



2Mbps Bandwidth Manager

BM-2002

User's Manual

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Customer Service

For information on customer service and support for the Bandwidth Manager, please refer to the following Website URL :

<http://www.planet.com.tw>

Before contacting customer service, please take a moment to gather the following information :

- ◆ Bandwidth Manager serial number and MAC address
- ◆ Any error messages that displayed when the problem occurred
- ◆ Any software running when the problem occurred
- ◆ Steps you took to resolve the problem on your own

Revision

User's Manual for PLANET BM-2002

Model: BM-2002

Rev: 2.0 (May, 2003)

Part No. EM-BM2002v2

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Chapter 1 : Introduction

Business-critical and time-sensitive applications such as VoIP or transaction processing need guaranteed bandwidth. PLANET's 2Mbps Bandwidth Manager, the BM-2002, offers network administrators an easy yet powerful means to allocate network resources based on business priorities, and to shape, analyze and control bandwidth usage. Expensive WAN resources are more effectively utilized, avoiding the need for costly upgrades while still meeting business priorities.

The PLANET BM-2002 is simple to install, with two 10/100Mbps Ethernet port for connecting to the local network and the WAN router respectively. For bandwidth management, packets can be classified based on IP address, IP subnet and TCP/UDP port number. The device has more than 20 of the most common protocols such as H.323, Oracle, HTTP, FTP, etc. for ease of definition; the administrator can then define policies to ensure committed and maximum bandwidth levels for inbound / outbound traffic in each class. The administrator can also define three priority levels for each policy to ensure that high priority packets receive the maximum available bandwidth. In addition, each policy can have a schedule defined for when the policy is activated or inactivated in increments of 5 minutes.

The BM-2002 also enables administrators to effectively measure traffic on your network and provides comprehensive graphical reports about how bandwidth is being used. The administrator can view each internal host's inbound and outbound traffic or each network service's inbound and outbound traffic. The BM-2002 also provides a graphical report for either the top ten internal hosts or services that generate traffic. This report system helps administrators quickly understand and reallocate bandwidth usage to an optimized level and make best use of the limited and expensive Wide-area network bandwidth.

1.1 Features

- ◆ Desktop size with two 10/100Mbps Fast Ethernet port for true 2 Mbps inbound and outbound throughput
- ◆ Remote configuration through standard web browser with SSL security
- ◆ Transparent operation requires no changing of existing network structure
- ◆ Traffic classification based on IP, IP range/subnet, MAC or TCP/UDP port range
- ◆ Configurable guaranteed and maximum bandwidth with level of priorities
- ◆ Dynamic and prioritized bandwidth sharing with fairness between equal-level priorities
- ◆ Assigns daily and weekly access schedules to each individual policy
- ◆ Real time traffic monitoring
- ◆ Round-robin database for monitoring traffic avoids storage expansion over time
- ◆ Graphical bandwidth usage display
- ◆ Policy bandwidth usage report and customization of bandwidth usage reports
- ◆ Simply backup and restore of the configuration files with full SSL protection

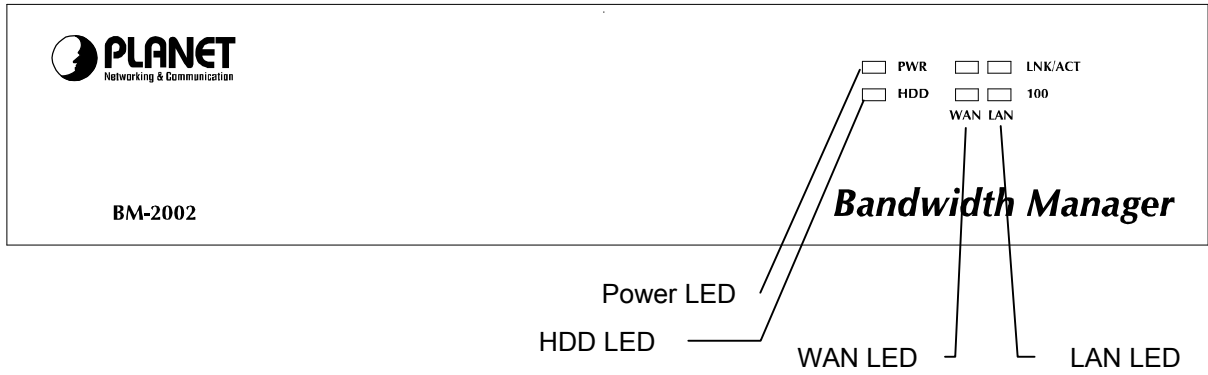
1.2 Package Contents

The following items should be included:

- ◆ Bandwidth Manager
- ◆ Power Cord
- ◆ Quick Installation Guide
- ◆ User's Manual CD

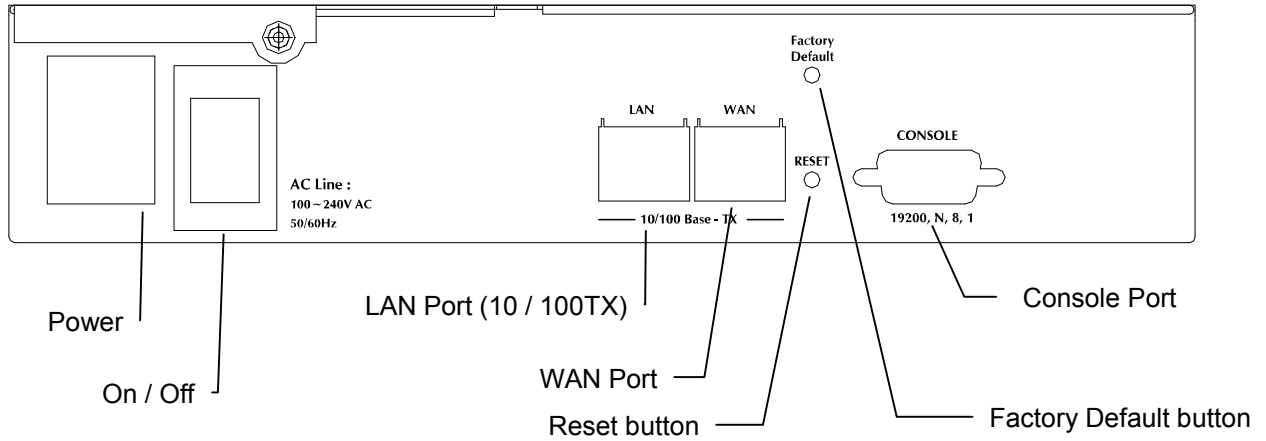
If any of the contents are missing or damaged, please contact your dealer or distributor immediately.

1.3 Bandwidth Manager Front View



LED	Status	Meaning
PWR	Lit Green	Indicates the device is receiving power
HDD	Lit Red	Indicates the system is reading or writing data to memory
LNK/ACT	Lit Green	Link is established
	Blinking Green	Packets are transmitting or receiving
	Off	Not connected
100	Lit Orange	Indicates the link operate on 100Mbps
	Off	Indicates the link operate on 10Mbps or not connected

1.4 Bandwidth Manager Rear Panel



Port	Function
Power	This is where you will connect the AC power cord. 100~240VAC is allowed.
Power Switch	You can turn on/off this device by the switch when the power cord is connected
LAN Port	This is where you will connect the RJ-45 line to your local switch or device. This port is MDI interface
WAN Port	This is where you will connect the RJ-45 line to your router or ISP. This port is MDI interface
Factory Default	Press this button to have your BM-2002's setting set to Factory Default
Reset	Press this button to have your BM-2002 device reboot
Console	This port is reserved for manufacturer use only

1.5 Specification

Model	BM-2002
Hardware	
Connections	2 x 10/100Base-TX
RS-232 Console	Yes
Button	Hardware Reset, Factory Default
System LED	System: Power, HDD Network: ACT/LNK, 100
Power	100~240 VAC, 50~60Hz
Operating Environment	Temperature: 5~40°C Relative Humidity: 20%~90%
Dimension W x D x H	220 x 254 x 44
Regulatory	FCC, CE Mark
Software	
Maximum Bandwidth	2Mbps
Maximum Host catalog + Service Catalog + Policy	256
Maximum concurrent session	10000
Management	Web with SSL protect
Traffic Classification	IP, IP subnet, TCP/UDP port
Bandwidth Allocation	Hierarchy of policy rules with In/Out traffic management Guaranteed and maximum bandwidth Scheduled in unit of 5 minutes 3 Priorities
Real-Time Report	Number of Connections Internal Host In/Out Traffic Service In/Out Traffic Top 10 Host Top 10 Service All Policies Bandwidth Usage Customized Bandwidth Usage Report
Advanced Report	Upload each user's connection data to FTP sever for billing or other analysis
Firewall	Deny SYN / UDP / ICMP flood, deny port scan Access control to limit user's access rights based on IP or TCP/UDP port Discard per user connection based on IP or MAC
Other Functions	Firmware upgradeable through web NTP support Configuration backup and restore through web Support SNMP

Chapter 2 : Hardware Installation

2.1 Installation Requirements

Before installing the BM-2002 Bandwidth Manager, make sure your network meets the following requirements.

Mechanical Requirements

The Bandwidth Manager is to be installed between your router and local area network. The Bandwidth Manager can be placed on the table or shelf. Locate the unit near the outlet.

Electrical Requirements

The Bandwidth Manager is powered from 100/240 VAC. A standard IEC connector is used for the power cable. Follow all applicable electrical codes. Frame ground should be tied to a common grounding point using #18AWG cable.

Note: The Bandwidth Manager is a power-required device, it means, the Bandwidth Manager will not work until it is powered. If your networked PCs will need to transmit data all the time, please consider use an UPS (Uninterrupted Power Supply) for your Bandwidth Manager. It will prevent you from network data loss. In some area, installing a surge suppression device may also help to protect your Bandwidth Manager from being damaged by unregulated surge or current to the Bandwidth Manager

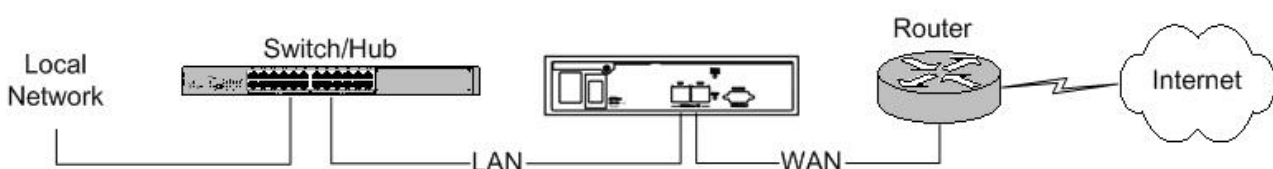
Network Requirements

The Bandwidth Manager provides two 10/100Base-TX port for connecting to WAN (external) and LAN (internal) side. The network ports are both MDI (media dependent interface) port. Please use straight Category 5 UTP Ethernet cable to connect the network port to switch, hub or other devices with MDI-X interface and use cross-over cable to connect the network port to router, DSL/Cable modem or other devices with MDI interface.

2.2 Deploy Bandwidth Manager On The Network

In order for Bandwidth Manager to manage traffic, the traffic must pass through Bandwidth Manager at a useful point in a network. In most situations, the bandwidth manager should be placed behind the Internet connection router.

This deployment allows the network administrators to control all bandwidth based on business priorities and give business-critical and time-sensitive applications guarantee bandwidth and higher priority. Business-critical applications can receive maximum performance while other less urgent traffic is still available on remaining bandwidth. Bandwidth Manager also provides comprehensive reporting functions to help monitor network and bandwidth usage and allow adjustment of the bandwidth management policies accordingly.



2.3 Install Bandwidth Manager To Your Network

- ◆ Choose an Installation Site

Select a suitable place on the network to install the Bandwidth Manager.

- ◆ Connect LAN Cables

Use standard LAN cables to connect your LAN side Switch or Hub to the LAN ports on Bandwidth Manager. Both 10Base-T and 100Base-T connections can be used. The LAN and WAN port of bandwidth manager support Auto-Negotiation to connect with best speed and duplex mode.

The LAN port of Bandwidth Manager is MDI port. Thus, you can just use straight network to connect the LAN port to your switch or hub.

- ◆ Connect WAN Cable

Connect the router, DSL or Cable modem to the WAN port on Bandwidth Manager. The LAN and WAN port of Bandwidth Manager are both MDI port. Thus, in some case, you may need to use cross-over cable to connect your router, DSL or cable modem.

- ◆ Power Up

Connect the supplied power cord to Bandwidth Manager and use the power switch that in rear panel to turn on the Bandwidth Manager. Use only the power cord provided. Using a different one may cause hardware damage

- ◆ Check the LEDs

The PWR LED should be ON.

The HDD LED should flash for about 1 to 2 minutes, and then turn off. This LED will also flash when it is reading data from the system memory.

Both the WAN and LAN's LNK/ACT LED should be on or flash. If one of the LED is off, please check the network connection. In some case, you may need to use cross-over cable to connect the LAN or WAN port to your networks.

For more information, refer to Section 1.3 Bandwidth Manager Front View.

Chapter 3 : Getting Started

This chapter explains how to setup your computer to be a client to manage the Bandwidth Manager.

3.1 Configuration On A Client Side to link with Bandwidth Manager

You must use web browser to manage Bandwidth Manager with SSL protection. Before starting to configure bandwidth management rules, you should configure client's network setting first.

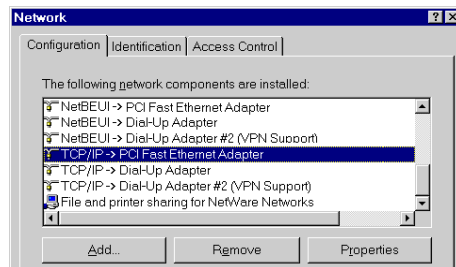
The default IP address of the Bandwidth Manager is as the following:

IP : 192.168.0.250
 Mask : 255.255.255.0
 Gateway : 192.168.0.254

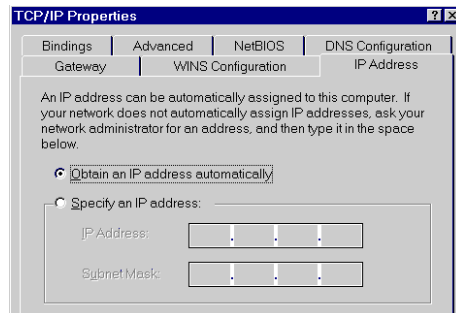
To connect the bandwidth manager by web, you need to first change the management client's network setup.

- Change TCP/IP Settings - Windows 9x/ME:

1. Select *Control Panel - Network*. You should see a screen like the following:



2. Select the *TCP/IP* protocol for your network card.
3. Click on the *Properties* button. You should then see a screen like the following.

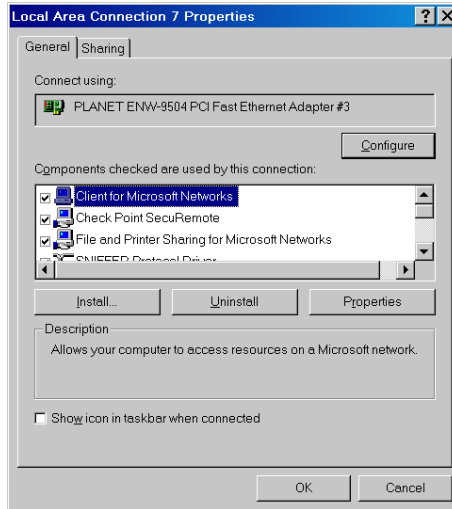


4. Select "Specify an IP Address" and input "192.168.0.200" (or other IP in the same subnet) on the IP Address field and "255.255.255.0" on Subnet Mask field.
5. Click OK and restart the PC to activate the IP configuration.

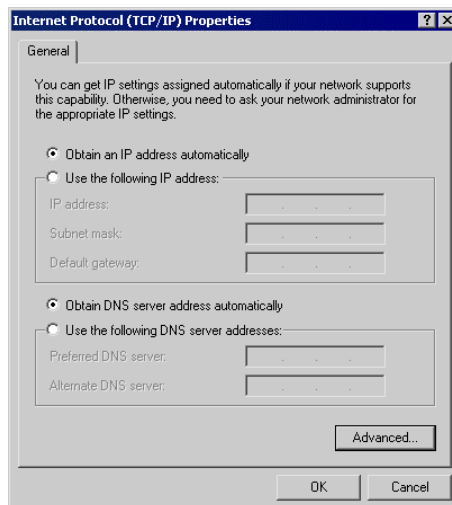
- Checking TCP/IP Settings - Windows 2000:

1. Select *Control Panel - Network and Dial-up Connection*.

2. Right - click the *Local Area Connection* icon and select *Properties*. You should see a screen like the following:



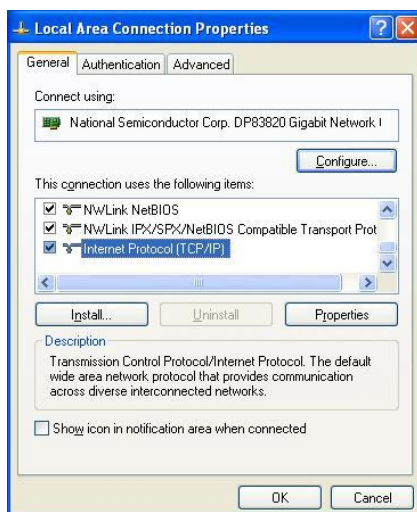
3. Select the *TCP/IP* protocol for your network card.
4. Click on the *Properties* button. You should then see a screen like the following.



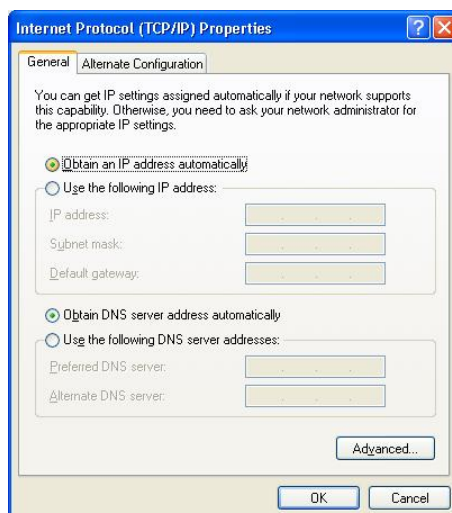
5. Select "Use the following IP address" and input "192.168.0.200" (or other IP in the same subnet) on the IP Address field and "255.255.255.0" on Subnet Mask field.
6. Click OK to activate the IP configuration.

- Checking TCP/IP Settings - Windows XP

1. Select *Control Panel - Network Connection*.
2. Right click the *Local Area Connection* and choose *Properties*. You should see a screen like the following:



3. Select the *TCP/IP* protocol for your network card.
4. Click on the *Properties* button. You should then see a screen like the following.



5. Select "Use the following IP address" and input "192.168.0.200" (or other IP in the same subnet) on the IP Address field and "255.255.255.0" on Subnet Mask field.
6. Click OK to activate the IP configuration.

3.2 Logging in as Administrator

Now you can communicate with Bandwidth Manager by web browser.

Open the web browser and type <https://192.168.0.250:8889>. Please note that "8889" is the port number of Bandwidth Manager management interface, "https" here is to invoke the SSL of you web browser.



You must key in user name and password to enter its web management interface.

The default user name is “**admin**” without password.



Then, you will enter Bandwidth Manager's Configuration Menu.

Chapter 4 : Web Configuration

This chapter introduces how to configure the Bandwidth Manager to effectively control your bandwidth usage.

On the top of the Web interface, there is three major menu of the bandwidth manager:

System Settings: The basic system configurations

Policy Editor: The policy that will be used to manage the bandwidth

Report: The reporting system of the bandwidth manager base on the system settings and pre-defined policy

The bandwidth manager will need the three parameters before it operates the bandwidth control: **Host**, (illustrated in section 4.1.6), **Services** (illustrated in section 4.1.7) and **Policy**, (illustrated in section 4.2). However, some of the configurations are also required. Please refer to the related section for the details.

4.1 System Settings

System settings menu contains three categories: "General" allows you to configure basic network parameters, Internet connection bandwidth and date/time. "Catalog" allows you to define host and services information which is needed for policy editor. "Admin" contains options to setup SNMP, backup / restore settings, upgrade firmware, etc.



4.1.1 Information

This section shows information about the Bandwidth Manager

Information	
Product :	BM-2002
Version:	v2.62
License:	Commercial
Serial No :	Y1Y3I-B5R0T-H0O2Y-G4C5U
Bandwidth Limit :	Outbound :2048 kbps, Inbound :2048 kbps

4.1.2 Network

You can setup Bandwidth Manager network settings in this section.

- ◆ **Host Name:** Please assign a name that is easy to remember for Bandwidth Manager.
- ◆ **Domain Name:** Your local network domain name.
- ◆ **DNS Server:** Your ISP's DNS server IP or your DNS server IP.
- ◆ **IP Address:** Please assign an IP that is not in use by other device for Bandwidth Manager. The default IP address of Bandwidth Manager is 192.168.0.250. This IP address can be on different subnet from other internal hosts that you want to manage. For example, the Bandwidth Manager's IP can be 192.168.0.250 and you can use it to manage internal hosts with IP in 10.x.x.x subnet.
- ◆ **Network Mask:** Your local network subnet mask. For example, 255.255.255.0.
- ◆ **Default Gateway:** Your local network default gateway. For example, 192.168.0.254.
- ◆ **Save:** Press save button to save all these configurations.

Note: If you have modified the IP address to a different IP subnet, you need to also modify the IP address of management client's IP address settings.

Network Setting	
Host Name :	<input type="text" value="bm2002"/>
Domain Name :	<input type="text" value="planet.com.tw"/>
DNS Server :	<input type="text" value="168.95.1.1"/>
IP Address :	<input type="text" value="192.168.1.1"/>
Network Mask :	<input type="text" value="255.255.255.0"/>
Default Gateway :	<input type="text" value="192.168.1.254"/>
<input type="button" value="Save"/>	

4.1.3 Bandwidth

Please enter your network bandwidth here. The sum of guaranteed bandwidth for all policies should not exceed this value.

- ◆ **Inbound Bandwidth:** Input the downstream speed of your Internet connection (WAN port). The valid value is form 1 to 2048 in units of kbps.
- ◆ **Outbound Bandwidth:** Input the upstream speed of your Internet connection (WAN port). The valid value is form 1 to 2048 in units of kbps.
- ◆ **Save:** Press save button to save all these configurations.

Bandwidth Setting	
Inbound Bandwidth:	<input type="text" value="1544"/> Kbps, Valid value range: 1 ~ 2048
Outbound Bandwidth:	<input type="text" value="384"/> Kbps, Valid value range: 1 ~ 2048
<input type="button" value="Save"/>	

BM-2002 allows up to 2Mbps (2048kbps) inbound/outbound bandwidth in both directions of its WAN port. Please be aware of the bandwidth that your Internet services provider provided. It is not necessary to configure Inbound and outbound bandwidth in the same values. Asymmetric bandwidth like 1.5Mbps (1544Kbs) downstream, 384Kbps upstream ADSL is allowed.

4.1.4 Date/Time

The Date/Time menu contains commands for setting Bandwidth Manager's time and date required for correctly record the bandwidth usage time. User can directly input the date and time or specify the NTP server for the device to synchronize with time-server. Click on “**Date/Time**” in the system settings menu bar and the Date/Time screen will appear as illustrated below:

- ◆ **Date:** Input the year and select the Date from the pull-down list respectively.
- ◆ **Time:** Select the Time from the pull-down list respectively.
- ◆ **NTP Server:** Local NTP (Network time protocol) server IP or DNS name. If you want to manually configure the date and time, left this field blank.

Note: Please find below NTP server web address for your reference to set the time-server.

<http://www.eecis.udel.edu/~mills/ntp/clock1a.htm>

<http://www.eecis.udel.edu/~mills/ntp/clock2a.htm>

- ◆ **Time Zone:** System administrator must select the time zone for the region.
- ◆ **Save:** Press save button to save all these configurations. If you have input a NTP server IP address or DNS name, the Bandwidth Manager will try to inquire the current time and update the Date and Time field.

Date/Time	
Date :	2003 / 5 / 16
Time :	16 : 35
NTP Server :	137.189.8.174
Time Zone :	(GMT+8:00)Taipei
Save	

The Date/Time information will be used in the reporting system (refer to section 4.3). If your BM-2002 can reach to the Internet, you can find the nearest NTP server in the Internet for your BM-2002 that should provide the accurate date and time for the bandwidth manager.



4.1.5 Host
















BM-2002 can control the bandwidth usage via host IP address. You must define local and/or remote user's IP address that you want to manage to the host catalog. This host catalog is useful on defining policy. The total number of host catalog, service catalog and policies cannot exceed 256.

The Host Catalog page lists all the defined hosts with host name, IP address and location. On the top of the host table, the following buttons are available:

- ◆ **New** - Create new host catalog.
- ◆ **Prev** - Go to previous page.
- ◆ **1, 2, ...** - First, second, ... page.
- ◆ **Next** - Next page.

On the Action field of each host name, the following two buttons are provided:

-  - Modify the host catalog
-  - Delete the host catalog

Host Catalog			
New Prev 1 2 Next Now Page: 1 Total Item: 16			
Host Name	IP Address	Location	Action
Anywhere	0.0.0.0/0	External	
Link2	192.168.1.249	Internal	 
fs	192.168.1.20	Internal	 
win2000_2cpu	192.168.1.152	Internal	 
ebox_win2000	192.168.1.12	Internal	 
albert	192.168.1.32	Internal	 
mejia	192.168.1.128	Internal	 
big	192.168.1.22	Internal	 
comp	192.168.1.13	Internal	 

After clicking “New” or Modify button, the following host configuration page will be shown:

Host Catalog--New	
Host Name :	<input type="text" value="PLANET"/>
IP Address :	<input type="text" value="192.168.1.8"/> <small>Format: (a)10.0.0.1 (b)10.0.0.1-255 (c)10.0.0.0/24 (d)Mix format of a, b and c. Use comma to divide each ones.</small>
Location :	<input checked="" type="radio"/> Internal <input type="radio"/> External
Description :	<input type="text" value="company web server"/>
<input type="button" value="Save"/> <input type="button" value="Cancel"/>	

- ◆ **Host Name:** The name of specified IP address or a range of IP address. With it, you can easily tell the bandwidth usage through this meaningful name. For example, a name like “Web_server” to a dedicated IP, or “Acct_Group” for the IP range of accounting department.
- ◆ **IP Address:** IP or IP range of this host. You can input by single IP address, IP range, IP subnet or mix of about formats and divided by comma. For example, 192.168.0.1, 192.168.0.5, for the two devices using (IP address 1 and 5); 192.168.0.20-30 (for the range of IP address from 20 to 30), and 192.168.0.128/28 (for IP address from 128 to 143).
- ◆ **Location:** If the host's position is on the WAN side of Bandwidth Manager in the network, please choose external. If the host's position is on the LAN side of Bandwidth Manager, please choose internal.
- ◆ **Description:** Additional description of this host(s).
- ◆ **Save/Cancel:** Press save button to save above configurations and Cancel button to discard your configurations.



After clicking Save or Cancel button, the Host Catalog page will be shown again. To edit the host(s) you have configured, please click Modify button on the Action field. To remove the host(s) you have configured, please click Delete button on the Action field.









4.1.6 Service

The Service Catalog contains all the popular services that you may want to manage. The total number of host catalog, service catalog and policies can not exceed 256. The bandwidth Manager have contained 22 predefine services. For other Internet services, however, you can direct click on New to add the services or click on Modify icon to modify and remove by click on the delete icon.

- ◆ **New** - Create new service.
- ◆ **Prev** - Go to previous page.
- ◆ **1, 2, ...** - First, second, ... page.
- ◆ **Next** - Next page.

On the Action field of each service name, the following two buttons are provided:

-  - Modify the Service catalog
-  - Delete the Service catalog

Service Catalog				
New Prev 1 2 Next Now Page: 1 Total Item: 18				
Name	Protocol	Port	Description	Action
all tcp	tcp	0	All services of tcp	
all udp	udp	0	All services of dup	
all tcp/udp	tcp/udp	0	All services of tcp and udp	
ftp	tcp	21	File transfer protocol	
h323	tcp/udp	1720	Voip, Netmeeting	
http	tcp	80	web service	 
https	tcp/udp	443	secure http (SSL)	 
dns	tcp/udp	53	Domain Name Server	 
telnet	tcp	23		 

After clicking “New” or Modify button, the following service configuration page will be shown.

Service Catalog--New	
Name :	<input type="text" value="CRM"/>
Protocol :	<input type="text" value="tcp"/>
Port Number :	<input type="text" value="1688"/> <input type="text" value="tcp"/> <input type="text" value="udp"/> <input type="text" value="icmp"/> <input type="text" value="tcp/udp"/> <small>Format: (a)80 (b)80-100 (c)Mix format of a and b. Use comma to divide each ones.(Max 15)</small>
Description :	<input type="text"/>
<input type="button" value="Save"/> <input type="button" value="Cancel"/>	

- ◆ **Name:** Name of this service. For example, www, http or telnet.
- ◆ **Protocol:** Choose which kind of protocol this service use. For example, Telnet is using TCP; voice data transmission like PLANET VoIP gateway, is using UDP.
- ◆ **Port Number:** enter the port number this service use. For example, Telnet will use port 23, http will use port 80, PLANET VoIP gateway is using 30000 to 30100 by default.
- ◆ **Description:** Additional description of this service.
- ◆ **Save/Cancel:** Press save button to save above configurations and Cancel button to discard your configurations.

After clicking Save or Cancel button, the Service Catalog page will be shown again. To edit the service you have configured, please click Modify button on the Action field. To remove the service you have configured, please click Delete button on the Action field.

4.1.7 SNMP

Use the SNMP Configuration screen to display and modify parameters for the Simple Network Management Protocol (SNMP). The device includes an on-board SNMP agent which monitors the status of its hardware, as well as the traffic passing through it. A computer attached to the network, called a Network Management Station (NMS), can be used to access this information. Access rights to the agent are controlled by community string. To communicate with the device, the NMS must first submit a valid community string for authentication.

SNMP	
Enable SNMP:	<input checked="" type="checkbox"/>
Community Strings:	<input type="text" value="public"/>
System Location:	<input type="text" value="PLANET_Headquarter"/>
Contact Information:	<input type="text" value="Technical_Support"/>
<input type="button" value="Apply"/>	

- ◆ **Enable SNMP:** Check this box to enable the SNMP function.
- ◆ **Community Strings:** A community entry authorized for management access. The network management station must use same string to read the SNMP data from the device.
- ◆ **System Location:** Specifies the area or location where the device resides.
- ◆ **Contact Information:** Contact person for the device.
- ◆ **Save:** Press save button to save all these configurations.

4.1.8 Backup/Restore

You can easily backup and restore the current configuration of Bandwidth Manager.

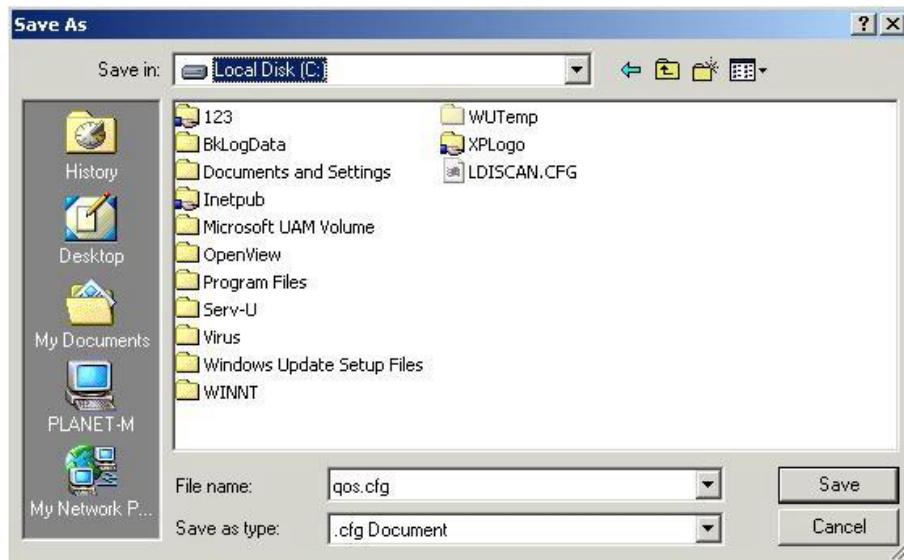


- ◆ **Backup:** Press “Start” button on the Config Download row to download the configuration file of Bandwidth Manager to your local client side. The following page will then be shown. Click “Save” to save the configuration file.

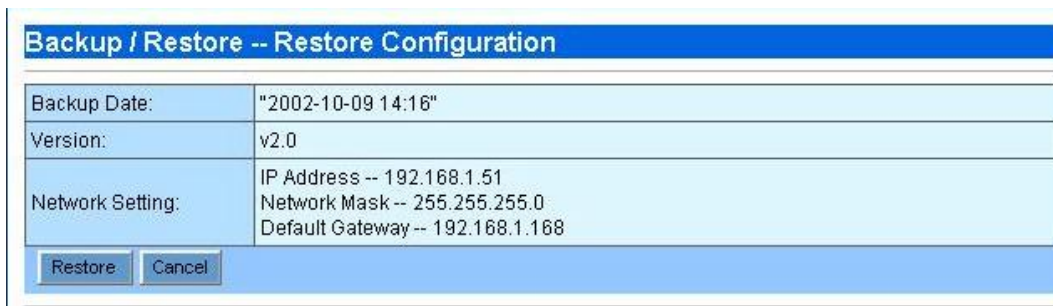


Note: It is strongly recommended to backup your file configuration file whenever you have complete the configurations.

- ◆ **Restore:** Press “Browse...” button to select the configuration file you have saved before.



Then press “Start” button to start upload configuration file to Bandwidth Manager.



After confirm backup date and network settings, press “Restore” button to start restore all of the configurations to Bandwidth Manager.



After restore is completed, a “Restore complete” window prompts. Click “OK” to continue.

4.1.9 Firmware Upgrade

PLANET will announce new patch or firmware on the website for users. You can download the latest firmware from the website and use this screen to upgrade.

Firmware Upgrade	
Upgrade File:	<input type="text"/> Browse...
<input type="button" value="OK"/>	

4.1.10 Account

You can change the user name and password when you log in on this window.

- ◆ **Old Name:** The old name you use to log in Bandwidth Manager
- ◆ **New Name:** The new name that you want to change.
- ◆ **Old Password:** Enter old password that you use before.
- ◆ **New Password:** The new password that you want to change.
- ◆ **New Password Again:** Confirm new password again.
- ◆ **Save:** Press “Save” button to save all the configurations.

Account	
Old Name :	admin
New Name :	<input type="text"/> *Not Require
Old Password :	<input type="text"/>
New Password :	<input type="text"/>
New Password again :	<input type="text"/>
<input type="button" value="Save"/>	

After save is completed, the following window is prompted, click “OK” to continue.



Note: For safety reason, it is strongly recommended to change the default password and store the password in a safe place.

4.1.11 Reboot

You can reboot Bandwidth Manager from web and by Reset button on the rear side of this device.

Reboot
<input type="button" value="Reboot"/>

Press “Reboot” button to reboot the Bandwidth Manager, while reboot is processing, this info prompt.



4.1.12 Logout

You can logout the management interface after finishing your configuration.



4.2 Policy Editor




You can setup all the control policies, make IP/MAC binding for security and control access right in this section.










4.2.1 Policy Editor

Here will list all the policies that you have made. The total number of host catalog, service catalog and policies can not exceed 256. The following functions are provided on this page:

- ◆ **New** - Create new policy
- ◆ **Prev** - Go to previous page.
- ◆ **1, 2, ...** - First, second, ... page.
- ◆ **Next** - Next page.

-  - Modify the existing policy
-  - Delete the policy
-  - Schedule the time when the policy will be enabled.

Policy							
New Remnant:6kbps(Outbound) 108kbps(Inbound)							
Order	Internal Host	External Host	Service	Internal → External	Internal ← External	Enable	Action
				Guarantee(kbps)	Guarantee(kbps)		
1	sales department	Anywhere	http	100 (26%)	500 (32.4%)	Enabled	  
2	web_master	Anywhere	http	150 (39.1%)	150 (9.7%)	Enabled	  
3	Default internal host	Any host	all	128 (33.3%)	786 (50.9%)	Enabled	


Press “New” or Modify button, the policy configuration page will be shown as the following.

- ◆ **Order:** Policies processing sequence. When the Bandwidth Manager receives a packet, it will find the packet's Internal Host, External Host and Service and check which policy the packet applies. Order 1 policy will be the first policy to check and so on. When the Bandwidth Manager find a policy fit to the

packet, it will stop the checking and apply the guarantee bandwidth, burst bandwidth and priority to the packet. Thus, always put mission-critical traffic policy in the front to get higher performance.

- ◆ **Internal Host:** The internal host that you want to manage. You have to first define the internal host on host catalog.
- ◆ **External Host:** The destination host that you want to manage. You have to first define the external host on host catalog. You can build an external host if the Bandwidth Manager is deployed in a LAN to LAN (VPN, Wireless, G.SHDSL, etc) network environment.
- ◆ **Service:** The service that you want to manage. The services must be defined on the service catalog.
- ◆ **Guarantee:** Assign guaranteed bandwidth in kbps to this policy. This is the minimum bandwidth that the policy guarantees. The sum of all guarantee bandwidth should not exceed the inbound and outbound bandwidth settings on chapter 4.1.3.
- ◆ **Burst:** This policy's maximum bandwidth may be used. This is the maximum bandwidth that the policy can use.
- ◆ **Priority:** The packet's priority on this policy. When packets compete un-guaranteed bandwidth, packets on higher priority policy always process first.
- ◆ **Enable:** Enable or disable this policy.
- ◆ **Save/Cancel:** Press "Save" button to save above configurations and "Cancel" button to discard your configurations.

Policy --New	
Order:	Before 1
Internal Host:	sales department
External Host:	Anywhere
Service:	http
Internal → External	
Guarantee:	100 (kbps) Remnant:256
Burst:	120 (kbps) Maximum:384
Priority:	Mid
Internal ← External	
Guarantee:	200 (kbps) Remnant:758
Burst:	240 (kbps) Maximum:1544
Priority:	Mid
Enable:	Enabled
Description :	<div style="border: 1px solid gray; height: 80px;"></div>
<input type="button" value="Save"/> <input type="button" value="Cancel"/>	

You may use  button on policy list to schedule when each policy will be enabled.

- ◆ **Start time:** Time to start policy activation.
- ◆ **End time:** Time to terminate policy activation.
- ◆ **Week:** Days in a week that you want QoS policy to take effect.

- ◆ **Enable:** Enable or disable this schedule.
- ◆ **Save/Cancel:** Press "Save" button to save all the configurations and "Cancel" button to discard your configurations.

Policy --Schedule	
Start time:	8 : 30
End time:	17 : 30
Week:	<input checked="" type="checkbox"/> Mon <input checked="" type="checkbox"/> Tue <input checked="" type="checkbox"/> Wed <input checked="" type="checkbox"/> Thu <input checked="" type="checkbox"/> Fri <input type="checkbox"/> Sat <input type="checkbox"/> Sun
Enable:	Enabled
<input type="button" value="Save"/> <input type="button" value="Cancel"/>	

4.2.2 Protection

The Bandwidth Manager provides extended capabilities for filtering out any malicious attacks based on TCP, UDP, or ICMP protocols. This greatly improves the security of your bandwidth, and guarantees that such attacks will not disrupt the normal operation of your systems. While filtering out detected malicious traffic, your network will be able to operate normally.

- ◆ **Deny SYN Flood:** TCP SYN Flood is one kind of attack that an attacker makes connection requests aimed at the victim device with packets with unreachable source addresses. The device is not able to complete the connection requests and, as a result, the device wastes all of its network resources, resulting in shutting down a device. By defining a SYN attack threshold, the bandwidth manager allows only the certain number of packets with unreachable source addresses each second.
- ◆ **UDP Flood Attack:** UDP is a connectionless protocol and it does not require any connection setup procedure to transfer data. An UDP Flood Attack is possible when an attacker sends a UDP packet to a random port on the victim device. When the victim device receives an UDP packet, it will determine what application is waiting on the destination port. When it realizes that there is no application that is waiting on the port, it will generate an ICMP packet of destination unreachable to the forged source address. If enough UDP packets are delivered to ports on victim, the device will go down. By defining a UDP flood threshold, the bandwidth manager allows only the certain number of destination unreachable UDP packets each second.
- ◆ **ICMP Flood Attack:** An ICMP flood is usually accomplished by broadcasting either a bunch of pings or UDP packets. The idea is, to send so much data to your system, that it slows you down so much that you're disconnected from IRC due to a ping timeout. By defining a ICMP flood attack threshold, the bandwidth manager allows only the certain number of ICMP packets each second.
- ◆ **Deny Port Scan:** Most attackers will first scan all port of the victim to know which services are running and then determined how to attack. Deny port scan will make hacker much hard to attack your internal LAN.
- ◆ **Circumventing Path MTU Discovery with MSS Clamping(for ADSL, cable, PPPoE):** An Ethernet packet provides maximum 1460 bytes payload. However, not all parts of the Internet support full 1460 bytes of payload per packet. It is therefore necessary to try and find the largest packet that will 'fit', in order to optimize a connection. This process is called 'Path MTU Discovery', where MTU stands for 'Maximum Transfer Unit.' However, Path MTU Discovery is not always working. MSS (Maximum

Segment Size) is another way to set the maximum packet size. This is a field in the TCP Options part of a SYN packet. By enable MSS clamping, the bandwidth manager calculates the proper MSS for your link and tell the remote side unequivocally 'do not ever try to send me packets bigger than this value'. Enable this function if your Internet connection is ADSL or cable modem and you meet connection problem with your ISP.

Protection Setting	
<input checked="" type="checkbox"/> Deny SYN Flood,	SYN attack threshold: <input type="text" value="5"/> packet per second.
<input checked="" type="checkbox"/> Deny UDP Flood,	UDP Flood threshold: <input type="text" value="40"/> packet per second.
<input checked="" type="checkbox"/> Deny ICMP Flood,	ICMP Flood threshold: <input type="text" value="5"/> packet per second.
<input checked="" type="checkbox"/> Deny Port Scan	
<input checked="" type="checkbox"/> Circumventing Path MTU Discovery with MSS Clamping(for ADSL, cable, PPPoE)	
<input type="button" value="Save"/>	

4.2.3 IP/MAC Binding Setting

IP/MAC Binding allow you to bind IP and MAC to allow or block only certain IP/MAC or MAC for passing through the bandwidth manager. The IP/MAC binding table can be build by importing from text file or discovering by the bandwidth manager. The following functions are provided on this page:

- ◆ **Binding Function:** Enable or disable binding function.
- ◆ **Binding Mode:** There are two options on binding mode –

Block the traffic when not defined or not match in the IP/MAC table. Select this option if you only want to allow the Internet access of defined and enabled IP/MAC addresses.

Allow the traffic when not defined or match in the IP/MAC table. Select this option if you only want to block the Internet access of defined and enabled IP/MAC addresses.

Setting	
Binding Function :	<input type="text" value="Disabled"/>
Binding Mode :	<input checked="" type="radio"/> Block the traffic when not defined or not match in the IP/MAC table. <input type="radio"/> Allow the traffic when not defined or match in the IP/MAC table.
<input type="button" value="Save"/>	


4.2.4 IP/MAC Table

Here will list all the defined IP/MAC binding table that you have built. The following functions and information are provided on this page:

- ◆ **New** - Create new IP/MAC binding.
- ◆ **Delete All** - Delete all the IP/MACbinding table
- ◆ **Prev** - Go to previous page.
- ◆ **1, 2, ...** - First, second, ... page.
- ◆ **Next** - Next page.

On the Action field of each IP address, the following two buttons are provided:

-  - Modify the IP/MAC binding

 - Delete the IP/MAC binding

IP/MAC Table			
New Delete All			
IP Address	MAC Address	Enable	Action
No Record			

Press “New” or modify button, the IP/MAC Table configuration page will be shown as the following.

- ◆ **MAC Address:** The MAC address of the host in format of xx:xx:xx:xx:xx:xx.
- ◆ **IP Address:** The IP address of the host in format of xxx.xxx.xxx.xxx. If you want to specify the MAC address only, input 0.0.0.0 here.
- ◆ **Enable:** Enable or Disable the IP/MAC binding. Only enabled IP/MAC binding is applied to the allow or block blocking mode.

IP/MAC Table--New	
MAC Address :	<input type="text"/> (e.g. 00:30:4f:12:34:56)
IP Address :	<input type="text"/> (0.0.0.0 for any IP addresses)
Enable:	Enabled ▾
<input type="button" value="Save"/> <input type="button" value="Cancel"/>	

4.2.5 Discover IP/MAC

The Discover IP/MAC function help you to find all the IP/MAC binding on your local network. The following functions and information are provided on this page:

- ◆ **IP Subnet:** Input a class C subnet for the Bandwidth Manager to find all host and their MAC address on the subnet.
- ◆ **Ignore Defined:** Select Yes if you want to ignore the defined IP/MAC binding. However, if only MAC address or IP address is defined on the IP/MAC table, the bandwidth manager will still show the IP/MAC binding on the result window.
- ◆ **Start Discover:** Click this button to start the discovery process.

Discover IP/MAC -- Range	
IP Subnet:	<input type="text"/> (only support class C, eg: 192.168.1)
Ignore Defined:	Yes ▾
<input type="button" value="Start Discover"/>	

After clicking the “Start Discover”, a warning message is shown to prompt for waiting a moment and don't press stop button of browser. A screen similar to the following is then shown for all IP/MAC address the bandwidth manager found on the IP subnet you specify. The following functions and information are provided on this page:

- ◆ **Clear All:** Unselect all the IP/MAC binding.
- ◆ **Select All:** Select all the IP/MAC binding.
- ◆ **Import:** Import the selected IP/MAC binding to the IP/MAC Table.
- ◆ **Cancel:** Discard the discover result and go back to Discover IP/MAC page.

On the table, each item has 3 fields:

- ◆ **Select:** Check this box to import to the IP/MAC table after clicking Import button.
- ◆ **IP Address:** IP address the bandwidth manager discovers. If there is already an IP address defined on the IP/MAC table, a * will be shown after the address to denote it is defined on the IP/MAC table.
- ◆ **MAC Address:** IP address the bandwidth manager discovers. If there is already a MAC address defined on the IP/MAC table, a * will be shown after the address to denote it is defined on the IP/MAC table.

Discover IP/MAC -- Discover Result		
<input type="button" value="Clear All"/> <input type="button" value="Select All"/> <input type="button" value="Import"/> <input type="button" value="Cancel"/> (*: defined on IP/MAC Table)		
Select	IP Address	MAC Address
<input checked="" type="checkbox"/>	192.168.0.50	00:A0:AE:00:4D:E3
<input checked="" type="checkbox"/>	192.168.0.57	00:48:54:12:4C:4D
<input checked="" type="checkbox"/>	192.168.0.22	00:01:29:40:49:E1
<input checked="" type="checkbox"/>	192.168.0.250	00:90:FB:08:9B:41
<input checked="" type="checkbox"/>	192.168.0.251	00:90:FB:08:7D:90

4.2.6 Export / Import

This page allows you to export the IP/MAC table or import IP/MAC binding from a text file.

- ◆ **Export IP/MAC file:** export the IP/MAC data to a file named ipmac.dump in text format.
- ◆ **Import IP/MAC file:** Click "Browse..." to select the IP/MAC table file you want to import and then click "Start" to import.

Export / Import	
Export IP/MAC file:	<input type="button" value="Start"/>
Import IP/MAC file:	<input type="text"/> <input type="button" value="Browse..."/> <input type="button" value="Start"/>

Each item in the IP/MAC Table file has 3 fields and use "space" to divide each field:

Field 1: IP address

Field 2: MAC address

Field 3: Enabled or disabled, 1 for enabled, 0 for disabled.

An example is as the following:

```
192.168.0.1 00:30:4F:18:CB:D4 1
192.168.0.2 00:30:4F:23:45:64 1
192.168.0.3 00:30:4F:AB:CD:EF 0
```

4.2.7 Access Control Setting

Access Control function allows you to control the access right of packets based on their IP address and TCP/UDP port. In Access Control setting, you can enable or disable the access control function and choose its access control mode.

- ◆ **Access Control Function:** Enable or disable access control function. If it is enabled, the access control checking will be processed first before bandwidth policy checking.
- ◆ **Access Control Mode:** There are two options on access control mode –

Allow the traffic when deny rules aren't defined in the Access List. You can choose allow or deny on the policy field on the Access List. Select this option if you only want to block the Internet access of defined IP addresses and TCP/UDP port with deny policy.



Deny the traffic when allow rule aren't defined in the Access List. Select this option if you only want to allow the Internet access of defined IP addresses and TCP/UDP port with allow policy.















Setting	
Access Control Function:	Disabled ▼
Access Control Mode:	<input checked="" type="radio"/> Allow the traffic when deny rule aren't defined in the Access List. <input type="radio"/> Deny the traffic when allow rule aren't define in the Access List.
<input type="button" value="Save"/>	

4.2.8 Access List

Access List allow you to define the access right based on traffic's source and destination IP address, and TCP/UDP port (service). The following functions and information are provided on this page:

- ◆ **New** - Create new service.
- ◆ **Prev** - Go to previous page.
- ◆ **1, 2, ...** - First, second, ... page.
- ◆ **Next** - Next page.
- ◆ **Action** - On the Action field of each service name, the following two buttons are provided:

-  - Modify the Access list
-  - Delete the Access list

Access List					
New					
Order	Source Host	Destination Host	Service	Policy	Action
1	Any host	VoIP Gateway	h323	accept	 
2	VoIP Gateway	Any host	h323	accept	 
3	Any host	Mail Server	smtp	accept	 
4	Mail Server	Any host	smtp	accept	 
6	Any host	Mail Server	pop3	accept	 
7	Any host	Web and FTP Server	ftp	accept	 
8	Any host	Web and FTP Server	http	accept	 

Press "New" or Modify button, the access list configuration page will be shown as the following.

- ◆ **Order:** Access List processing sequence. When the Bandwidth Manager receives a packet, it will find the packet's Source Host, Destination Host and Service and check which Access List the packet applies. Order 1 will be the first list to check and so on. When the Bandwidth Manager find a list fit to the packet, it will stop the checking and accept or deny the packet. Thus, always put mission-critical traffic list in the front to get higher performance.
- ◆ **Source Host:** The source host that you want to control. You have to first define the source host on host catalog. This is the host(s) which originates the network service request. It can be on LAN(internal) or WAN(external) side.
- ◆ **Destination Host:** The destination host that you want to control. You have to first define the destination host on host catalog. This is the host(s) which receives the network service request. It can be on LAN(internal) or WAN(external) side.
- ◆ **Service:** The service that you want to control. The services must be defined on the service catalog.
- ◆ **Policy:** Accept or deny this access list.
- ◆ **Save/Cancel:** Press "Save" button to save above configurations and "Cancel" button to discard your configurations.

Access List- New	
Order:	Be last ▾
Source Host:	Any host ▾
Destination Host:	Any host ▾
Service:	all tcp ▾
Policy:	accept ▾
<input type="button" value="Save"/> <input type="button" value="Cancel"/>	

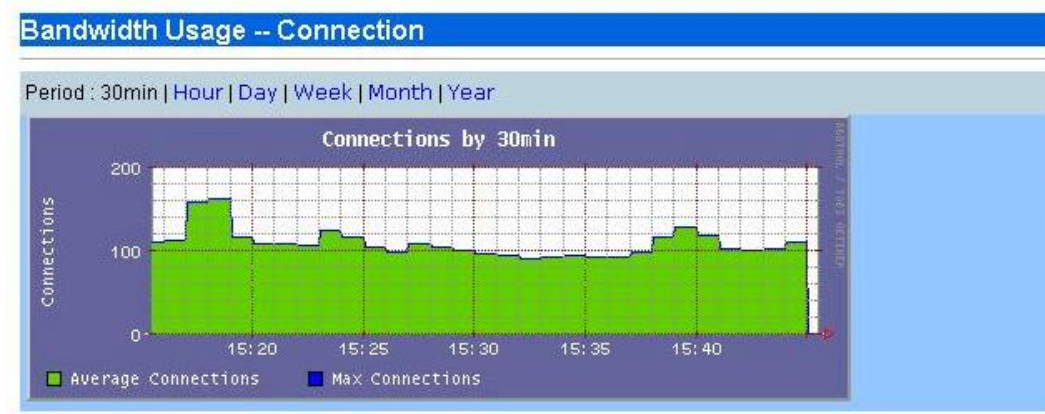
4.3 Report

PLANET Bandwidth Manager can monitor all the inbound and outbound packets and automatically categorize to provide versatile reports. These reports help you to analyze the traffic flowing through your Bandwidth Manager and aid you in determining the optimum configuration for your system.



4.3.1 Connection

This report shows all the connections passed Bandwidth Manager and you can choose several periods that you want it to display.



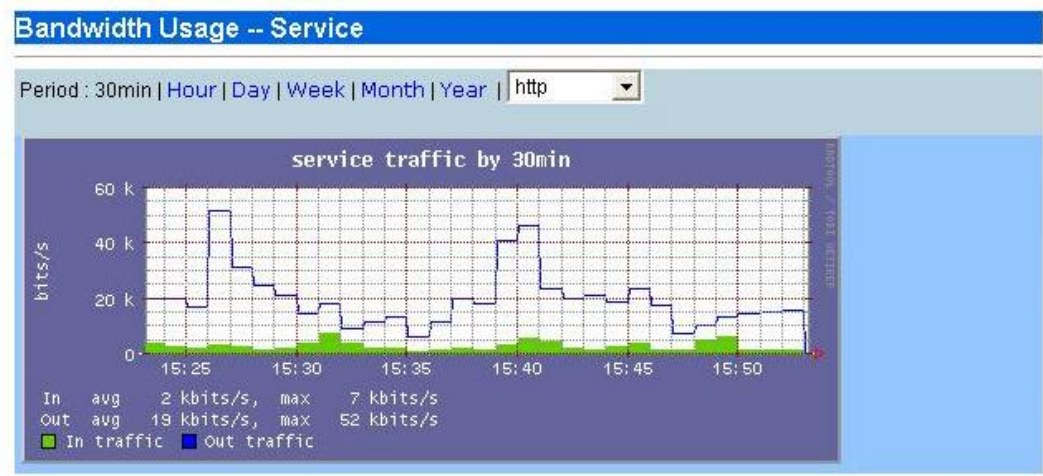
4.3.2 Internal Host

This report shows the bandwidth usage rate of each internal host. And you can choose several kinds of period that you want it to display. The graph report shows both inbound and outbound traffic.



















4.3.3 Service


This report shows the bandwidth usage rate that each service used. And you can choose several kinds of period that you want it to display. The graph report shows both inbound and outbound traffic.



4.3.4 Top 10 Host

This report shows top 10 bandwidth usage of internal hosts. And you can choose several kinds of period that you want it to display.

Bandwidth Usage -- Top 10 Host				
Period : 30min Hour Day Week Month Year				
Internal ← External (In)				
Internal Host	Average rate (bps)	Total transfer (byte)	Percentage	Graph
internal network	4 K	965.65 K	56% 	
web_master	2 K	373.77 K	22% 	
sales department	2 K	373.77 K	22% 	
Internal → External (Out)				
Internal Host	Average rate (bps)	Total transfer (byte)	Percentage	Graph
internal network	19 K	4.28 M	34% 	
sales department	19 K	4.14 M	33% 	
web_master	19 K	4.14 M	33% 	
fs	6	1.38 K	0% 	
abc	6	1.38 K	0% 	

Press  button to view graph report of specified internal host. The graph report shows both inbound and outbound traffic.

4.3.5 Top 10 Service

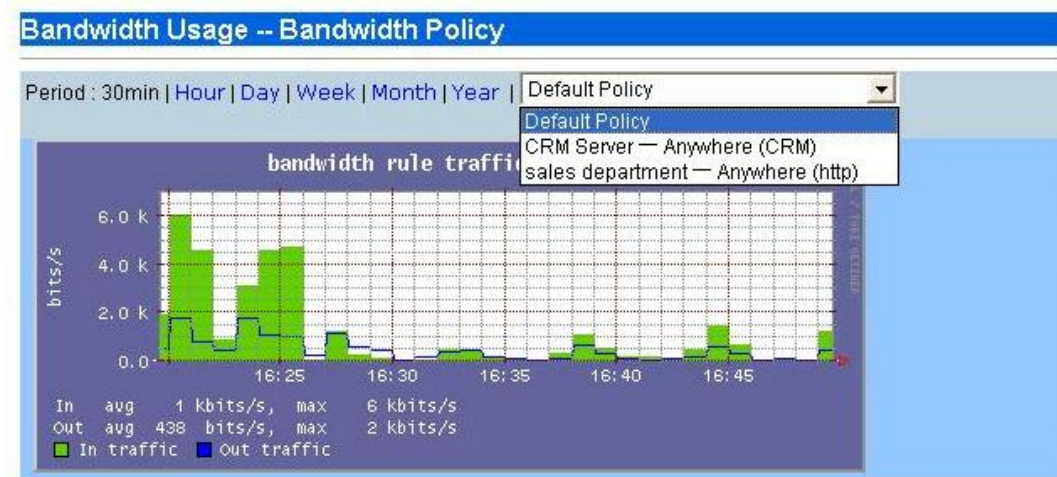
This report shows top 10 bandwidth usage of services. And you can choose several kinds of period that you want it to display.



Press button to view graph report of specified service. The graph report shows both inbound and outbound traffic.

4.3.6 Bandwidth Policy

You can choose each policy that you want to view. And you can choose several kinds of period that you want it to display. The graph report shows both inbound and outbound traffic.



4.3.7 Customize

This function offers system administrator to easily collect network bandwidth usage rate information to report. The Bandwidth Manager will record the traffic of all the defined host catalog, service catalog and policy and save the following data in a specified time period:

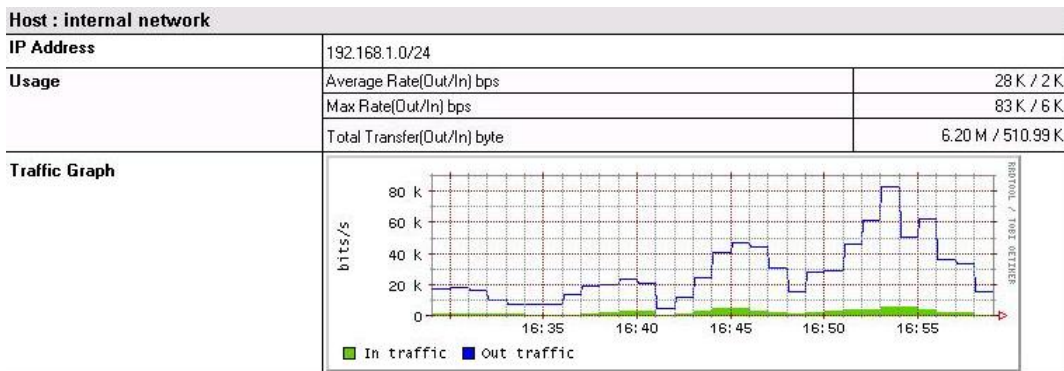
- ◆ The average bandwidth usage per minute for past 12 hours
- ◆ The average bandwidth usage per 10 minutes for past 60 hours
- ◆ The average bandwidth usage per hour for past 10 days
- ◆ The average bandwidth usage per day for past 360 days (1 year)

Thus, when you use customize to show the bandwidth usage statistic, please make sure you do not use a time period that Bandwidth Manager does not record.

- ◆ **Name:** Customized report title.
- ◆ **Type:** Type of report. Three options provided: Internal host / service / bandwidth policy.
- ◆ **Period:** Choose several periods that you wants to do a routine record in our report
- ◆ **End Time:** Stop to record network bandwidth usage rate in this report.
- ◆ **Disabled no data:** If there is no data in some item. You may decide that enable or disable these items display on the report.

Press "OK" button to generate a report you have customized

The following is a part of customized report as a sample.



4.3.8 IP Discovery - Text List

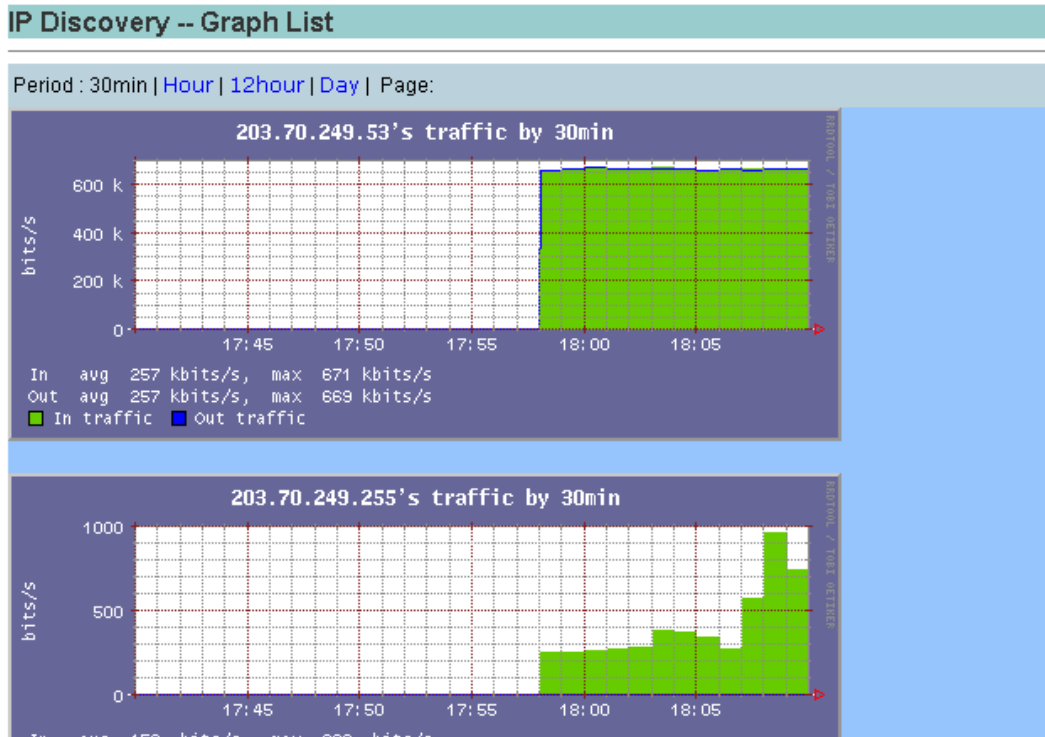
This function lists all the internal IP addresses which have pass through Bandwidth Manager and their upload and download data for past one day. This offer you an easily way for you to know which host use most bandwidth and how many bandwidth it have used for past one day. It also helps you to find the hidden node(s) on your network and take adequate action.

Press "Renew to count" button that reset the data to zero and start to count all the internal IP bandwidth usage again. You can also press "Upload Transfer (byte)" button to sort by upload transfer rate and press "Download Transfer (byte)" button to sort by download transfer rate.

IP Discovery -- Text List		
Renew to count 1 2		
IP Address	Upload Transfer(byte)	Download Transfer(byte)
203.70.249.53	2.79 G	2.31 G
10.0.0.53	291.22 M	273.22 M
210.66.155.79	915.99 K	3.90 M
203.70.249.255	0	1.23 M
210.66.155.95	0	197.00 K
255.255.255.255	0	191.98 K
224.0.0.251	0	72.45 K
192.168.0.255	0	31.37 K
239.255.255.253	0	17.39 K

4.3.9 IP Discovery - Graph List

This function provide a graph view all the internal IP addresses which have pass through Bandwidth Manager and their upload and download data and you can choose several periods that you want it to display.



4.3.10 Log – Export Log

This function allows you to send all the session statistics to a FTP server. The log data which compressed with tgz is sent to FTP server every 5 minutes. This data is suitable for you to make your own analysis and even billing. The following parameters are required:

- ◆ **Export Function:** Enable or disable the export function.
- ◆ **Server Type:** Choose the server type as FTP or FTPS. FTPS is FTP with SSL security which is more secure than FTP. Please make sure your FTP server also support FTPS before choose FTPS.
- ◆ **IP Address:** The IP address of the FTP server.
- ◆ **Port Number:** The TCP port number used for FTP communication. The default port number for FTP is 21.
- ◆ **Remote Dir:** The directory used to store the log data. Please make sure you have created this directory on the FTP server before make test.
- ◆ **User Name:** The user name used to login to FTP server.
- ◆ **Password:** The password used to login to FTP server.
- ◆ **Save:** Press "Save" button to save above configurations.
- ◆ **Test:** Test the connection status to FTP server. If the server is on-line and the remote directory, user name and password are all correct, the Bandwidth Manager will upload a file named "test_upload" to the remote directory and a small window will pop-up with message of "Server is ready". Otherwise, it will show "Can not connect to server".

Log -- Export Log	
Export Function :	Enabled
Server Type :	FTP
IP Address :	210.66.155.79
Port Number :	21
Remote Dir :	/bmttest
User Name :	bmttest
Password :	*****
<input type="button" value="Save"/> <input type="button" value="Test"/>	

Once you click "Save", the Bandwidth Manager will start to export the log data to FTP server every 5 minutes. The file name format of log data is "year-month-day-hour-minute.txt.gz". For example, 2003-05-21-19-15.txt.gz. The minute represent the start time of the log data. Each log file contains many connection session for the 5 minutes. The data format is as the following with an example:

Host1	Host2	Protocol	Port1	Port2	Received Bytes 1	Received Bytes 2	Received Packets 1	Received Packets 2	First Packet Time	Last Packet Time	First Packet Host	Last Packet Host
192.168.001.040	192.168.002.137	6	139	3982	184023	5164128	2461	3729	01:40:02.9531	01:45:01.9304	2	2
192.168.002.137	192.168.001.203	6	4109	22	52932	190218	330	355	01:40:25.7275	01:45:02.1453	2	1

- ◆ **Host1:** Host 1 IP address, eg: 192.168.001.040
- ◆ **Host2:** Host 2 IP address, eg: 192.168.002.137
- ◆ **Protocol:** Network connection protocol, 1=icmp, 6=tcp, 17=udp, 0= other non-TCP/IP packets.
- ◆ **Port1:** Port number used by host 1, eg: 139
- ◆ **Port2:** Port number used by host 2, eg: 3982
- ◆ **Received Bytes 1:** Total number of received data by host 1 in unit of bytes
- ◆ **Received Bytes 2:** Total number of received data by host 2 in unit of bytes
- ◆ **Received Packets 1:** Total number of received packets by host 1
- ◆ **Received Packets 2:** Total number of received packets by host 2
- ◆ **First Packet Time:** Time the first packet pass through the Bandwidth Manager. This is the time the session start. The time format is HH:MM:SS.SSSS which HH is hours, MM is minutes, and SS.SSSS is seconds with precision up to 1/10,000 seconds.
- ◆ **Last Packet Time:** Time the last packet pass through the Bandwidth Manager. This is the time the session complete. The time format is HH:MM:SS.SSSS which HH is hours, MM is minutes, and SS.SSSS is seconds with precision up to 1/10,000 seconds.
- ◆ **First Packet Host:** 1 mean Host 1 send the first packet, i.e., host 1 start the session. 2 mean Host 2 send the first packet, i.e., host 2 start the session.
- ◆ **Last Packet Host:** 1 mean Host 1 send the last packet, i.e., host 1 complete the session. 2 mean Host 2 send the last packet, i.e., host 2 complete the session.

