

**xtramus**

**DApps-2544**  
**User's Manual**



## Foreword

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## Revision History

Date	Version	History
2011/05/03	1.0	First draft version
2012/07/30	1.1	<ol style="list-style-type: none"><li>1. Add NuDOG-801's descriptions. (Page 5, 28, 31, 34)</li><li>2. Renew NuDOG-301C/101T/801's descriptions. (Page 6-20)</li><li>3. Modify NuDOG-301C's figures. (Page 27, 29, 30, 42)</li><li>4. Modify figures for Port Configuration. (Page 38)</li><li>5. Modify figures for Test Configuration. (Page 41)</li><li>6. Modify figures for Report. (Page 52)</li></ol>
2012/09/10	1.2	<ol style="list-style-type: none"><li>1. Deleting the description of DApps-2544 supports operation system Windows 2000.(Page 5)</li></ol>
2018/02/06	1.3	<ol style="list-style-type: none"><li>1. Modify NuDOG-101T speed LED description.(Page 20)</li></ol>
2020/09/22	1.4	<ol style="list-style-type: none"><li>1. Add note about connect device to PC.</li><li>2. Add NuDOG-802.</li></ol>



## Table of Contents

Foreword.....	1
Revision History .....	2
1. General Descriptions of NuDOG-301C.....	4
2. NuDOG-301C Description .....	5
2.1. NuDOG-301C Overview .....	5
2.2. Features & Advantages of NuDOG-301C .....	6
2.3. NuDOG-301C Applications in Different Modes .....	6
2.4. NuDOG-301C Interface Ports .....	8
2.5. NuDOG-301C LED Status .....	9
3. NuDOG-801 Descriptions.....	10
3.1. NuDOG-801 OVERVIEW .....	10
3.2. Features & Advantages of NuDOG-801 .....	11
3.3. NuDOG-801 Applications in Different Modes.....	11
3.4. NuDOG-801 Interface Ports.....	13
3.5. NuDOG-801 LED Status.....	14
4. NuDOG-101T Descriptions.....	15
4.1. NuDOG-101T OVERVIEW .....	15
4.2. Features & Advantages of NuDOG-101T .....	16
4.3. NuDOG-101T Applications in Different Modes .....	16
4.4. NuDOG-101T Interface Ports.....	18
4.5. NuDOG-101T LED Status.....	19
5. Software Installation and Uninstallation for DApps-2544 .....	20
6. DApps-2544 Overview .....	26
6.1. Hardware Installation.....	26
6.2. Starting DApps-2544.....	26
6.3. DApps-2544 Test Modes & Hardware Installation Examples .....	28
6.4. DApps-2544/NuServer Main Window Overview .....	30
6.5. Menu Bar .....	31
6.5.1. File .....	31
6.5.2. View .....	31
6.5.3. Language.....	32
6.5.4. Help.....	32
6.6. Tool Bar .....	33
6.7. System Info/Configuration List.....	34
6.8. Elapsed Time.....	35
6.9. Description.....	36
6.10. Status Bar.....	36
6.11. Control Buttons/Test Running Status Icon .....	36
7. Port Configuration and Test Configuration .....	37
7.1. Port Configuration .....	37
7.2. Test Configuration .....	40
7.2.1. Test Configuration Overview .....	42
7.2.2. Throughput Test .....	43
7.2.3. Latency Test.....	45
7.2.4. Packet Loss Test.....	47
7.2.5. Back to Back Test .....	49
7.3. Report.....	51
8. Appendix – Other Utility Softwares for NuDOG series .....	54



# 1. General Descriptions of DApps-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.

Devices Supporting DApps-2544		
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-2544.

OS	Windows XP	Windows Vista/7/8/10
CPU	Pentium 1.3 GHz or higher	
RAM	512MB RAM	1GB RAM
HDD	10GB of available hard disk space	

**\* Note: Large amount of data will be generated while running DApps-2544. 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-301C**, **NuDOG-801/802**, and **NuDOG-101T**.



## 2. NuDOG-301C Description

### 2.1. NuDOG-301C Overview

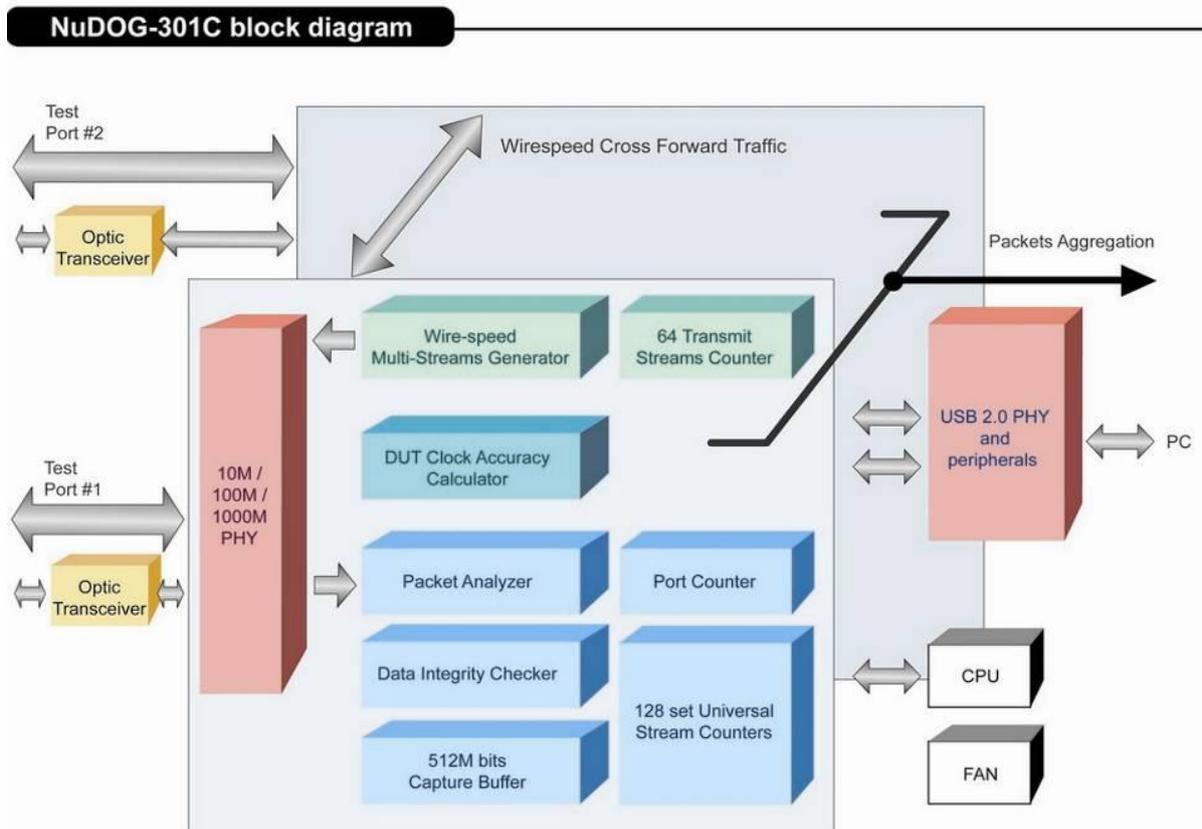
NuDOG-301C is a handheld device with two Gigabit ports for Ethernet testing. The main functions of NuDOG-301C include multi-streams generation, TAP/Loopback test, and NIC emulation.

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 2889. 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.



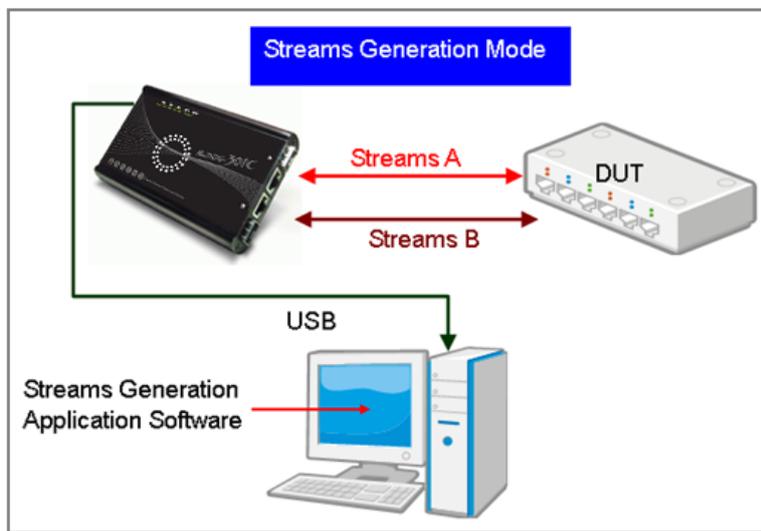


## 2.2. Features & Advantages of NuDOG-301C

- 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

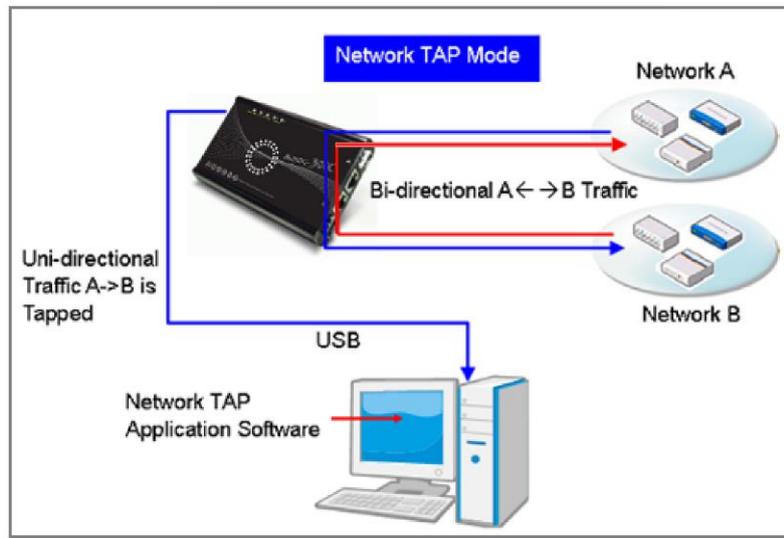


In Streams Generation mode, NuDOG-301C generates bi-directional network streams for test requirements as the illustration above.

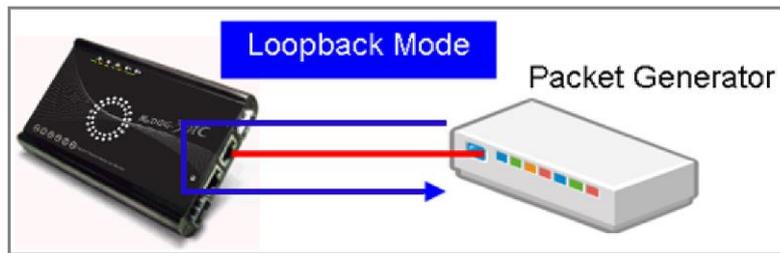
Both NuDOG-301C's Port A and Port B can generate and receive test streams. The test streams are sent and returned to the same NuDOG-301C for DUT (device under test) analysis.



## TAP/Loopback Mode



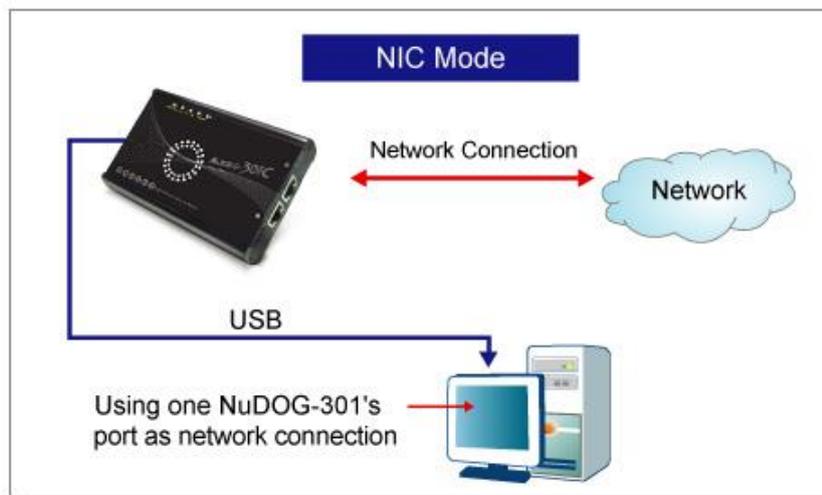
TAP Mode



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.

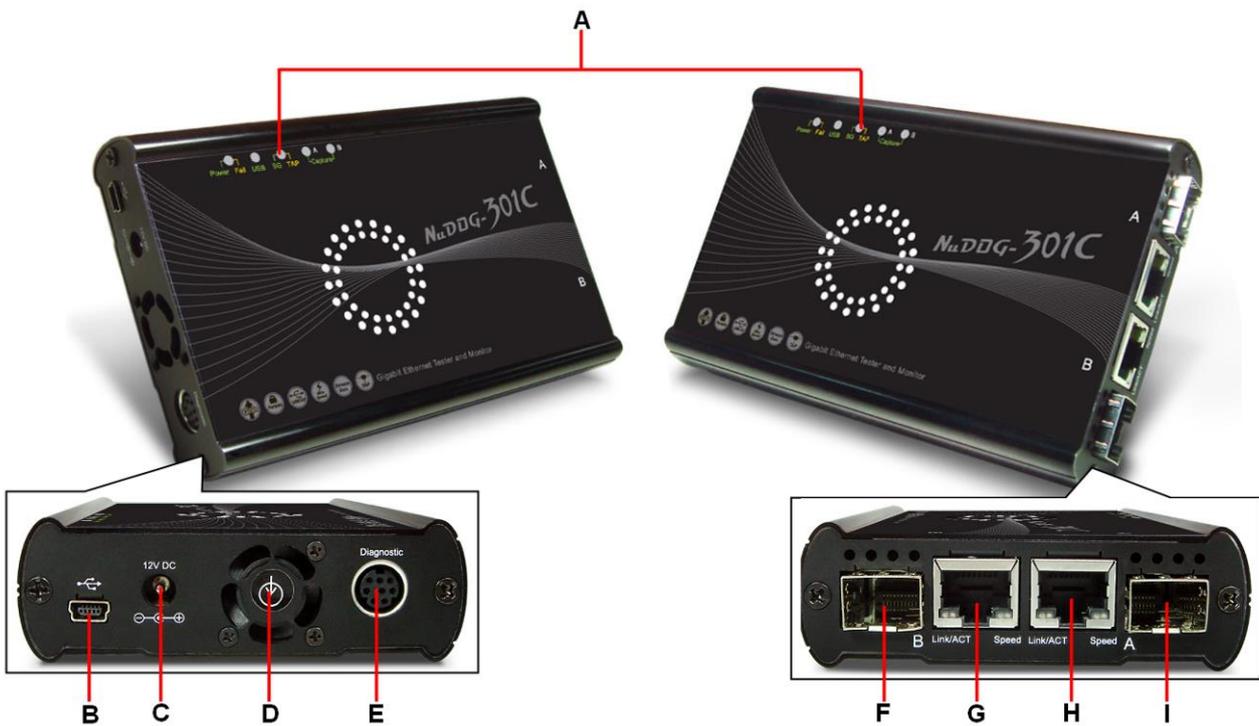
## NIC Mode



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



## 2.4. NuDOG-301C Interface Ports



### NuDOG-301C Hardware Overview

<b>A</b>	<b>LEDs</b>	LEDs that displays NuDOG-301C's status.	
<b>B</b>	<b>Mini-USB Port*</b>	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.	
<b>C</b>	<b>Power Jack</b>	12V DC Power Jack for connecting external power adapter.	
<b>D</b>	<b>Cooling FAN</b>	Fan hole with internal fan for ventilation.	
<b>E</b>	<b>Diagnostic Port</b>	8-Pin Mini-DIN Receptacle Diagnostic Port	
<b>F</b>	<b>Port B - SFP Port</b>	1000 Mbps Full Duplex SFP Port B	Only one port can be used at the same time.
<b>G</b>	<b>Port B - RJ45 Port</b>	10/100/1000 Mbps Half/Full RJ45 Port B	
<b>H</b>	<b>Port A - SFP Port</b>	1000 Mbps Full Duplex SFP Port A	Only one port can be used at the same time.
<b>I</b>	<b>Port A - RJ45 Port</b>	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	<b>Green Blinking</b>	Power is ON and working properly
	<b>Yellow Blinking</b>	System failed
USB	<b>Green Blinking</b>	USB of this device is linked to PC
SG/TAP	<b>Green</b>	NuDOG-301C is working under Stream Generation Mode
	<b>Yellow</b>	NuDOG-301C is working under TAP Mode
	<b>OFF</b>	NuDOG-301C is working under NIC (Network Interface Card) mode
Capture A/B	<b>Green</b>	Port A/B is under Capturing Mode
Link/ACT	<b>Green ON</b>	The RJ45 Port is connected to DUT/Network
	<b>Green Blinking</b>	NuDOG-301C is transmitting or receiving data
Speed	<b>Green ON</b>	1000Mbps connection
	<b>Green Blinking</b>	100Mbps connection
	<b>OFF</b>	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.

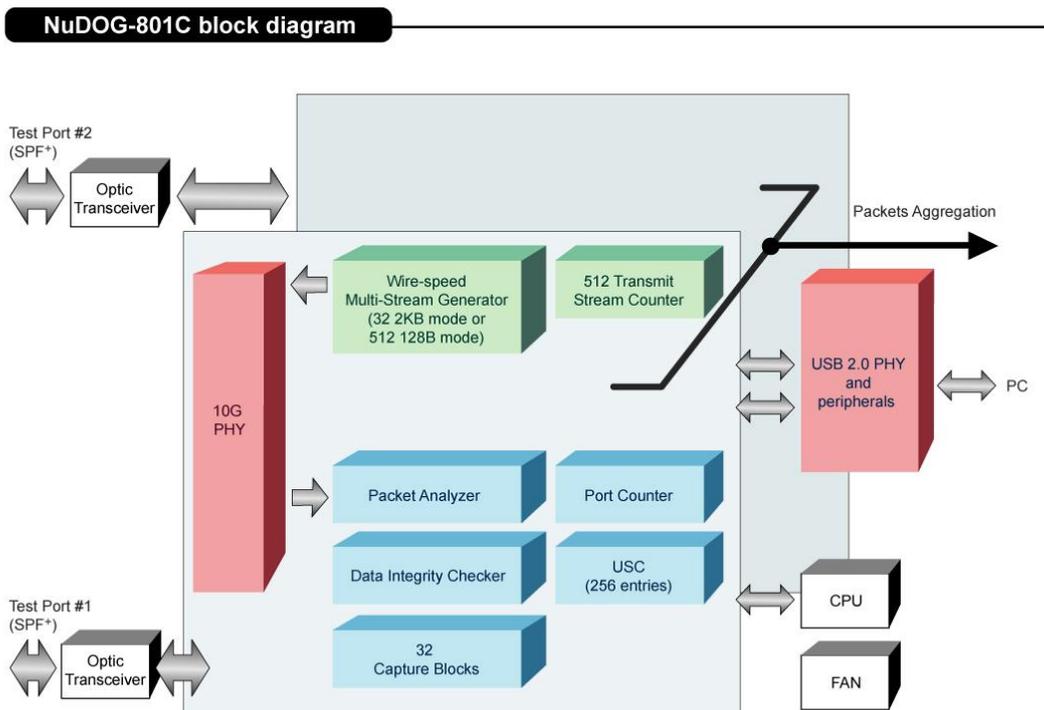


Connecting NuDOG-801/802 to its Standard-B Receptacle USB Port makes it possible for system configurations and managements. NuDOG-801/802 is an ideal device for in-field testing.

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.



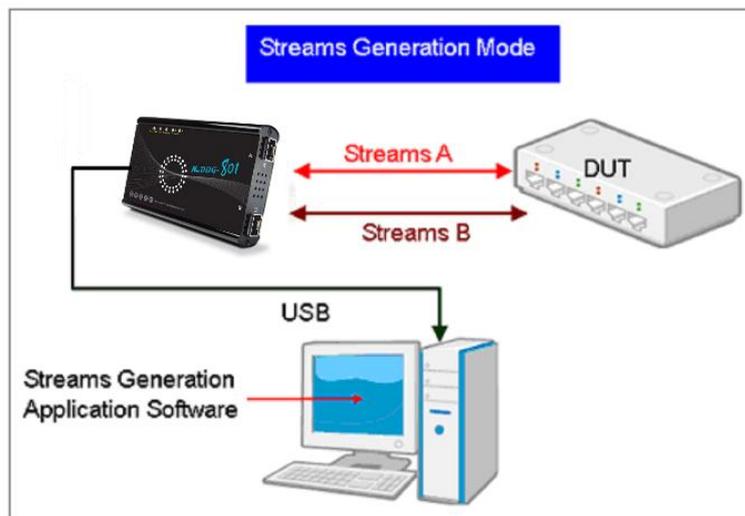


### 3.2. Features & Advantages of NuDOG-801/802

- 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

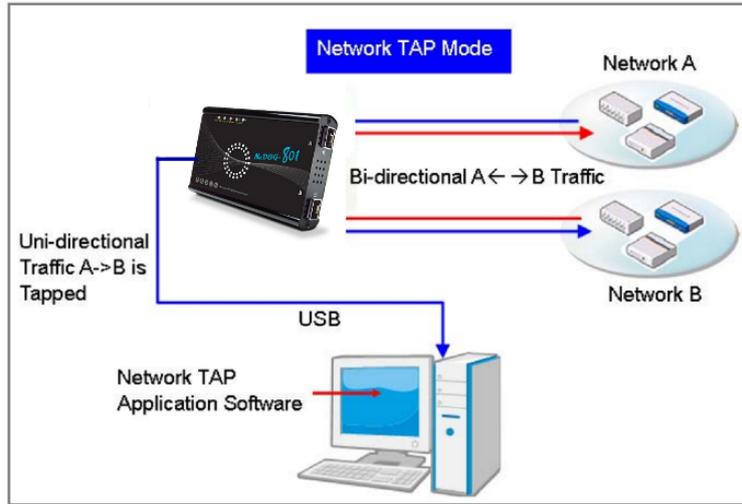


In Streams Generation mode, NuDOG-801/802 generates bi-directional network streams for test requirements as the illustration above.

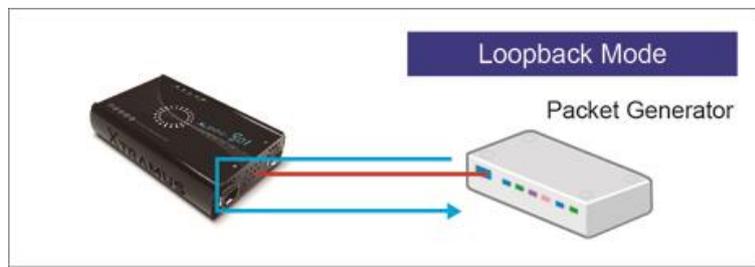
Both NuDOG-801/802's Port A and Port B can generate and receive test streams. The test streams are sent and returned to the same NuDOG-801/802 for DUT (device under test) analysis.



## TAP/Loopback Mode



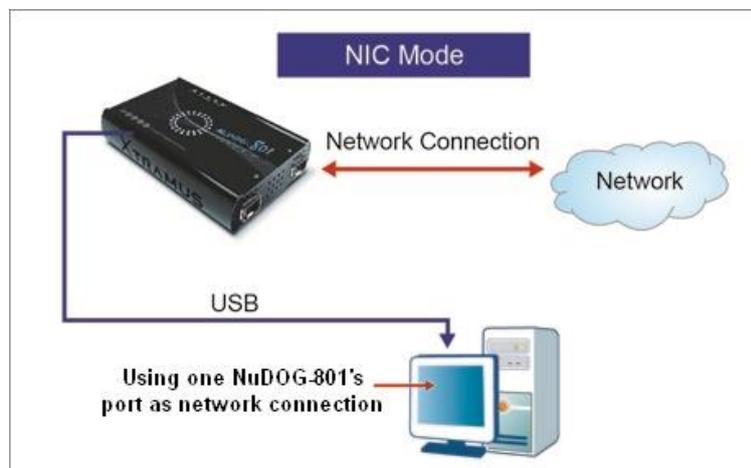
**TAP Mode**



**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		
<b>A</b>	<b>LEDs</b>	LEDs that displays NuDOG-801/802's status.
<b>B</b>	<b>Mini-USB Port*</b>	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.
<b>C</b>	<b>Power Jack</b>	12V DC Power Jack for connecting external power adapter.
<b>D</b>	<b>Cooling FAN</b>	Fan hole with internal fan for ventilation.
<b>E</b>	<b>Diagnostic Port</b>	8-Pin Mini-DIN Receptacle Diagnostic Port
<b>F</b>	<b>10 Gigabit Wirespeed SFP+ Port</b>	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 RJ45 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

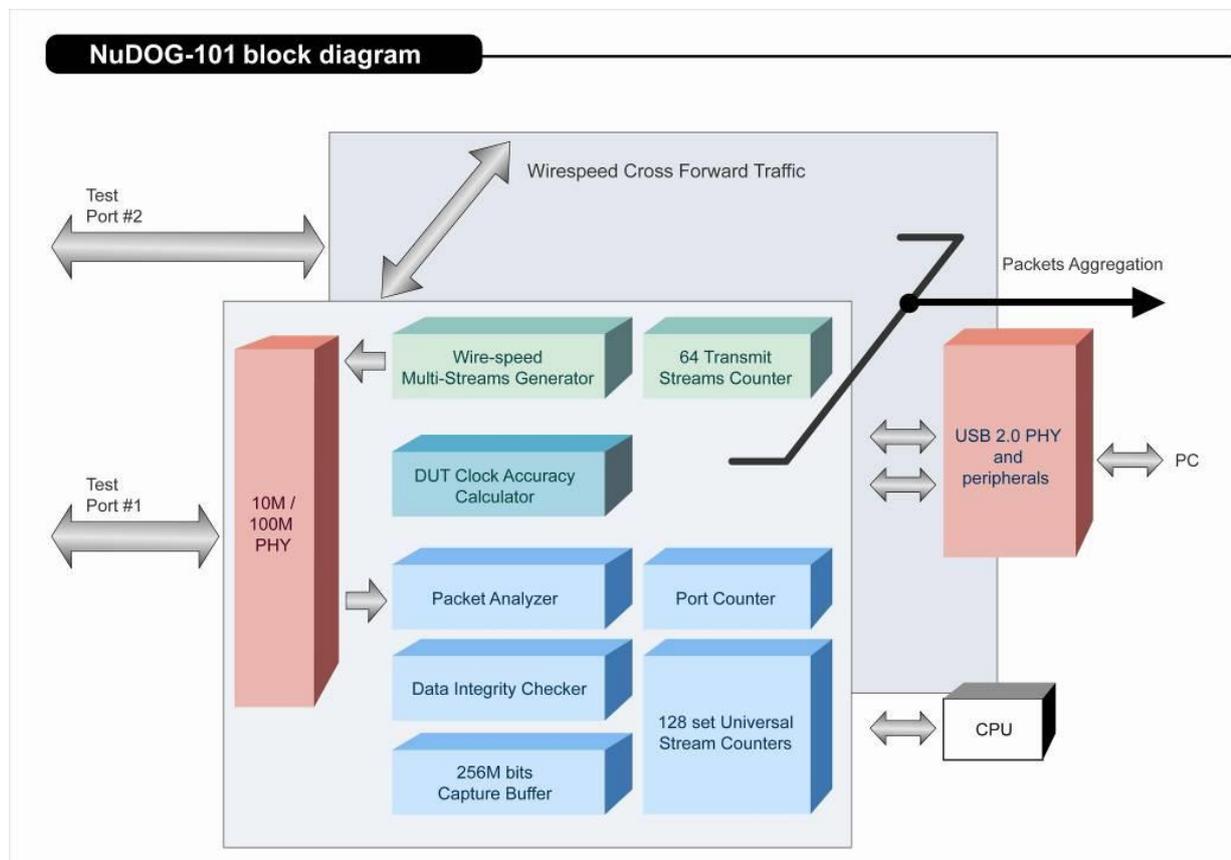
NuDOG-101T is a handheld device with two ports for Ethernet testing. The main functions of NuDOG-101T include multi-streams generation, TAP/Loopback test, and NIC emulation.

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.



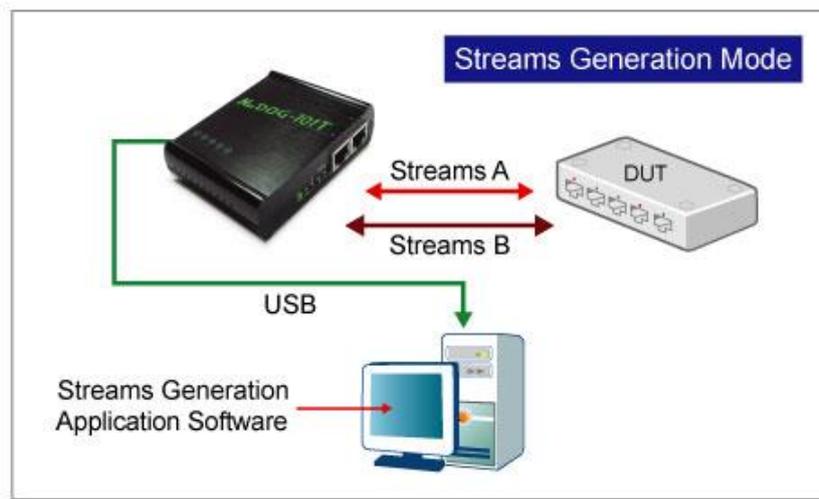


## 4.2. Features & Advantages of NuDOG-101T

- 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

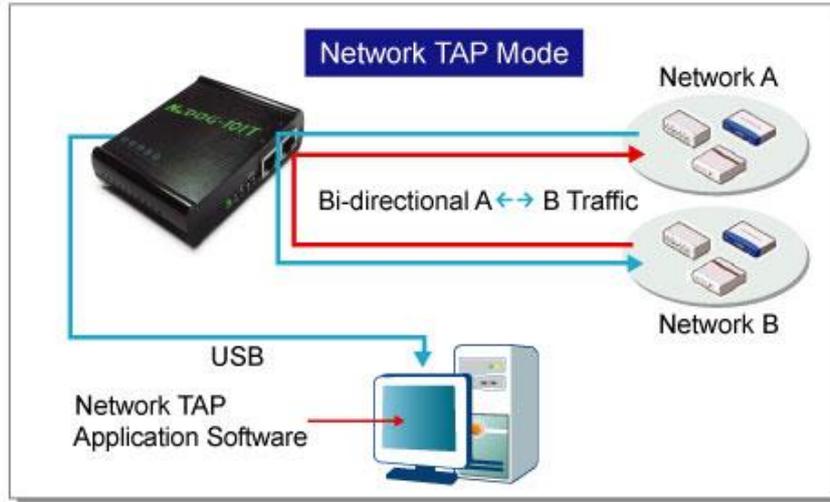
### Stream Generation Mode



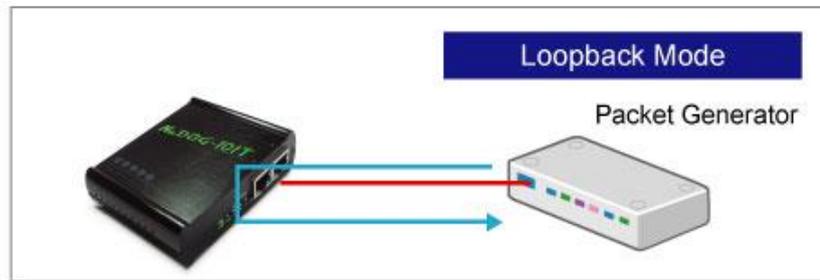
In Streams Generation mode, NuDOG-101T generates bi-directional network streams for test requirements as the illustration above.

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**



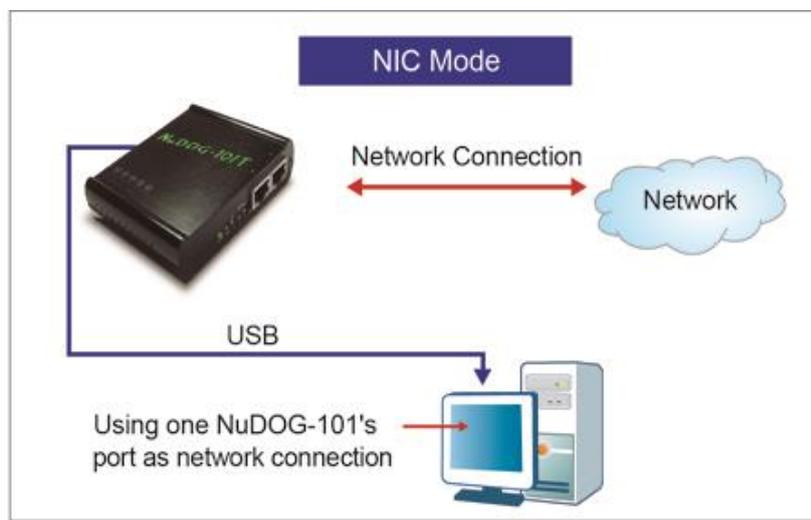
**TAP Mode**



**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	
<b>A</b>	Mini-USB Port for connecting NuDOG-101T to PC or for power supply.
<b>B</b>	LEDs that display NuDOG-101T's system status.
<b>C</b>	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

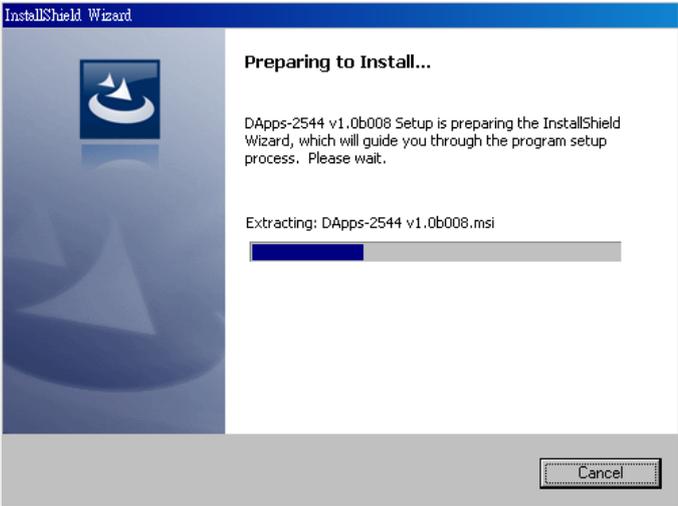


LED	Status	Description
Power	Green Blinking	Power is ON and working properly
	Yellow Blinking	System failed
USB	Green Blinking	USB of this device is linked to PC
PG/TAP	Green	NuDOG-101T is working under Packet Generation Mode
	Yellow	NuDOG-101T is working under TAP Mode
	OFF	NuDOG-101T is working under 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



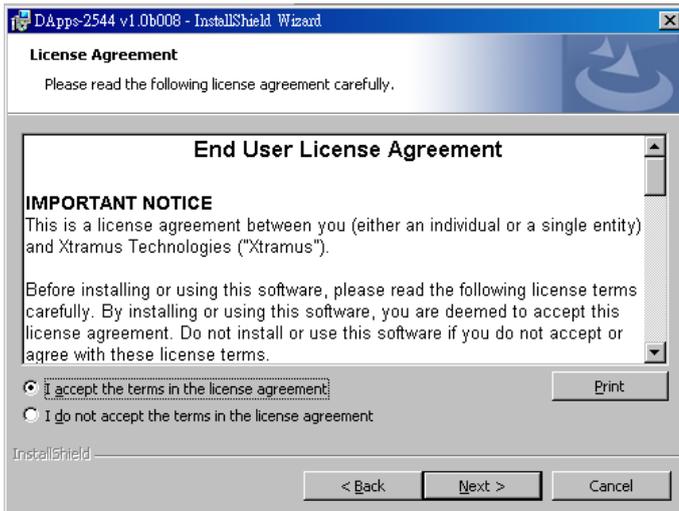
## 5. Software Installation and Uninstallation for DApps-2544

Please follow the steps down below to install DApps-2544:

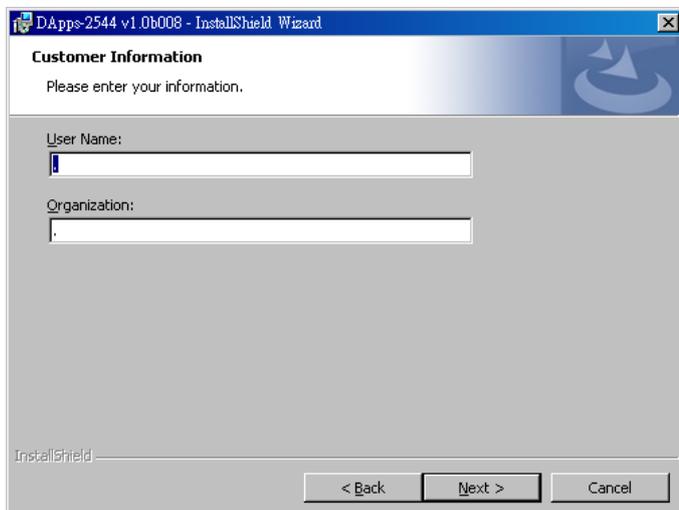
Installing DApps-2544	
 <p>DApps-2544 v1.0b008</p>	<ol style="list-style-type: none"><li>1. Double-click DApps-2544 installation program and start the installation process.</li></ol>
	<ol style="list-style-type: none"><li>2. InstallShield Wizard is starting to install DApps-2544. If you would like to cancel installation, click "<b>Cancel</b>".</li></ol>
	<ol style="list-style-type: none"><li>3. Click "<b>Next</b>" to continue installation.</li></ol>



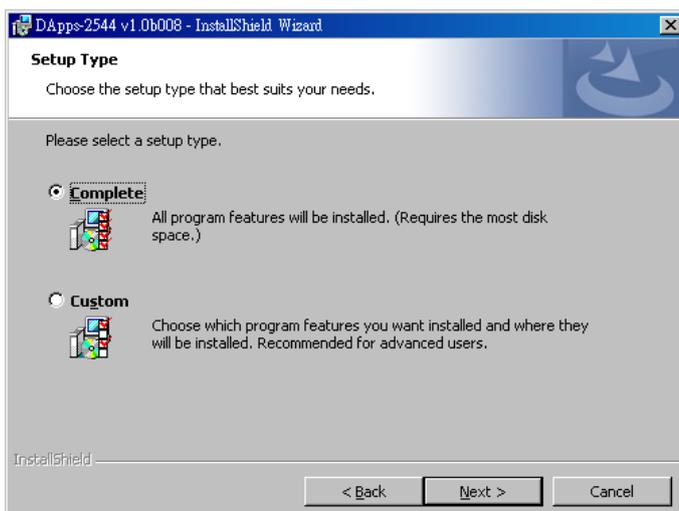
## Installing DApps-2544



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



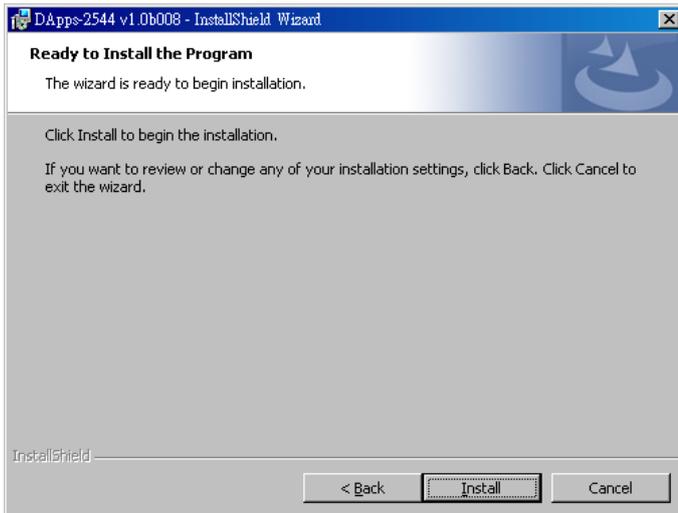
5. You can set your **User Name** and **Organization** here, and click “Next” to continue.



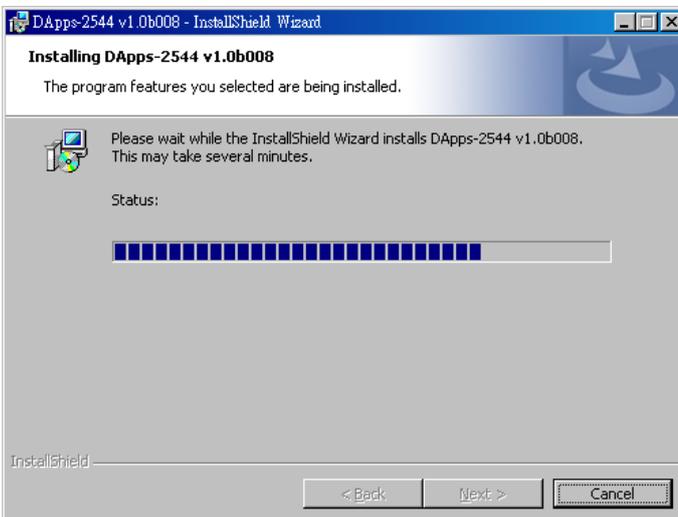
6. You can select the **Complete** option to install all program feature for running DApps-2544, or select **Custom** option to choose the program feature to be installed.



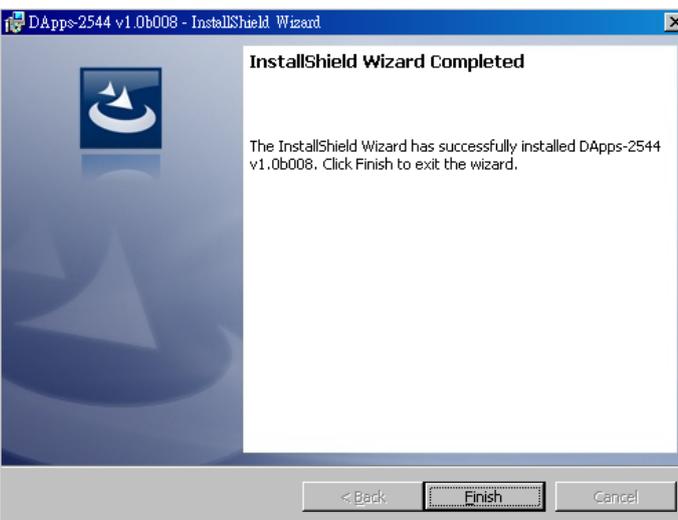
## Installing DApps-2544



7. DApps-2544 InstallShield Wizard will start installing momentarily. Click **Install** button if the information is correct.



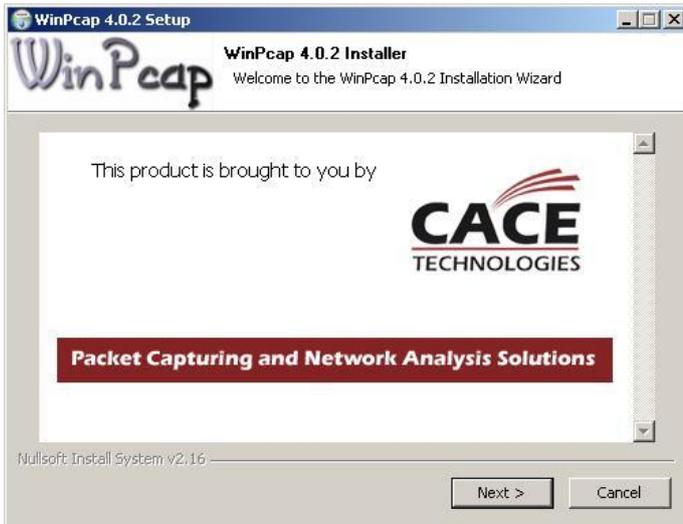
8. InstallShield Wizard is installing DApps-2544.



9. DApps-2544 installation completes. Click **Finish** button to exit.



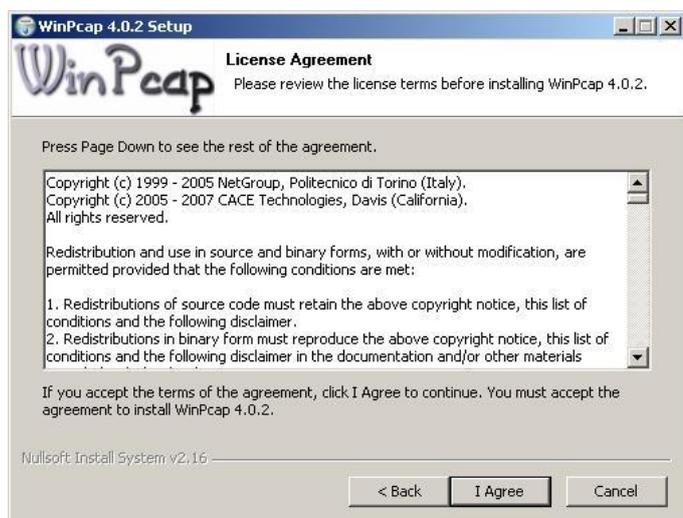
## Installing DApps-2544



10. WinPcap Installer appears. Click **Next** button to get ready to install, or click **Cancel** button to stop.



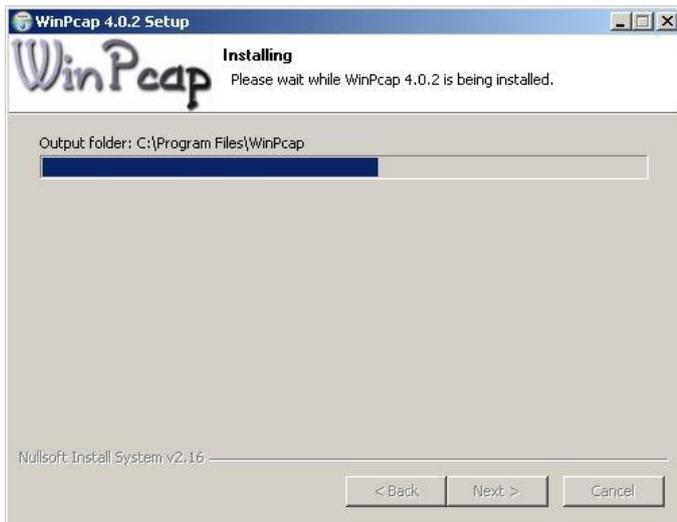
11. WinPcap is preparing to install, or click **Cancel** button to stop at any time.



12. Review the license agreement before installing. Click **I Agree** button to continue. It is necessary to accept the agreement to install WinPcap.



## Installing DApps-2544



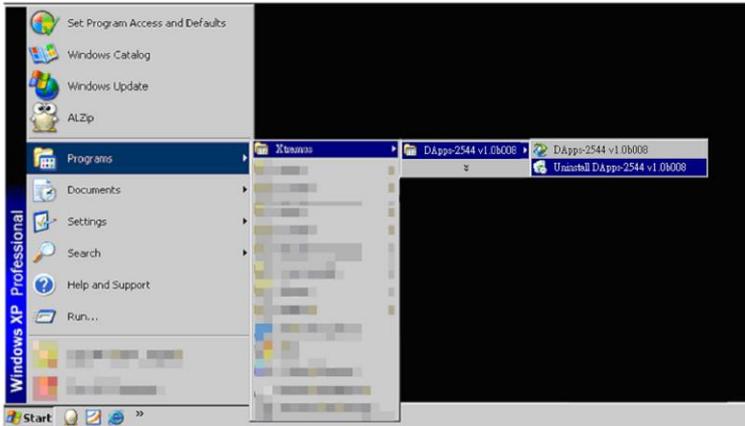
13. WinPcap is installing.



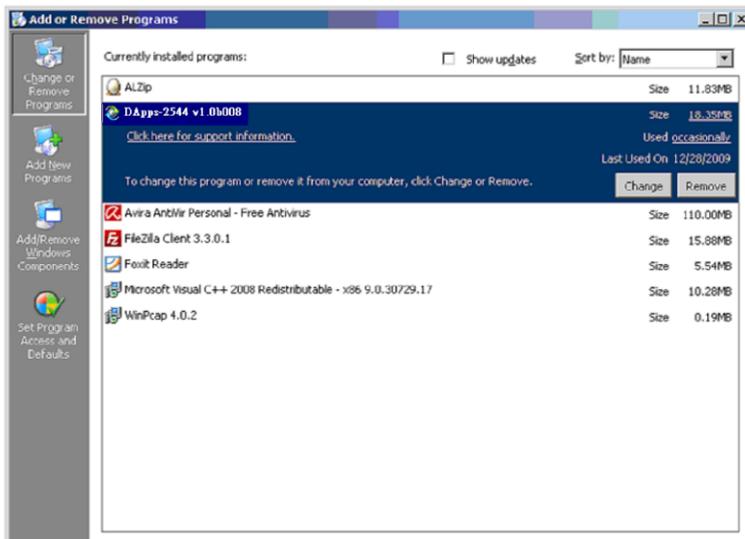
14. WinPcap installation completes. Click **Finish** button to close the wizard.



## You can uninstall DApps-2544 by:



- Click Start → Programs → Xtramus → DApps-2544 → Uninstall DApps-2544



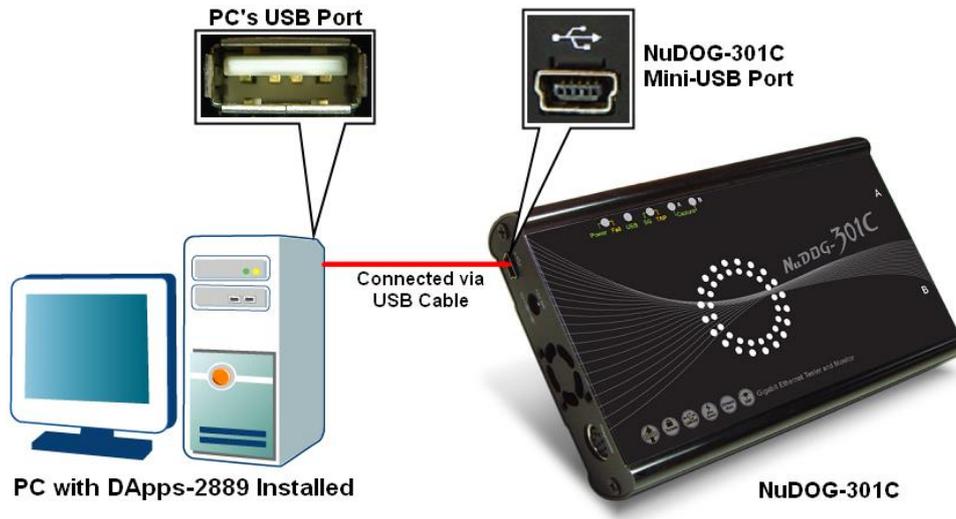
- Go to the Control Panel, choose DApps-2544 from installed program list, and click **Remove** to uninstall as well.



## 6. DApps-2544 Overview

### 6.1. Hardware Installation

Before starting DApps-2544, 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-801/802 and NuDOG-101T with PC in the same manner, but **DO NOT connect NuDOG-301C or NuDOG-801/802 with PC before the device is powered on.**

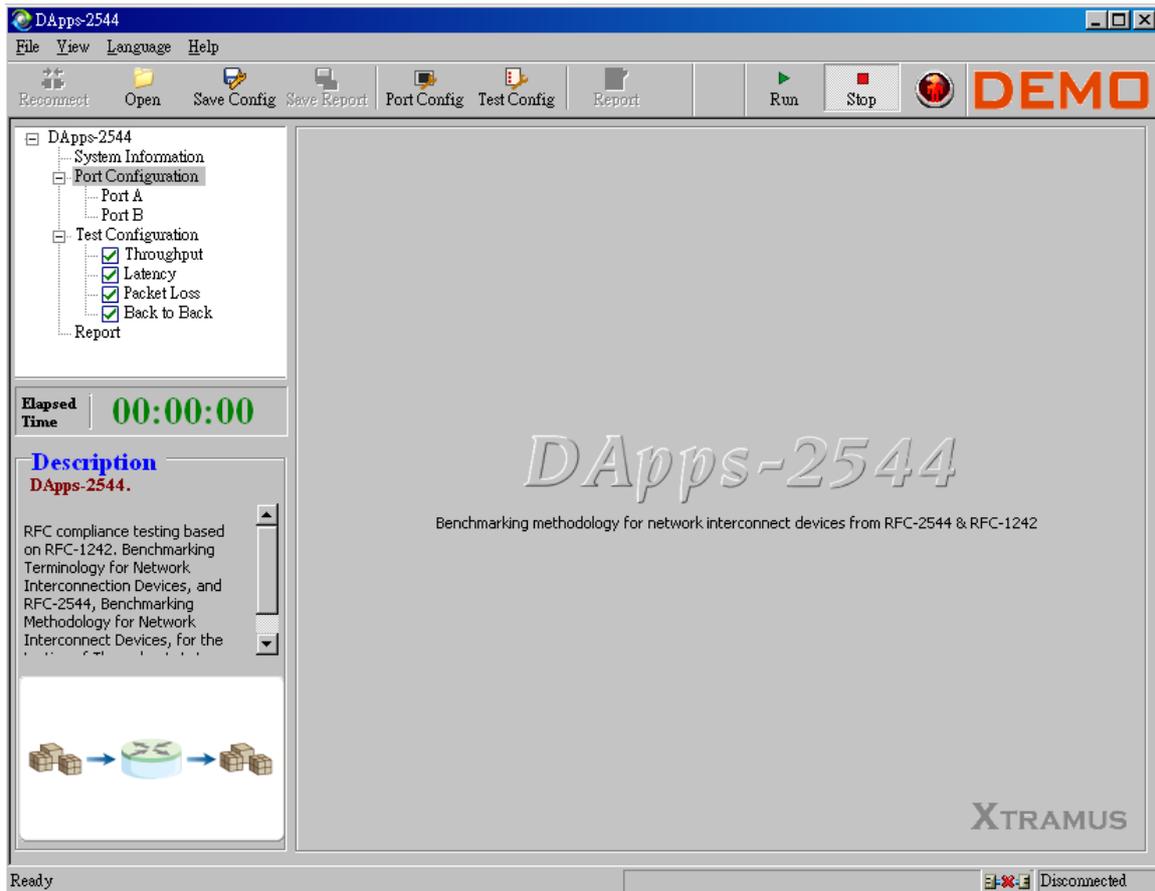


### 6.2. Starting DApps-2544

Before starting DApps-2544, the DUT, your PC, and NuDOG-301C/801/802/101T shall be connected as shown in "6.1. Hardware Installation".

**You can start running DApps-2544 by:**

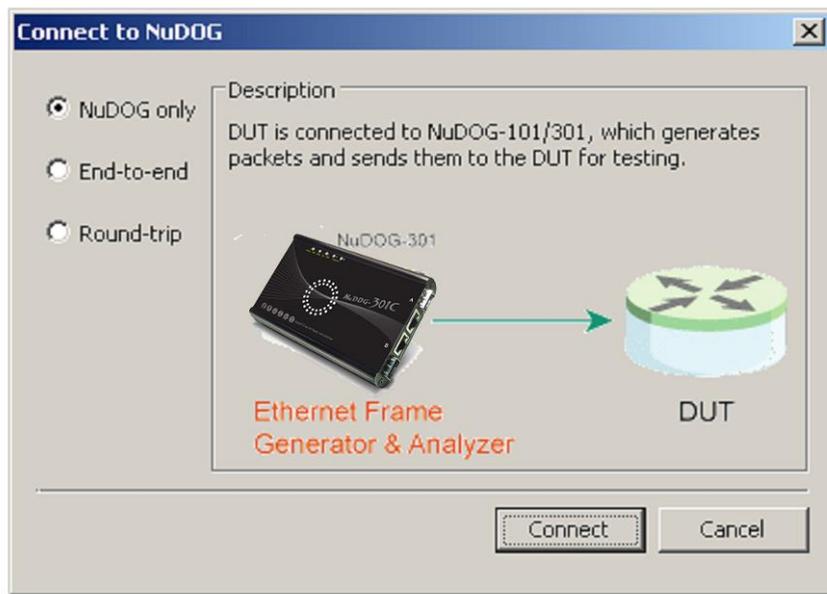
	<p>➤ Click Start → Programs → NuStreams → DApps-2544.</p>
	<p>➤ Double-click DApps-2544 icon located on your PC's desktop.</p>



If your PC is not connected with NuDOG-101T/801/802/301C, you can still run DApps-2544 under Demo mode. Almost all DApps-2544'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.

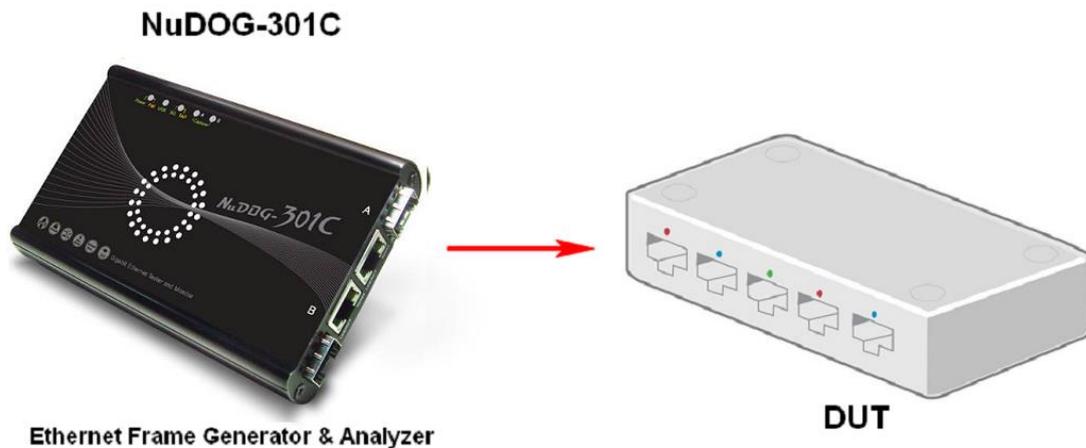


### 6.3. DApps-2544 Test Modes & Hardware Installation Examples



After starting DApps-2544 as mentioned in the above section, a “**Connect to NuDOG**” window will pop up. DApps-2544 supports 3 different test modes: **NuDOG Only Mode**, **End-to-end Mode**, and **Round-trip Mode**. Please see the section down below for more information and hardware installation examples regarding to these test modes.

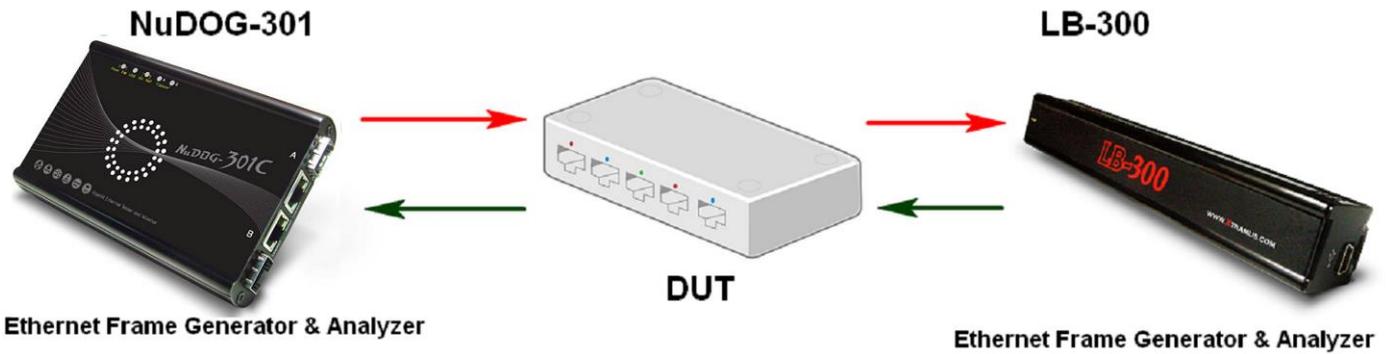
#### NuDOG Only Mode



Under "NuDOG Only" mode, DUT is connected to NuDOG-301C, which generates packets and sends them to the DUT for testing.

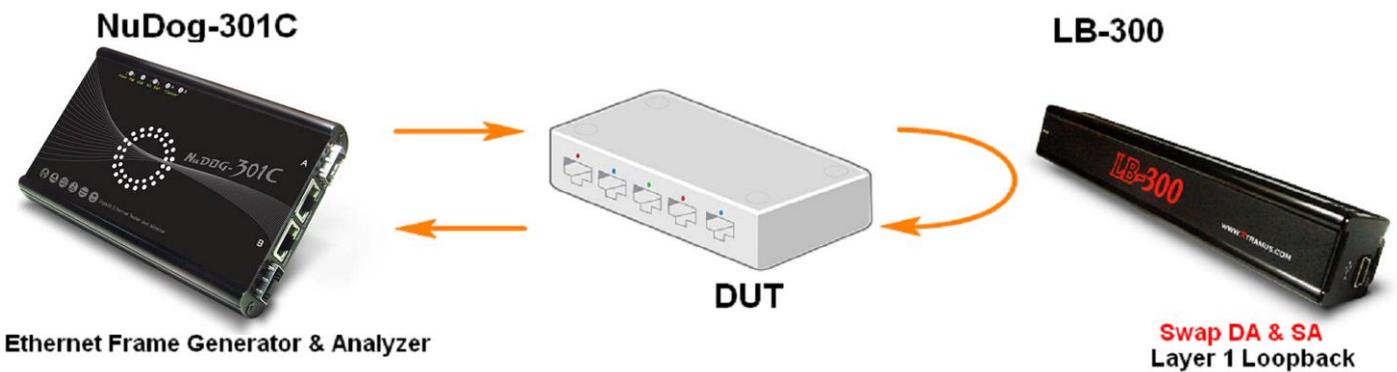


### End-to-end Mode



Under "End-to-end" mode, DUT is connected between NuDOG-301C and LB-300. Test packets are sent between NuDOG-301C and LB-300 in a one-way direction, while the DUT serves as the middle point.

### Round-trip Mode

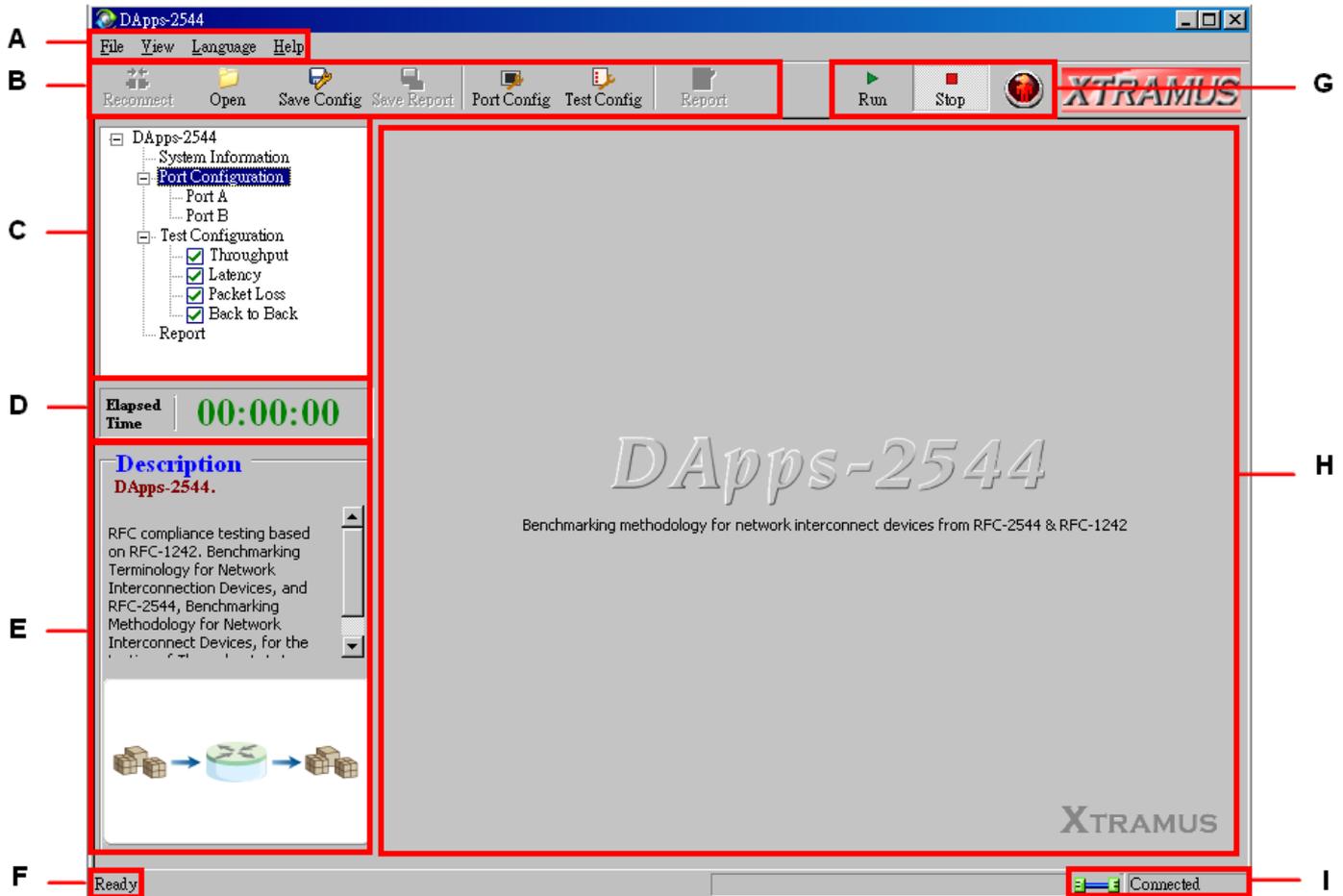


Under "Round-trip" mode, DUT is connected between NuDOG-301C and LB-300. Test packets are sent between NuDOG-301C and LB-300 in a loop-back manner, while the DUT serves as the middle point.



## 6.4. DApps-2544/NuServer Main Window Overview

### DApps-2544 Main Window



### DApps-2544 Functions Overview

<b>A</b>	<b>Menu Bar</b>	The <b>Menu Bar</b> allows you to load/save settings, show or hide the Tool Bar/Status Bar, change language displayed, view the version of the software/NuDOG-301C/801/802/101T and system requirement.
<b>B</b>	<b>Tool Bar</b>	The <b>Tool Bar</b> allows you to reconnect your PC to your NuDOG-301C/801/802/101T, save the configuration, save and show the test report, and configure the port/test settings.
<b>C</b>	<b>System Info/Configuration List</b>	By clicking the <b>System Info/Configuration List</b> , you can view system information, making port/test configurations, or view test reports on <b>H. Main Display Screen</b> .
<b>D</b>	<b>Elapsed Time</b>	The <b>Elapsed Time</b> field displays the elapsed time during test.
<b>E</b>	<b>Description</b>	The <b>Description</b> field display brief descriptions regarding to tests.
<b>F</b>	<b>Status Bar</b>	The <b>Status Bar</b> shows the DApps-2544's running status.
<b>G</b>	<b>Control Buttons/Test Running Status Icon</b>	The <b>Control Buttons</b> allow you to start/stop tests, and the <b>Test Running Status Icon</b> indicates if there's a test running.
<b>H</b>	<b>Main Display Screen</b>	You can make detail configurations and view real-time testing diagrams on the <b>Main Display Screen</b> .
<b>I</b>	<b>System Connection Status</b>	This icon shows the connection status between your PC and NuDOG-301C/801/802/101T.

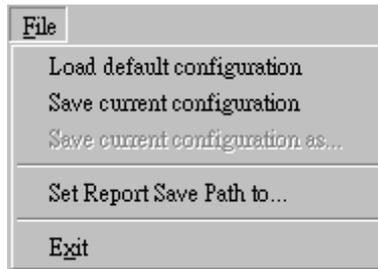


## 6.5. Menu Bar

File View Language Help

DApps-2544 Menu Bar includes configuration options such as **File**, **View**, **Languages**, and **Help**. Please refer to the sections down below for detail information regarding to each configuration option.

### 6.5.1. File



File	
<b>Load default configuration</b>	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 <b>Load default configuration</b> . All configuration files are saved in the format of <b>"*.xml"</b> .
<b>Save current configuration</b>	The <b>Save current configuration</b> function on the <b>Menu Bar</b> allows you to save the settings you've made. Configuration files are saved in the format of <b>"*.xml"</b> .
<b>Set Report Save Path to...</b>	To save the test results, choose <b>Set Report Save Path to...</b> from the <b>Menu Bar</b> after performing test, and choose the file path where you would like to save your test results. Test results and related statistic are available and can be viewed with the <b>"*.xls"</b> file you saved this way. Please note that you need Microsoft Excel® to view <b>"*.xls"</b> file.
<b>Exit</b>	A prompt pop-up window will ask if you are sure to exit DApps-2544. Click <b>YES</b> to exit DApps-2544, or click <b>NO</b> to cancel.

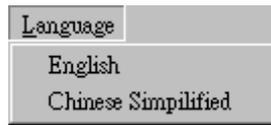
### 6.5.2. View



View	
<b>Toolbar</b>	Selecting this option will allow you to show or hide the <b>Tool Bar</b> .
<b>Status Bar</b>	Selecting this option will allow you to show or hide the <b>Status Bar</b> .

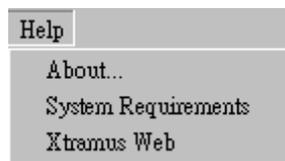


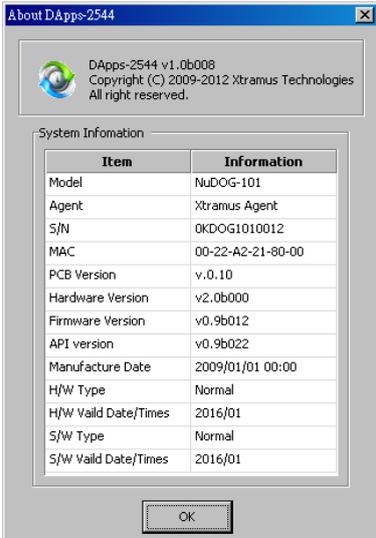
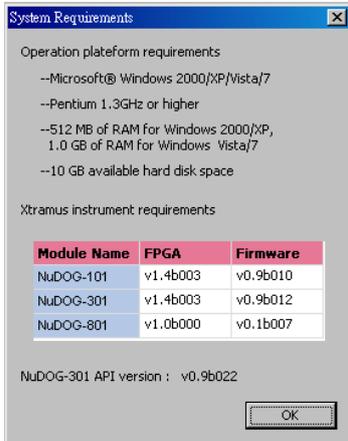
### 6.5.3. Language



Language	
<b>English/ Chinese Simplified</b>	DApps-2544 has <b>2</b> different languages for its UI available. You can set the language of UI to either <b>English</b> and <b>Simplified Chinese</b> .

### 6.5.4. Help



Help	
<b>About...</b>	 <p>An “<b>About</b>” window will pop up and show detailed system information.</p> <p>Click the <b>OK</b> button to exit the “<b>About DApps-2544</b>” pop-up window.</p>
<b>System Requirements</b>	 <p>A “<b>System Requirements</b>” window will pop up and show the requirements for your PC and the FPGA/Firmware of the module.</p> <p>Click the <b>OK</b> button to exit the “<b>System Requirements</b>” pop-up window.</p>



## 6.6. Tool Bar

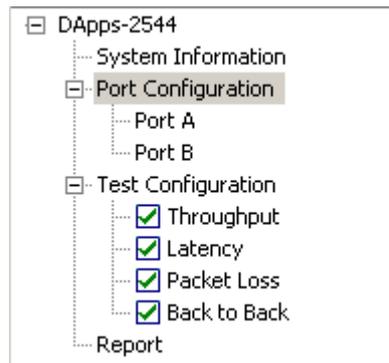


The Tool Bar allows you to load/save configuration, save report, configure port/test settings, reconnect the NuDOG-301C/NuDOG-801/802/NuDOG-101T to your PC and see test report.

Tool Bar	
 <p>Reconnect</p>	<p>If the USB connection between your PC and NuDOG-301C/NuDOG-801/802/NuDOG-101T is down, a “<b>Disconnected</b>” icon  Disconnected will be shown in “<b>System Connection Status</b>”.</p> <p>Press <b>Reconnect</b> button  to re-establish the connection between your PC and NuDOG-301C/NuDOG-801/802/NuDOG-101T. If the connection has been established successfully, a message window will pop up, and the “<b>System Connection Status</b>” will be shown as “<b>Connected</b>” .</p>
 <p>Open</p>	<p>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 clicking the “<b>Open</b>” button on the <b>Tool Bar</b>. All configuration files are saved in the format of “<b>*.xml</b>”</p>
 <p>Save Config</p>	<p>The <b>Save Config</b> button on the <b>Tool Bar</b> allow you to save the settings you’ve made. Configuration files are saved in the format of “<b>*.xml</b>”.</p>
 <p>Save Report</p>	<p>The <b>Save Report</b> button on the <b>Tool Bar</b> allow you to save the test results. To save the test results, <b>click the “Save Report” button on the Tool Bar after performing tests</b>, and choose the file path where you would like to save your test results. By default, these test results are named with a prefix of “<b>RFC 2544TestResult</b>”, and following by the date/time when the file are created. Test results and related statistic are available and can be viewed with the “<b>*.xls</b>” file you saved this way. Please note that you need Microsoft Excel® to view “<b>*.xls</b>” file.</p>
 <p>Port Config</p>	<p>By clicking the <b>Port Config</b> button, the <b>Port Configuration</b> screen will be shown on the <b>Main Display Screen</b> located on the right side of DApps-2544’s main window, allowing you to make settings for NuDOG-301C/NuDOG-801/802/NuDOG-101T’s ports. Settings such as port transmitting rate, auto-negotiation, and protocol are available and can be set here.</p> <p>For more detail description about <b>Port Configuration</b>, please refer to <b>7.1. Port Configuration</b>.</p>
 <p>Test Config</p>	<p>By clicking the <b>Test Config</b> button, the <b>Test Configuration</b> screen will be shown on the <b>Main Display Screen</b> located on the right side of DApps-2544’s main window, allowing you to make test settings. You can set 4 different test modes here, including <b>Throughput, Latency, Packet Loss</b> and <b>Back to Back</b>.</p> <p>For more detail description about <b>Test Configuration</b>, please refer to <b>7.2. Test Configuration</b>.</p>
 <p>Report</p>	<p>Clicking this button will show the test result on the Main Screen.</p>



## 6.7. System Info/Configuration List



The **System Info/Configuration List** allows you to view system information, making port/test configurations, and check test reports on the **Main Display Screen**.

### System Information

System Information	
Model	NuDOG-301C
Agent	Xtramus Agent
S/N	0JDOG3000000
MAC	00-22-A2-00-00-00
PCB Version	v.MP05
Hardware Version	v1.0b001
Firmware Version	v1.0b001
API version	v1.0b001
Manufacture Date	2009/07/30 10:00
H/W Type	DEMO
H/W Vaild Date/Times	2010/12
S/W Type	DEMO
S/W Vaild Date/Times	2010/12

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-2544's main window.

### Port Config

Port Configuration					
Normal		Protocol			
Port No.	Card Type	Speed	Duplex	Flow control	Auto negotiate
Port A	NuDOG-301C	10M	Half	On	Force
Port B	NuDOG-301C	10M	Half	On	Auto

Media Waiting Time :

Media Timeout :

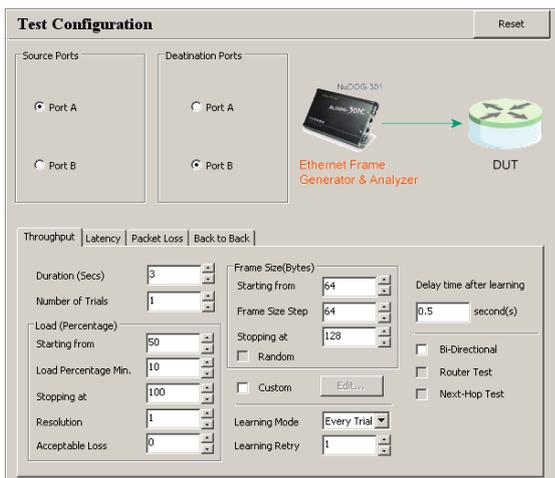
By clicking the **Port Config** on the **System Info/Configuration List**, the **Port Configuration** screen will be shown on the **Main Display Screen** located on the right side of DApps-2544's main window, allowing you to make settings for NuDOG-301C/NuDOG-801/802/NuDOG-101T's ports.

Settings such as port transmitting rate, auto-negotiation, and protocol are available and can be set here.

For more detail description please refer to **7.1. Port Configuration**.



**Test Config (Throughput, Latency, Packet Loss, Back to Back)**

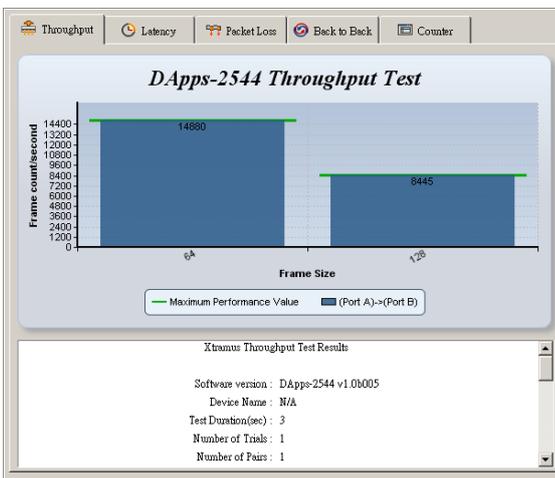


By clicking the **Test Config** on the **System Info/Configuration List**, the **Test Configuration** screen will be shown on the **Main Display Screen** located on the right side of DApps-2544's main window, allowing you to make test settings.

You can set 4 different test modes here, including **Throughput, Latency, Packet Loss, and Back to Back**.

For more detail description, please refer to **7.2. Test Configuration**.

**Report**



The **Report** on the **System Info/Configuration List** allows you to view test results, charts, and statistics on the **Main Display Screen** located on the right side of DApps-2544's main window.

For more detail description about **Report**, please refer to **7.3. Report**.

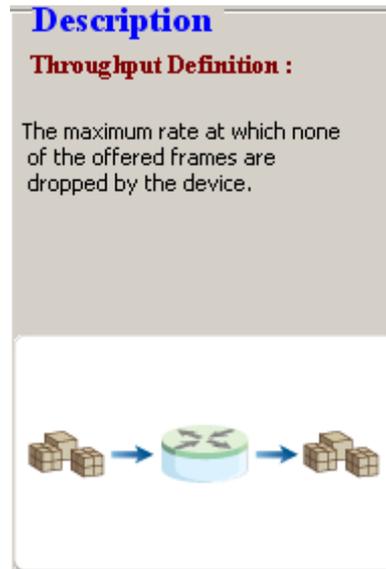
**6.8. Elapsed Time**



The **Elapsed Time** allows you to know the time spent during tests.



## 6.9. Description



The **Description** displays brief descriptions and figures regarding to **Throughput, Latency, Packet Loss,** and **Back to Back** tests.

## 6.10. Status Bar

Perform testing ...2 sec

The **Status Bar** shows the running status of DApps-2544.

## 6.11. Control Buttons/Test Running Status Icon



The **Control Buttons** allow you to start/stop tests, and the **Test Running Status Icon** indicates if there's a test running.

Control Buttons	
 Run	Start test
 Stop	Stop test

Test Running Status Icon	
	No test is underway
	Test is running



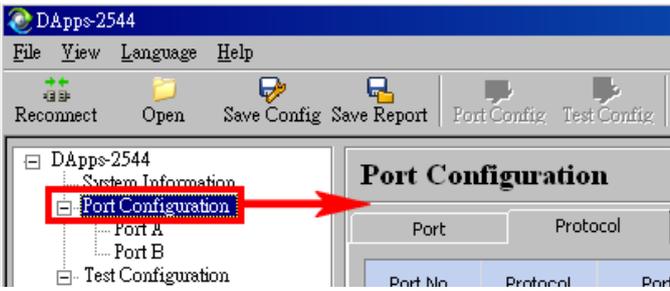
## 7. Port Configuration and Test Configuration

### 7.1. Port Configuration

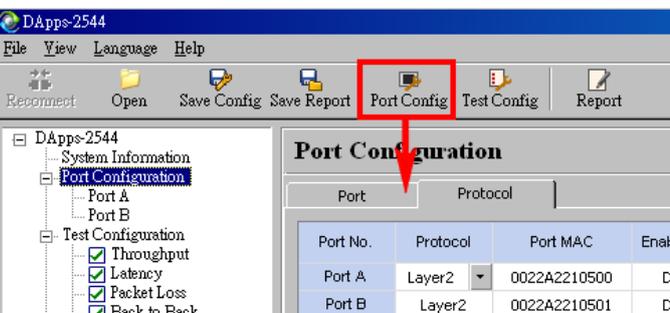
Settings such as port transmitting rate, auto-negotiation, and protocol are available and can be configured on the **Port Configuration** displayed on the **Main Display Screen**.

There are two ways to access **Port Config**:

#### Accessing Port Config



Click **Port Config** located on **System Info/Configuration List**



Click the **Port Config** button located on **Tool Bar**.

Port No.	Card Type	Speed	Duplex	Flow control	Auto negotiate
Port A	NuDOG-301C	10M	Half	On	Force
Port B	NuDOG-301C	10M	Half	On	Force

Media Waiting Time : 4      Media Timeout : 10

Port No.	Protocol	Port MAC	Enable VLAN	VID	CFI	Priority	Port IP
Port A	Layer2	0022A2210500	Disable	0	Enable	136	192.168.0.1
Port B	Layer2	0022A2210501	Disable	0	Enable	136	192.168.0.2

Media Waiting Time : 4      Media Timeout : 10

The **Port Configuration** contains two different sets of settings: **Port** and **Protocol**. These two settings can be accessed by clicking the **Port** or **Protocol** menu tab.

- **Port:** Allows you to set each port's transmitting rate, flow control, and auto-negotiation.
- **Protocol:** Allows you to set each port's protocol (Layer 2 or Layer 3-IP), VLAN, and IP addresses.



## Port

Port No.	Card Type	Speed	Duplex	Flow control	Auto negotiate
Port A	NuDOG-301C	10M	Half	On	Force
Port B	NuDOG-301C	10M	Half	On	Force

Media Waiting Time :       Media Timeout :

- **Port No:** This field lists NuDOG-301C's Test Port (Port A/B).
- **Card Type:** This field lists the model name of the test device.
- **Speed:** The **Speed** scroll-down menu allows you to set each port's transmitting/receiving rate.
- **Duplex:** You can set the port as Full-Duplex or Half-Duplex with the scroll-down menu.
- **Flow Control:** When enabling this function, the transmitting rate will drop if traffic overflow occurs.
- **Auto Negotiate:** By clicking the scroll-down menu, you can set the transmitting mode to **Auto** (with auto-negotiation) or **Force** (without auto-negotiation).
- **Media Waiting Time:** The minimum waiting time (**in seconds**) for auto-negotiation.
- **Media Timeout:** If the time (**in seconds**) DApps-2544 spent for auto-negotiation exceeds the time you set here, the test will stop.

Port No.	Protocol	Port MAC	Enable VLAN	VID	CFI	Priority	Port IP
Port A	Layer2	0022A2210500	Disable	0	Enable	136	192.168.0.1
Port B	Layer2	0022A2210501	Disable	0	Enable	136	192.168.0.2

Media Waiting Time :       Media Timeout :

- **Port No.:** This field lists NuDOG-301C's Test Port (Port A/B).
- **Protocol:** The **Protocol** shows each port's protocol.
  - **Layer 2:** Packets will be transmitted and received via layer 2 MAC addresses.
  - **Layer 3-IP:** Packets will be transmitted and received via layer 3 IP addresses.
- **Port MAC:** These fields display the **Source/Destination MAC addresses**.
- **Enable VLAN:** Enable or Disable VLAN function.
- **VID:** You can set the VID in this field.
- **CFI:** Enable or Disable the CID in this field.
- **Priority:** Set the value of priority in this field.
- **Port IP:** You can modify the port IP in this field.
- **Gateway IP:** You can modify the gateway IP address in this field.
- **IP Mask:** You can modify the IP Mask in this field.
- **Media Waiting Time:** The minimum waiting time (**in seconds**) for auto-negotiation.
- **Media Timeout:** If the time (**in seconds**) DApps-2544 spent for auto-negotiation exceeds the time you set here, the test will stop.

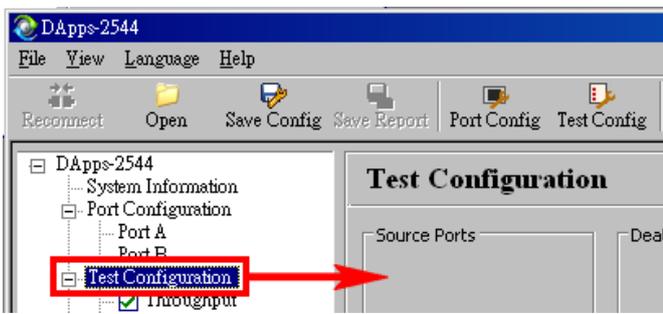


## 7.2. Test Configuration

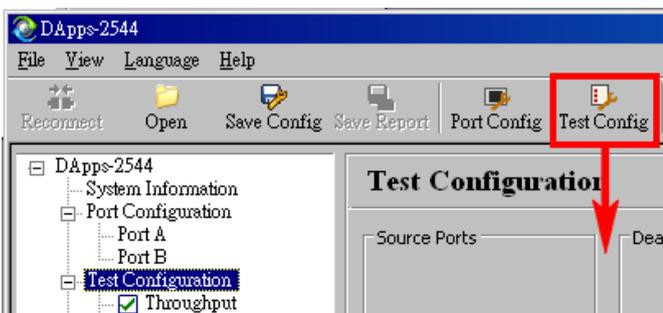
4 different test modes, including **Throughput**, **Latency**, **Packet Loss**, and **Back to Back**, can be configured on the **Test Configuration** displayed on the **Main Display Screen**.

There are two ways to access **Test Config**:

**Accessing Test Config**



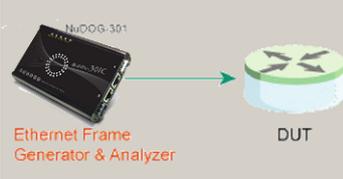
- Click **Test Config** located on **System Info/Configuration List**



- Click the **Test Config** button located on **Tool Bar**.

**Test Configuration** Reset

Source Ports:  Port A,  Port B  
Destination Ports:  Port A,  Port B



Throughput | Latency | Packet Loss | Back to Back

Duration (Secs): 3  
Number of Trials: 1  
Load (Percentage): Starting from 50, Load Percentage Min. 10, Stopping at 100, Resolution 10, Acceptable Loss 0

Frame Size (Bytes): Starting from 64, Frame Size Step 64, Stopping at 128,  Random,  Custom Edit...

Delay time after learning: 0.5 second(s)  
 Bi-Directional  
 Router Test  
 Next-Hop Test

Learning Mode: Every Trial  
Learning Retry: 1

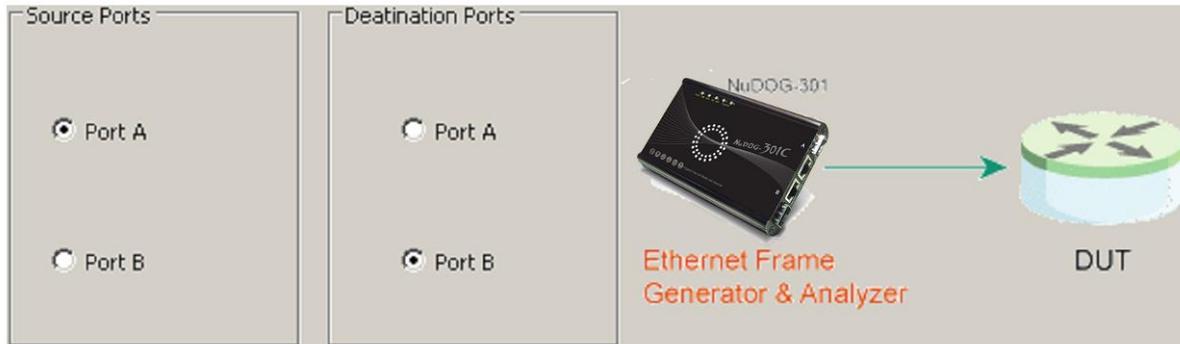
The **Test Configuration** contains four different sets of settings: **Throughput**, **Latency**, **Packet Loss** and **Back to Back**, which can be accessed by clicking the test you would like to perform on **System Info/Configuration List** or the tab menu located on **Test Configuration** screen.



### Assigning Source Port and Destination Port for DApps-2544

Before making any test configurations on the **Test Configuration** screen, you have to assign the Source Port and Destination Port for DApps-2544 first on the upper part of the **Test Configuration** menu.

If you've chosen **NuDOG Only** as DApps-2544's test mode, please select whether you would like to use NuDOG-301C's Port A or Port B as the Source Port or Destination Port as shown in the figure down below.



If you've chosen **End-to-End** or **Round-Trip** as DApps-2544's test mode, please select whether you would like to use NuDOG-301C's Port A, Port B, or LB-300 as the Source Port or Destination Port as shown in the figure down below.



For more information regarding to DApps-2544's test modes, please refer to description down below.



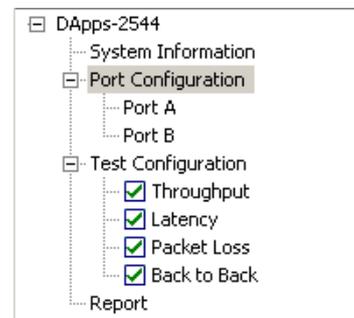
### 7.2.1. Test Configuration Overview

DApps-2544 supports four different tests including:

Diagram	Description
	<b>Throughput</b> test determines the DUT's maximum capable throughput rate without dropping any packets.
	<b>Latency</b> test measures the time it takes for the DUT to forward a packet.
	<b>Packet Loss</b> test measures the percentage of packets that are not forwarded due to the lack of resource.
	<b>Back to Back</b> test measures DUT's buffer capacity by sending bursts of traffic at the maximum frame rate and measuring the longest burst size without dropping any packets.

To start performing tests with DApps-2544, please check the check box  in front of the test you would like to perform first. Unchecked tests will not be performed, and you cannot access their reports as well during or after the tests.

You can access setting options for the tests you would like to perform by:



#### Accessing Test Setting Pages

Elapsed Time: 00:00:00

Description: DApps-2544.

Throughput | Latency | Packet Loss | Back to Back

- Click the test you would like to configure located on **System Info/Configuration List**

Elapsed Time: 00:00:00

Description: DApps-2544.

Throughput | Latency | Packet Loss | Back to Back

- Click the test you would like to configure located on the test tab menu.

For more detailed setting options regarding to **Throughput**, **Latency**, **Packet Loss** and **Back to Back**, please refer to the sections down below.



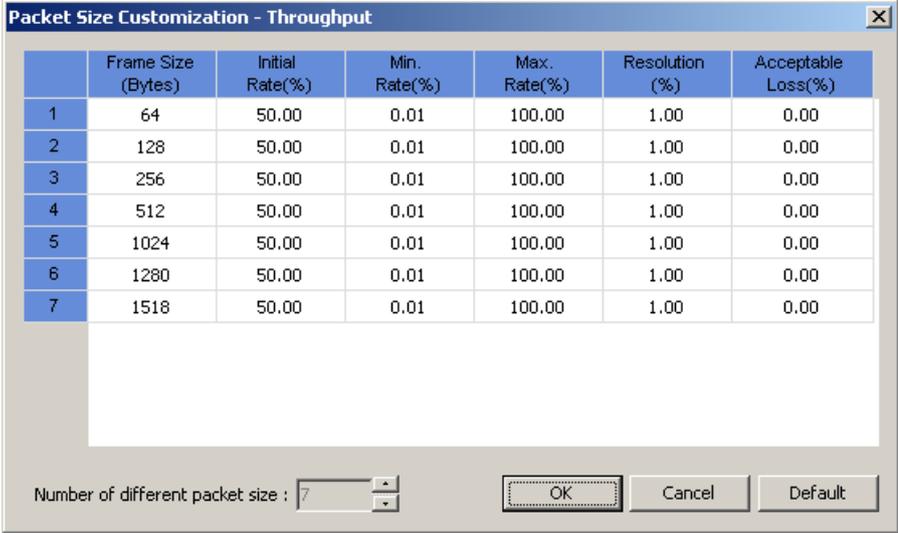
## 7.2.2. Throughput Test

**Throughput** test determines the DUT's maximum capable throughput rate without dropping any packets. The **Throughput** configuration page allows you to customize the test duration, packet length, packet transmission rate (%) for the desired testing environment.

<b>Duration (Secs)</b>	The duration of time (in seconds) for the test. The range for the testing time is <b>1~5000</b> .
<b>Number of Trials</b>	The number of times of the test. The range for the number of times of the test is <b>1~100</b> .
<b>Load Percentage (%)</b>	
<b>Start from</b>	The starting network traffic rate (%) of the test.
<b>Load Percentage Min.</b>	The minimum acceptable network traffic rate (%) of the test.
<b>Stopping at</b>	The maximum acceptable network traffic rate (%) of the test.
<b>Resolution</b>	The test will stop when the difference between the current network traffic rate and the last network traffic rate is smaller than the value you set here.
<b>Acceptable Loss</b>	The acceptable rate of packet loss during the test.

<b>Frame Size (bytes)</b>	
<b>Starting from</b>	The starting size of the transmitted packet. The range of the <b>Starting from/at</b> field is <b>64~2032</b> .
<b>Frame Size Step</b>	The frame size will increase in arithmetic progression fashion, while the value you set here will serve as its difference. The range of the <b>Frame Size Step</b> is <b>64~2032</b> .
<b>Stopping at</b>	The maximum network frame size (Bytes) of the test.



<p><b>Custom</b></p>	<p>You can customize the size of each transmitted packet manually by enabling <b>Custom</b> function and clicking the <b>Edit</b> button. A <b>Packet Size Customization -Throughput</b> window will pop up. You can customize the <b>Initial Rate</b>, <b>Min/Max Rate</b>, <b>Resolution</b>, and <b>Acceptable Loss</b> here as well.</p>  <p>You can double-click the field you would like to customize and input the value manually.</p> <ul style="list-style-type: none"> <li>• <b>Number of Different Packet Size:</b> You can set how many different frame sizes you would like to apply to the test here in this field.</li> <li>• <b>OK/Cancel:</b> Apply/cancel the changes you've made.</li> <li>• <b>Default:</b> Set all the values to default value.</li> </ul>
<p><b>Learning Mode</b></p>	<p>This function allows the DUT to create an address table according to the source address in the received frame.</p> <ul style="list-style-type: none"> <li>• <b>Never:</b> DUT will <b>never</b> create an address table, and <b>Learning Mode</b> is disabled.</li> <li>• <b>Once:</b> DUT will create an address table only <b>once</b>.</li> <li>• <b>Every Trial:</b> DUT will create an address table <b>in every trial</b>.</li> </ul>
<p><b>Learning Retry</b></p>	<p>The value set here will be the number of learning packets that will be sent through the ports chosen to be learned for building address table.</p>
<p><b>Bi-Direction</b></p>	<p>Enabling this function allows two-way direction transmitting during the test.</p>
<p><b>Router Test*</b></p>	<p>Enabling this function to perform router (Residential Gateway) tests using Ping/ARP.</p>
<p><b>Next-Hop Test*</b></p>	<p>Some routers (Residential Gateway) have the abilities to simulate as routers with next-hop capability according to RFC-2544. Enable this function if the DUT have such capability.</p>

\*Note: As of May 3rd, 2011, both Router Test and Next-Hop Test are not supported yet.



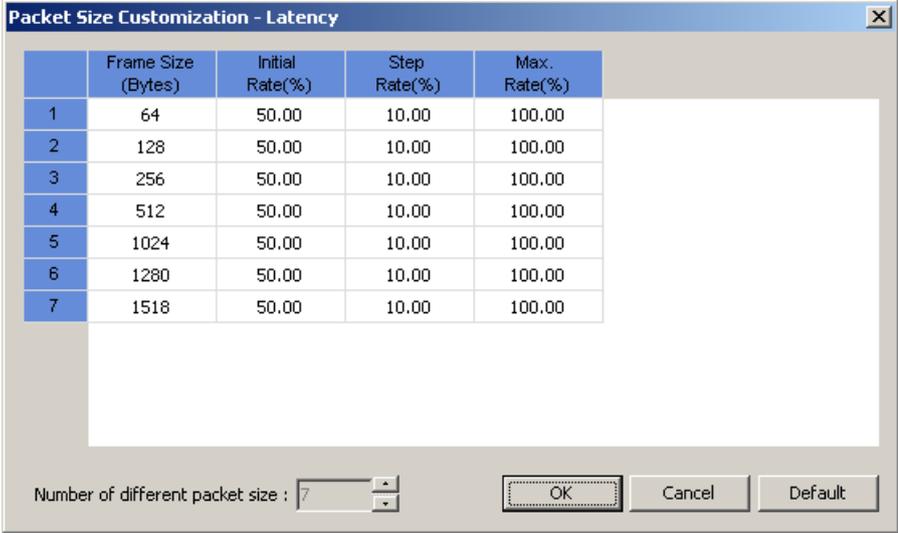
### 7.2.3. Latency Test

**Latency** test measures the time it takes for the DUT to forward a packet. The load generated by NuDOG-301C can be customized with different packet lengths and for specified period of times.

<b>Duration (Secs)</b>	The duration of time (in seconds) for the test. The range for the testing time is <b>1~5000</b> .
<b>Number of Trials</b>	The number of times of the test. The range for the number of times of the test is <b>1~100</b> .
<b>Load Percentage (%)</b>	
<b>Starting from</b>	The starting network traffic rate (%) of the test.
<b>Load Percentage Step</b>	The traffic rate (%) will be added on each step.
<b>Stopping at</b>	The maximum acceptable network traffic rate (%) of the test.
<b>Resolution</b>	The test will stop when the difference between the current network traffic rate and the last network traffic rate is smaller than the value you set here.
<b>Acceptable Loss</b>	The acceptable rate of packet loss during the test.

<b>Frame Size (bytes)</b>	
<b>Starting from</b>	The starting size of the transmitted packet. The range of the <b>Starting from/at</b> field is <b>64~2032</b> .
<b>Frame Size Step</b>	The frame size will increase in arithmetic progression fashion, while the value you set here will serve as its difference. The range of the <b>Frame Size Step</b> is <b>64~2032</b> .
<b>Stopping at</b>	The maximum network frame size (Bytes) of the test.



<p><b>Custom</b></p>	<p>You can customize the size of each transmitted packet manually by enabling <b>Custom</b> function and clicking the <b>Edit</b> button. A <b>Packet Size Customization - Latency</b> window will pop up. You can customize the <b>Initial Rate</b>, <b>Step Rate</b>, and <b>Max. Rate</b> here as well.</p>  <p>You can double-click the field you would like to customize and input the value manually.</p> <ul style="list-style-type: none"> <li>• <b>Number of Different Packet Size:</b> You can set how many different frame sizes you would like to apply to the test here in this field.</li> <li>• <b>OK/Cancel:</b> Apply/cancel the changes you've made.</li> <li>• <b>Default:</b> Set all the values to default value.</li> </ul>
<p><b>Learning Mode</b></p>	<p>This function allows the DUT to create an address table according to the source address in the received frame.</p> <ul style="list-style-type: none"> <li>• <b>Never:</b> DUT will <b>never</b> create an address table, and <b>Learning Mode</b> is disabled.</li> <li>• <b>Once:</b> DUT will create an address table only <b>once</b>.</li> <li>• <b>Every Trial:</b> DUT will create an address table <b>in every trial</b>.</li> </ul>
<p><b>Learning Retry</b></p>	<p>The value set here will be the number of learning packets that will be sent through the ports chosen to be learned for building address table.</p>
<p><b>Bi-Direction</b></p>	<p>Enabling this function allows two-way direction transmitting during the test.</p>
<p><b>Router Test*</b></p>	<p>Enabling this function to perform router (Residential Gateway) tests using Ping/ARP.</p>
<p><b>Next-Hop Test*</b></p>	<p>Some routers (Residential Gateway) have the abilities to simulate as routers with next-hop capability according to RFC-2544. Enable this function if the DUT have such capability.</p>

\*Note: As of May 3rd, 2011, both Router Test and Next-Hop Test are not supported yet.



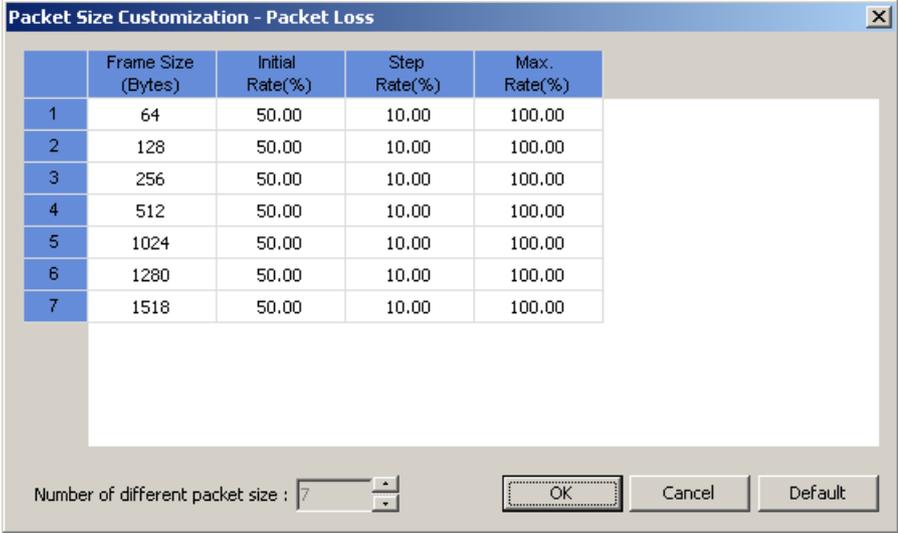
### 7.2.4. Packet Loss Test

**Packet Loss** test measures the percentage of packets that are not forwarded (therefore, lost) due to the lack of resource. The loading and the testing time can be customized to simulate real-world scenario; thus, giving the user a clear view of DUT's performance limits under different loading environments.

<b>Duration (Secs)</b>	The duration of time (in seconds) for the test. The range for the testing time is <b>1~5000</b> .
<b>Number of Trials</b>	The number of times of the test. The range for the number of times of the test is <b>1~100</b> .
<b>Load Percentage (%)</b>	
<b>Start from</b>	The starting network traffic rate (%) of the test.
<b>Load Percentage Step</b>	The traffic rate (%) will be added on each step.
<b>Stopping at</b>	The maximum acceptable network traffic rate (%) of the test.
<b>Resolution</b>	The test will stop when the difference between the current network traffic rate and the last network traffic rate is smaller than the value you set here.
<b>Acceptable Loss</b>	The acceptable rate of packet loss during the test.

<b>Frame Size (bytes)</b>	
<b>Starting from/at</b>	The starting size of the transmitted packet. The range of the <b>Starting from/at</b> field is <b>64~2032</b> .
<b>Frame Size Step</b>	The frame size will increase in arithmetic progression fashion, while the value you set here will serve as its difference. The range of the <b>Frame Size Step</b> is <b>64~2032</b> .
<b>Stopping at</b>	The maximum network frame size (Bytes) of the test.



<p><b>Custom</b></p>	<p>You can customize the size of each transmitted packet manually by enabling <b>Custom</b> function and clicking the <b>Edit</b> button. A <b>Packet Size Customization – Packet Loss</b> window will pop up. You can customize the <b>Initial Rate</b>, <b>Step Rate</b>, and <b>Max. Rate</b> here as well.</p>  <p>You can double-click the field you would like to customize and input the value manually.</p> <ul style="list-style-type: none"> <li>• <b>Number of Different Packet Size:</b> You can set how many different frame sizes you would like to apply to the test here in this field.</li> <li>• <b>OK/Cancel:</b> Apply/cancel the changes you've made.</li> <li>• <b>Default:</b> Set all the values to default value.</li> </ul>
<p><b>Learning Mode</b></p>	<p>This function allows the DUT to create an address table according to the source address in the received frame.</p> <ul style="list-style-type: none"> <li>• <b>Never:</b> DUT will <b>never</b> create an address table, and <b>Learning Mode</b> is disabled.</li> <li>• <b>Once:</b> DUT will create an address table only <b>once</b>.</li> <li>• <b>Every Trial:</b> DUT will create an address table <b>in every trial</b>.</li> </ul>
<p><b>Learning Retry</b></p>	<p>The value set here will be the number of learning packets that will be sent through the ports chosen to be learned for building address table.</p>
<p><b>Bi-Direction</b></p>	<p>Enabling this function allows two-way direction transmitting during the test.</p>
<p><b>Router Test*</b></p>	<p>Enabling this function to perform router (Residential Gateway) tests using Ping/ARP.</p>
<p><b>Next-Hop Test*</b></p>	<p>Some routers (Residential Gateway) have the abilities to simulate as routers with next-hop capability according to RFC-2544. Enable this function if the DUT have such capability.</p>

\*Note: As of May 3rd, 2011, both Router Test and Next-Hop Test are not supported yet.



### 7.2.5. Back to Back Test

**Back to Back** test measures DUT's buffer capacity by sending bursts of traffic at the maximum frame rate and measuring the longest burst size without dropping any packets.

<b>Duration (Secs)</b>	The duration of time (in seconds) for the test. The range for the testing time is <b>1~5000</b> .
<b>Number of Trials</b>	The number of times of the test. The range for the number of times of the test is <b>1~100</b> .
<b>Load Percentage (%)</b>	
<b>Starting from</b>	The starting network traffic rate (%) of the test.
<b>Load Percentage Step</b>	The traffic rate (%) will be added on each step.
<b>Stopping at</b>	The maximum acceptable network traffic rate (%) of the test.
<b>Resolution</b>	The test will stop when the difference between the current network traffic rate and the last network traffic rate is smaller than the value you set here.
<b>Acceptable Loss</b>	The acceptable rate of packet loss during the test.

<b>Frame Size (bytes)</b>	
<b>Starting from</b>	The starting size of the transmitted packet. The range of the <b>Starting from/at</b> field is <b>64~2032</b> .
<b>Frame Size Step</b>	The frame size will increase in arithmetic progression fashion, while the value you set here will serve as its difference. The range of the <b>Frame Size Step</b> is <b>64~2032</b> .
<b>Stopping at</b>	The maximum network frame size (Bytes) of the test.



<p style="text-align: center;"><b>Custom</b></p>	<p>You can customize the size of each transmitted packet manually by enabling <b>Custom</b> function and clicking the <b>Edit</b> button. A <b>Packet Size Customization – Back to Back</b> window will pop up. You can customize the <b>Initial Rate</b>, <b>Step Rate</b>, and <b>Max. Rate</b> here as well.</p> <div data-bbox="501 389 1399 922" style="border: 1px solid gray; padding: 5px;"> <p style="text-align: center; margin: 0;"><b>Packet Size Customization - Back to Back</b> <span style="float: right;">X</span></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 5%;"></th> <th style="width: 15%;">Frame Size (Bytes)</th> <th style="width: 15%;">Initial Rate(%)</th> <th style="width: 15%;">Step Rate(%)</th> <th style="width: 15%;">Max. Rate(%)</th> </tr> </thead> <tbody> <tr><td>1</td><td>64</td><td>50.00</td><td>10.00</td><td>100.00</td></tr> <tr><td>2</td><td>128</td><td>50.00</td><td>10.00</td><td>100.00</td></tr> <tr><td>3</td><td>256</td><td>50.00</td><td>10.00</td><td>100.00</td></tr> <tr><td>4</td><td>512</td><td>50.00</td><td>10.00</td><td>100.00</td></tr> <tr><td>5</td><td>1024</td><td>50.00</td><td>10.00</td><td>100.00</td></tr> <tr><td>6</td><td>1280</td><td>50.00</td><td>10.00</td><td>100.00</td></tr> <tr><td>7</td><td>1518</td><td>50.00</td><td>10.00</td><td>100.00</td></tr> </tbody> </table> <p style="margin-top: 10px;">Number of different packet size : <input style="width: 50px;" type="text" value="7"/></p> <p style="text-align: right; margin-top: 5px;"> <input type="button" value="OK"/> <input type="button" value="Cancel"/> <input type="button" value="Default"/> </p> </div> <p>You can double-click the field you would like to customize and input the value manually.</p> <ul style="list-style-type: none"> <li><b>Number of Different Packet Size:</b> You can set how many different frame sizes you would like to apply to the test here in this field.</li> <li><b>OK/Cancel:</b> Apply/cancel the changes you've made.</li> <li><b>Default:</b> Set all the values to default value.</li> </ul>		Frame Size (Bytes)	Initial Rate(%)	Step Rate(%)	Max. Rate(%)	1	64	50.00	10.00	100.00	2	128	50.00	10.00	100.00	3	256	50.00	10.00	100.00	4	512	50.00	10.00	100.00	5	1024	50.00	10.00	100.00	6	1280	50.00	10.00	100.00	7	1518	50.00	10.00	100.00
	Frame Size (Bytes)	Initial Rate(%)	Step Rate(%)	Max. Rate(%)																																					
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6	1280	50.00	10.00	100.00																																					
7	1518	50.00	10.00	100.00																																					
<p style="text-align: center;"><b>Learning Mode</b></p>	<p>This function allows the DUT to create an address table according to the source address in the received frame.</p> <ul style="list-style-type: none"> <li><b>Never:</b> DUT will <b>never</b> create an address table, and <b>Learning Mode</b> is disabled.</li> <li><b>Once:</b> DUT will create an address table only <b>once</b>.</li> <li><b>Every Trial:</b> DUT will create an address table <b>in every trial</b>.</li> </ul>																																								
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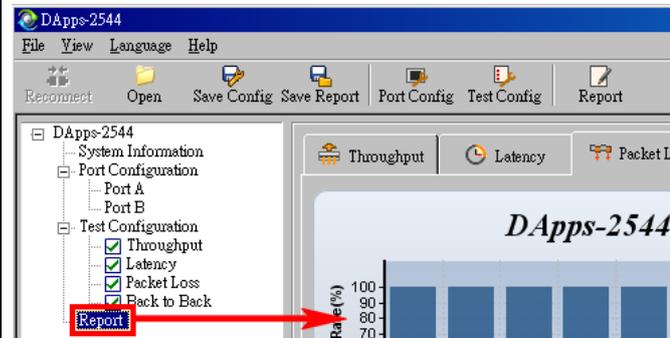
\*Note: As of May 3rd, 2011, both Router Test and Next-Hop Test are not supported yet.



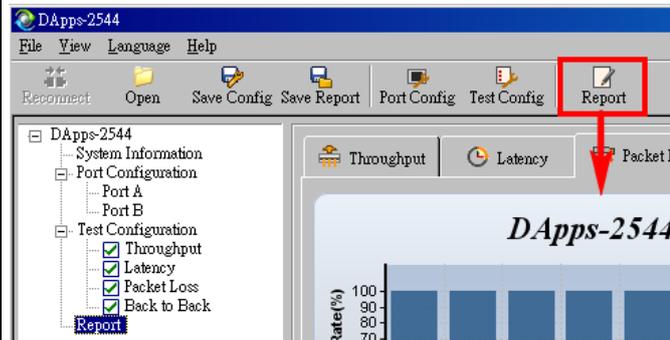
### 7.3. Report

Test results, statistics and charts are displayed and can be checked on the **Main Display Screen**. There are two ways to view **Report**:

#### Accessing Report

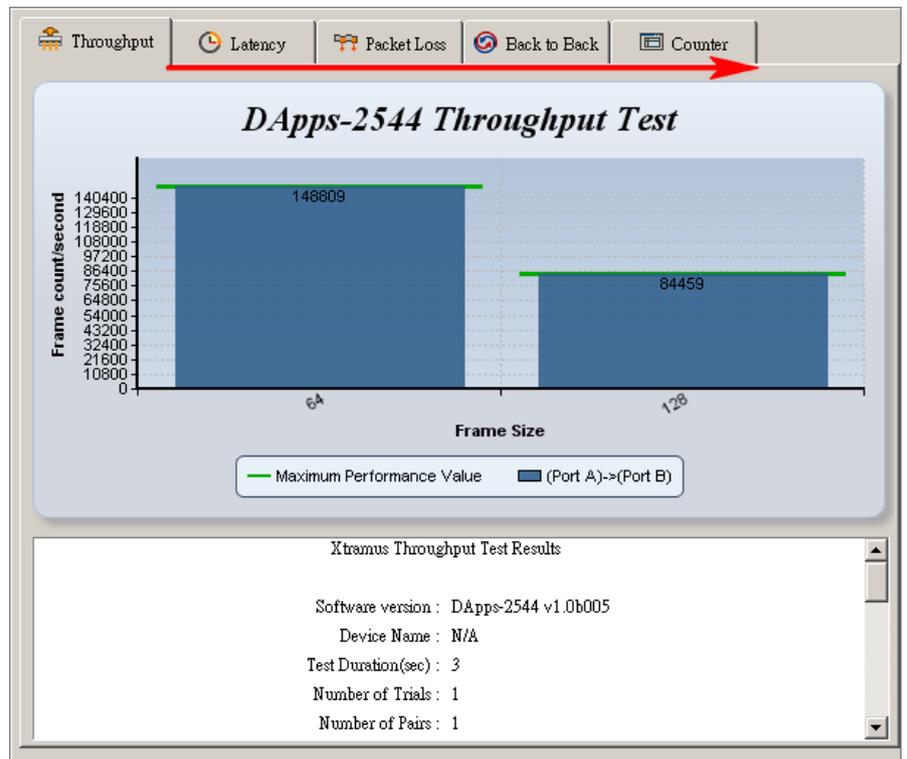


- Click **Report** located on **System Info/ Configuration List**.



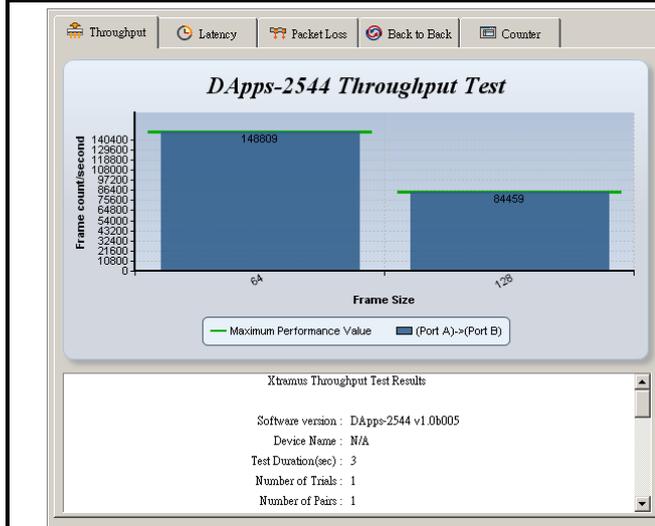
- Click the **Report** button located on **Tool Bar**.

During the tests, charts for the results of each test (**Throughput**, **Latency**, **Packet Loss** or **Back to Back**) will be displayed on the **Main Display Screen**. DApps-2544 will switch charts of each test automatically when finishing the current test and starting the next test as shown in the figures. Please note that you can only access charts of the tests you've performed.



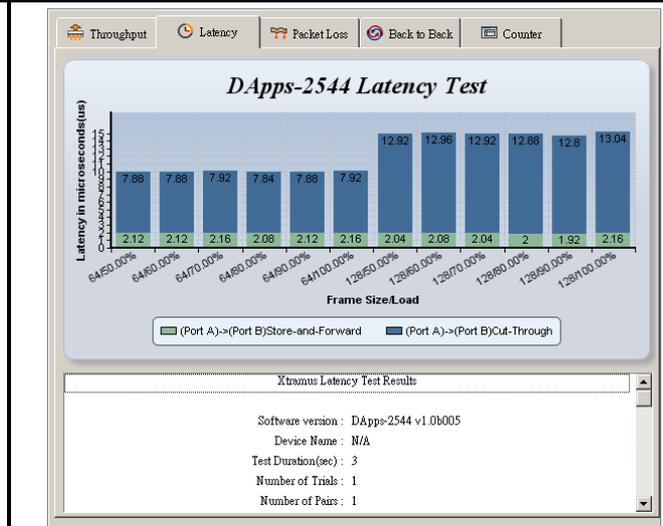


### Throughput Test Result Chart



This chart uses **Frame Count per Second** as X-Axis, and **Frame Size** as Y-Axis to show DUT's throughput performance.

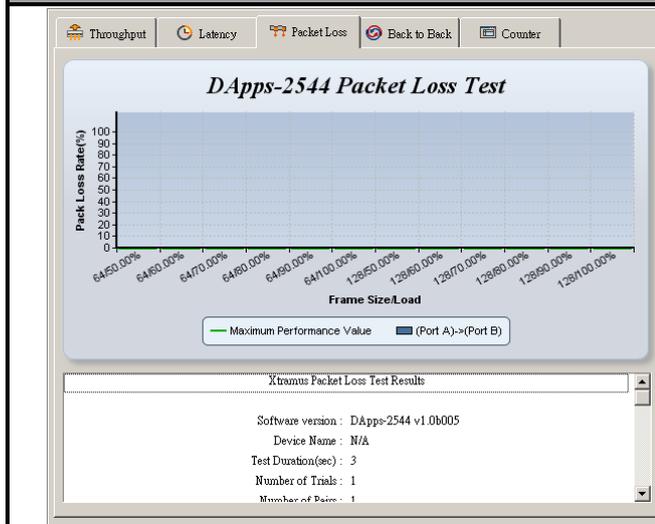
### Latency Test Result Chart



This chart uses **Latency in Microseconds (µs)** as X-Axis, and **Frame Size/Load** as Y-Axis.

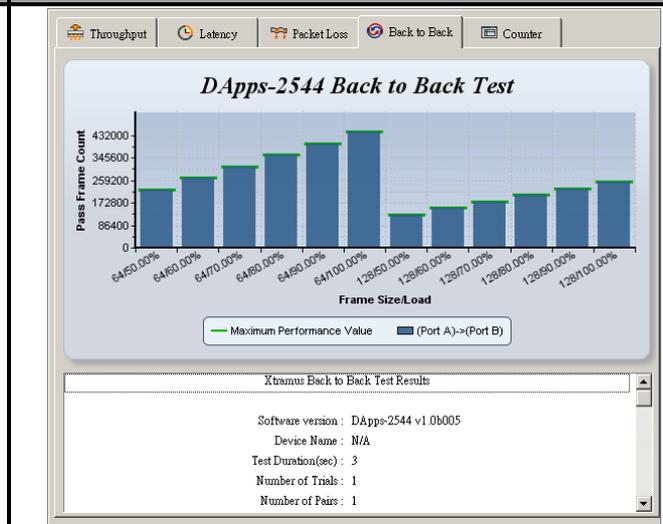
- **Store and Forward:** Represents packets that were stored inside DUT's buffer before transmitted.
- **Cut Through:** Represents packets that were transmitted right away.

### Packet Loss Test Result Chart

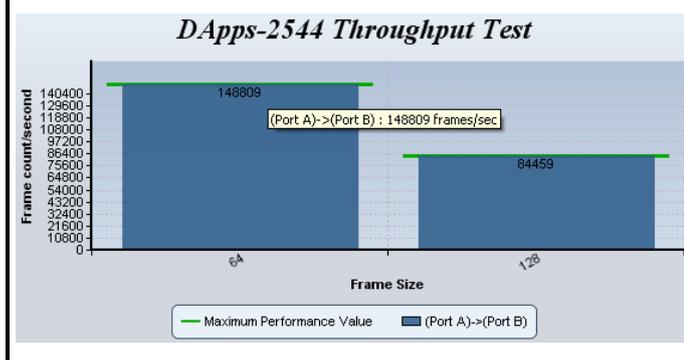


This chart uses **Packet Loss Rate (%)** as X-Axis, and **Frame Size/Load** as Y-Axis to show DUT's packet loss ratio.

### Back to Back Test Result Chart



This chart uses **Pass Frame Count** as X-Axis, and **Frame Size/Load** as Y-Axis to show DUT's back to back test result.



To view detail statistics on the chart, please move the mouse cursor to the part you would like to know more, as shown in the figure on the left.

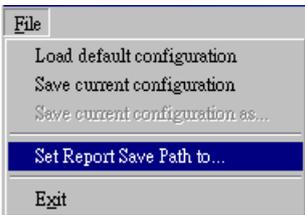


Also, you can view test results counter by clicking the **Counter** tab menu. All statistics will be displayed in this table in great detail for test result analysis.

Port	PktSize	FrameGap	Percent(%)	Rate	TxPkt	RxPkt	GoodPkt	Collision
Benchmark:Throughput Trial:1 Repetition:1 Duration:3.00 sec.								
Port A	64	768	50.00	74404	223212	0	0	
Port B	n/a	n/a	n/a	n/a	0	223212	223212	
Passed								
Benchmark:Throughput Trial:1 Repetition:2 Duration:3.00 sec.								
Port A	64	320	75.00	111606	334818	0	0	
Port B	n/a	n/a	n/a	n/a	0	334818	334818	
Passed								
Benchmark:Throughput Trial:1 Repetition:3 Duration:3.00 sec.								
Port A	64	192	87.50	130207	390621	0	0	
Port B	n/a	n/a	n/a	n/a	0	390621	390621	
Passed								
Benchmark:Throughput Trial:1 Repetition:4 Duration:3.00 sec.								
Port A	64	136	93.75	139508	418524	0	0	
Port B	n/a	n/a	n/a	n/a	0	418524	418524	
Passed								
Benchmark:Throughput Trial:1 Repetition:5 Duration:3.00 sec.								
Port A	64	112	96.88	144158	432474	0	0	
Port B	n/a	n/a	n/a	n/a	0	432474	432474	
Passed								
Benchmark:Throughput Trial:1 Repetition:6 Duration:3.00 sec.								
Port A	64	104	98.44	146484	439452	0	0	
Port B	n/a	n/a	n/a	n/a	0	439452	439452	
Passed								
Benchmark:Throughput Trial:1 Repetition:7 Duration:3.00 sec.								
Port A	64	96	99.22	147646	442938	0	0	
Port B	n/a	n/a	n/a	n/a	0	442938	442938	
Passed								

You can save the test results by:

### Saving Test Results



- Click **Save** located on **Menu Bar**.



- Click the **Save Report** button located on **Tool Bar**.

Test results and related statistic are available and can be viewed with the “ \* .xls” file you saved this way.

You need Microsoft Excel® to view “ \* .xls” file.



## 8. Appendix – Other Utility Softwares for NuDOG series

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

### ***DApps-TAP: Network TAP/Loopback Utility***

For NuDOG-301C/NuDOG-801/802/NuDOG-101T, all data streams between two network ports can be duplicated and sent to PC via mini USB port for monitoring and analyzing. The user can specify conditions to filter the packets wanted with 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-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 Suit 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 2889.