DApps-TAP Utility User's Manual

USM Ver 1.5

Foreword

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Revision History

Date	USM Version	History
2011/12/15	1.0	First draft version
2012/08/06	1.1	1. Add NuDOG-801. (Page 6, 22, 26-28, 36, 43 and 47) 2. Renew Description for NuDOG series. (Page 7-21) 3. Added note about: NuDOG-801 doesn't support Jumbo Mode. (Page 34) 4. Added note about: the capture forward port A/B block function can only capture up to 64 packets. (Page 34)
2012/09/10	1.2	1. Deleting the description of DApps-TAP supports operation system Windows 2000.(Page 6)
2012/09/12	1.3	1. Deleting watermark : **Preliminary** 2. Deleting the Xtramus Logo. (Page 27-28) 3. Adding figure and description when the users' PC cannot detect the NuDOG-301C/801/101T. (Page 27) 4. Modifying **System Requirement**'s figure supports operation system Windows 2000.(Page 35)
2018/02/06	1.4	1. Modify NuDOG-101T speed LED description.(Page 21)
2020/09/16	1.5	1. Add note about connect device to PC. 2. Add NuDOG-802.

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1. General Description of DApps-TAP

For NuDOG-301C, NuDOG-801/802 and NuDOG-101T, all data streams between two network ports can be duplicated and sent to PC via mini USB port for monitoring and analyzing. Users can specify conditions to filter the packets wanted by DApps-TAP application software. It reduces USB port's network traffic and also cuts down PC resource consumption while dealing with large quantity of packets.

DApps-TAP is designed for Xtramus Technologies NuDOG series handheld Ethernet testing devices listed in the table down below:

Devices Supporting DApps-TAP		
NuDOG-301C	**NuDOG-801/802**	**NuDOG-101T**

Also, please make sure that your PC meets the requirements listed in the table down below before installing DApps-TAP.

OS	Windows XP	Windows Vista/7/8/10
CPU	Pentium 1.6GHz or higher	
RAM	1.0GB RAM	1.5GB RAM
HDD	10 GB Available Space	

*** Note: Large amount of data will be generated while running DApps-TAP. It is recommended to preserve enough available Hard-Disk space to store these data.**

Please see the sections down below for detailed information regarding to **NuDOG-101T**, **NuDOG-801/802** and **NuDOG-301C**.

2. NuDOG-301C Descriptions

2.1. NuDOG-301C Overview

NuDOG-301C is a handheld device with two Gigabit ports for Ethernet testing. The main functions of NuDOG-301C include multi-streams generation, TAP/Loopback test, and NIC emulation.

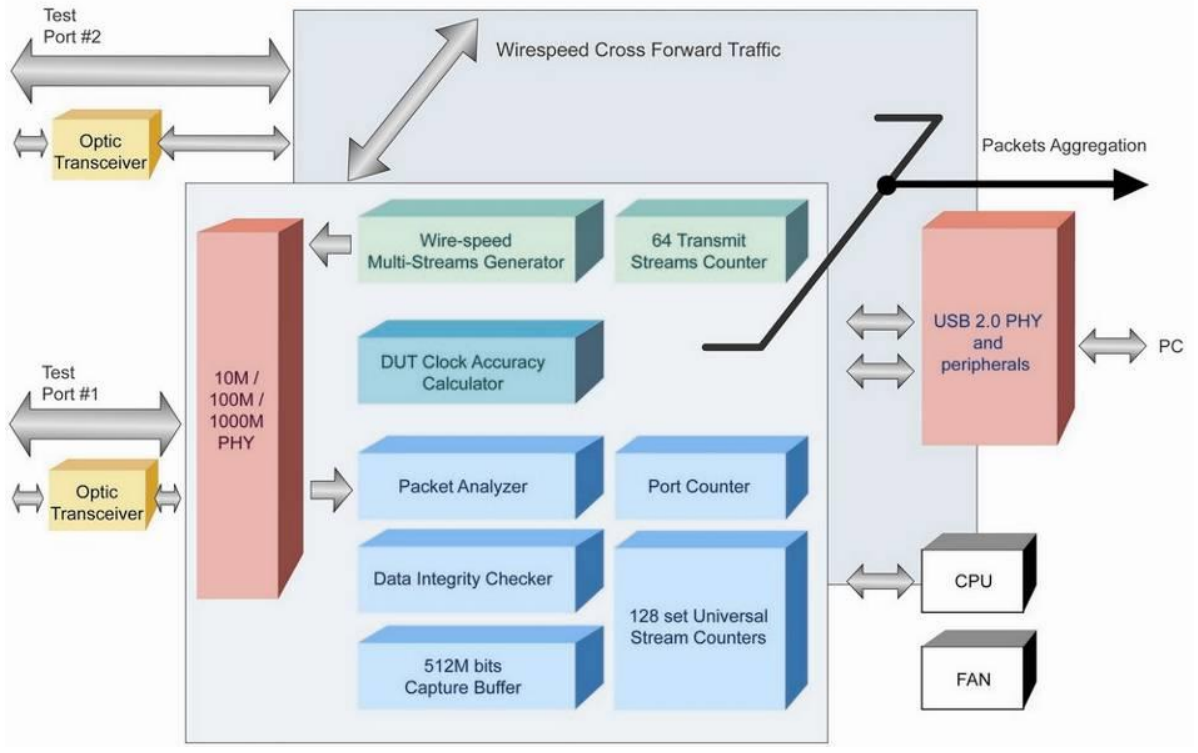
Connecting NuDOG-301C to its mini-USB port makes it possible for system configurations and managements. NuDOG-301C is an ideal device for in-field testing.

NuDOG-301C can work along with a series of utility software that qualify industrial standards such as RFC 2544 and RFC 2889S. With these utilities, NuDOG-301C is able to conduct throughput test, latency test, error filtering test, forwarding test, and so on. Utility software can provide a user-friendly interface for different test configurations when setting test parameters and criteria. More optional software is available for extended test requirements.

With its unique Universal Stream Counter (USC), NuDOG-301C offers real-time statistics of network events during packet monitoring and capturing.

With these advantageous features, NuDOG-301C is your best partner for LAB researching and in-field troubleshooting.

NuDOG-301C block diagram

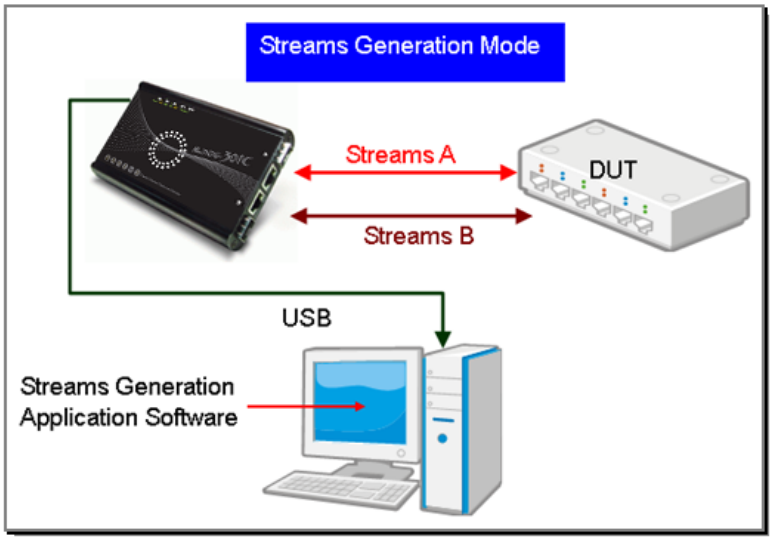


2.2. Features & Advantages of NuDOG-301C

- Hardware based wirespeed streams generation, analysis, network TAP and NIC
- High precision performance for measuring throughput, latency, packet loss and disordered sequence
- Wirespeed traffic capturing with programmable filter and trigger criteria
- Supports Universal Stream Counter (USC) with 128 streams
- RFC 2544 test suite
- RFC 2889 test suite
- Layer 1 and Layer 2 loopback test
- High precision 1 ppm temperature-compensated oscillator provides accurate clock speed to ensure the reliability of the tests
- Adding errors in transmitted traffic to simulate and test abnormal situations
- Real-time statistics for each port, including transmitted/received frame for VLAN, IPv4, IPv4 fragment, IPv4 extension , ICMP, ARP, total bytes/packets, CRC, IPCS error and over-and-under size frames
- Utility software with user-friendly interface that supports various parameter configurations and meets various test requirements
- 512Mbits wirespeed packet capture buffer per port

2.3. NuDOG-301C Applications in Different Modes

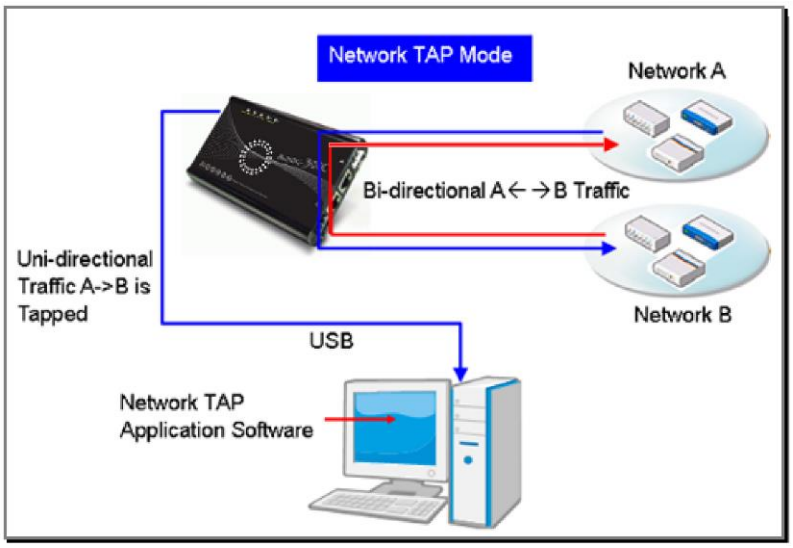
Stream Generation Mode



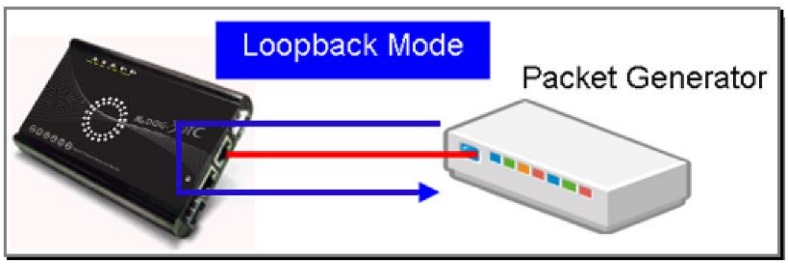
In Streams Generation mode, NuDOG-301C generates bi-directional network streams for test requirements as the illustration above.

Both NuDOG-301C's Port A and Port B can generate and receive test streams. The test streams are sent and returned to the same NuDOG-301C for DUT (device under test) analysis.

TAP/Loopback Mode



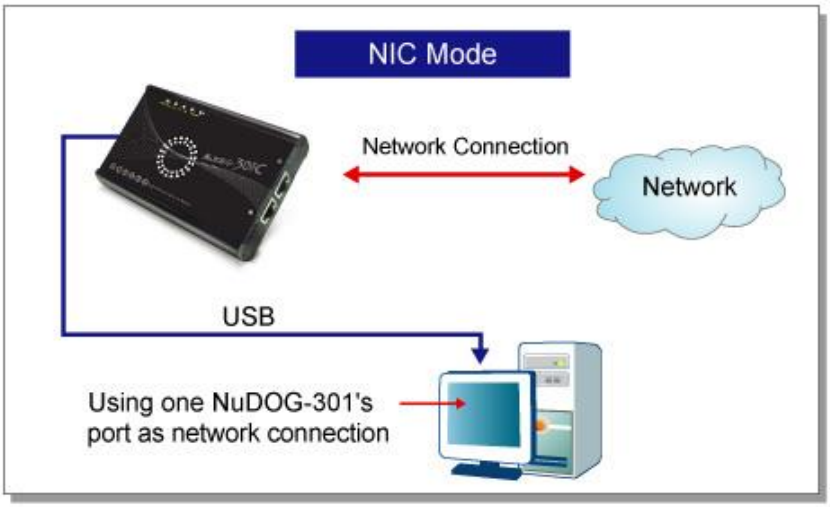
TAP Mode



Loopback Mode

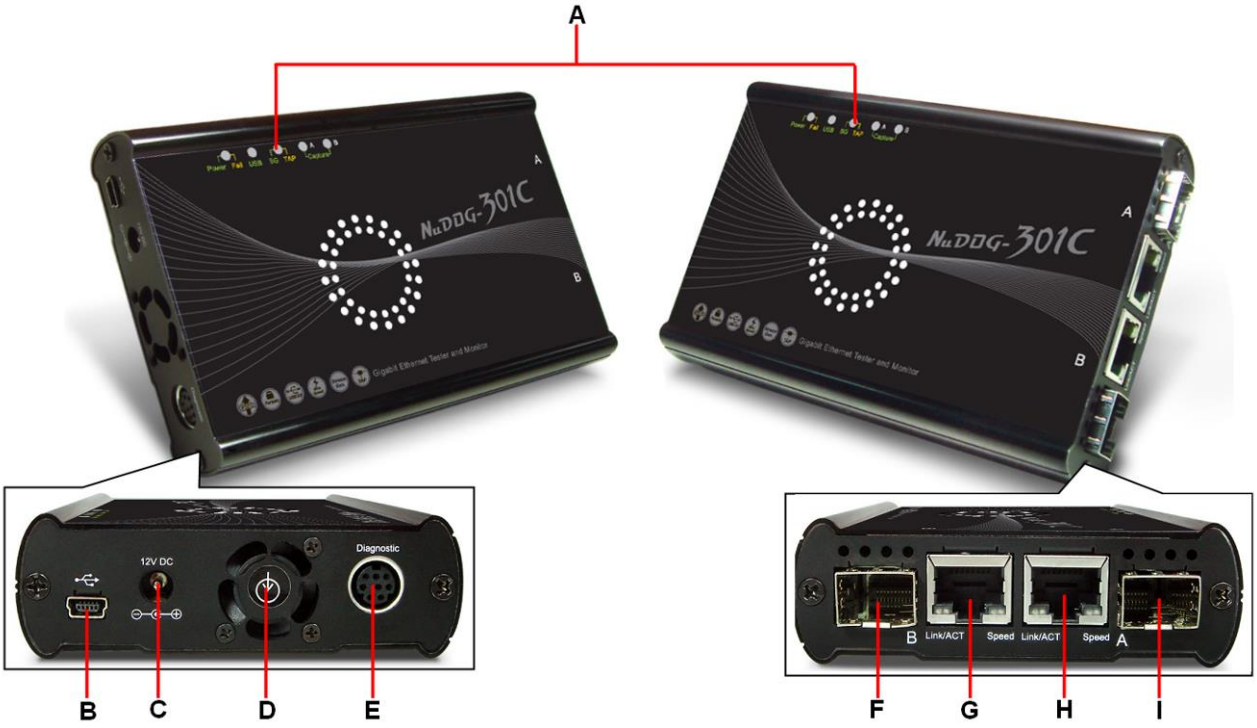
In TAP mode, NuDOG-301C can monitor any data that flows through it. Network TAP is a method of monitoring network's situation dynamically without interference. NuDOG-301C can tap bi-directional or uni-directional traffic from different sides (port A and port B) and also provides abundant packet counters. In Loopback mode, NuDOG-301C resends the incoming streams back to the source.

NIC Mode



In this mode, NuDOG-301C simulates network interface card (NIC).

2.4. NuDOG-301C Interface Ports



NuDOG-301C Hardware Overview			
A	**LEDs**	LEDs that displays NuDOG-301C's status.	
B	**Mini-USB Port***	5 Pin Mini-B Receptacle USB Port. You can manage, configure, or update firmware/FPGA when connecting NuDOG-301C to your PC. While under TAP mode, this mini-USB port can also re-direct tapped packets to PC.	
C	**Power Jack**	12V DC Power Jack for connecting external power adapter.	
D	**Cooling FAN**	Fan hole with internal fan for ventilation.	
E	**Diagnostic Port**	8-Pin Mini-DIN Receptacle Diagnostic Port	
F	**Port B - SFP Port**	1000 Mbps Full Duplex SFP Port B	Only one port can be used at the same time.
G	**Port B - RJ45 Port**	10/100/1000 Mbps Half/Full RJ45 Port B	
H	**Port A - SFP Port**	1000 Mbps Full Duplex SFP Port A	Only one port can be used at the same time.
I	**Port A - RJ45 Port**	10/100/1000 Mbps Half/Full RJ45 Port A	

***Please note that when connecting NuDOG-301C with PC via its USB port, DO NOT use a USB hub, and DO NOT connect NuDOG-301C with PC before NuDOG-301C is powered on.**

2.5. NuDOG-301C LED Status

LED	Status	Description
Power/Fail	**Green Blinking**	Power is ON and working properly
	Yellow Blinking	System failed
USB	**Green Blinking**	USB of this device is linked to PC
SG/TAP	**Green**	NuDOG-301C is working under Stream Generation Mode
	Yellow	NuDOG-301C is working under TAP Mode
	OFF	NuDOG-301C is working under NIC (Network Interface Card) mode
Capture A/B	**Green**	Port A/B is under Capturing Mode
Link/ACT	**Green ON**	The RJ45 Port is connected to DUT/Network
	Green Blinking	NuDOG-301C is transmitting or receiving data
Speed	**Green ON**	1000Mbps connection
	Green Blinking	100Mbps connection
	OFF	10Mbps connection if Link/ACT is ON or blinking

3. NuDOG-801/802 Descriptions

3.1. NuDOG-801/802 OVERVIEW

NuDOG-801/802 is a handheld device with two 10 Gigabit SFP+ Ports for Ethernet testing, and NuDOG-802 also supports 10G /5G/2.5G/1G/100Mbps electrical port with specific NBase-T copper SFP+ transceiver. The main functions of NuDOG-801/802 include multi-streams generation and NIC emulation.

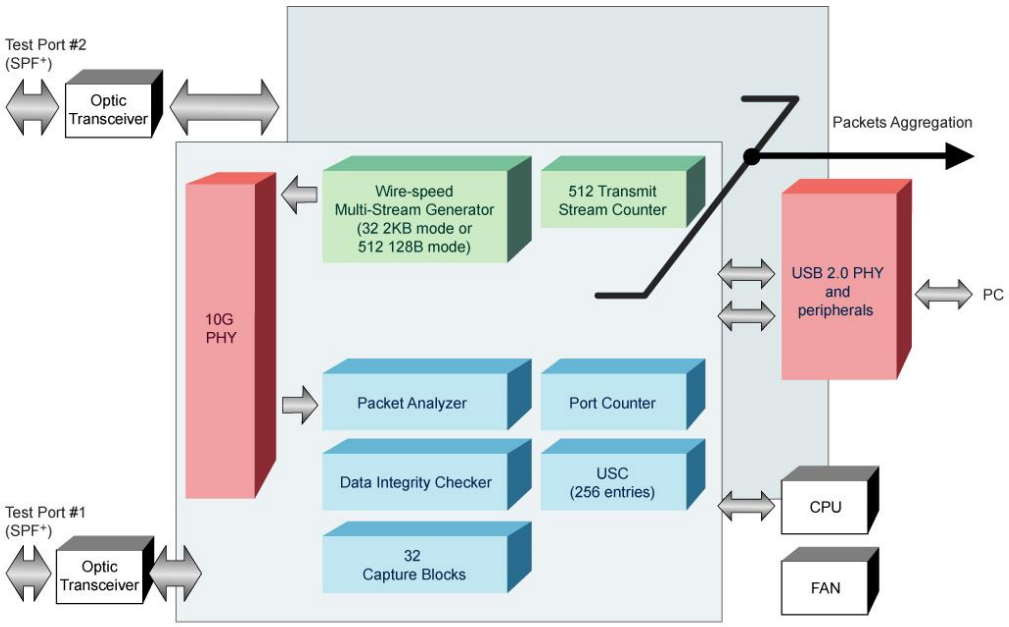
Connecting NuDOG-801/802 to its Standard-B Receptacle USB Port makes it possible for system configurations and managements. NuDOG-801/802 is an ideal device for in-field testing.

NuDOG-801/802 can work along with a series of utility software that qualify industrial standards such as RFC 2544 and RFC 2889. With these utilities, NuDOG-801/802 is able to conduct throughput test, latency test, error filtering test, forwarding test, and so on. Xtramus' utility software provides a user-friendly interface for different test configurations when setting test parameters and criteria. More optional software is available for extended test requirements.

With its unique Universal Stream Counter (USC), NuDOG-801/802 offers real-time statistics of network events during packet monitoring and capturing.

With these advantageous features, NuDOG-801/802 is your best partner for LAB researching and in-field troubleshooting.

NuDOG-801C block diagram

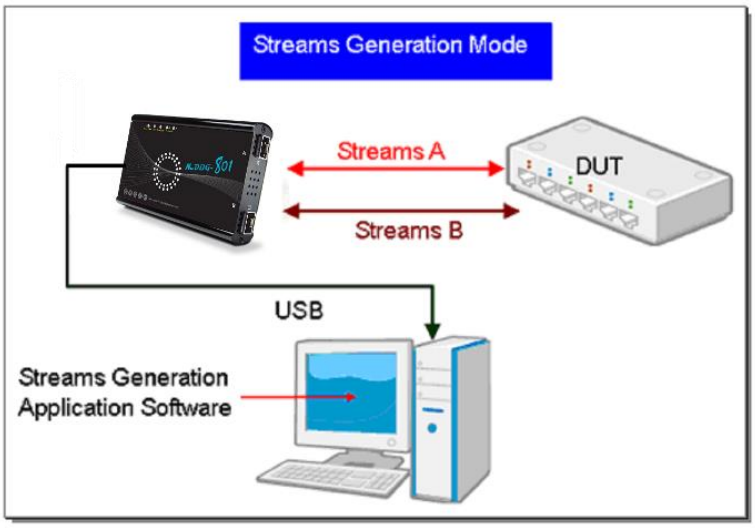


3.2. Features & Advantages of NuDOG-801/802

- Hardware based wirespeed streams generation, analysis, and NIC
- High precision performance for measuring throughput, latency, packet loss and disordered sequence
- Wirespeed traffic capturing with programmable filter and trigger criteria
- Supports Universal Stream Counter (USC) with 256 streams
- RFC 2544 test suite
- RFC 2889 test suite
- High precision 1 ppm temperature-compensated oscillator provides accurate clock speed to ensure the reliability of the tests
- Adding errors in transmitted traffic to simulate and test abnormal situations
- Real-time statistics for each port, including transmitted/received frame for VLAN, IPv4, IPv4 fragment, IPv4 extension , ICMP, ARP, total bytes/packets, CRC, IPCS error and over-and-under size frames
- Supports IPv6
- Utility software with user-friendly interface that supports various parameter configurations and meets various test requirements
- 32 Capture Blocks for each Test Port

3.3. NuDOG-801/802 Applications in Different Modes

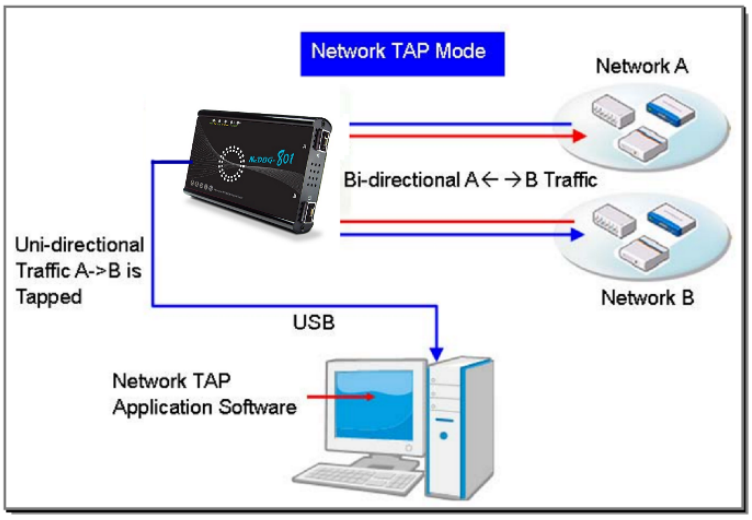
Stream Generation Mode



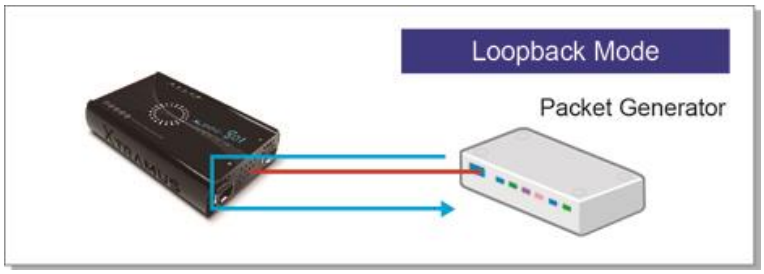
In Streams Generation mode, NuDOG-801/802 generates bi-directional network streams for test requirements as the illustration above.

Both NuDOG-801/802's Port A and Port B can generate and receive test streams. The test streams are sent and returned to the same NuDOG-801/802 for DUT (device under test) analysis.

TAP/Loopback Mode



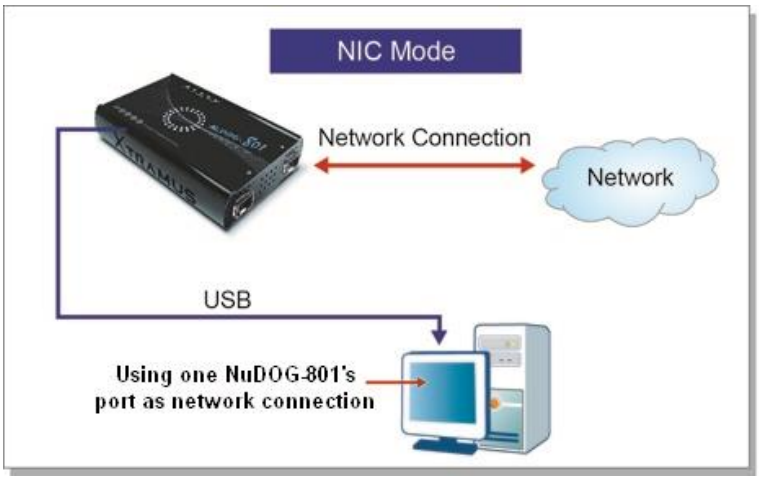
TAP Mode



Loopback Mode

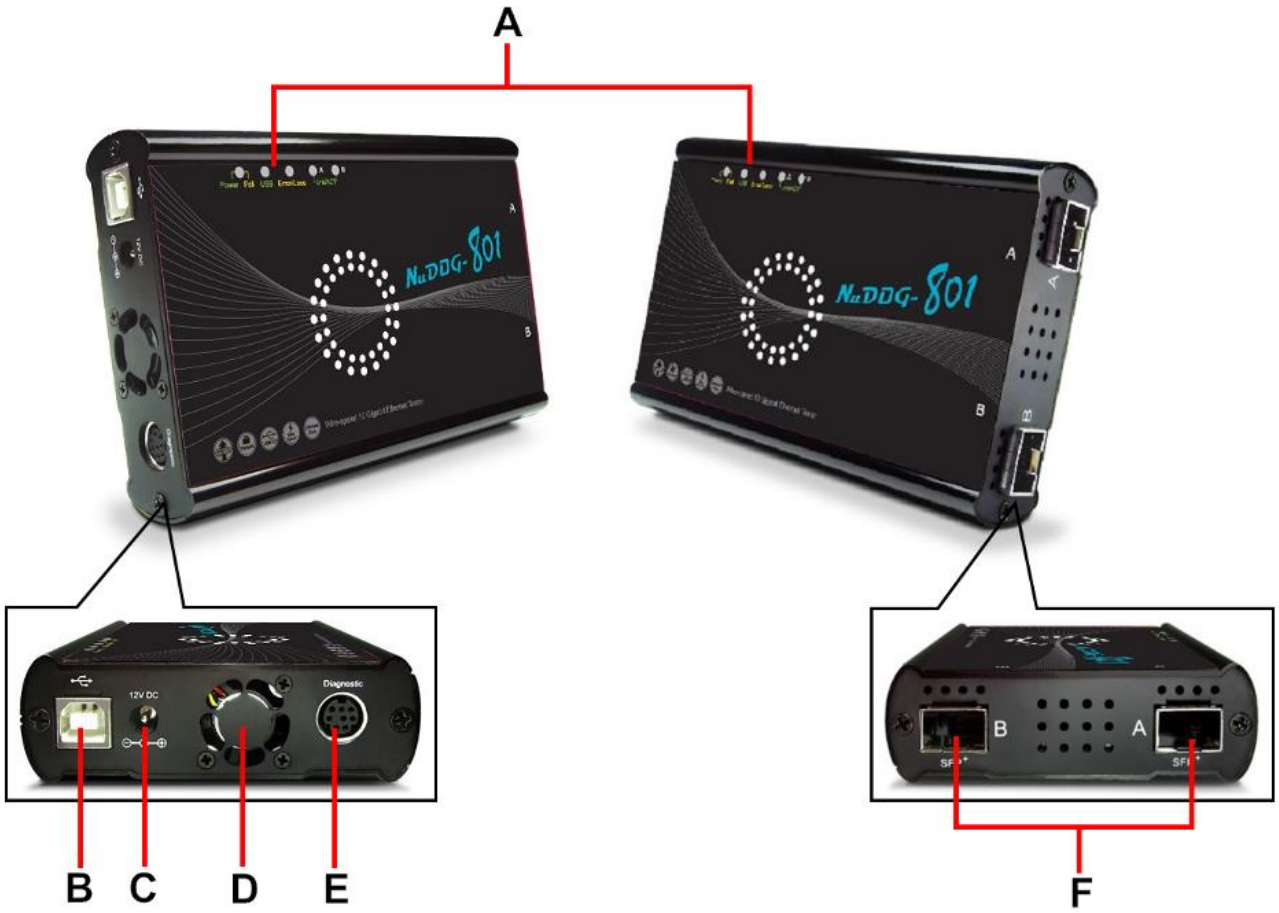
In TAP mode, NuDOG-801/802 can monitor any data that flows through it. Network TAP is a method of monitoring network's situation dynamically without interference. NuDOG-801/802 can tap bi-directional or uni-directional traffic from different sides (port A and port B) and also provides abundant packet counters. In Loopback mode, NuDOG-801/802 resends the incoming streams back to the source.

NIC Mode



In this mode, NuDOG-801/802 simulates network interface card (NIC).

3.4. NuDOG-801/802 Interface Ports



NuDOG-801/802 Hardware Overview		
A	**LEDs**	LEDs that displays NuDOG-801/802's status.
B	**Mini-USB Port***	5 Pin Mini-B Receptacle USB Port. You can manage, configure, or update firmware/FPGA when connecting NuDOG-801/802 to your PC. While under TAP mode, this mini-USB port can also re-direct tapped packets to PC.
C	**Power Jack**	12V DC Power Jack for connecting external power adapter.
D	**Cooling FAN**	Fan hole with internal fan for ventilation.
E	**Diagnostic Port**	8-Pin Mini-DIN Receptacle Diagnostic Port
F	**10 Gigabit Wirespeed SFP+ Port**	10 Gigabit Wirespeed SFP+ Port

***Please note that when connecting NuDOG-801/802 with PC via its USB port, DO NOT use a USB hub, and DO NOT connect NuDOG-801/802 with PC before NuDOG-801/802 is powered on.**

3.5. NuDOG-801/802 LED Status

LED	Status	Description
Power/Fail	**Green Blinking**	Power is ON and working properly
	Yellow Blinking	System failed
USB	**Green Blinking**	USB of this device is linked to PC
Error/Loss	**Yellow Blinking**	CRC error or packet loss is occurring
	OFF	No CRC error or packet loss is occurring
Capture A/B	**Green**	Port A/B is under Capturing Mode
Link/ACT	**Green ON**	The SFP+ Port is connected to DUT/Network
	Green Blinking	NuDOG-801/802 is transmitting or receiving data

4. NuDOG-101T Descriptions

4.1. NuDOG-101T OVERVIEW

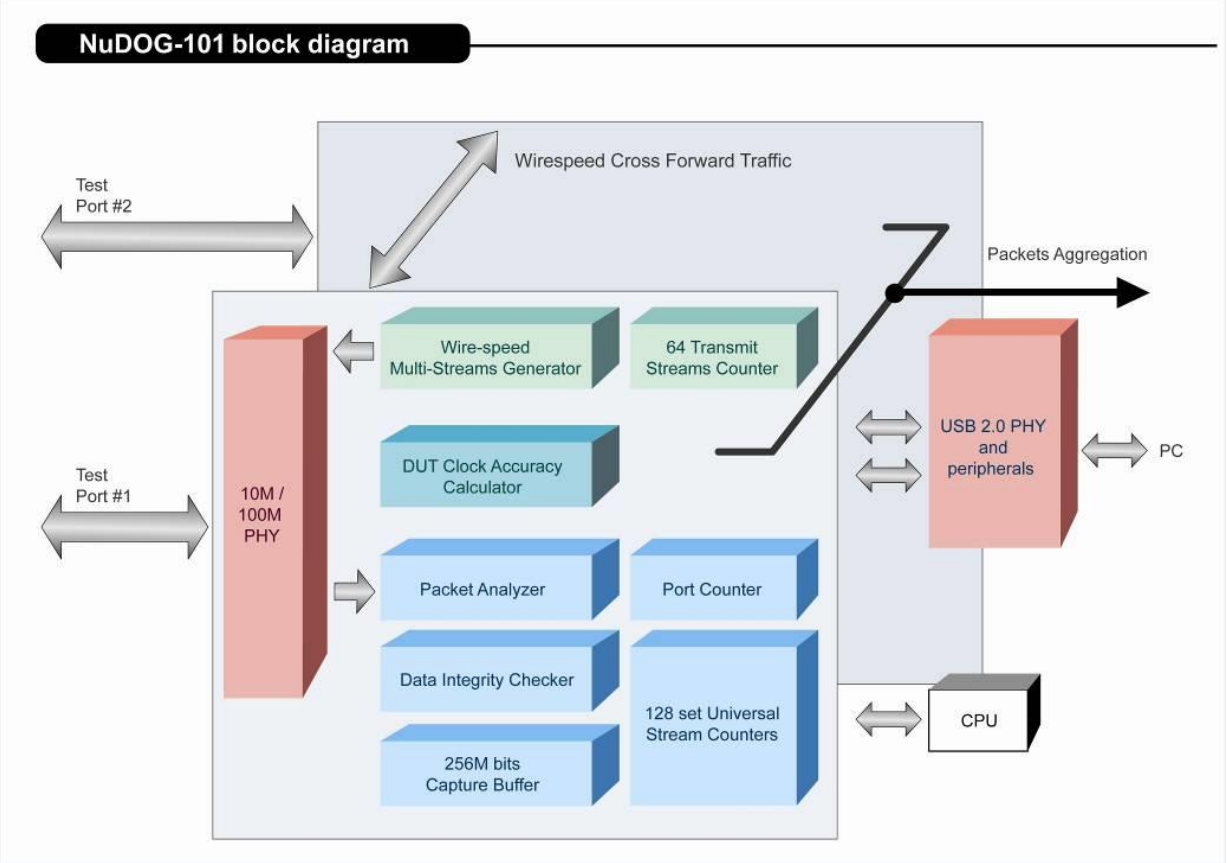
NuDOG-101T is a handheld device with two ports for Ethernet testing. The main functions of NuDOG-101T include multi-streams generation, TAP/Loopback test, and NIC emulation.

Connecting NuDOG-101T to its mini-USB port makes it possible for system configurations and managements. NuDOG-101T is an ideal device for in-field testing.

NuDOG-101T can work along with a series of utility software that qualify industrial standards such as RFC 2544 and RFC 2889. With these utilities, NuDOG-101T is able to conduct throughput test, latency test, error filtering test, forwarding test, and so on. The utility software provides a user-friendly interface for making different test configurations and setting test parameters and criteria. More optional software is available for extended test requirements.

With its unique Universal Stream Counter (USC), NuDOG-101T offers real-time statistics of network events during packet monitoring and capturing.

With these advantageous features, NuDOG-101T is your best partner for LAB researching and in-field troubleshooting.

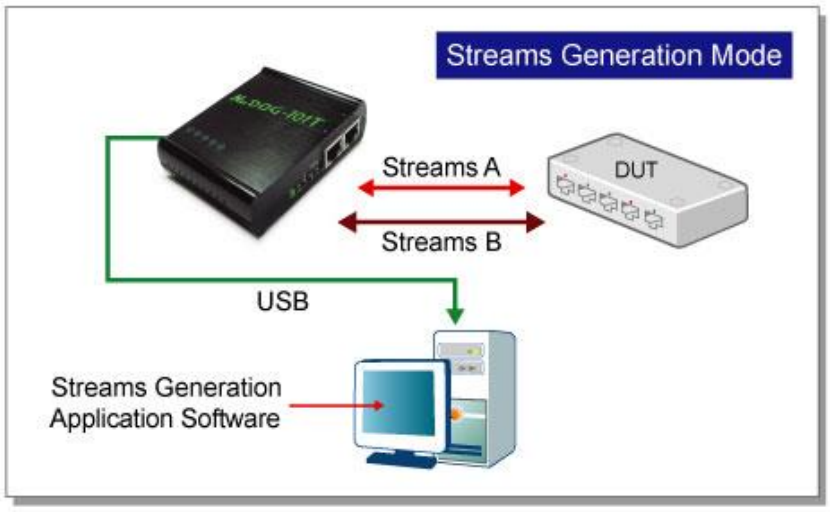


4.2. Features & Advantages of NuDOG-101T

- Hardware based wirespeed streams generation, analysis, network TAP and NIC
- High precision performance for measuring throughput, latency, packet loss and disordered sequence
- Wirespeed traffic capturing with programmable filter and trigger criteria
- Supports Universal Stream Counter (USC) with 128 streams
- RFC 2544 test suite
- RFC 2889 test suite
- Layer 1 and Layer 2 loopback test
- High precision 1 ppm temperature-compensated oscillator provides accurate clock speed to ensure the reliability of the tests
- Injecting errors in transmitted traffic to simulate and test abnormal situations
- Real-time statistics for each port, including transmitted /received frame for VLAN, IPv4, IPv4 fragment, IPv4 extension , ICMP, ARP, total bytes/packets, CRC, IPCS error and over-and-under size frames
- User-friendly interface that supports various parameter configurations and meets various test requirements
- 256Mbits packet capture buffer per port

4.3. NuDOG-101T Applications in Different Modes

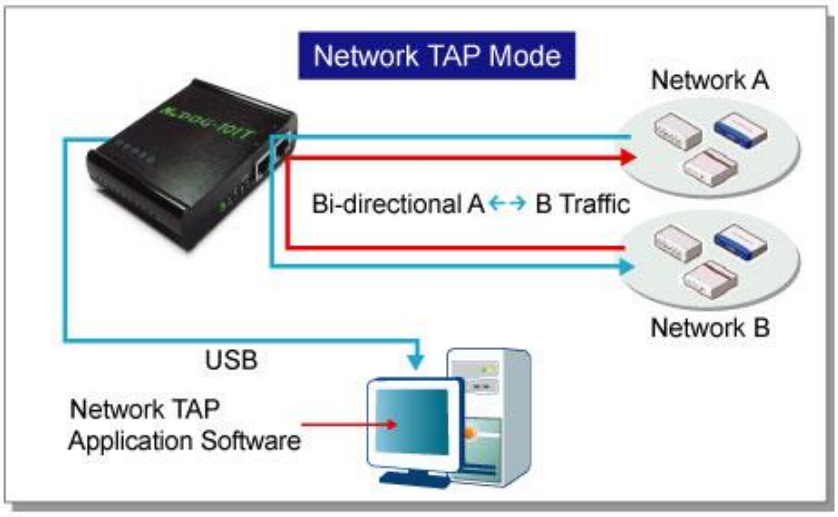
Stream Generation Mode



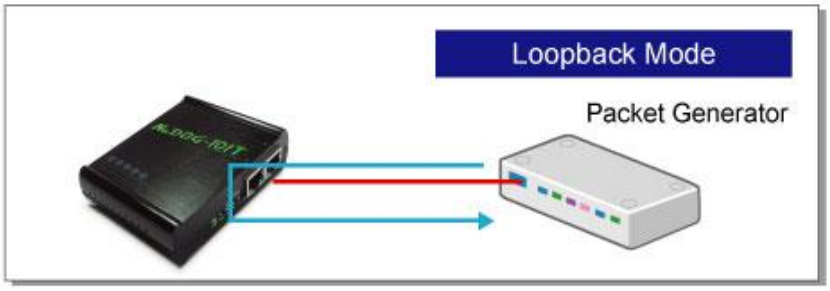
In Streams Generation mode, NuDOG-101T generates bi-directional network streams for test requirements as the illustration above.

Both NuDOG-101T's Port A and Port B can generate and receive test streams. The test streams are sent and returned to the same NuDOG-101T for DUT (device under test) analysis.

TAP/Loopback Mode



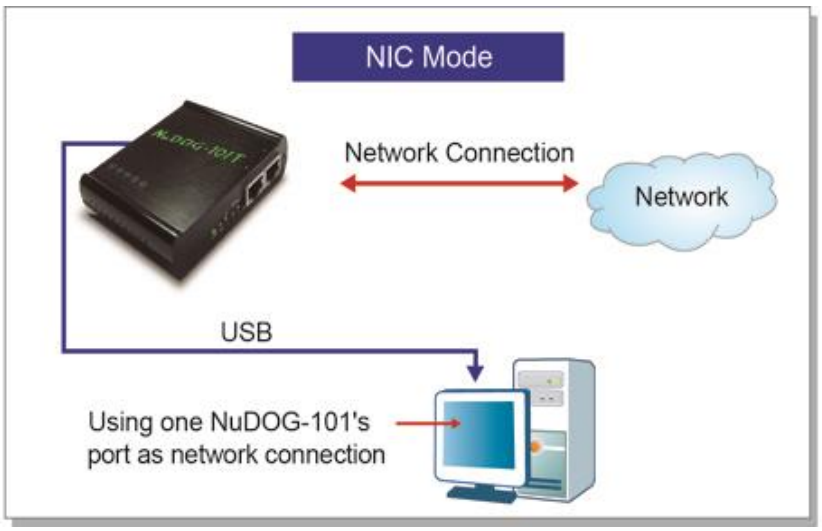
TAP Mode



Loopback Mode

In TAP mode, NuDOG-101T can monitor any data that flows through it. Network TAP is a method of monitoring network's situation dynamically without interference. NuDOG-101T can tap bi-directional or uni-directional traffic from different sides (port A and port B) and also provides abundant packet counters. In Loopback mode, NuDOG-101T resends the incoming streams back to the source.

NIC Mode



In this mode, NuDOG-101T simulates network interface card (NIC).

4.4. NuDOG-101T Interface Ports

NuDOG-101T Hardware Overview	
A	Mini-USB Port for connecting NuDOG-101T to PC or for power supply.
B	LEDs that display NuDOG-101T's system status.
C	Interface Port A/B for connecting NuDOG-101T to DUT or network.

***Please note that when connecting NuDOG-101T with PC via its USB port, DO NOT use a USB hub.**

4.5. NuDOG-101T LED Status

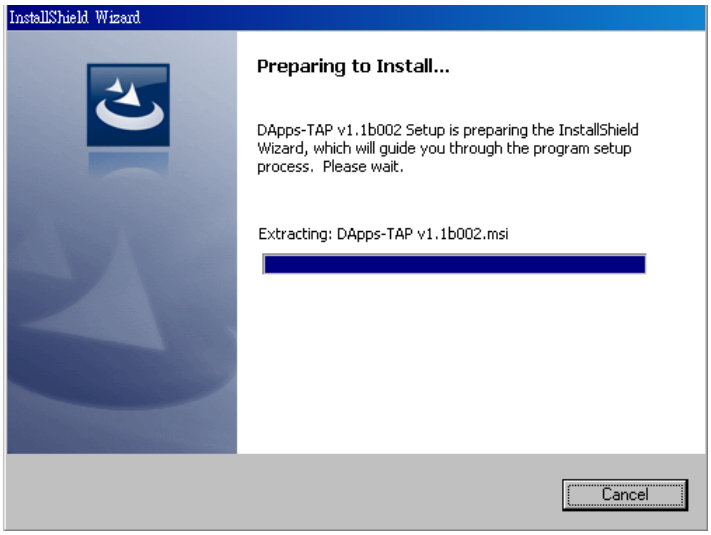
LED	Status	Description
Power	**Green Blinking**	Power is ON and working properly
	Yellow Blinking	System failed
USB	**Green Blinking**	USB of this device is linked to PC
PG/TAP	**Green**	NuDOG-101T is working under Packet Generation Mode
	Yellow	NuDOG-101T is working under TAP Mode
	OFF	NuDOG-101T is working under NIC (Network Interface Card) mode
Capture A/B	**Green**	Port A/B is under Capturing Mode
Link/ACT	**Green ON**	The RJ45 Port is connected to DUT/Network
	Green Blinking	NuDOG-101T is transmitting or receiving data
Speed	**Green ON**	100Mbps connection
	OFF	10Mbps connection if Link/ACT is ON or blinking

5. Installing/Uninstalling DApps-TAP

Please follow the steps down below to install DApps-TAP. Also, please note that DO NOT connect your NuDOG-301C, NuDOG-801/802 or NuDOG-101T to your PC before DApps-TAP is properly installed on your PC.

Installing DApps-TAP

1. Double-click DApps-TAP installation program and start the installation process*****.



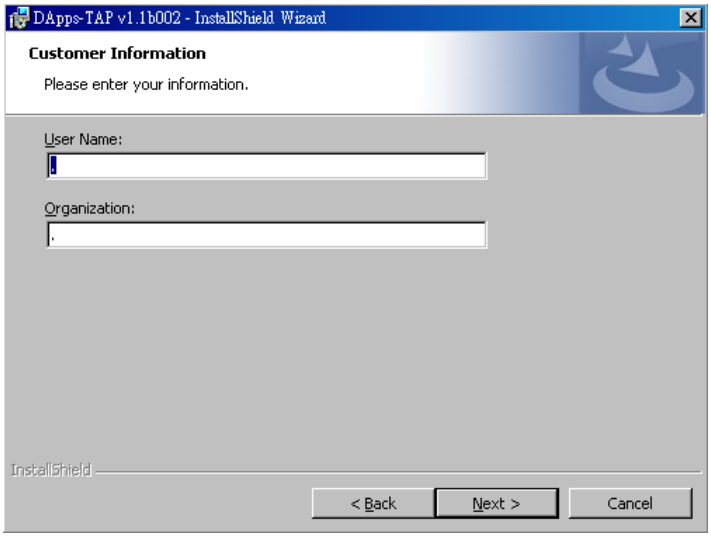
2. InstallShield Wizard is starting to install DApps-TAP. If you would like to cancel installation, click "**Cancel**".

3. Click "**Next**" to continue installation.

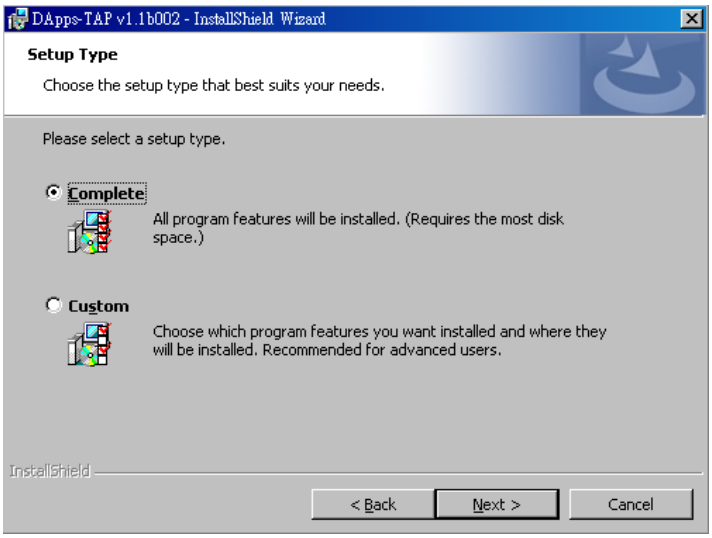
***Note: Due to different Operating Systems or system settings, warning messages might pop up when installing DApps-TAP or driver for your device. When this occurs, please choose the options on these pop-up warning messages that allow you to continue installing DApps-TAP or device driver.**

Installing DApps-TAP

4. Click "**I accept the terms in the license agreement**", and click "**Next**" to continue.



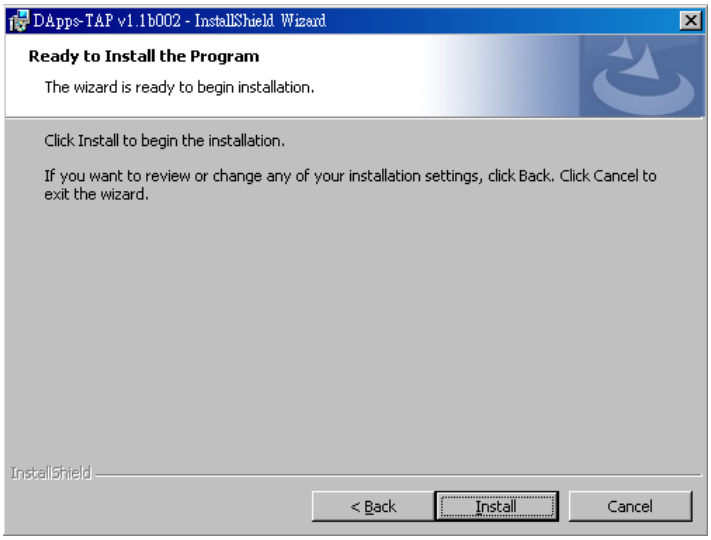
5. You can input **Username** and **Organization** in the related fields. Click "**Next**" to continue.



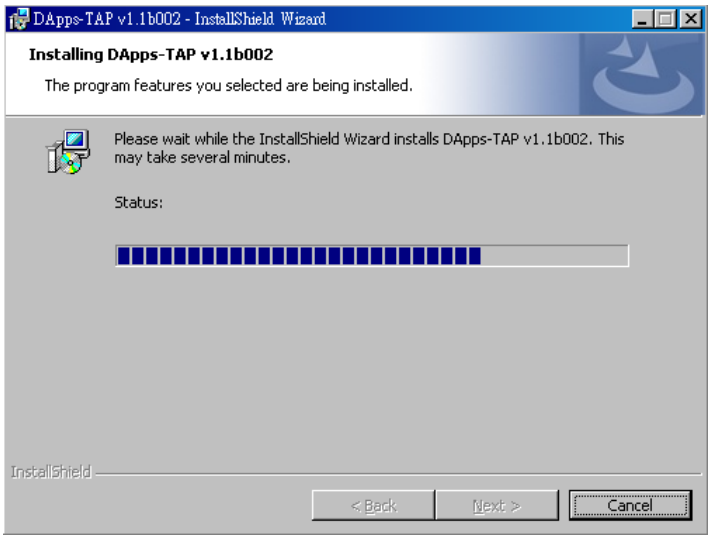
6. If you choose **Complete** option and click **Next** button, a next step window will pop up for direct install option.

   If you choose **Custom** option and click **Next** button, you will be able to choose the folder to save this program on the next window.

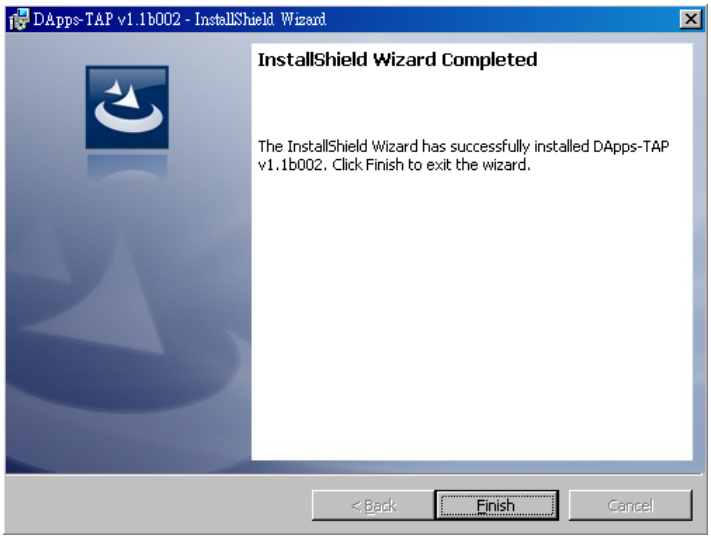
Installing DApps-TAP



7. DApps-TAP InstallShield Wizard will start installing momentarily. Click "**Install**" button to continue.



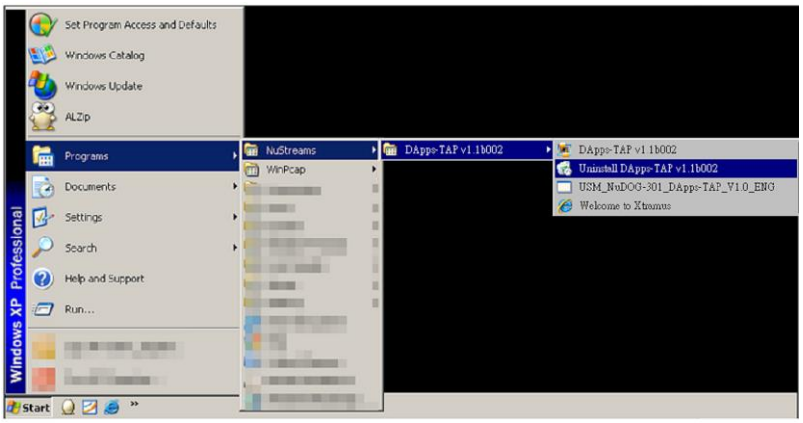
8. InstallShield Wizard is installing DApps-TAP.



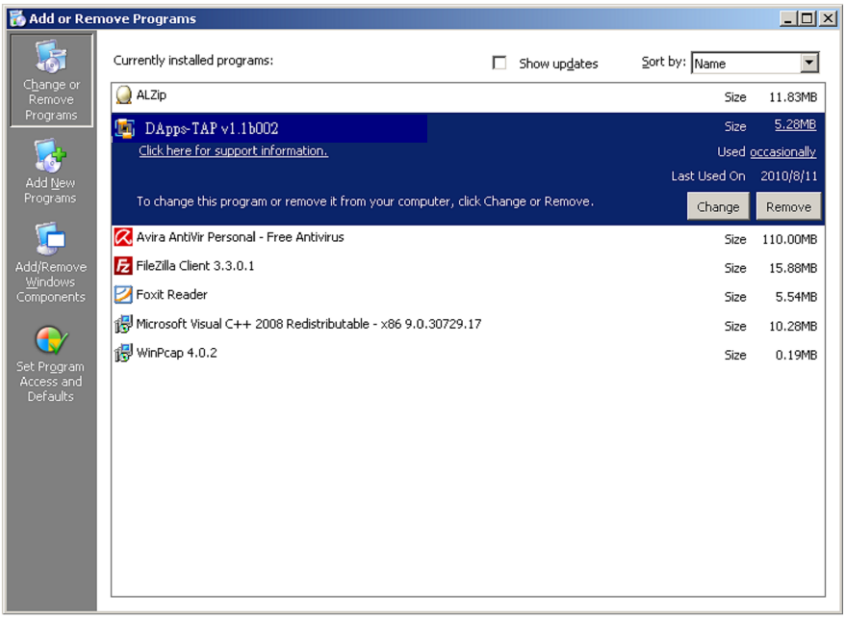
9. DApps-TAP installation completes. Click **Finish** button to exit.

You can uninstall DApps-TAP by:

Uninstalling DApps-TAP



- Click **Start → Programs → Xtramus → DApps-TAP → Uninstall DApps-TAP**.

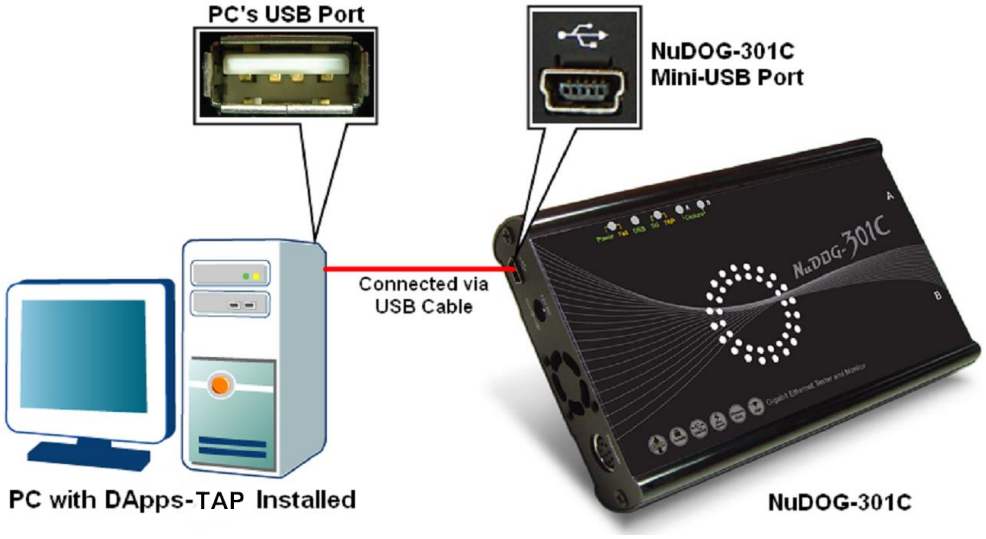


- Go to the **Control Panel**, choose **DApps-TAP** from installed program list, and click "**Remove**" to uninstall.

6. DApps-TAP Overview

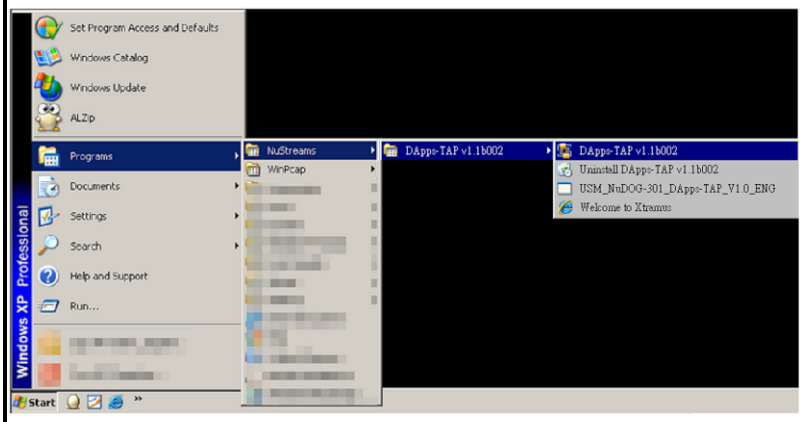
6.1. Starting DApps-TAP

Before starting DApps-TAP, your PC and NuDOG-301C/NuDOG-801/802/NuDOG-101T shall be connected properly. The figure down below illustrates connecting PC and NuDOG-301C. You can connect NuDOG-101T or NuDOG-801/802 with PC in the same manner, but **DO NOT connect NuDOG-301C or NuDOG-801/802 with PC before the device is powered on**.



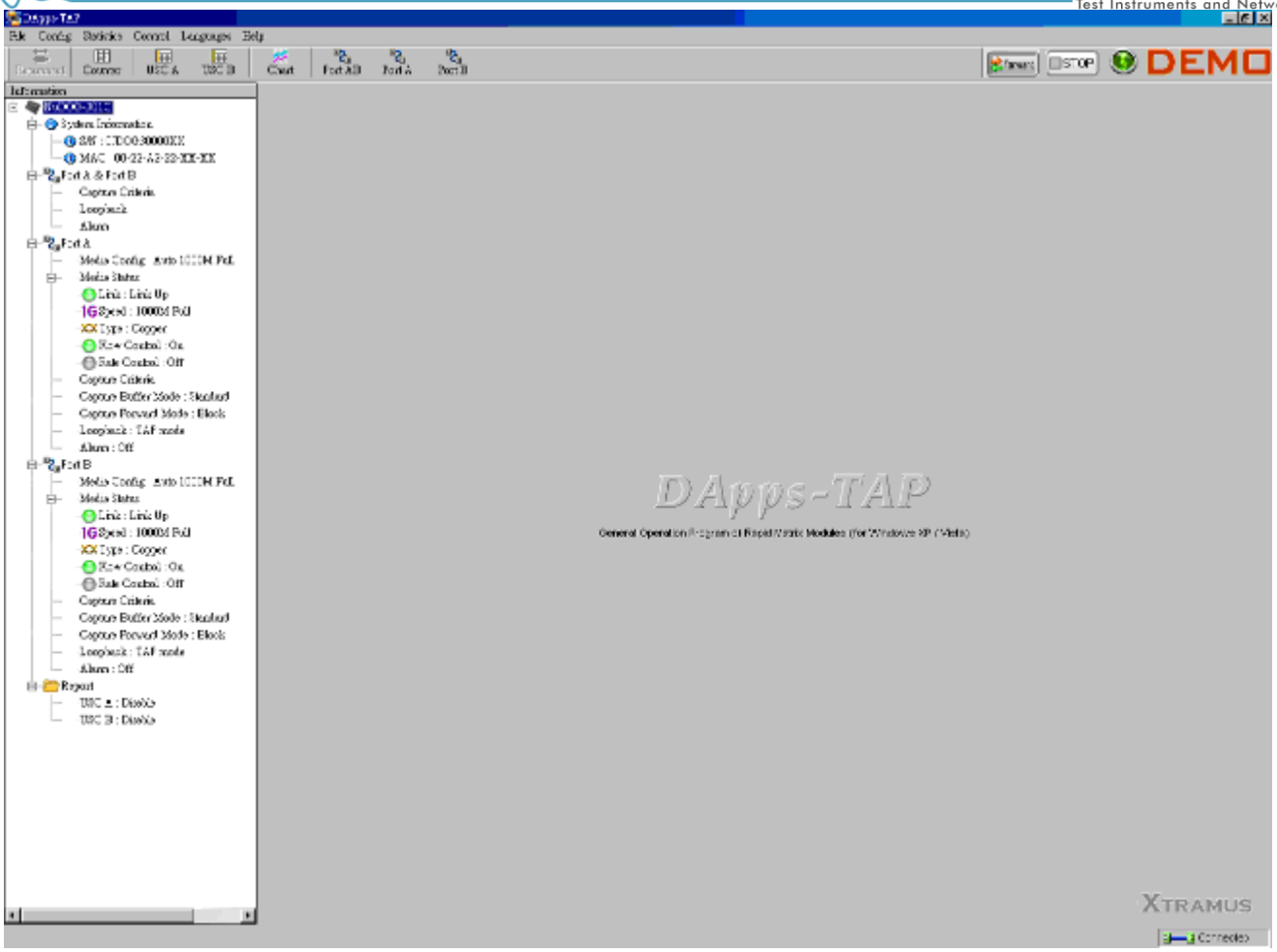
There are two ways to start DApps-TAP:

Starting DApps-TAP

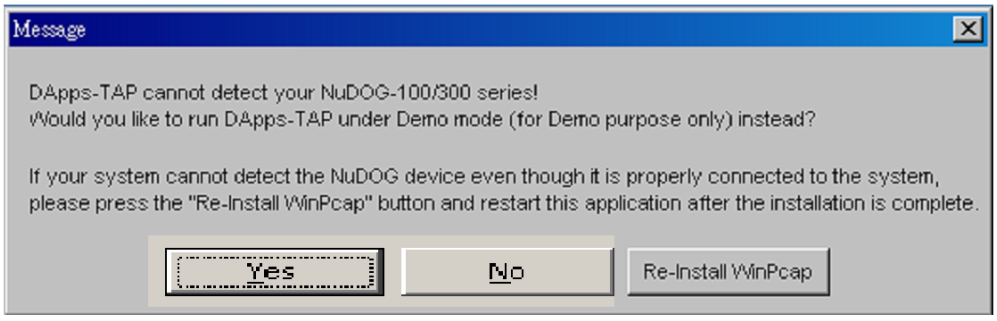


- Click **Start → Programs → Xtramus → DApps-TAP**.

- Double-click DApps-TAP icon located on your PC's desktop.

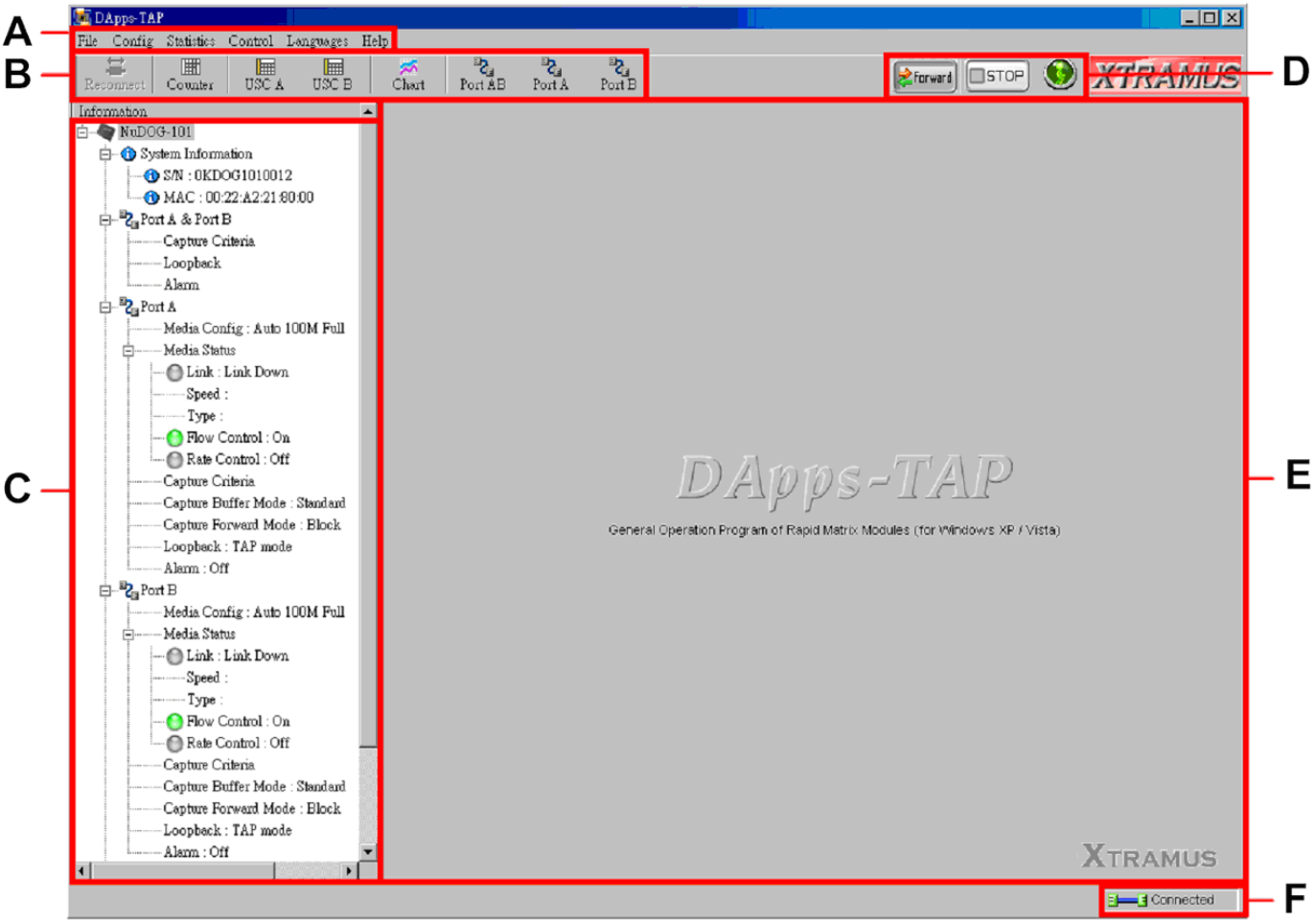


If your PC is not connected with NuDOG-301C/801/802/101T, you can still run DApps-TAP under Demo Mode. Almost all DApps-TAP's functions are available under Demo Mode. However, please note that **Demo Mode is for system demo purposes only**, and does not serve any testing purposes at all.



When your PC cannot detect your NuDOG-301C/801/802/101T, a window as shown above will pop up asking if you want to start the DApps-TAP in Demo mode or not, also a third option will pop up asking if you want to re-install WinPcap for successfully run the DApps-TAP.

6.2. DApps-TAP Overview



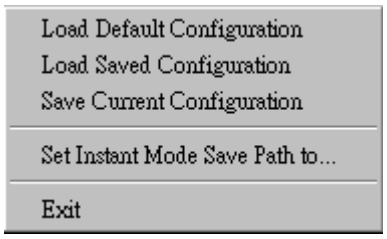
DApps-TAP Functions Overview		
A	**Menu Bar**	The **Menu Bar** allows you to make settings about task criteria, view Counter window, load/save settings you've made, and change language displayed.
B	**Tool Bar**	The **Tool Bar** contains buttons that allow you to reconnect your PC to NuDOG-301C/801/802/101T, make task/port configurations, view Counter, USC A/B and Charts.
C	**Information Field**	In the **Information Field**, you can view system information, making port configurations, or view port and USC status on right side **Main Display Screen**.
D	**Control Buttons/ Run Status Icon**	The **Control Buttons** allow you to start/stop tasks, and the **Run Status Icon** indicates if there's a task running.
E	**Main Display Screen**	You can make detail configurations and view real-time testing diagrams on the **Main Display Screen**.
F	**System Connection Status**	This icon shows the connection status between your PC and NuDOG-301 /NuDOG-801/802/NuDOG-101T.

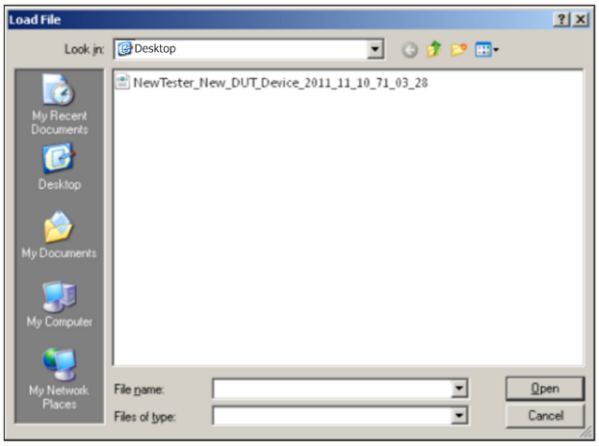
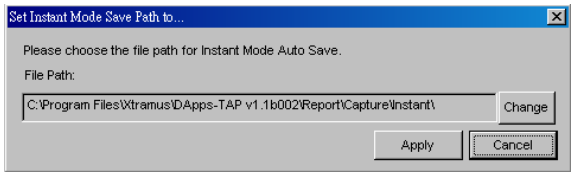
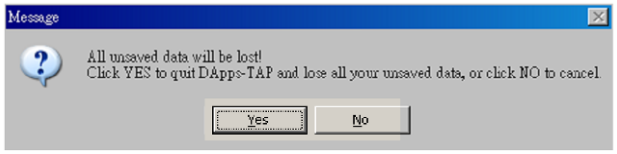
7. DApps-TAP Functions

7.1. Menu Bar

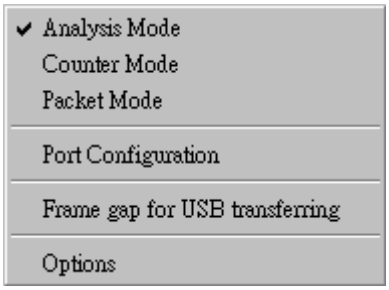
DApps-TAP **Menu Bar** includes configuration options such as **File**, **Config**, **Statistics**, **Control**, **Languages**, and **Help**. Please refer to the sections down below for detail information regarding to each configuration option.

7.1.1. File



File	
Load default configuration	If you choose the **Load Default Configuration** option, the system will be restored to the default configuration.
Load Saved Configuration	 If you have a previously saved configuration setting file stored in your PC, you can load it and apply all the setting you've made by choosing "**File → Load Saved Configuration**" from the **Menu Bar**. All configuration files are saved in the format of " *** .xml**".
Save current configuration	The **Save current configuration** function on the **Menu Bar** allow you to save the settings you've made or the test results. To save the settings you've made, choose **"Save current configuration"** from the **Menu Bar** before performing any tasks, and choose the file path where you would like to save the configuration file. Configuration files are saved in the format of "***.xml**".
Set Instant Mode Save Path to…	 In this option, you can set the file path for auto save function. Click Change button to choose a new path, and **Apply** button to save the setting, or **Cancel** button to close the window.
Exit	 A prompt pop-up window will ask if you are sure to exit DApps-TAP. Click **YES** to exit DApps-TAP, or click **NO** to cancel.

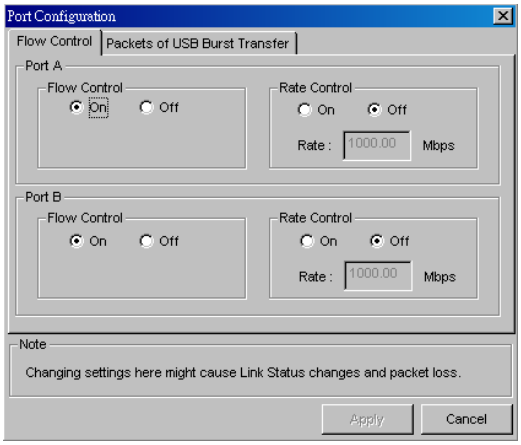
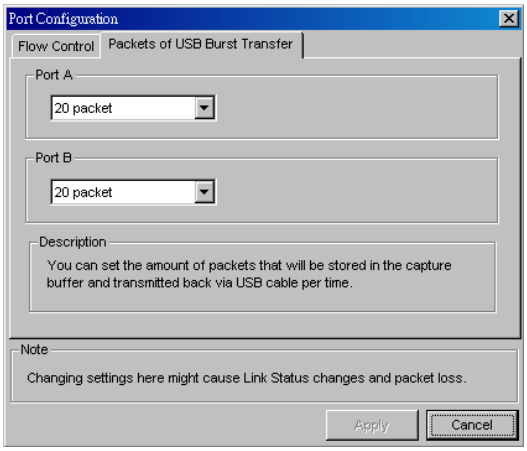
7.1.2. Config



7.1.2.1. Run Mode

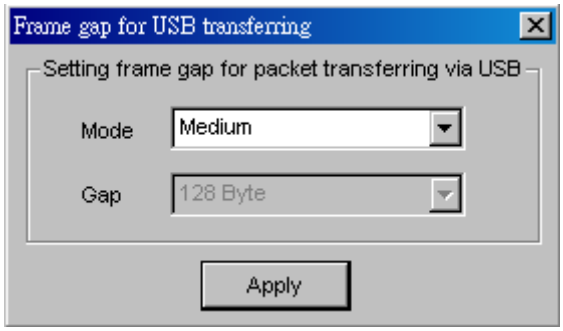
Run Mode	
Analysis Mode	All the function of DApps-TAP is available.
Counter Mode	The packets capture function and interface will rely on Wireshark software.
Packet Mode	The packets capture function and interface will rely on others software. The Counter table will not show the status of capturing packets.

7.1.2.2. Port Configuration

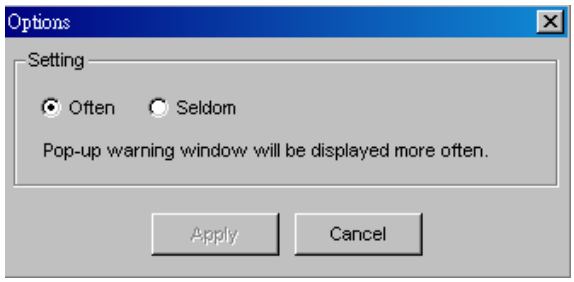
Port Configuration	
	Click the **Flow Control** bar to turn **Port A/B**'s **Flow Control On/Off**. If you turn **ON** the **Flow Control**, the **Rate Control** settings will be available. And when you turn **On** the **Rate Control**, you may set the **Rate** between 0.00~1000.00 Mbps. After **finishing** the settings, please click **Apply** button to save the configuration, or click **Cancel** to close window without saving.
	In the Packets of **USB Burst Transfer** bar, you can set the amount of packets that will be stored in the capture buffer and transmitted back via USB cable per time. The packet quantity available to choose for each port A/B on the scroll field is **1, 10, 20, 30, 60, 100**. After finishing the **settings**, please click **Apply** button to save the configuration, or click **Cancel** to close window without saving.

***Note: Changing settings in Port Configuration window might cause Link Status changes and packet loss.**

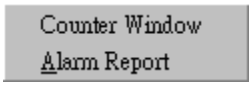
7.1.2.3. Frame gap for USB transferring

Frame gap for USB transferring	
	Four modes are available in **Frame gap for USB transferring**: **Fast, Medium, Slow and User Define**. If you choose the **User Define** option, the **Gap** scroll field will be available to scroll down and to choose the size of frame gap. After finishing the settings, please click **Apply** button to save the configuration.

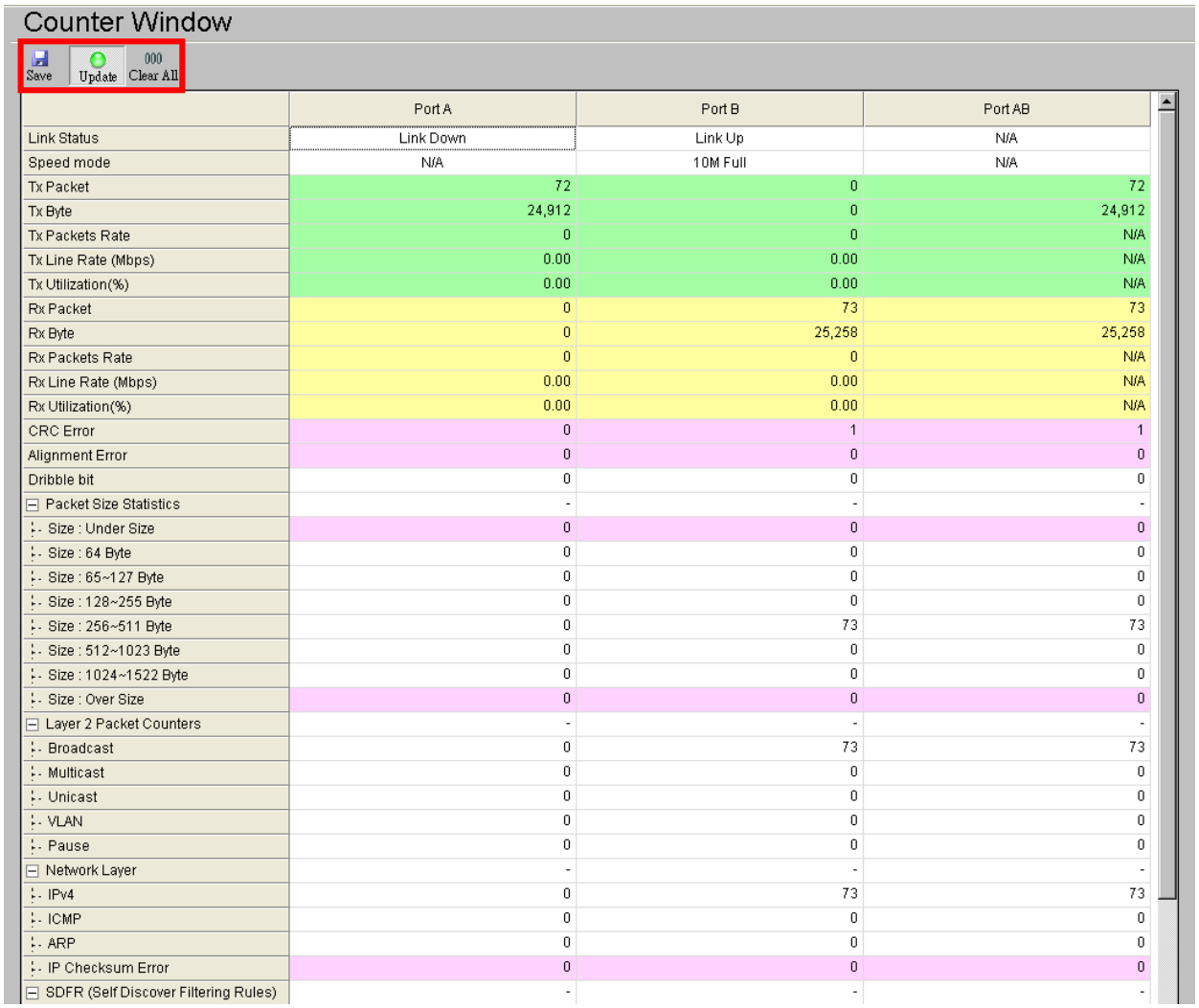
7.1.2.4. Options

Options	
	In this window, you can set if the future warning window will pop up more often by choosing the **Often** option, or pop up less warning window by choosing **Seldom** option. After finishing the settings, please click **Apply** button to save the configuration, or click **Cancel** to close window without saving.

7.1.3. Statistics



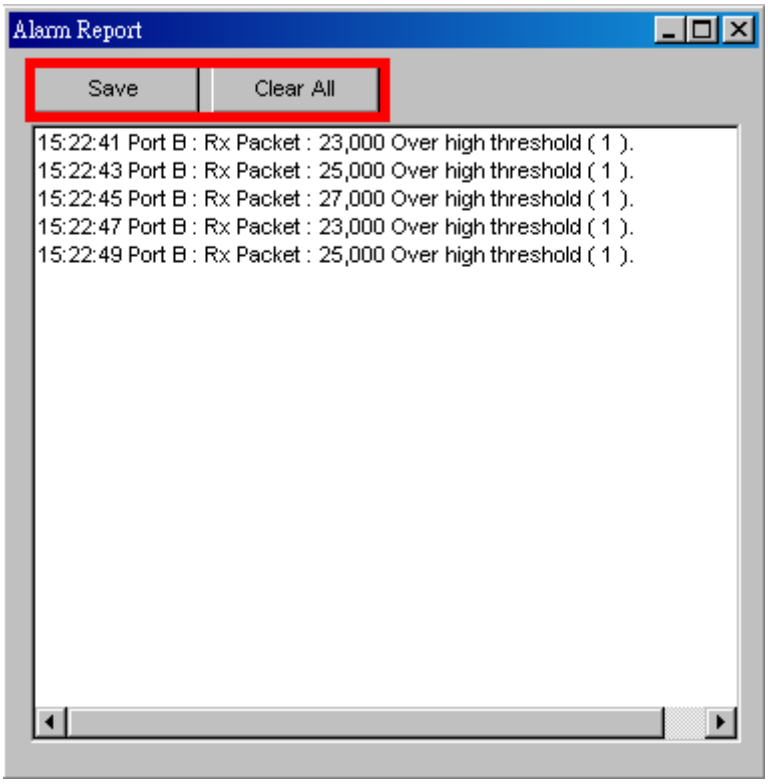
7.1.3.1. Counter Window



	Port A	Port B	Port AB
Link Status	Link Down	Link Up	N/A
Speed mode	N/A	10M Full	N/A
Tx Packet	72	0	72
Tx Byte	24,912	0	24,912
Tx Packets Rate	0	0	N/A
Tx Line Rate (Mbps)	0.00	0.00	N/A
Tx Utilization(%)	0.00	0.00	N/A
Rx Packet	0	73	73
Rx Byte	0	25,258	25,258
Rx Packets Rate	0	0	N/A
Rx Line Rate (Mbps)	0.00	0.00	N/A
Rx Utilization(%)	0.00	0.00	N/A
CRC Error	0	1	1
Alignment Error	0	0	0
Dribble bit	0	0	0
Packet Size Statistics	-	-	-
Size : Under Size	0	0	0
Size : 64 Byte	0	0	0
Size : 65~127 Byte	0	0	0
Size : 128~255 Byte	0	0	0
Size : 256~511 Byte	0	73	73
Size : 512~1023 Byte	0	0	0
Size : 1024~1522 Byte	0	0	0
Size : Over Size	0	0	0
Layer 2 Packet Counters	-	-	-
Broadcast	0	73	73
Multicast	0	0	0
Unicast	0	0	0
VLAN	0	0	0
Pause	0	0	0
Network Layer	-	-	-
IPv4	0	73	73
ICMP	0	0	0
ARP	0	0	0
IP Checksum Error	0	0	0
SDFR (Self Discover Filtering Rules)	-	-	-

Counter Window	
	Click the **Save** button to save the current counter data.
	The **Update** button allows you to pause or start the counter operation. If the **Update** button is shown as the figure on the left, than the counter operation is paused.
	If the **Update** button is shown as the figure on the left, the counter operation is started.
	Click the **Clear All** button to clear the counter data.

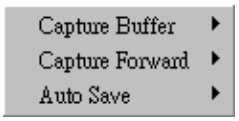
7.1.3.2. Alarm Report



This window will warn you about the over high threshold of the parameter chosen in port configuration, for more detail about how to set the parameter to be presented on Alarm Report window, please refer to the **7.2.5. Port AB, Alarm.**

The **Save** button allows you to save the **Alarm Report** data on a path folder. If you click the **Clear All** button, you will clear all the data gathered on this window.

7.1.4. Control

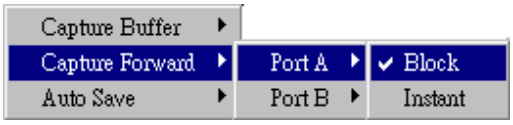


7.1.4.1. Capture Buffer

Capture Buffer	
Standard Mode	Active capture buffer (built-in memory) mode for maximum 2K size packets.
Jumbo Mode	Active capture buffer (built-in memory) mode for maximum 16K size packets.

***Note: the NuDOG-801/802 doesn't support the Jumbo Mode.**

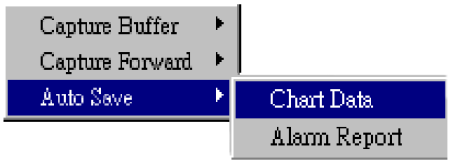
7.1.4.2. Capture Forward



Capture Forward	
Block	Click this option to see the packets capture status after stopping the counter.
Instant	Click this option to see the packets capture status during the operation of the counter.

***Note: for NuDOG-801/802, the Capture Forward Port A/B Block function can only capture 64 packets.**

7.1.4.3. Auto Save

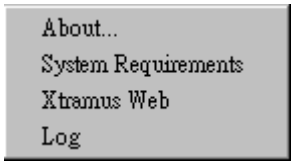


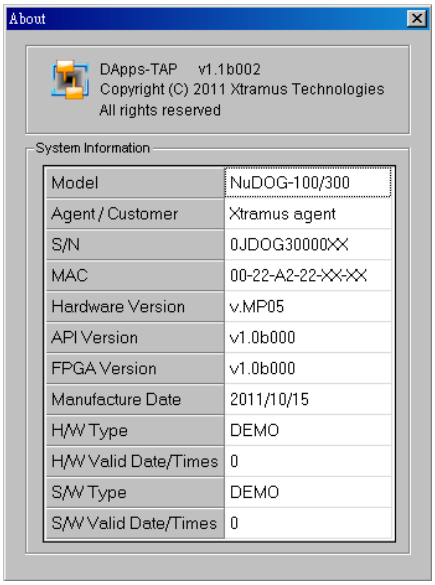
Auto Save	
Chart Data	Click this option to auto save **Chart Data** to the Report folder below your DApps-TAP folder in each 60 min.
Alarm Report	Click this option to auto save **Alarm Report** to the Report folder below your DApps-TAP folder in each 60 min.

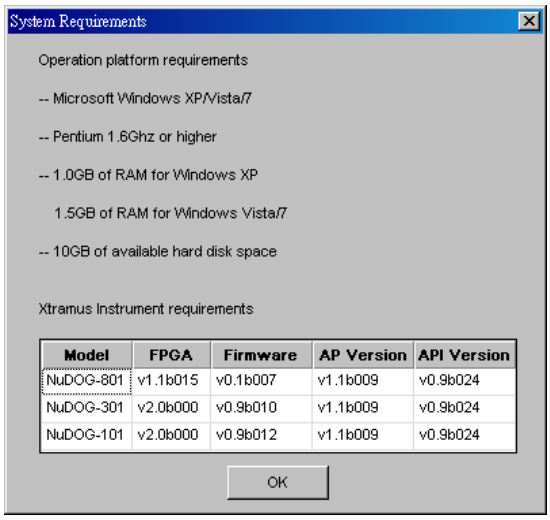
7.1.5. Languages

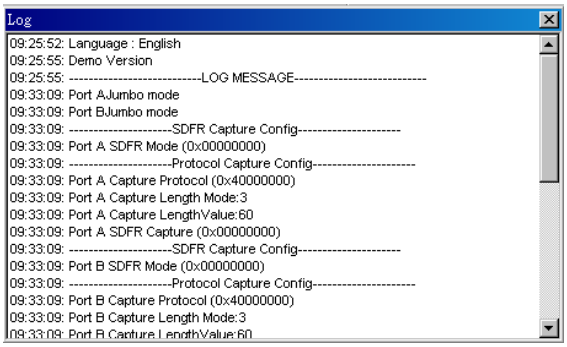
Languages	
English/Simplified Chinese/Japanese	DApps-TAP has 3 different languages for its UI available. You can set the UI language to English, Simplified Chinese or Japanese.

7.1.6. Help



<table>
<tr><th colspan="2">Help</th></tr>
<tr><td>About DApps-TAP</td><td>


An “About” window will pop up and show detailed system information.
</td></tr>
<tr><td>System Requirements</td><td>


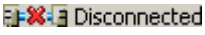
A “System Requirements” window will pop up and show the requirements for your PC, FPGA/Firmware, AP and API version of the equipment.
OK: Click this button to exit the “System Requirements” pop-up window.
</td></tr>
<tr><td>Xtramus Web</td><td>Open your default web browser and access Xtramus Website (www.xtramus.com).</td></tr>
<tr><td>Log</td><td>


Clicking this option will pop up a LOG window showing the settings that you made on DApps-TAP program so far.
</td></tr>
</table>

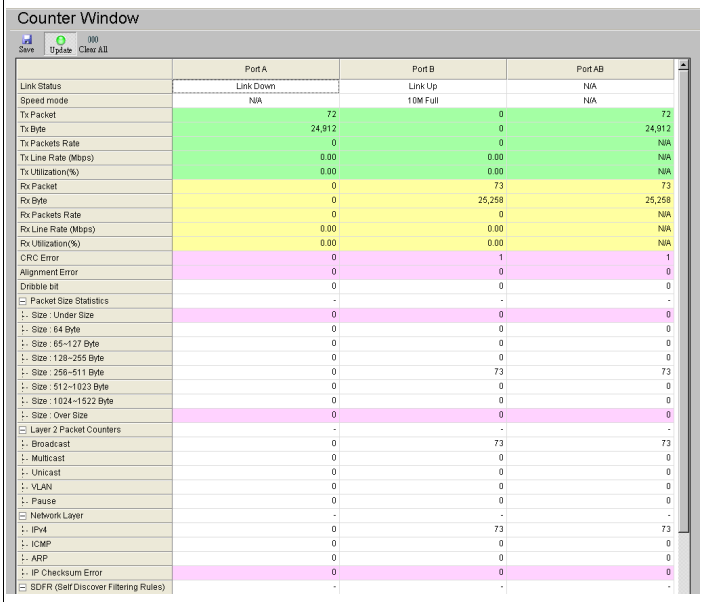
7.2. Tool Bar

The **Tool Bar** contains buttons that allow you to reconnect NuDOG-301C/801/802/101T, view Counter, view USC A/B, view Chart and Configure Port A/B. Please refer to the section down below for more detail descriptions regarding to **Quick Launch Buttons**.

7.2.1. Reconnect

Reconnect	
	If the USB connection between your PC and NuDOG-301C/801/802/101T is down, a "**Disconnected**" icon  will be shown in "**System Connection Status**". Press **Reconnect** button  to re-establish the connection between your PC and NuDOG-301C /801/802/101T. If the connection has been established successfully, a message window will pop up, and the "**System Connection Status**" will be shown as "**Connected**"  .

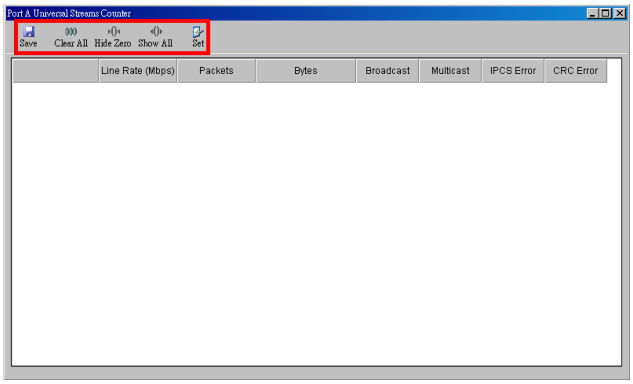
7.2.2. Counter

Counter	
	 If you click the Counter button, the Counter Window will pop up showing the status of the packets. For more information, please refer to the **7.1.3.1. Counter Window.**

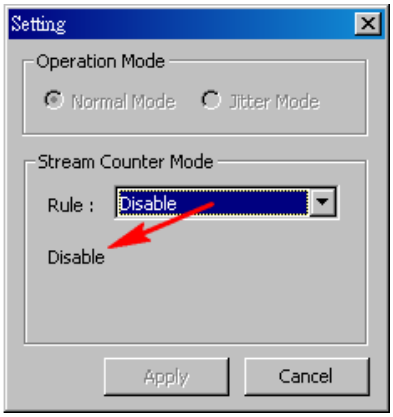
	Port A	Port B	Port AB
Link Status	Link Down	Link Up	N/A
Speed mode	N/A	10M Full	N/A
Tx Packet	72	0	72
Tx Byte	24,912	0	24,912
Tx Packets Rate	0	0	N/A
Tx Line Rate (Mbps)	0.00	0.00	N/A
Tx Utilization(%)	0.00	0.00	N/A
Rx Packet	0	73	73
Rx Byte	0	25,258	25,258
Rx Packets Rate	0	0	N/A
Rx Line Rate (Mbps)	0.00	0.00	N/A
Rx Utilization(%)	0.00	0.00	N/A
CRC Error	0	1	1
Alignment Error	0	0	0
Dribble bit	0	0	0
Packet Size Statistics	-	-	-
:- Size : Under Size	0	0	0
:- Size : 64 Byte	0	0	0
:- Size : 65~127 Byte	0	0	0
:- Size : 128~255 Byte	0	0	0
:- Size : 256~511 Byte	0	73	73
:- Size : 512~1023 Byte	0	0	0
:- Size : 1024~1522 Byte	0	0	0
:- Size : Over Size	0	0	0
Layer 2 Packet Counters	-	-	-
:- Broadcast	0	73	73
:- Multicast	0	0	0
:- Unicast	0	0	0
:- VLAN	0	0	0
:- Pause	0	0	0
Network Layer	-	-	-
:- IPv4	0	73	73
:- ICMP	0	0	0
:- ARP	0	0	0
:- IP Checksum Error	0	0	0
SDFR (Self Discover Filtering Rules)	-	-	-

7.2.3. USC A & USC B

USC A/B



- Save — Allows you to save the data of this window.
- Clear All — Clear all the data of this window.
- Hide Zero — Hide all the data that is zero.
- Show All — Show all the data of this window.
- Set — Set the Stream Counter Mode.

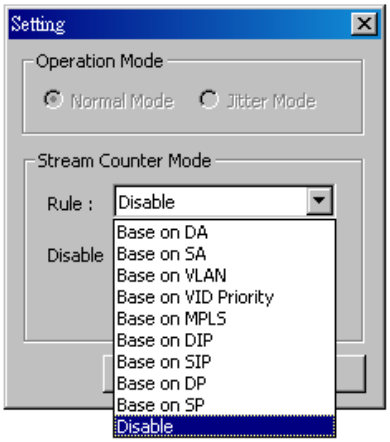


Click the Set button to pop up the **Setting** window. In this window, you may modify the **Rule** (Stream Counter Mode) of USC. The chosen mode will be shown in the side pointed by the red arrow.

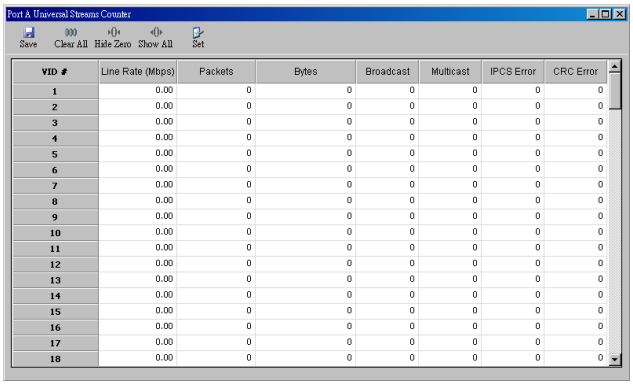
Click the **Apply** button to save this setting or **Cancel** to close this window without saving.

Note: The Operation mode is not available yet.

USC A

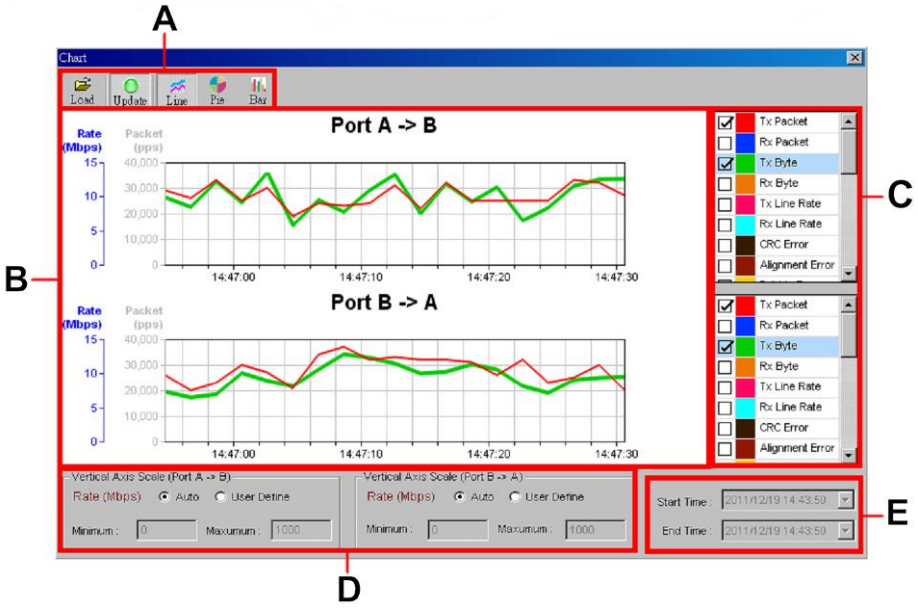


The left figure shows the **Rule** (Stream Counter Mode) available when you scroll down the field.



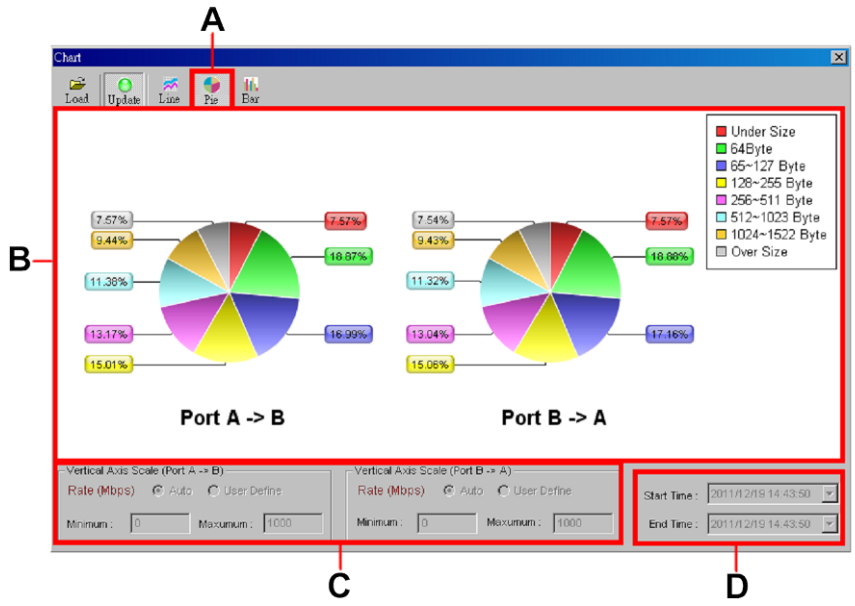
After applying your settings made on the **Setting** window, the changes will be shown on the **Port Universal Streams Counter** window.

7.2.4. Chart

Chart_Line	
	
	Click the **Chart** button to pop up the **Chart** window shown above. From **A** bar, you can click the  button to see Packets status in line chart as shown in **B** field. The lines shown in the chart depends on the parameters chosen in **C** field. You can set the Rate of packets to be analyzed in Mbps in **D** field. If you set in **Auto mode**, the **Rate** will be set under a default setting, if you set in **User Define** mode, than a **Minimum** and a **Maximum** rate range will be available to modify. You can open a saved chart by clicking the  button from **A** bar. When opening a saved chart, the **Start/End Time** scroll field from **E** will be available. The function of **Start/End Time** allows you to check the status of the packets of the saved chart in different times. The **Update** button  allows you to pause or start the counter operation.

Chart_Pie

Chart



Click the 

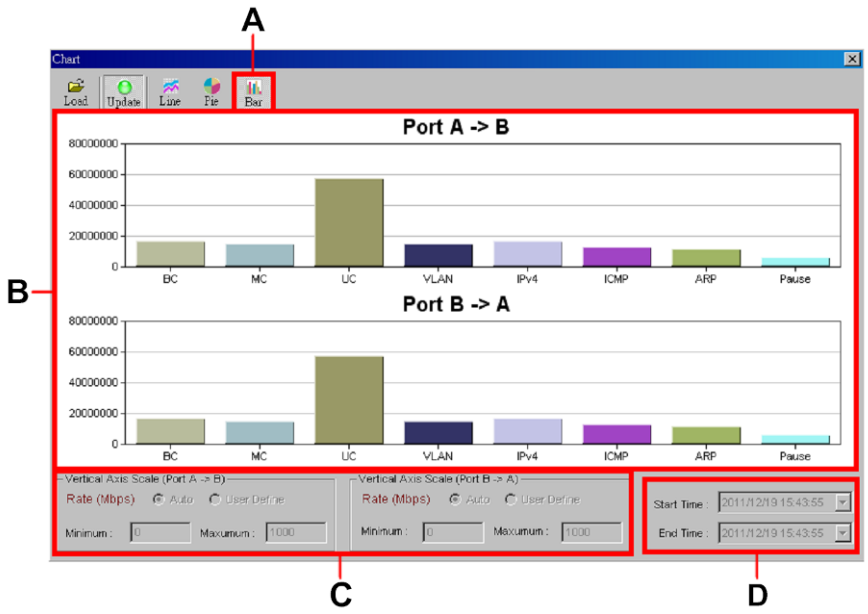
button as shown in **A** to view the pie chart in **B** field. The pie chart shows the percentage of each captured packet size during the operation of the **DApps-TAP**.

You can set the Rate of packets to be analyzed in Mbps in **C** field. If you set in **Auto mode**, the **Rate** will be set under a default setting, if you set in **User Define** mode, than a **Minimum** and a **Maximum** rate range will be available to modify.

You can open a saved chart by clicking the 

button. When opening a saved chart, the **Start/End Time** scroll field from **D** will be available. The function of **Start/End Time** allows you to check the status of the packets of the saved chart in different times.

Chart_Bar



Click the 

button as shown in **A** to view the bar chart in **B** field. The Bar chart shows the rate of network event counts from Port A to Port B and Port B to Port A. Those includes: BC (Layer 2 Broadcast), MC (Layer 2 Multicast), UC (Layer 2 Unicast), VLAN, IPv4, ICMP (Ping), ARP, PAUSE.

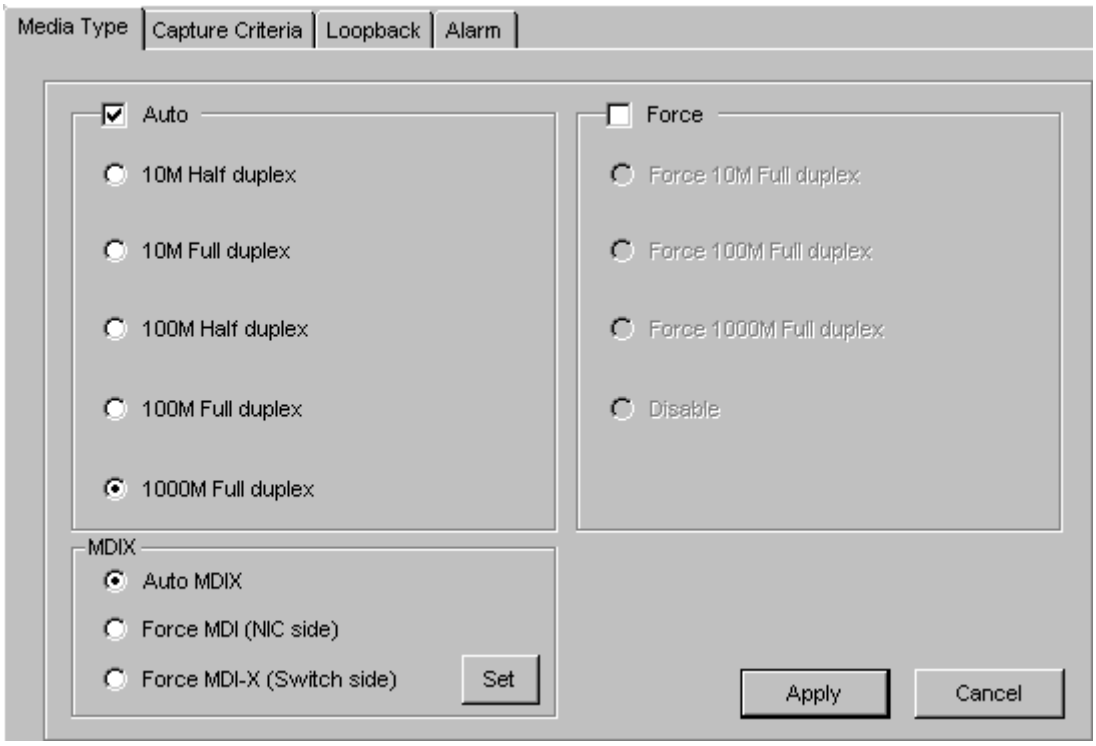
You can set the Rate of packets to be analyzed in Mbps in **C** field. If you set in **Auto mode**, the **Rate** will be set under a default setting, if you set in **User Define** mode, than a **Minimum** and a **Maximum** rate range will be available to modify.

You can open a saved chart by clicking the 

button. When opening a saved chart, the **Start/End Time** scroll field from **D** will be available. The function of **Start/End Time** allows you to check the status of the packets of the saved chart in different times.

7.2.5. Port AB

Port AB_Media Type



Click the **Port AB** button to pop up the Port AB configuration interface. In this interface, you can set the **Media type** as **Auto** or **Force** mode.

The **Auto** mode enables to choose the rate in 10/100M under Half/Full duplex and 1000M under Full duplex, but it may be auto modified by the DApps-TAP program to a best rate to run.

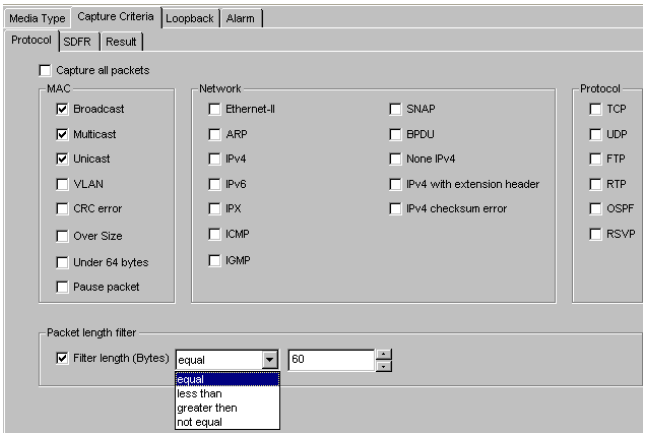
The **Force** mode enables to choose and fix the transfer rate in 10/100/1000M under Full duplex.

You can also set **MDIX** mode here, and click the **Set** button to save settings made for **MDIX** mode:

- If you set **Auto MDIX** mode, the DApps-TAP will auto sense the direction of Tx/Rx for signal connection between **NuDOG-301C/801/802/101T** with **NIC/Switch** side.
- You can choose **Force MDI (NIC side)** to force the direction of the Tx/Rx signal based on NIC side.
- You can choose **Force MDI-X (Switch side)** to force the direction of the Tx/Rx signal based on Switch side.

Click the **Apply** button to save the settings, or **Cancel** button to recover to the default configuration.

Port AB_Capture Criteria

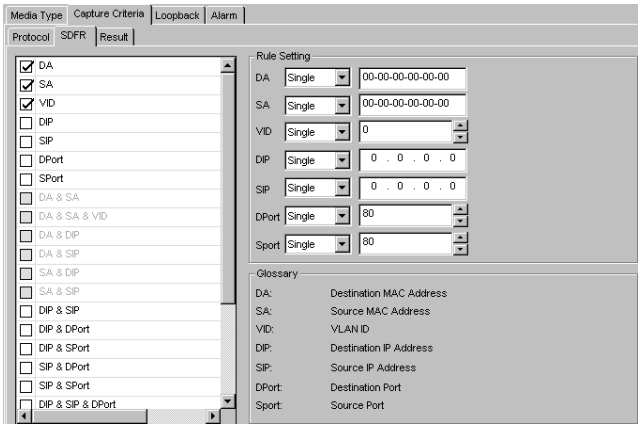


In the **Protocol** interface, If you click the **Capture all packets** function, you will enable the DApps-TAP to capture all packets criteria.

If you close the **Capture all packets** function, than the criteria from **MAC**, **Network** and **Protocol** will be available to choose.

The **Packet length filter** allows you to filter packets as equal, less than, greater than and not equal to a range of packets of 52~16384 bytes.

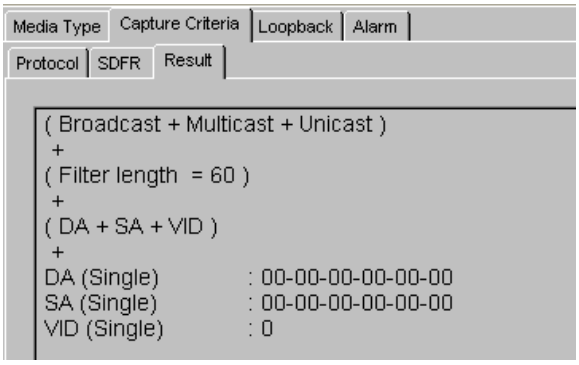
Port AB



SDFR (Self-Discover Filtering Rules).

If you closed the **Capture all packets** function in the **Protocol** interface, the **SDFR** interface will be available for settings.

The SDFR interface allows you to choose a single or multiple criteria for capturing packets.

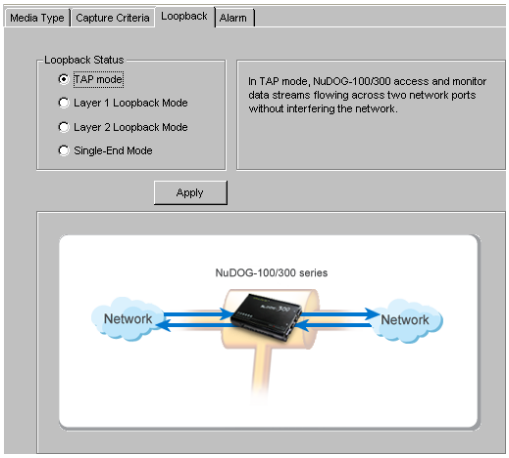


It shows the result of capture criteria by user's selection.

***Note: Packet loss is possible if the captured traffic is higher than traffic allowed for USB port.**

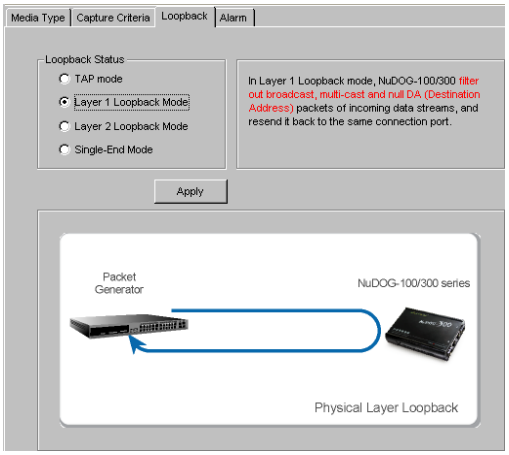
***Note: For SDFR items, you can tick the items that act as criteria. When you tick one option, some other options will be gray. It means the option what you tick has covered the range of those options in gray.**

Port AB_Loopback

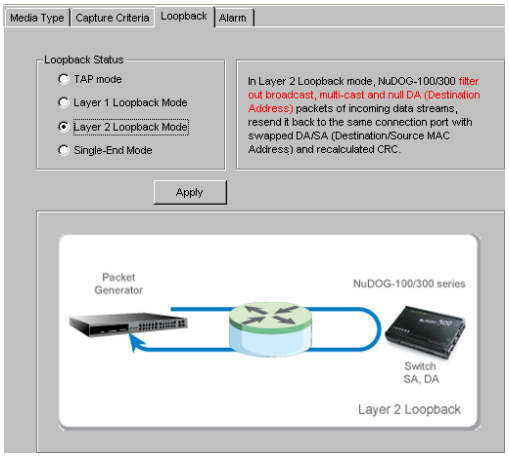


If you choose the **TAP mode** on **Loopback** interface, the NuDOG-301C, NuDOG-801/802 and NuDOG-101T operates like a hardware device that provides a method to access and monitor the data streams flowing across two network ports without intruding the running network.

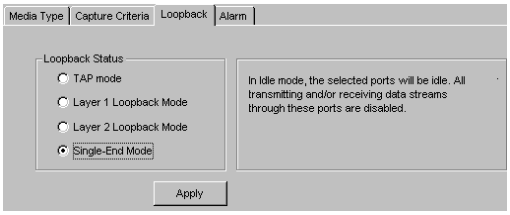
Port AB



If you choose the **Layer 1 Loopback Mode** on **Loopback** interface, the NuDOG-301C, NuDOG-801/802 and NuDOG-101T filters out broadcast, multicast and null DA (destination address) packets of incoming data streams, and then resends them back to the same connected port.



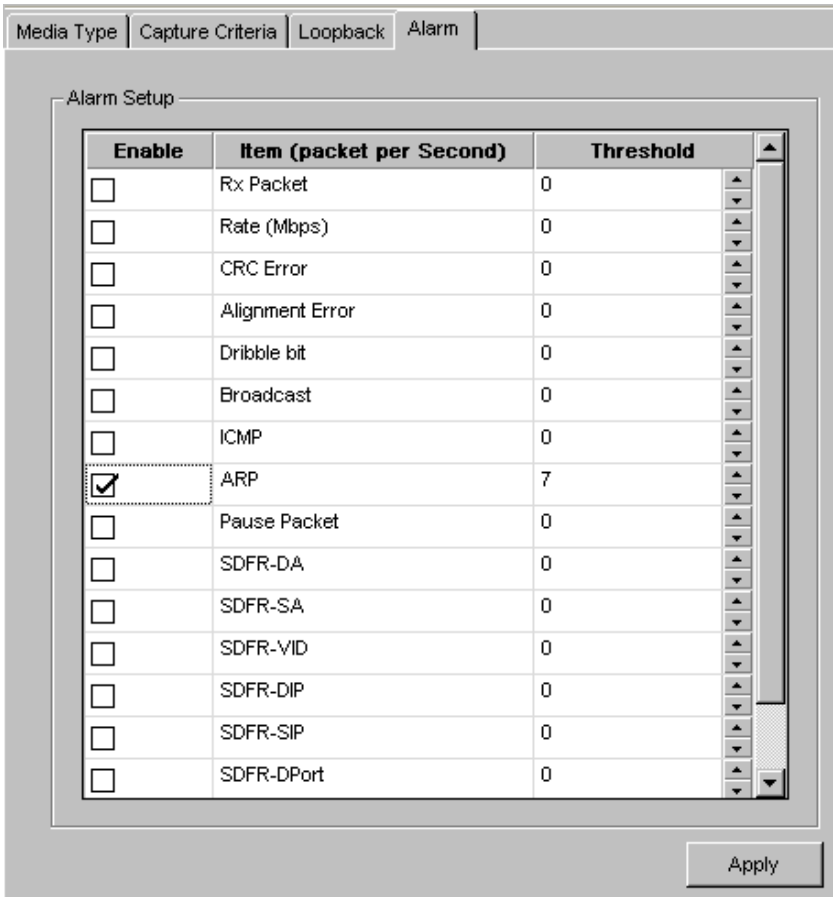
If you choose the **Layer 2 Loopback Mode** on **Loopback** interface, the NuDOG-301C, NuDOG-801/802 and NuDOG-101T filters out broadcast, multicast and null DA (destination address) packets of incoming data streams, and then resends them back to the same connected port with swapped DA / SA (destination / source MAC address) and recalculated CRC.



If you choose the **Single-End Mode** on **Loopback** interface, the selected ports are idle that all transmitting and/or receiving data streams via these ports are disabled.

Port AB_Alarm

Port AB



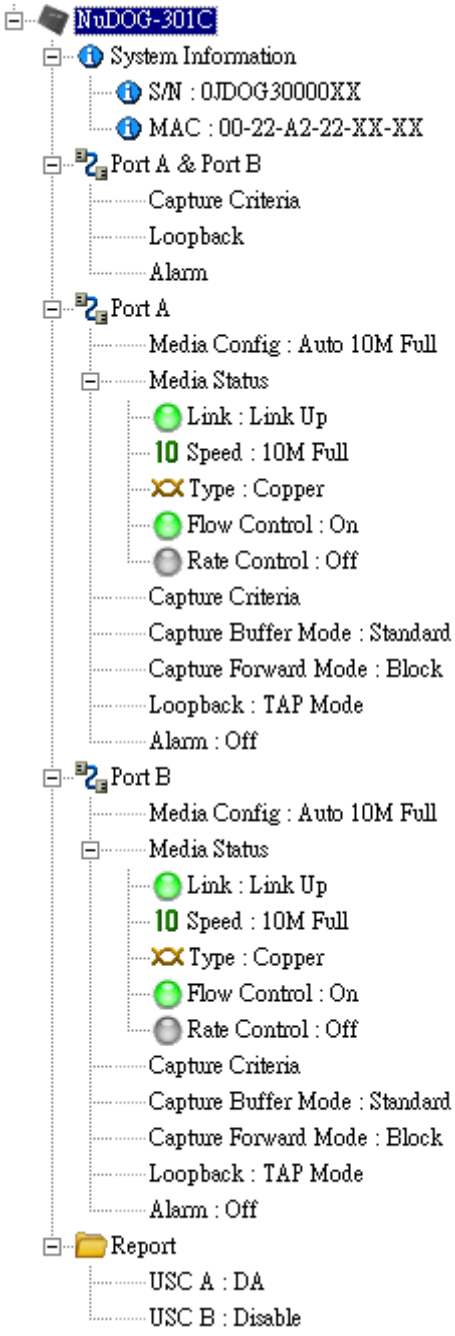
In the Alarm interface, you can choose the alarm threshold to be displayed on the alarm report. When the check box is ticked as ☑, these alarm criteria are enabled if the network event of the running network is beyond the threshold.

Click ▲ or ▼ of  button to increase or decrease the value of threshold as the limit to starting the alarm report.

When the network traffic flows through this device and the network event triggers the alarm threshold, the alarm condition is registered in alarm report.

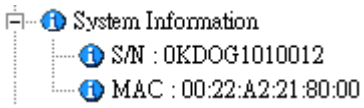
The Settings of Port AB will configure the Port A and Port B at same time with the same packets capture criteria. If you want to configure Port A and Port B at different packets capture criteria, please choose the Port A and Port B to configure separately with different packets capture criteria.

7.3. System Info/Configuration List



The **System Info/Configuration List** allows you to view system information and making port configurations.

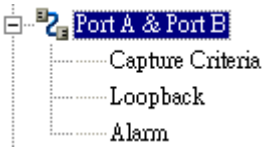
7.3.1. System Information



By clicking the **System Information** on the **System Info/Configuration List**, the **System Information** screen will be shown on the **Main Display Screen** located on the right side of DApps-TAP' main window.

Model	NuDOG-101
Agent / Customer	Xtramus agent
S/N	0KDOG1010012
MAC	00:22:A2:21:80:00
Hardware Version	v.0.10
API Version	v0.9b011 2011/06/17
FPGA Version	v1.4b000 2011/09/06
Manufacture Date	2009/01/01 00:00
Type	Normal

7.3.2. Port A & Port B



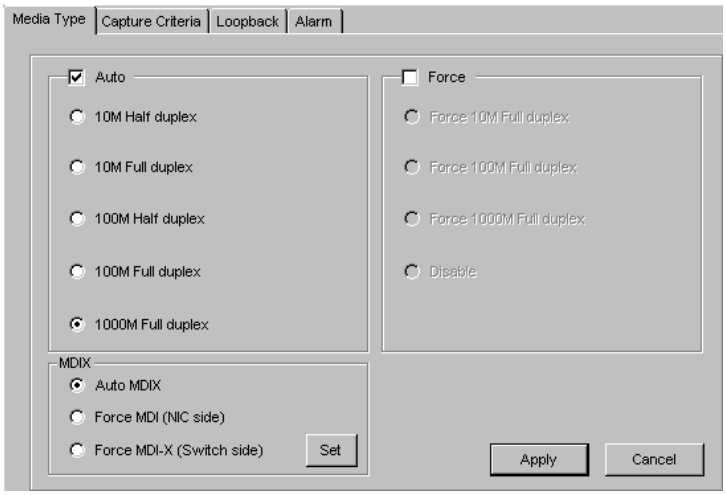
Media Type, **Capture Criteria**, **Loopback and Alarm**

By clicking the **Port A & Port B** on the **System Info/Configuration List**, the **Port A & Port B Configuration** screen will be shown on the **Main Display Screen** located on the right side of DApps-TAP' main window, allowing you to make settings for NuDOG-301C /801/802/101T ports.

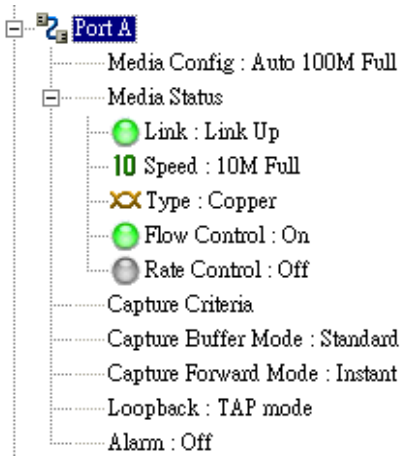
Those settings include the **Media Type**, **Capture Criteria**, **Loopback** and **Alarm** related to 

.

For more detail description about **Port A & Port B Configuration**, please refer to **7.2.5. Port AB**.



7.3.3. Port A / Port B



7.3.3.1. Media Type, Capture Criteria, Loopback and Alarm

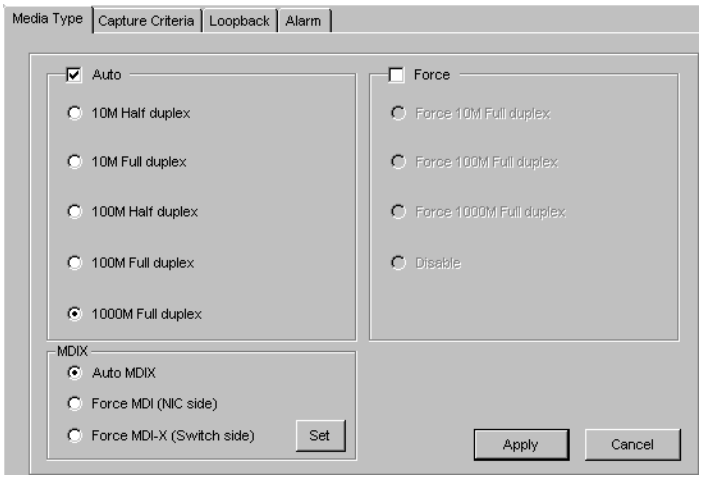
By clicking the **Port A** or **Port B** on the **System Info/Configuration List**, the **Port A** or **Port B Configuration** screen will be shown on the **Main Display Screen** located on the right side of DApps-TAP' main window, allowing you to make settings for NuDOG-301C /801/802/101T ports.

Those settings include the **Media Type**, **Capture Criteria**, **Loopback** and **Alarm** related to 

and 

. Besides, the change on the status of **Media Type**, **Capture Criteria**, **Loopback** and **Alarm** are also shown in the **System Info/Configuration.**

For more detail description about **Port A or Port B Configuration**, please refer to **7.2.5. Port AB**.

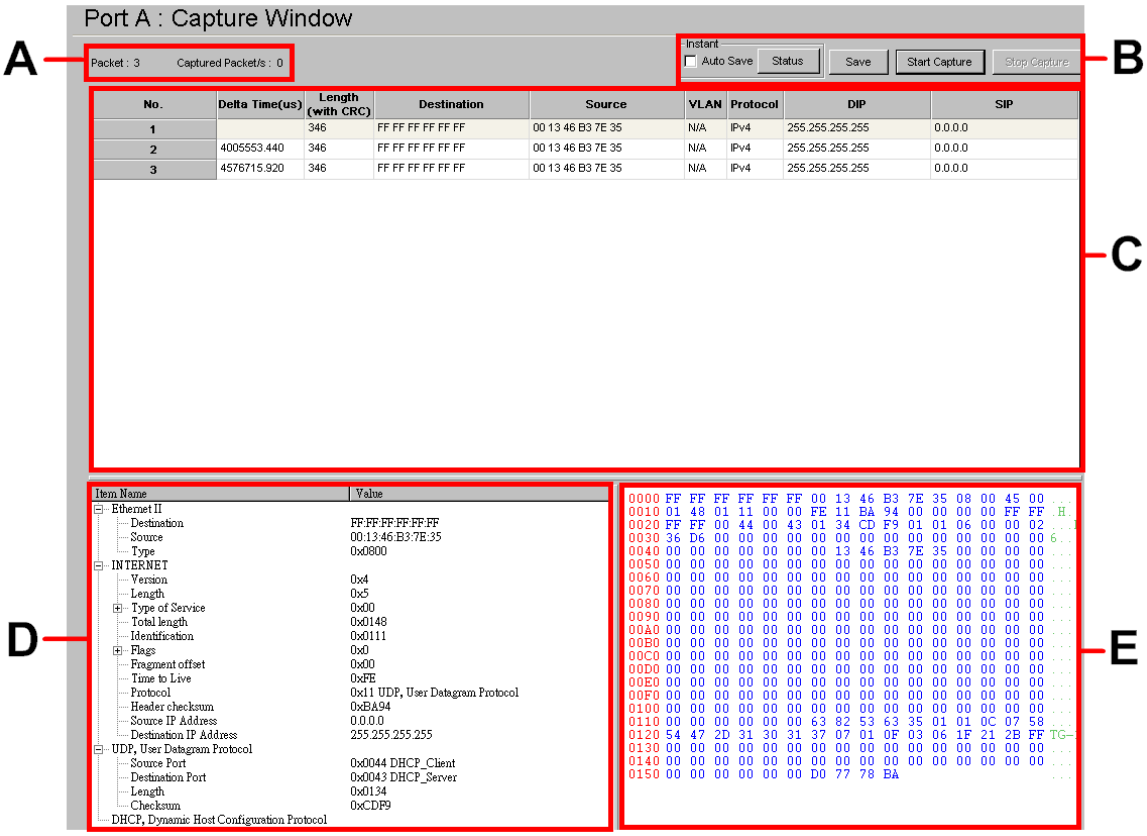


7.3.3.2. Media Status

By clicking the **Media Status** on the **System Info/Configuration List**, it will show the status of **Link**, **Speed**, **Mode**, **Type**, **Flow Control and Rate Control**.

Link	Link Up
Speed	10M
Mode	Full-dulpex
Type	Copper
Flow Control	On
Rate Control	Off

7.3.3.3. Capture Buffer Mode and Capture Forward Mode



A: This field shows the number of packets and number of captured packets.

B: If you set **Capture Forward Mode** under **Instant** mode, this field will be available for settings:

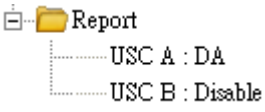
- You can enable **Auto Save** by clicking the check box, and see the status of captured packets on a designated folder by clicking **Status** button. Or you can save the instant status by clicking the **Save button**.
- You can also initiate the packets capture operation by clicking **Start Capture** button, and stop the packets capture operation by clicking the **Stop Capture** button.

C: In this field, you can check the status of each captured packet based on the order of packet (**No.**), **Delta Time(us)**, **Length(with CRC)**, **Destination/Source** MAC address, **VLAN**, **Protocol** and **Destination/Source IP**.

D: This field shows the packet/frame view items, such as Ethernet II. User can click ⊞ to expend the sub-tree on the **Item Name** column, and see the value of network frame on the **Value** column.

E: Shows the data based on the field **C**.

7.3.4. Report: USC A/B



The **Report** shows the **Rule** chosen on the **Stream Counter Mode** settings for each **USC A** and **USC B**. Please refer to the **7.2.3. USC A & USC B** for more details.

7.4. Control Buttons/ Operating Status Icon

7.4.1. For TAP mode

The **Control Buttons** allow you to start/stop tasks, and the **Operating Status Icon** indicates if there's a task running.

Control Buttons	
	Start task
	Stop task

Operating Status Icon	
	Not operating
	Operating

7.4.2. For Layer 1/Layer 2 Loopback mode and Single-End mode

The **Control Buttons** allow you to start/stop tasks, and the **Operating Status Icon** indicates if there's a task running.

Control Buttons	
	Start task
	Stop task

Operating Status Icon	
	Not operating
	Operating

8. Appendix – Other Utility Softwares for NuDOG-301C/801/802/101T

There are several other optional utility softwares for NuDOG-301C/801/802/101T for different kinds of test requirements. The following section contains brief descriptions of these utility softwares.

DApps-2544: Test Suite Based on RFC 2544

DApps-2544 is a user-friendly and automatic test suite based on industry-standard RFC 2544. It generates and analyzes packets to evaluate the Throughput performances, Latency, Packet Loss, and Back-to-Back of Ethernet switches or routers via this device. The real-time test results display and customized report provides an effective way when examining the DUT.

DApps-SG: Control Suite for Multiple Streams Generator

DApps-SG provides a powerful and sophisticated virtual front control panel to manage this device. Two test ports can be configured independently with parameters to define multiple streams and capture capabilities. Traffic for various network protocols can be customized, transmitted, and received on each port. Comprehensive statistics give users an in-depth analysis of the DUT performance.

DApps-NIC: Network Interface Card Simulation Suite

NuDOG-301C/NuDOG-801/802/NuDOG-101T has a mini-USB port for PC connection. In addition to network TAP, system control and system upgrade functions.
NuDOG-301C/NuDOG-801/802/NuDOG-101T can also be used as a network interface card. With control software and NuDOG-301C/NuDOG-801/802/NuDOG-101T's hardware conversion, network data streams can flow between NuDOG-301C/NuDOG-801/802/NuDOG-101T's USB and network port.

DApps-2889: Test Suite Based on RFC 2889

DApps-2889 is a user-friendly and automatic test suite based on industry-standard RFC 2889 (partial) to test the DUT. RFC 2889 provides methodology for benchmarking for local area network (LAN) switching devices, forwarding performance, congestion control, latency, address handling and filtering. It extends the methodology already defined for benchmarking network interconnecting devices in RFC 2544.