LevelOne

DSA-1000 / PRT-1000

Device Server / Thermal Printer

User Manual

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1. Introduction

Overview of Network Ticket Generator

Whether you are "*operating a wireless hotspot service for generating revenue"* or "*providing free but controlled wireless internet access to guests"*, it would be handy to both the operators and the wireless users if the account information (such as username, password, SSID and etc.) can be readily output to Thermal Printers and printed out as account tickets.

DSA-1000 is designed specifically to operate in conjunction with specific Controllers/Gateways. Typical serial Thermal Printers on the market today may or may not be IP network ready, and it is not practical to integrate each brand one-by-one with Controllers/Gateways. Hence, it has specifically designed a smart device server - DSA-1000, for two purposes:

1. Attaching before a serial Thermal Printer so that one or more Thermal Printers can be connected to a Controller/Gateway via IP networks.

2. Pre-integrated with the Controller/Gateway so that account generation becomes quick and easy to the operator, simply by a push of buttons on the device.

It provides **DSA-1000** and a Thermal Printer as a combo set called **Network Ticket Generator**.

The followings are typical application scenarios:

- A small business who wishes to quickly set up a wireless service hotspot for charged internet service may purchase a Gateway, and a Network Ticket Generators set. The Gateway alone serves as an AP and a gateway, Network Ticket Generator enables the registration operator to generate and issue accounts via push buttons on the DSA-1000 and hand out the account ticket printed out by Thermal Printer.

- A corporate has several sites. Deployed at the reception area of each site are with a DSA-1000 and a Thermal Printer. Guests who need wireless connection to the internet simply need to request the receptionist and obtain a slip with account information. The guest account will automatically expire after the pre-configured time.

- A hotel has a Controller/Gateway and multiple APs within it's hospitality areas. Multiple sets of Network Ticket Generator are distributed at the service desks and lounge counters. The service clerks are able to create accounts for their guests with charged or free internet service depending on the hotel's service model.

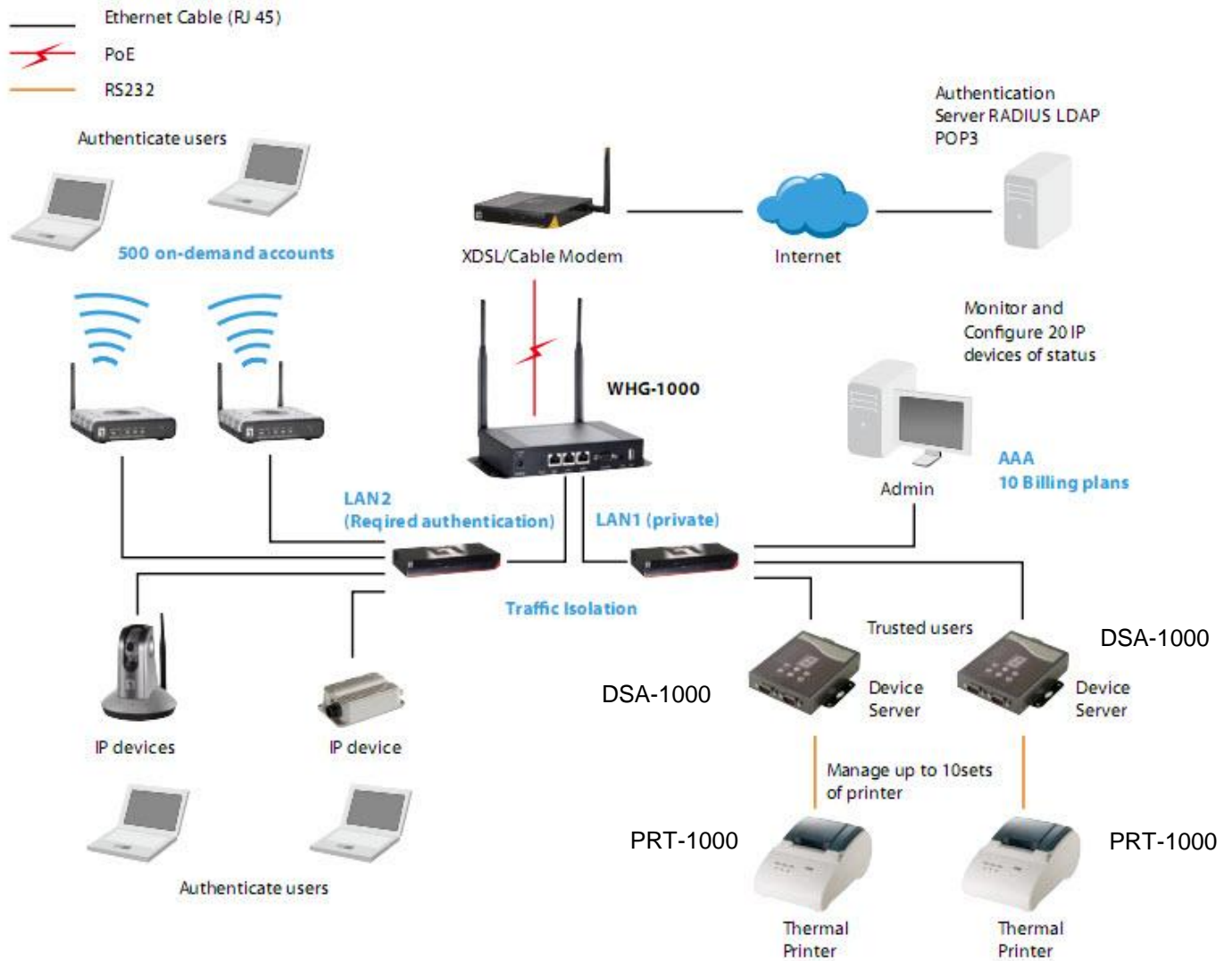Below are two network diagrams examples using Network Ticket Generator combo set.

1) One Gateway with one Network Ticket Generator set

Ethernet Cable

WHG-1000

DSA-1000

RS232 Cable

PRT-1000

2) One Gateway with multiple Network Ticket-Generator sets

Ethernet Cable

WHG-1000

DSA-1000

Ethernet Cable

RS232 Cable

DSA-1000

PRT-1000

RS232 Cable

PRT-1000

Application Diagram

Though DSA-1000 is specifically designed to for on-demand account generation and operate Thermal Printers, it can also be deployed independently to connect other RS232 devices to an Ethernet network for remote operation. If you will be deploying DSA-1000 independently to manage other serial devices, please carefully set the **Serial Settings** in DSA-1000 to match the operating needs of your serial device.
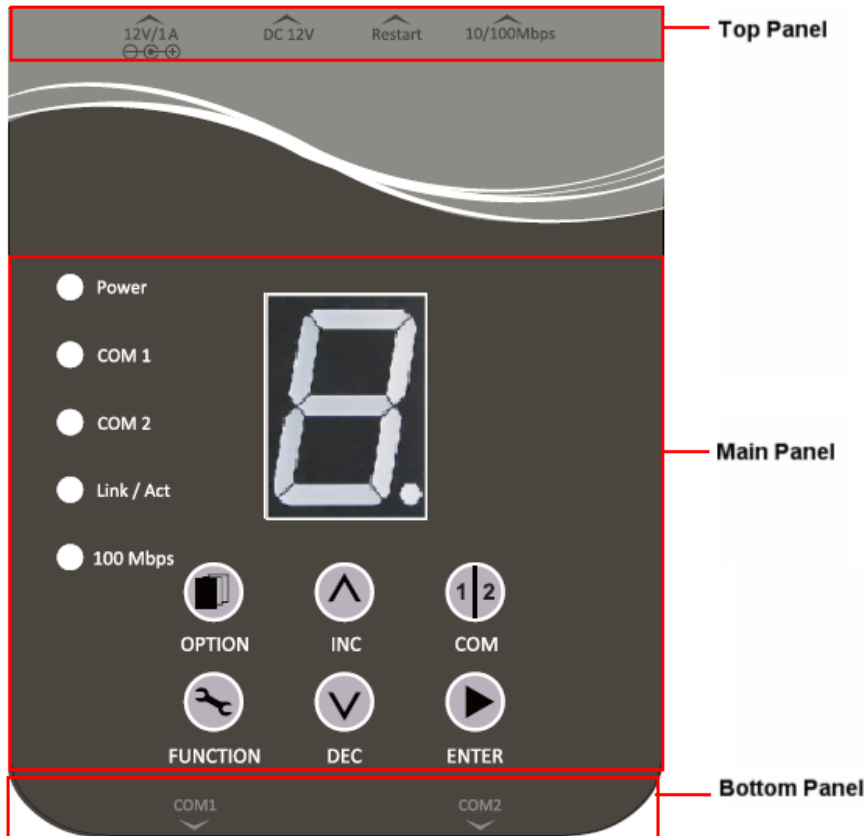
	If you connect other serial device to DSA-1000 and are unable to re-motely operate your connected serial device, please check that:
Note: ·	The settings under **Serial Settings** of DSA-1000 are configured to match your serial device operating requirements.
·	If your serial device application operates on pure serial communication then you need to setup a COM port redirector.

2. Device Overview

Panel Overview

Top Panel

	Adapter Socket (12V/1A)	The power socket for connecting to an external power source through the power adapter provided in the package.
	DC Socket (DC12V)	The power socket for connecting to an external power source through a DC power supply.
	Restart Button	Press to restart DSA-1000.
	Ethernet Port	Ethernet port for connecting to a Controller/Gateway.

Bottom Panel

COM 1	Serial Port for connection with a Thermal Printer.
COM 2	Serial Port for connection with a Thermal Printer. Used for back up when COM 1 malfunctions.

Main Panel

LED indicators	
Power	Turned on when properly connect to power supply.
COM 1	Turned on when output is switched to COM1. *Note:* - *When COM 1 and COM 2 are blinking simultaneously, this means that Terminal Server configuration is not set correctly. Please check the settings in Terminal Server of your Gateway/Controller.* - *When COM 1 and COM 2 are turned on simultaneously, this means that the system is in safe mode.*
COM 2	Turned on when output is switched to COM2. *Note:* - *When COM 1 and COM 2 are blinking simultaneously, this means that Terminal Server configuration is not set correctly. Please check the settings in Terminal Server of your Gateway/Controller.* - *When COM 1 and COM 2 are turned on simultaneously, this means that the system is in safe mode.*
Link / Act	Turned on when LAN port is connected to an upstream networking device such as a switch or Gateway/Controller.
100 Mbps	Turned on when LAN port is connected.
7 Segment	Displays an integer between 0 ~ 9 which indicates the billing plan number selected.
Buttons	
OPTION	For future use.
INC	Increase the numeric display for selecting a billing plan number.

		For switching the output to COM1 or COM2.
		Press this button followed by selecting a number and press Enter will perform a specific action. The available combinations are as follows: FUNTION + 1 + ENTER: Print out the IP address of DSA-1000. FUNTION + 8 + ENTER: Enter panel test mode. FUNTION + 9 + ENTER: Reset DSA-1000 to factory default. FUNTION + 0 + ENTER: Lock the panel of DSA-1000. To Unlock select your lock number and press ENTER
		Decrease the numeric display for selecting a billing plan number.
		Create and print out an account for the chosen billing plan.

3. Hardware Setup

The following diagram illustrates how to connect DSA-1000 to the Thermal Printer and Gateways/Controllers. Please follow the steps described below to install hardware:

Ethernet Cable

WHG-1000

DSA-1000

RS232 Cable

PRT-1000

1. Attach DSA-1000 to a power source, either through adaptors provided in the package or through DC socket with a DC power supply.

2. Attach Thermal Printer to a power source, through adaptors provided in the package and turn on the power switch situated on the left side of the device.

3. Connect Thermal Printer to the COM1 port of DSA-1000 by a RS-232 cable provided within Thermal Printer package.

4. Connect DSA-1000 to the LAN port of your Gateway/Controller by an Ethernet cable. Note: You need to connect to the correct LAN port if your Gateway/Controller is operating in Port-based mode.

5. To verify that the system is up and running, enter the WMI of your Gateway/Controller and ping DSA-1000 (**192.168.1.10**). You should see replies from DSA-1000 as shown below, this means that the devices are setup and working properly.

Network Utilities		
Wake-on-LAN		(MAC, e.g. XX:XX:XX:XX:XX:XX) Wake Up
Ping	192.168.1.10	(IP/Domain Name) Ping
Trace Route		(IP/Domain Name) Start Stop
ARP Table	Show	
Status	Done	
Result	PING 192.168.1.10 (192.168.1.10) 56(84) bytes of data. 64 bytes from 192.168.1.10: icmp_seq=1 ttl=64 time=1.31 ms 64 bytes from 192.168.1.10: icmp_seq=2 ttl=64 time=1.39 ms 64 bytes from 192.168.1.10: icmp_seq=3 ttl=64 time=1.32 ms 64 bytes from 192.168.1.10: icmp_seq=4 ttl=64 time=1.34 ms --- 192.168.1.10 ping statistics --- 4 packets transmitted, 4 received, 0% packet loss, time 3003ms rtt min/avg/max/mdev = 1.317/1.346/1.390/0.027 ms	

Note:	If you are unable to get a reply from pinging DSA-1000, please refer to **System Configuration** and check that the network settings of DSA-1000 and Gateway/Controller interface connected to are under the same subnet.

4. System Configuration

DSA-1000 is designed specifically to operate in conjunction with all Gateways/Controllers. If you are not using default settings, before connecting DSA-1000 to your Gateway/Controller, some configurations steps are required. The configuration instructions for Gateways/Controllers and DSA-1000 are covered in the following sections.
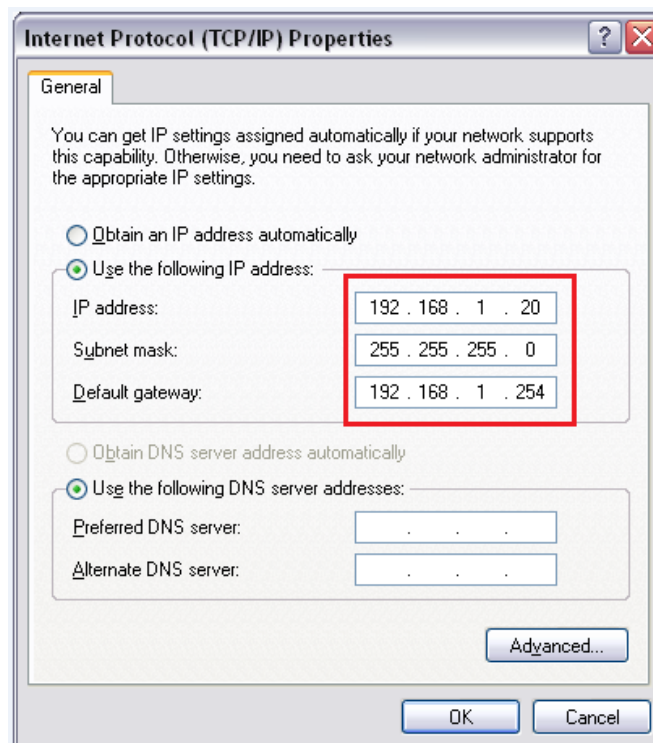
4.1 DSA-1000

DSA-1000 supports web based configuration. By factory default, DSA-1000 web interface can be accessed with ***IP address: 192.168.1.10***

> ***Subnet Mask: 255.255.255.0***
>
> ***Default Gateway: 192.168.1.254***

Step1:

Configure administrator PC's TCP/IP settings with a static IP address that is under the same subnet mask as DSA-1000. For example: 192.168.1.20

Step2:

Attach DSA-1000 to a power supply using the adapter provided in the package. Connect the administrator PC to the Ethernet Port of DSA-1000 via an Ethernet cable. Launch a web browser and type in the default IP address of DSA-1000 in the address field (**http://192.168.1.10**), the web interface of DSA-1000 should appear.

Serial Settings	
Data Baud Rate	9600
Data Bits	8
Data Paritiy	None
Stop Bits	1
Flow Control	None
Network Settings	
Static IP Address	192.168.1.10
Static Subnet Mask	255.255.255.0
Static Default Gateway	192.168.1.254
Static DNS Server	168.95.1.1
Transmit Timer	10
Server Listening Port	5000
Lock Password	0
	☐ Safe Mode
	Apply Clear
Utilities	
Firmware Upgrade	Apply
Restart	Apply
Reset to Factory Default	Apply
Status	
Software Version	1.00.00_00500

Step3:

Change DSA-1000 Network Settings if necessary so that the IP address of DSA-1000 is under the same subnet as the Gateway/Controller's interface, which DSA-1000 will be connected to. Click *Apply* to save the settings.

Serial Settings	
Data Baud Rate	9600
Data Bits	8
Data Paritiy	None
Stop Bits	1
Flow Control	None
Network Settings	
Static IP Address	192.168.1.10
Static Subnet Mask	255.255.255.0
Static Default Gateway	192.168.1.254
Static DNS Server	168.95.1.1
Transmit Timer	10
Server Listening Port	5000
Lock Password	0
	☐ Safe Mode
	Apply Clear
Utilities	
Firmware Upgrade	Apply
Restart	Apply
Reset to Factory Default	Apply
Status	
Software Version	1.00.00_00500

4.2 Gateway/Controller

Configuration procedures are similar on all Gateway/Controller models, the following instruction steps uses WHG-1000 as illustration. Note: the screenshots may be slightly different for your Gateway/Controller model.

Step1:

Connect administrator PC to your Gateway/Controller and access the WMI (web management interface).

Step2:

Enter the configuration page of the Service Zone which DSA-1000 will be connected to. Check to make sure that the network settings of DSA-1000 are under the same subnet as this service zone.

	Basic Settings : Private	
Network Interface	Operation Mode ⦿ NAT ○ Router	
	IP Address : 192.168.1.254 *	
	Subnet Mask : 255.255.255.0 *	
DHCP Server	○ Disable DHCP Server	
	⦿ Enable DHCP Server	
	Start IP Address : 192.168.1.1 *	
	End IP Address : 192.168.1.100 *	
	Preferred DNS Server : 192.168.1.254 *	
	Alternate DNS Server :	
	Domain Name : domain *	
	WINS Server :	
	Lease Time : 1 Day ▼	
	Reserved IP Address List	
	○ Enable DHCP Relay	

Step3:

Go to the configuration page for On-demand authentication; click **Configure** to edit Terminal Server settings.

Enter the IP address (**192.168.1.10**) and Port (**5000**) of DSA-1000.

Ticket Customization	Configure
Billing Plans	Configure
External Payment Gateway	Configure
Terminal Server	Configure
On-demand Account Creation	Create

⇩

Terminal Server Configuration				
Item	Server IP	Port	Location	Remark
1	192.168.1.10	5000		

Step4:

Edit and enable desired billing plans.

Billing Plans					
Plan	Type	Quota	Price	Enable	Function
1	Usage-time	10 day(s) 2 hr(s) 3 min(s)	34	☑	Edit
2	Duration-time	From 2010/05/20 01:18:00 till 2010/06/25 07:15:00	45	☑	Edit
3	Usage-time	8 day(s) 9 hr(s) 30 min(s)	5	☑	Edit
4	N/A			☐	Edit
5	N/A			☐	Edit
6	N/A			☐	Edit

5. Operation Instructions

After completing the Hardware Setup and the devices are physically connected, the system is ready for operation. This section will describe how to operate DSA-1000 to printout tickets for enabled billing plans.

1. Select an enabled billing plan number on DSA-1000 by o butt e numeric LED display on the center of the device represents the billing plan number currently selected.

Press button on DSA-1000 to create and print out an on-demand account of the selected billing plan. TH AL PRINTER will print out the ticket with the text format (Without background image) configured on your Gateway/Controller in **Ticket Customization.**

Note:	If you are unable to get a ticket printout after pressing *ENTER*, please check if the selected plan is enabled.

Appendix A. DSA-1000 Web Interface Summary

The attribute setting in this web interface is for COM 1 only. COM 2 uses default settings that are unchangeable.

Serial Settings (corresponding to Thermal Printer)		
Data Baud Rate		Select the desired baud rate. (The number of characters per second transferred)
Data Bits		Select the number of bits in each character.
Data Parity		Choose between Even or Odd for error detection, or select None for no error detection.
Stop Bits		Choose the number of stop bits to be sent at the end of every character. Electronic devices usually use 1 bit, slower electromechanical devices use 1.5 bit.
Flow Control		Choose the method of flow control to pause and resume the transmission of data to coordinate with printer speed. Select None if flow control is not required.

Network Settings		
	Static IP Address	The static IP address assigned to DSA-1000.
	Static Subnet Mask	The subnet mask of DSA-1000.
	Static Default Gateway	The default gateway of DSA-1000.
	Static DNS Server	Set the DNS server used by DSA-1000.
	Transmit Timer	TCP transmit timer, set the desired value or use default value. When the timer expires for a sent packet, sender will retransmit the packet.
	Server Listening Port	Set the port number for communication with the Gateway/Controller.
	Lock Password	This attribute is the integer between 0 ~ 9 that will be set as the password for unlocking the main panel.
Utilities		
	Firmware Upgrade	Firmware of DSA-1000 can be upgraded by clicking the *Apply* button. Note: Upgrade preparations are required before upgrade, please refer to ***Appendix B. Firmware Upgrade***
	Restart	Click *Apply* to restart DSA-1000 device.
	Reset to Factory Default	Click *Apply* to reset DSA-1000 to factory default settings.
Status		
	Software Version	The current software version running on DSA-1000.

Appendix B. Firmware Upgrade

Software tools tftpd32 is required in the upgrade procedure, please download and install tftpd32 before you proceed further.

Note:	Tftpd32 can be downloaded from the following link: http://tftpd32.jounin.net/tftpd32.html

Step1: Place the new firmware of DSA-1000 on a local location (for example desktop) in the PC that is accessing DSA-1000's web interface and performing the upgrade.

Step2: Configure the TCP/IP settings of your PC with an IP address under the same subnet mask as DSA-1000. For example 192.168.1.20

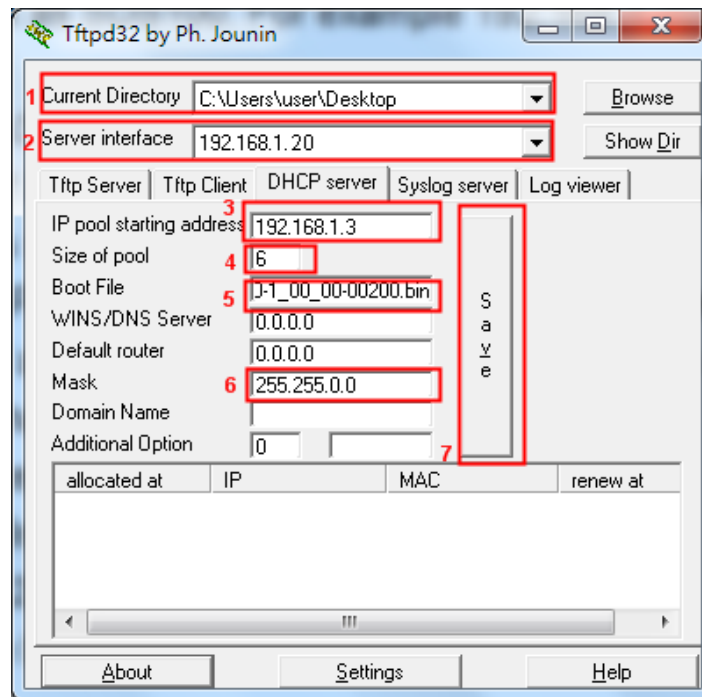**Step3:** Launch tftpd32 and click the DHCP tab.

1. In *"Current Directory"* field, browse for the location path where the firmware is stored.

2. Enter the IP address of your PC in *"Server interfaces"* field.

3. In *"IP pool starting address"* field, enter the start IP address of an IP segment that is available for allocation.

4. Set the size of the IP pool.

5. Enter the firmware filename in *"Boot file field"*.

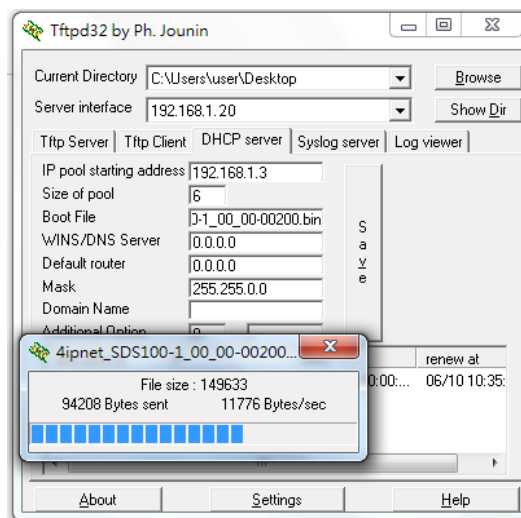6. Enter 255.255.0.0 in the *"Mask"* field.

7. Click *Save* button.

Note:	Please make sure that the location path and the firmware for up-grade is correct.

Step4: Click *Apply* of **Firmware Upgrade** in DSA-1000's web interface. DSA-1000 will automatically restart and connect to tftpd32 server set in Step3 as a DHCP client, download the firmware and perform the upgrade. Progress can be observed on tftpd32.

Step5: When complete, check the information displayed at **Software Version**, DSA-1000 have successfully upgraded to the new firmware.