



## NuTAP-S61 OVERVIEW

NuTAP-S61 is a portable network TAP device. Embedded with 2 Network Ports and 2 Monitor Ports, NuTAP-S61 can monitor and redirect any data streams which flow through it. Moreover, NuTAP-S61's Console Port allows users to access test data and configure test variables while serving as an optional power source for NuTAP-S61.

Network TAP is a hardware device which allows monitoring data flows in a network environment dynamically without any interference.

As mentioned above, NuTAP-S61 is embedded with two Network Ports and is capable of monitoring all data flows between two network points. All data traffic flows between NuTAP-S61's Network Port A0 and A1 can be brought out for further analysis and research dynamically and without intervening network environment.

NuTAP-S61 is a compact, lightweight, and highly cost-effective device that provides 3 different filters for users to choose: Forwarding Filter, Re-Direct Filter, and Capture Criteria. All these filters are powered by Xtramus SDFR (Self-Discover Filtering Rules), which makes packet capturing/filtering over Ethernet easy and convenient.





## KEY FEATURE

- Portable and light-weighted, with high-performance and reliable test results
- Filter and redirect TAP streams to monitor port by SDFR technique which can ease the loading of monitor PC
- SDFR (Self-Discover Filtering Rules), a set of filtering rules including Destination Address, Source Address, VLAN, Destination IP, Source IP, Destination Port, and Source Port
- 2 Network Ports and 2 Monitor Ports of 10/100 Mbps RJ45 Ethernet port
- 1 Console Port which allows users configuring test variables, accessing test results, upgrading firmware/FPGA, and serving as NuTAP-S61's optional power source while connected to PC with a RJ45-to-USB cable\*
- Both Network Ports support Universal Stream Counter (USC), each USC can contain up to 256 sets of statistics (up to 48-bits) including Packets, Bytes, Packet Broadcast, CRC Error, IPCS Error, Packet Multicast, and Transferring Rate.
- NuSet-MiniTAP is a utility software designed for NuTAP-S61 and runs under Windows® environment. When connecting NuTAP-S61 with your PC via a RJ45-to-USB cable, it allows users to:
  - Upgrading NuTAP-S61's firmware and FPGA
  - Monitoring data flows in the network environment
  - Configuring test settings and accessing test results
  - Setting 2 sets of Session Filter including Port A → Port B and Port B → Port A
  - Setting SDFR (Self-Discover Filtering Rules). SDFR is a set of filtering rules including Packets, Bytes, Packet Broadcast, CRC Error, IPCS Error, Packet Multicast, and Transferring Rate.
- Reset Button which allows users to reset all NuTAP-S61's settings back to default value
- Utility Software that supports multi-language user-interface including Simplified Chinese and English

\* When using Console Port as NuTAP-S61's power source, please use the RJ45-to-USB cable that comes with NuTAP-S61 package. Extending the length of RJ45-to-USB cable might cause NuTAP-S61 power insufficient.



## SPECIFICATION

Ports					
Network Port	Network Port A0	10/100 Mbps Full Ethernet RJ45 Port		Network Port A1	10/100 Mbps Full Ethernet RJ45 Port
Monitor Port	Monitor Port M0	10/100 Mbps Full Ethernet RJ45 Port		Monitor Port M1	10/100 Mbps Full Ethernet RJ45 Port
Console Port	RJ45 Port for Firmware/FPGA Upgrading, Configuration Setting, and NuTAP-S61 Power Supply*				
Power Jack	1 × 12V DC Power Jack				
LEDs & Button					
LEDs	General	➤ Power		➤ SYS	
	Network Port	➤ A0		➤ A1	
		➤ 100M		➤ 10M	➤ Full
	Monitor Port	➤ M0		➤ M1	
	Re-Direct Filter	➤ Segregate: 		➤ Aggregate: 	
Button	Reset Button	Reset Button which allows to set all system settings to default values			
Filter Description/Criteria					
NuTAP-S61 filter redirects only the packets that meets user-defined SDFR (Self-Discover Filtering Rules)					
Forwarding Filter	Description	All packets transferring between Network Port A0 and A1 that meet filter criteria will be filtered out or let through			
	SDFR	➤ Destination Address	➤ Source Address	➤ Destination IP	➤ Source IP
Re-Direct Filter	Description	All packets transferring between Network Port A0 and A1 that meet filter criteria will be re-directed to the Monitor Port(s)			
	SDFR	➤ Destination Address	➤ Source Address	➤ VLAN ID	➤ Destination IP
		➤ Source IP	➤ Destination Port	➤ Source Port	
Capture Criteria	Description	All packets transferring between Network Port A0 and A1 that meet filter criteria will be captured and stored in NuTAP-S61's memory buffer.			
	SDFR	➤ Destination Address	➤ Source Address	➤ Destination IP	➤ Source IP
Filter Protocol	MAC (Data-Link Layer)	➤ Broadcast	➤ Multicast	➤ Unicast	
		➤ VLAN	➤ QinQ (Double VLAN TAG)	➤ CRC Error	
	Network (Network Layer)	➤ ARP	➤ IPv4	➤ IPv6	
		➤ ICMP	➤ IPCS Error	➤ Pattern Check	
	Protocol (Transport Layer)	➤ TCP	➤ UDP	➤ FTP	➤ RTP
Packet Capturing Mode					
Capture-and-Stop	All packets transferring between Network Port A0 and A1 that meet filter criteria will be filtered and stored in NuTAP-S61's memory buffer. System will stop storing new data once the memory buffer is full.				
Real-Time	All packets transferring between Network Port A0 and A1 that meet filter criteria will be filtered and stored in NuTAP-S61's memory buffer. System will keep overwriting old data with new data.				
Packet Header Editing					
Header Adding	➤ DA/SA (Destination/Source Address)		➤ Time Stamp		
	➤ VLAN TAG		➤ IP Header: UDP Header, IP Fragment		
Hardware					
Temperature	➤ Operating: 0 °C~ 40 °C (32 °F~ 104 °F)		➤ Storage: 0 °C~ 50°C (32 °F~ 122 °F)		
Humidity (non-condensing)	➤ Operating: 0% ~ 85% RH		➤ Storage: 0% ~ 85% RH		
Dimension	106 mm x 80 mm x 25 mm				
Net Weight	Approx. 140g				

\* When using Console Port as NuTAP-S61's power source, please use the RJ45-to-USB cable that comes with NuTAP-S61 package. Extending the length of RJ45-to-USB cable might cause NuTAP-S61 power insufficient.



## TECHNICAL TERMS & APPLICATION

### SDFR

SDFR (Self-Discover Filtering Rules) is a technology that makes packet capturing/filtering over Ethernet easy and convenient.

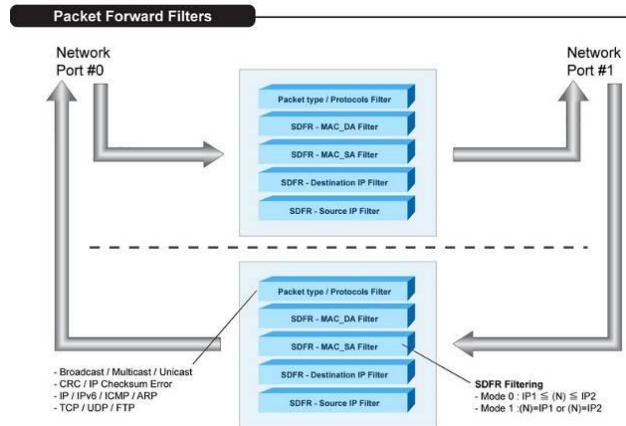
SDFR's User- friendly interface can display values such as Source IP, Destination IP and so on. All these values (one single value or a specific range of values) can be input directly without calculating mask.

All captured packets are displayed in real-time without intervening network flow, and SDFR values can be changed dynamically during capture procedure.

SDFR parameters include filter of Layer 2 Destination MAC Address, Source MAC Address, VLAN ID, Layer 3 Destination IP Address, Source IP Address, Destination Port, and Source Port. Each filter is independent and can be activated in any combinations.

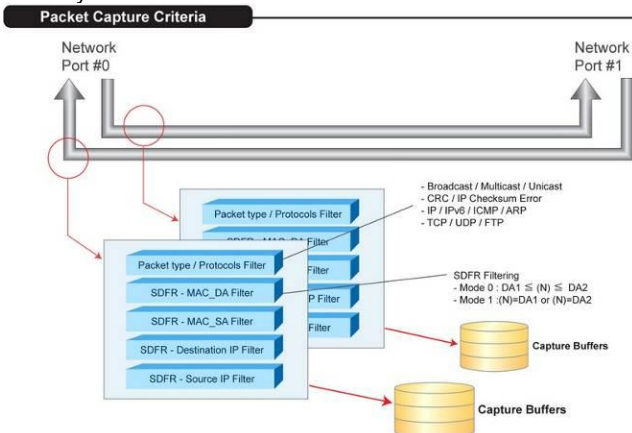
### Forwarding Filter

As shown in the figures down below, transmitted packets from Network Port A0 to A1 (or the other way around) that meet the criteria set in Forwarding Filter will be filtered out or through.



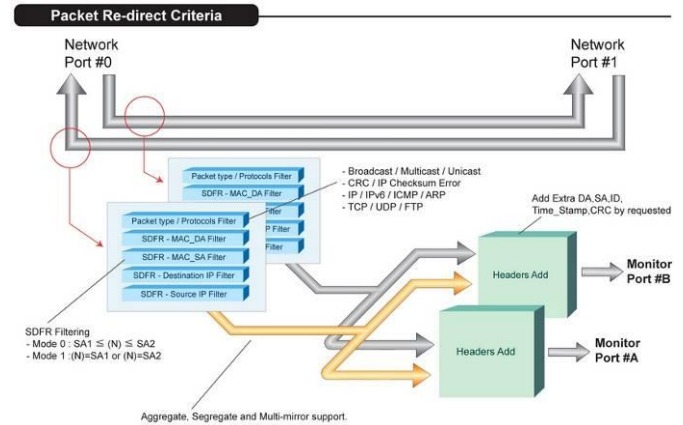
### Capture Criteria

Transmitted packets from Network Port A0 to A1 (or the other way around) that meet the criteria set in Capture Criteria will be captured and stored in NuTAP-S61's buffer memory.



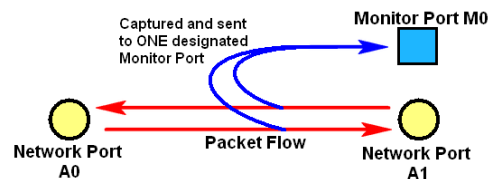
### Re-direct Filter

As shown in the figures down below, transmitted packets from Network Port A0 to A1 (or the other way around) that meet the criteria set in Re-direct Filter will be captured by NuTAP-S61 and transferred to Monitor Port(s) judging by its settings (Aggregate, Segregate, or Multi-Mirror).



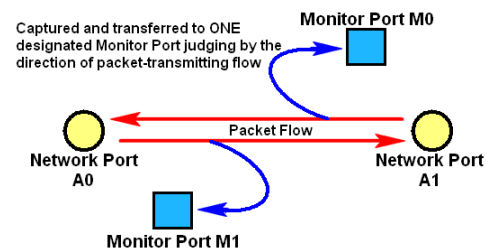
### Aggregate

As shown in the figures down below, transmitted packets mentioned previously will be captured and transferred to ONE designated Monitor Port.



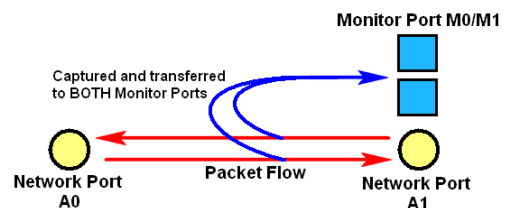
### Segregate

Transmitted packets mentioned previously will be captured and transferred to ONE designated Monitor Port judging by the direction of packet-transmitting flow (A0→A1 or A1→A0).



### Multi-Mirror

As shown in the figure down below, transmitted packets mentioned previously will be captured and transferred to BOTH Monitor Ports.



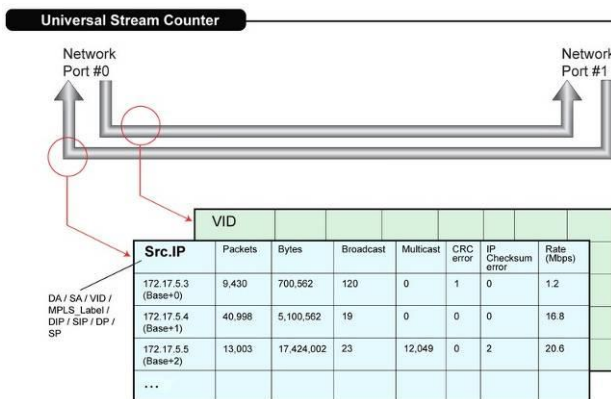


## Universal Stream Counter (USC)

Network Port A0/USC0			Network Port A0/USC1			Network Port A1/USC0			Network Port A1/USC1		
DA	Line Rate(Mbps)	Packets	DA	Line Rate(Mbps)	Packets	DA	Line Rate(Mbps)	Packets	DA	Line Rate(Mbps)	Packets
XX:XX:XX:XX:XX:XX	0.00		XX:XX:XX:XX:XX:XX	0.00		XX:XX:XX:XX:XX:XX	0.00		XX:XX:XX:XX:XX:XX	0.00	
XX:XX:XX:XX:XX:XX	0.00		XX:XX:XX:XX:XX:XX	0.00		XX:XX:XX:XX:XX:XX	0.00		XX:XX:XX:XX:XX:XX	0.00	
XX:XX:XX:XX:XX:XX	0.00		XX:XX:XX:XX:XX:XX	0.00		XX:XX:XX:XX:XX:XX	0.00		XX:XX:XX:XX:XX:XX	0.00	
XX:XX:XX:XX:XX:XX	0.00		XX:XX:XX:XX:XX:XX	0.00		XX:XX:XX:XX:XX:XX	0.00		XX:XX:XX:XX:XX:XX	0.00	
XX:XX:XX:XX:XX:XX	0.00		XX:XX:XX:XX:XX:XX	0.00		XX:XX:XX:XX:XX:XX	0.00		XX:XX:XX:XX:XX:XX	0.00	
XX:XX:XX:XX:XX:XX	0.00		XX:XX:XX:XX:XX:XX	0.00		XX:XX:XX:XX:XX:XX	0.00		XX:XX:XX:XX:XX:XX	0.00	
XX:XX:XX:XX:XX:XX	0.00		XX:XX:XX:XX:XX:XX	0.00		XX:XX:XX:XX:XX:XX	0.00		XX:XX:XX:XX:XX:XX	0.00	
XX:XX:XX:XX:XX:XX	0.00		XX:XX:XX:XX:XX:XX	0.00		XX:XX:XX:XX:XX:XX	0.00		XX:XX:XX:XX:XX:XX	0.00	
XX:XX:XX:XX:XX:XX	0.00		XX:XX:XX:XX:XX:XX	0.00		XX:XX:XX:XX:XX:XX	0.00		XX:XX:XX:XX:XX:XX	0.00	

When monitoring data flows in a network environment with Network TAP devices, it is common to use packet analyzers (or sniffers) for capturing and analyzing packet frames. However, information acquired this way may be too vast and complicated for pinpointing the possible cause of network/product problems.

Unlike these common packet analyzers or sniffers mentioned above, Universal Stream Counter (USC) offers real-time statistics of network events during packet monitoring and capturing, as shown in the figure down below:



Both of NuTAP-S61's Network Ports support Universal Stream Counter (USC), each Network Port contains 1 set of USC with packet filtering rules based on:

- DA (Destination Address)
- SA (Source Address)
- VID (VLAN ID)
- MPLS
- DIP (Destination IP)
- SIP (Source IP)
- D Port (Destination Port)
- S Port (Source Port)
- VLAN CoS (Class of Service)

Also, each USC can contain up to 256 sets of statistics (up to 48-bits) including:

- Line Rate (Mbps)
- Packets
- Bytes
- Broadcast
- Multicast
- IPCS Error
- CRC Error

Operation Mode

☒ Normal Mode ☐ Jitter Mode

Universal Stream Counter can run under two modes: **Normal Mode** and **Jitter Mode**. Under **Normal Mode**, you can monitor/analyze statistics mentioned previously. However, when under **Jitter Mode**, additional statistics regarding to packet jitter will be displayed:

Delta Time (ns*)	Current	Current time interval between packets
	Maximum	Maximum time interval between packets
	Minimum	Minimum time interval between packets
Jitter (ns*)	The variance of time intervals between <b>Maximum Delta Time</b> and <b>Minimum Delta Time</b> .	

\*ns: Nanosecond

## Pattern Check

Forwarding Filter | Capture Criteria | Re-direct Filter | Pattern Check

☐ Pattern 0

Data: 00 00 00 00 00 00 00 00

Byte Enable: ☒ ☒ ☒ ☒ ☒ ☒ ☒ ☒

Result: 00 00 00 00 00 00 00 00

☐ Pattern 1

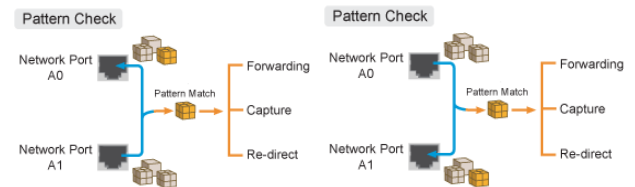
Data: 00 00 00 00 00 00 00 00

Byte Enable: ☒ ☒ ☒ ☒ ☒ ☒ ☒ ☒

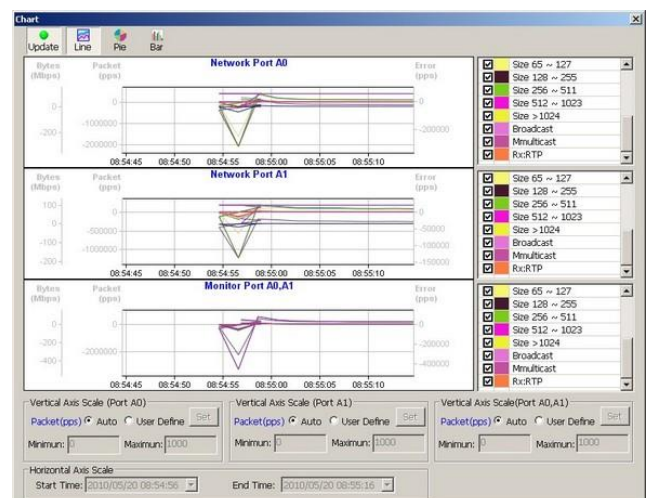
Result: 00 00 00 00 00 00 00 00

Description: The utility will compare the user-defined value set here with all packets received from corresponding port. All packets contain with the matched values will be captured.

NuSet-MiniTAP can compare the user-defined value set here with all packets received from corresponding port. All packets contain with the matched values will be forwarded/captured/re-directed according to settings.



## NuSet-MiniTAP Dynamic Chart



NuSet-MiniTAP provides a graphic interface which allows you to monitor/interpret network packet streams easily. You can set the graphic display as **Line**, **Pie** or **Bar** chart.





## GENERAL DESCRIPTION OF NuTAP-S61

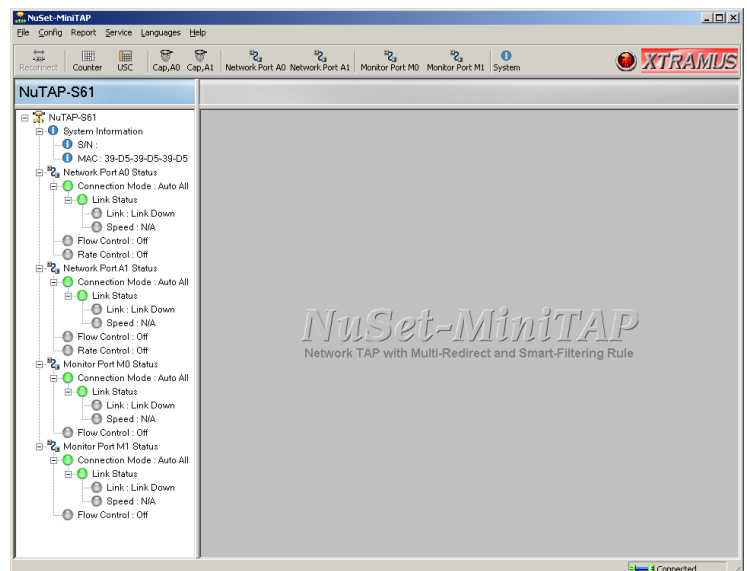
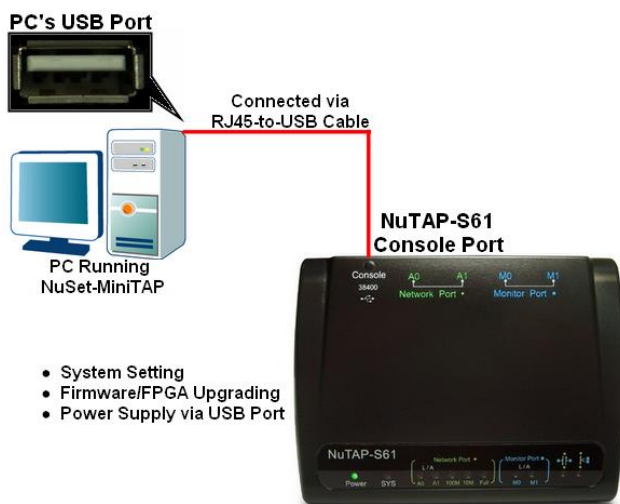


1	12V DC Power Jack	2	LEDs
3	RJ45 Ports	4	Reset Button

### Control via NuSet-MiniTAP

NuSet-MiniTAP is a utility software designed for NuTAP-S61 and runs under Windows® environment. With NuSet-MiniTAP's GUI (Graphic User Interface), users can configure test parameters, access test data and upgrade system firmware.

To use NuSet-MiniTAP, you need a USB-to-RJ45 cable, and connect this cable between NuTAP-S61's Console Port and your PC's USB port as shown in the figure down below.





## RELATED PRODUCTS

### NuTAP-311:

Network TAP with Two 10/100/1000 Mbps Network Port/Monitor Port



## CONTACT INFORMATION

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