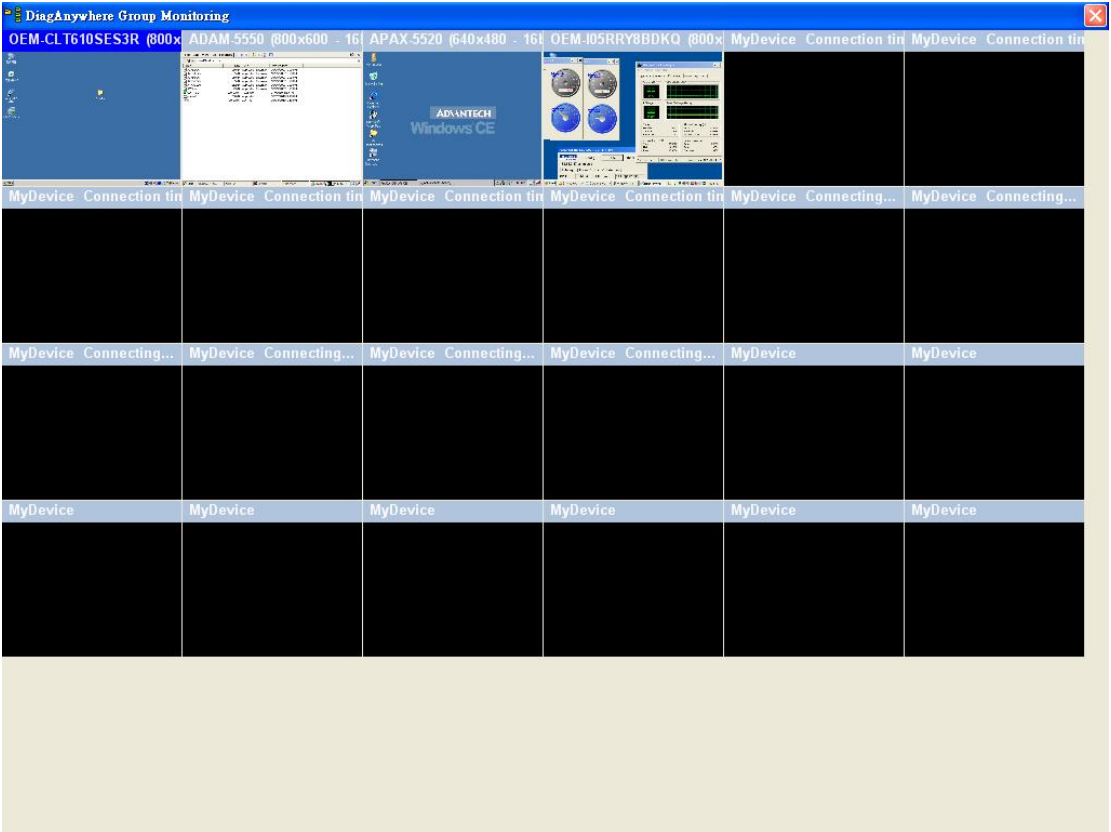
● Four Monitors per Row



● Five Monitors per Row



● Six Monitors per Row

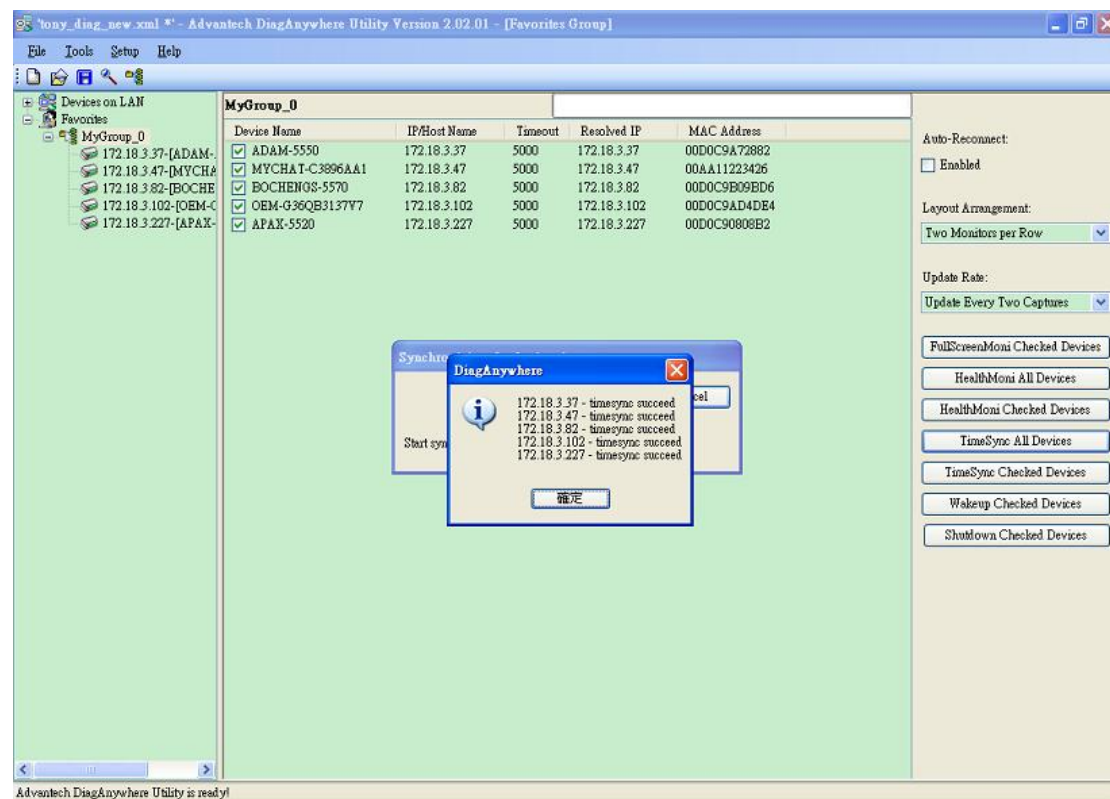


3.4.5.2. Time Synchronize

If you want to synchronize all devices in the group, press the “TimeSync All Devices” button. All devices in the group will be time synchronized by the utility using the local UTC. **This function only works for registered version.**

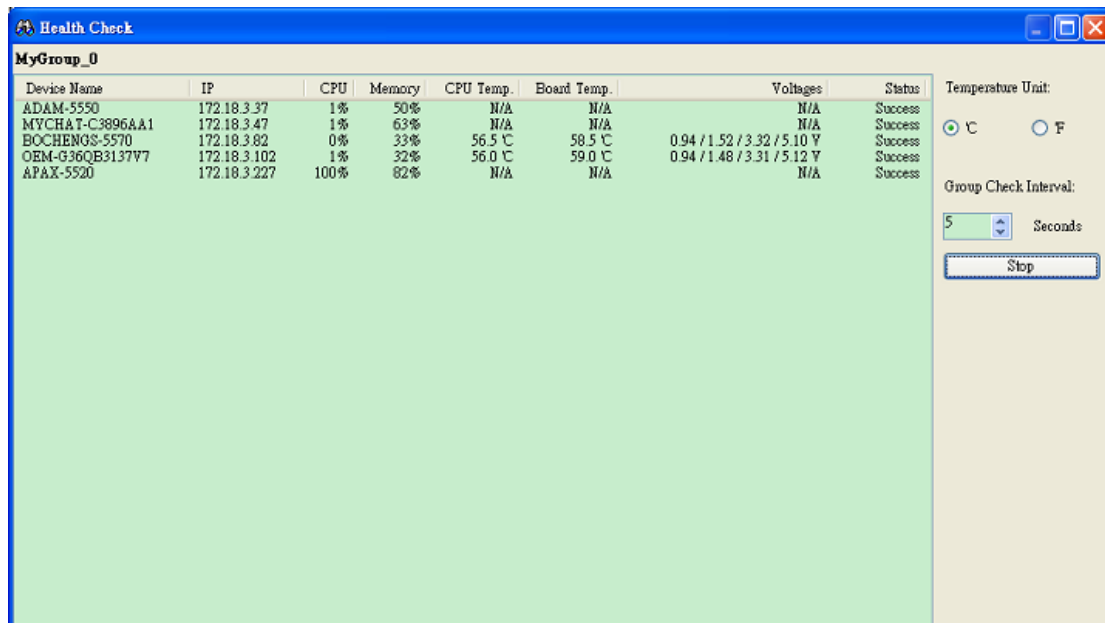
Or press “TimeSync Checked Devices” to synchronize the checked devices. For unregistered version, this function can only work with one device at a time.

After TimeSync, you will see the results.



3.4.5.3. Health Check

If you want to monitoring the devices health condition, which includes the CPU usage, memory usage, hardware temperature, and hardware voltage consumption, you can use this function continuously monitoring all selected devices.



The screenshot shows a window titled "Health Check" with a table of device health data. The table has columns for Device Name, IP, CPU, Memory, CPU Temp., Board Temp., Voltages, and Status. The data is for a group named "MyGroup_0". The table shows five devices: ADAM-5550, MYCHAT-C3896AA1, BOCHENG-5570, OEM-G36QB3137V7, and APAX-5520. The CPU and Memory usage are shown as percentages. CPU and Board temperatures are shown in degrees Celsius. Voltages are shown as a list of values. The Status column shows "Success" for all devices. On the right side of the window, there are controls for Temperature Unit (Celsius/Fahrenheit), Group Check Interval (5 seconds), and a Stop button.

| Device Name | IP | CPU | Memory | CPU Temp. | Board Temp. | Voltages | Status |
|-----------------|--------------|------|--------|-----------|-------------|-----------------------------|---------|
| ADAM-5550 | 172.18.3.37 | 1% | 50% | N/A | N/A | N/A | Success |
| MYCHAT-C3896AA1 | 172.18.3.47 | 1% | 63% | N/A | N/A | N/A | Success |
| BOCHENG-5570 | 172.18.3.82 | 0% | 33% | 56.5 °C | 58.5 °C | 0.94 / 1.52 / 3.32 / 5.10 V | Success |
| OEM-G36QB3137V7 | 172.18.3.102 | 1% | 32% | 56.0 °C | 59.0 °C | 0.94 / 1.48 / 3.31 / 5.12 V | Success |
| APAX-5520 | 172.18.3.227 | 100% | 82% | N/A | N/A | N/A | Success |

If the field shows “N/A”, it means the device does not support that information.
The last column “Status” shows the query condition.

This function only works for registered version.

3.4.5.4. Wakeup devices

For those devices that have ATX power, you can wake up those devices by the utility through local area network.

3.4.5.5. Shutdown devices

For those devices that their Windows supports shutdown procedure, you can shutdown those devices by the utility. On the server side, this shutdown function is optional (see section 2.2.1.4), this means the shutdown function will work only when the remote server “Accept Remote Shutdown” is enabled.

● Appendix

● Firewall issue

If the “DiagAnywhere Utility” is running on Windows XP, you have to change some setting to allow the utility to use the socket ports if your firewall is enabled.

● Ethernet router issue

If this solution is going to be applied on the network with router, you may need to allow some communication ports for “DiagAnywhere”. The ports listed as below:

5048: For UDP search.

987: For remote control.

2394: For agent search and time synchronize.

2395: For file transfer.

If the above ports are not acceptable in your network environment, you may change the ports to fit your need. On the utility side, you can go to menu “Tools”, then “Configure Port” to change the ports setting. On the server side, you must add the following keys on the registry.

For the Win32 server:

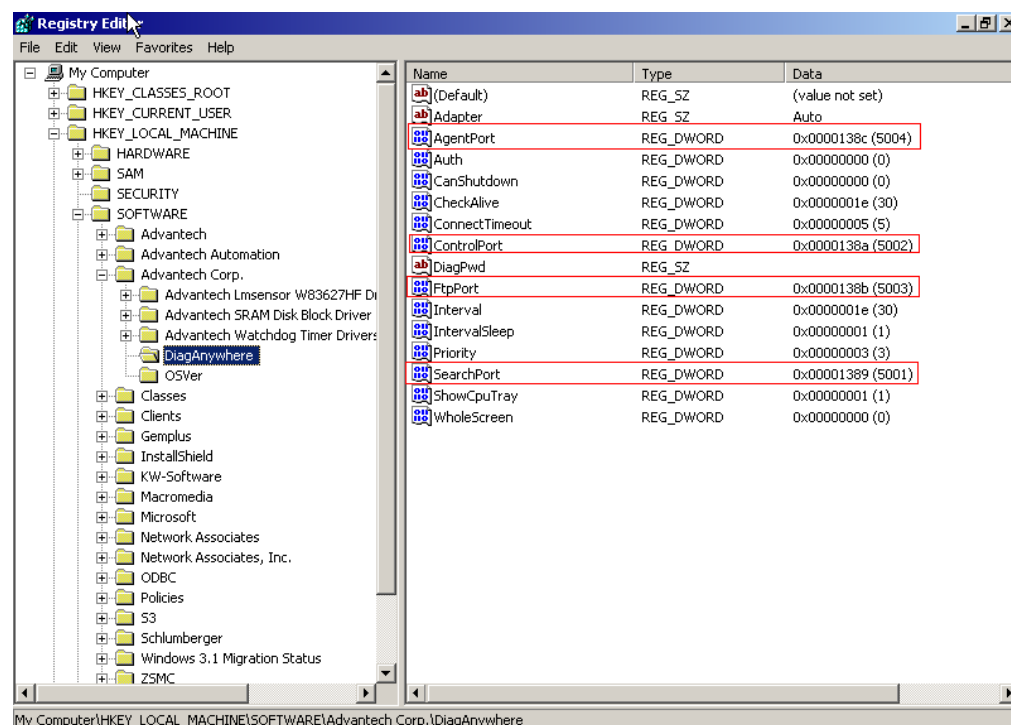
“HKEY_LOCAL_MACHINE\SOFTWARE\Advantech Corp.\DiagAnywhere”

Add “SearchPort” key for UDP search.

Add “ControlPort” key for remote control.

Add “AgentPort” key for agent search and time synchronize.

Add “FtpPort” key for file transfer.



For the WinCE server:

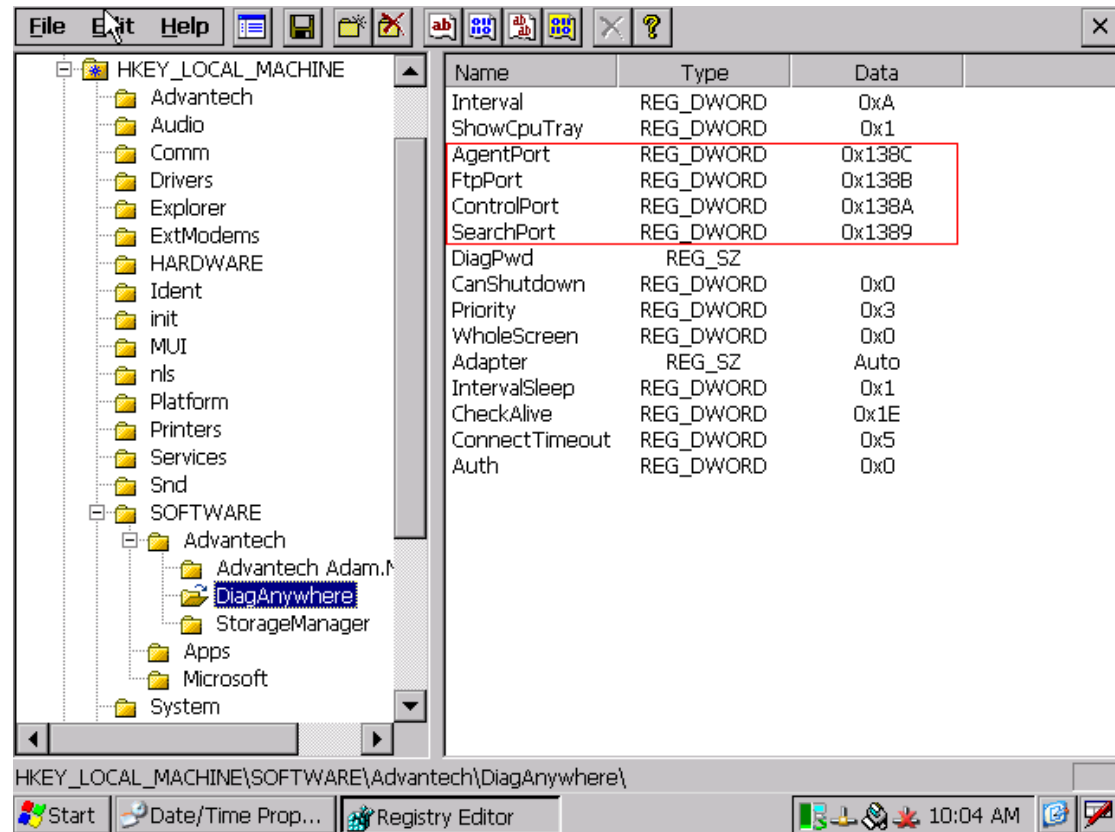
“HKEY_LOCAL_MACHINE\SOFTWARE\Advantech\DiagAnywhere”

Add “SearchPort” key for UDP search.

Add “ControlPort” key for remote control.

Add “AgentPort” key for agent search and time synchronize.

Add “FtpPort” key for file transfer.



● **Wake On LAN issue**

For some LAN chips, the WOL (Wake on LAN) function only works after the devices first boot up. In other words, some devices may not be able to be waked up after power on the device. Only after the device is power on, first boot up, and then shutdown (not power off), the WOL function can work.

- **Windows 7 issue (32bits and 64 bits)**

When you run the DiagAnywhere utility on the Windows 7, you will see a dialog as below. Please press “Yes” button to make utility can work on your computer.

