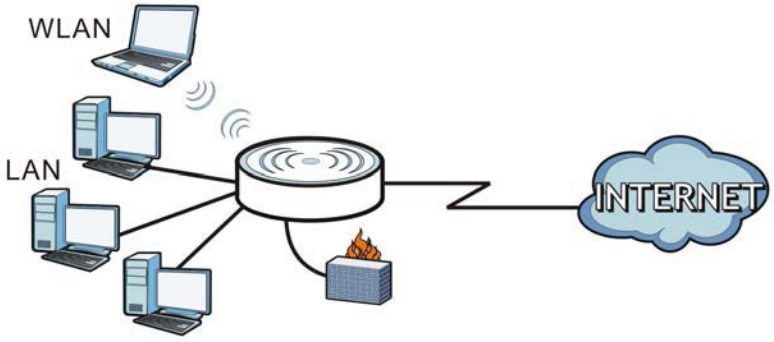
12 LAN

12.1 Overview

This chapter describes how to configure LAN settings.

A Local Area Network (LAN) is a shared communication system to which many computers are attached. A LAN is a computer network limited to the immediate area, usually the same building or floor of a building.

Figure 61 LAN Example



The LAN screens can help you configure a manage IP address, and partition your physical network into logical networks.

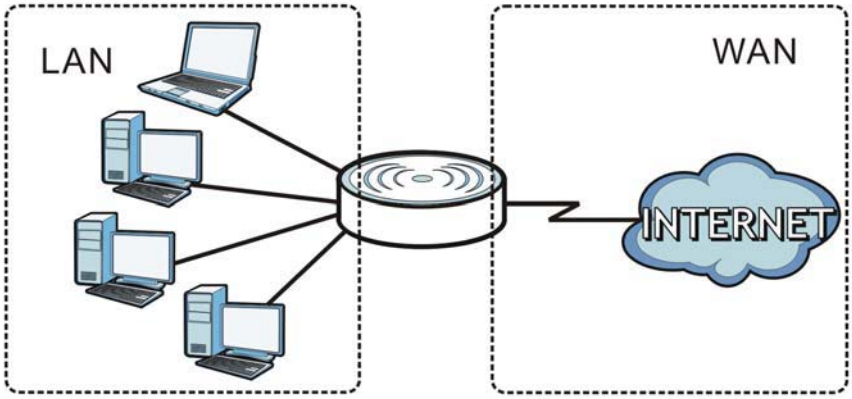
12.2 What You Can Do

- Use the **LAN IP** screen to configure the IPv4 and IPv6 addresses for your NBG6617 on the LAN (Section 12.4 on page 100).
- Use the **Static DHCP** screen to assign IP addresses on the LAN to specific individual computers based on their MAC Addresses (Section 12.5 on page 101).
- Use the **IPv6 LAN** screen to configure the IPv6 address for your NBG6617 on the LAN (Section 12.6 on page 102).

12.3 What You Need To Know

The actual physical connection determines whether the NBG6617 ports are LAN or WAN ports. There are two separate IP networks, one inside the LAN network and the other outside the WAN network as shown next.

Figure 62 LAN and WAN IP Addresses



The LAN parameters of the NBG6617 are preset in the factory with the following values:

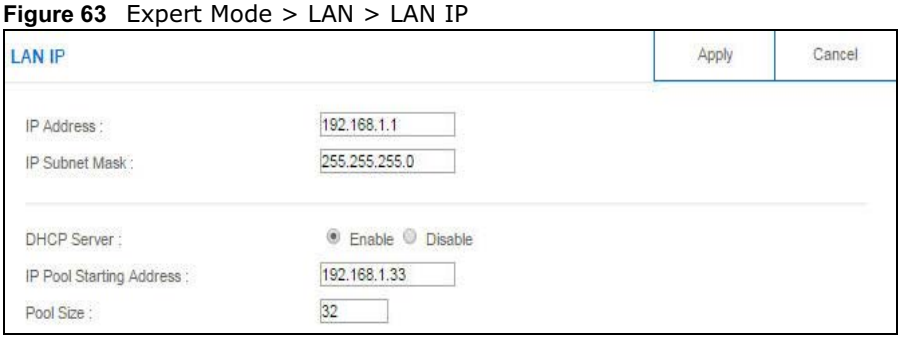
- IPv4 address of 192.168.1.1 with subnet mask of 255.255.255.0 (24 bits)
- DHCP server enabled with 32 client IPv4 addresses starting from 192.168.1.33.

These parameters should work for the majority of installations.

12.4 LAN IP Screen

Use this screen to change the IP address for your NBG6617. Click **Expert Mode > LAN > LAN IP**.

Figure 63 Expert Mode > LAN > LAN IP



The following table describes the labels in this screen.

Table 37 Expert Mode > LAN > LAN IP

LABEL	DESCRIPTION
IP Address	Type the IP address of your NBG6617 in dotted decimal notation.
IP Subnet Mask	The subnet mask specifies the network number portion of an IP address. Your NBG6617 will automatically calculate the subnet mask based on the IP address that you assign. Unless you are implementing subnetting, use the subnet mask computed by the NBG6617.

Table 37 Expert Mode > LAN > LAN IP (continued)

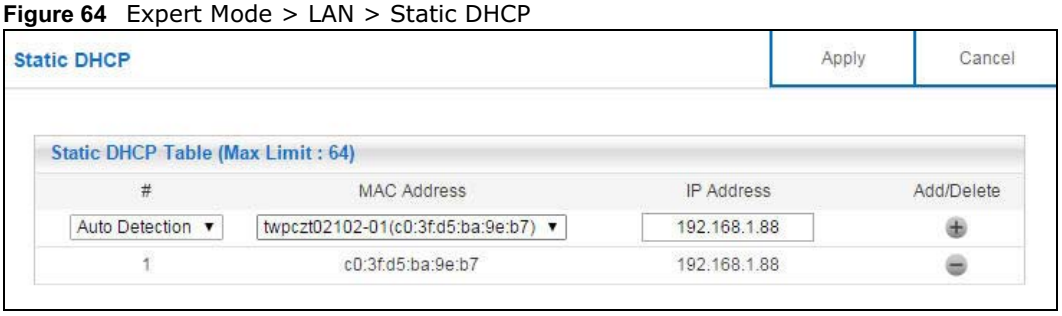
LABEL	DESCRIPTION
DHCP Server	Select **Enable** to activate DHCP for LAN. DHCP (Dynamic Host Configuration Protocol, RFC 2131 and RFC 2132) allows individual clients (computers) to obtain TCP/IP configuration at startup from a server. Enable the DHCP server unless your ISP instructs you to do otherwise. Select **Disable** to stop the NBG6617 acting as a DHCP server. When configured as a server, the NBG6617 provides TCP/IP configuration for the clients. If not, DHCP service is disabled and you must have another DHCP server on your LAN, or else the computers must be manually configured. When set as a server, fill in the following four fields.
IP Pool Starting Address	This field specifies the first of the contiguous addresses in the IP address pool for LAN.
Pool Size	This field specifies the size, or count of the IP address pool for LAN.
Apply	Click **Apply** to save your changes back to the NBG6617.
Cancel	Click **Cancel** to begin configuring this screen afresh.

12.5 Static DHCP Screen

This screen allows you to assign IP addresses on the LAN to specific individual computers based on their MAC addresses.

To change your NBG6617's static DHCP settings, click **Expert Mode > LAN > Static DHCP**.

Figure 64 Expert Mode > LAN > Static DHCP



The following table describes the labels on this screen.

Table 38 Expert Mode > LAN > Static DHCP

LABEL	DESCRIPTION
#	This is the index number of the static IP table entry (row). Select **Auto Detection** to automatically detect the MAC address of a computer on your LAN. Otherwise, select **User define** to enter the MAC address of a computer on your LAN in the **MAC Address** field.
MAC Address	This field displays the MAC address of a computer on your LAN. If you select **User define** in the **#** field, enter the MAC address(es) manually.
IP Address	This field displays the LAN IP address of a computer on your LAN. If you select **User define** in the **#** field, enter the IP address(es) manually.
Add/Delete	Click ⊕ to add the rule in the MAC filter summary table. Click ⊖ to remove a rule.

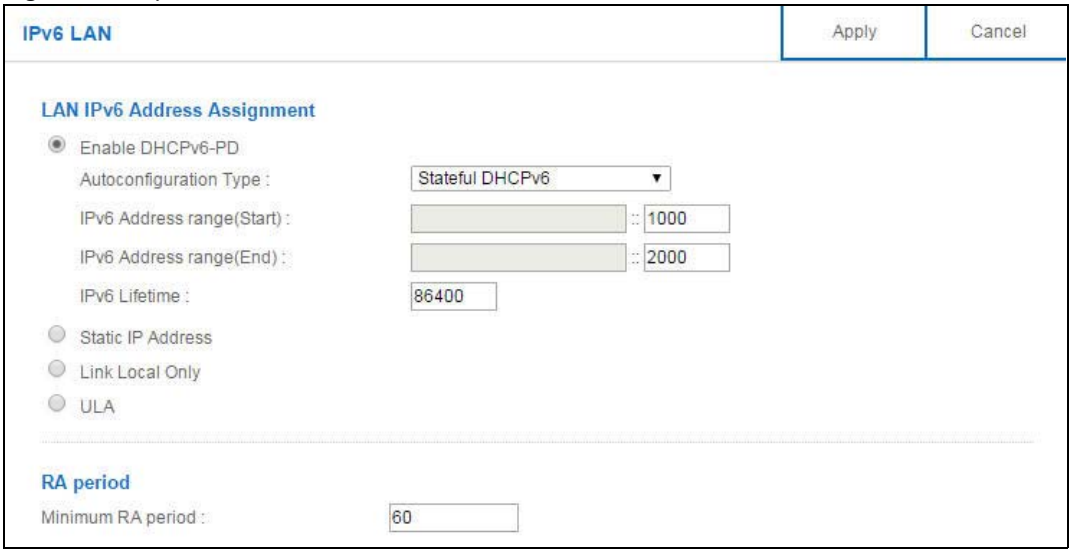
Table 38 Expert Mode > LAN > Static DHCP (continued)

LABEL	DESCRIPTION
Apply	Click **Apply** to save your changes with the NBG6617.
Cancel	Click **Cancel** to begin configuring this screen afresh.

12.6 IPv6 LAN Screen

Use this screen to configure the IP address for your NBG6617 on the LAN. Click **Expert Mode** > **LAN** > **IPv6 LAN**.

Figure 65 Expert Mode > LAN > IPv6 LAN



The following table describes the labels in this screen.

Table 39 Expert Mode > LAN > IPv6 LAN

LABEL	DESCRIPTION
LAN IPv6 Address Assignment	
Enable_DHCPv6-PD Select this option to use DHCPv6 prefix delegation. The NBG6617 will obtain an IPv6 prefix from the ISP or a connected uplink router for the LAN.	
Autoconfiguration Type	Select **SLAAC + RDNSS** to enable IPv6 stateless auto-configuration on this interface. The interface will generate an IPv6 IP address itself from a prefix obtained from an IPv6 router in the network. Select **SLAAC + Stateless DHCPv6** to enable IPv6 stateless auto-configuration on this interface. The interface will get an IPv6 address from an IPv6 router and the DHCP server. The IP address information gets through DHCPv6. Select **Stateful DHCPv6** to allow a DHCP server to assign and pass IPv6 network addresses, prefixes and other configuration information to DHCP clients.
IPv6 Address range (Start)	Enter the beginning of the range of IP addresses that this address object represents.
IPv6 Address range (End)	Enter the end of the range of IP address that this address object represents.

Table 39 Expert Mode > LAN > IPv6 LAN (continued)

LABEL	DESCRIPTION
IPv6 Lifetime	Enter the IPv6 lifetime in the LAN.
Static IP Address Select this option to manually enter an IPv6 address if you want to use a static IP address.	
LAN IPv6 Address	Enter the LAN IPv6 address you want to assign to your NBG6617 in hexadecimal notation.
LAN IPv6 Prefix Length (48~64)	Enter the 48 to 64 address prefix length to specify in an IPv6 address compose the network address.
Prefix Preferred Lifetime	Enter the preferred lifetime for the prefix.
Prefix Valid Lifetime	Enter the valid lifetime for the prefix.
Link Local Only Select this option to only use the link local address on the NBG6617 interfaces in the LAN.	
ULA Select this option to identify a unique local address of the NBG6617 in the LAN.	
RA period	
Minimum RA period	Enter the minimum time in seconds between router advertisement messages.
Apply	Click **Apply** to save your changes back to the NBG6617.
Cancel	Click **Cancel** to begin configuring this screen afresh.

13

Applications

13.1 Overview

This chapter shows you how to configure parental control, bandwidth management, USB media sharing, UPnP and file sharing.

13.1.1 What You Can Do

- Use the **Parental Control** screens to enable parental control, configure the parental control rules and schedules, and send e-mail notifications. (Section 13.2 on page 106).
- Use the **Bandwidth Management** screen to configure bandwidth management and the device priority (Section 13.3 on page 112).
- Use the **USB Media Sharing** screen to use the NBG6617 as a media server and allow DLNA-compliant devices to play media files stored in the attached USB device (Section 13.4 on page 117).
- Use the **UPnP** screen to enable UPnP on your NBG6617 (Section 13.5 on page 118).
- Use the **File Sharing** screen to allow file sharing via the NBG6617 using Windows Explorer, the workgroup name or FTP (Section 13.6 on page 119).
- Use the **One Connect** screen to enable or disable Wi-Fi auto-configuration (Section 13.7 on page 126).

13.1.2 What You Need To Know

The following terms and concepts may help as you read through this chapter.

Keyword Blocking URL Checking

The NBG6617 checks the URL's domain name (or IP address) and file path separately when performing keyword blocking.

The URL's domain name or IP address is the characters that come before the first slash in the URL. For example, with the URL www.zyxel.com.tw/news/pressroom.php, the domain name is www.zyxel.com.tw.

The file path is the characters that come after the first slash in the URL. For example, with the URL www.zyxel.com.tw/news/pressroom.php, the file path is news/pressroom.php.

Since the NBG6617 checks the URL's domain name (or IP address) and file path separately, it will not find items that go across the two. For example, with the URL www.zyxel.com.tw/news/pressroom.php, the NBG6617 would find "tw" in the domain name (www.zyxel.com.tw). It would also find "news" in the file path (news/pressroom.php) but it would not find "tw/news".

DLNA

The Digital Living Network Alliance (DLNA) is a group of personal computer and electronics companies that works to make products compatible in a home network. DLNA clients play files stored on DLNA servers. The NBG6617 can function as a DLNA-compliant media server and stream files to DLNA-compliant media clients without any configuration.

Workgroup name

This is the name given to a set of computers that are connected on a network and share resources such as a printer or files. Windows automatically assigns the workgroup name when you set up a network.

File Systems

A file system is a way of storing and organizing files on your hard drive and storage device. Often different operating systems such as Windows or Linux have different file systems. The file-sharing feature on your NBG6617 supports New Technology File System (NTFS), File Allocation Table (FAT) and FAT32 file systems.

Windows/CIFS

Common Internet File System (CIFS) is a standard protocol supported by most operating systems in order to share files across the network.

CIFS runs over TCP/IP but uses the SMB (Server Message Block) protocol found in Microsoft Windows for file and printer access; therefore, CIFS will allow all applications, not just Web browsers, to open and share files across the Internet.

The NBG6617 uses Common Internet File System (CIFS) protocol for its file sharing functions. CIFS compatible computers can access the USB file storage devices connected to the NBG6617. CIFS protocol is supported on Microsoft Windows, Linux Samba and other operating systems (refer to your systems specifications for CIFS compatibility).

Samba

SMB is a client-server protocol used by Microsoft Windows systems for sharing files, printers, and so on.

Samba is a free SMB server that runs on most Unix and Unix-like systems. It provides an implementation of an SMB client and server for use with non-Microsoft operating systems.

File Transfer Protocol

This is a method of transferring data from one computer to another over a network such as the Internet.

Universal Plug-and-Play (UPnP)

UPnP hardware is identified as an icon in the Network Connections folder (Windows XP). Each UPnP compatible device installed on your network will appear as a separate icon. Selecting the icon of a UPnP device will allow you to access the information and properties of that device.

13.1.3 Before You Begin

Make sure the NBG6617 is connected to your network and turned on.

1. Connect the USB device to one of the NBG6617's USB ports.
2. The NBG6617 detects the USB device and makes its contents available for browsing. If you are connecting a USB hard drive that comes with an external power supply, make sure it is connected to an appropriate power source that is on.

Note: If your USB device cannot be detected by the NBG6617, see the troubleshooting for suggestions.

13.2 Parental Control

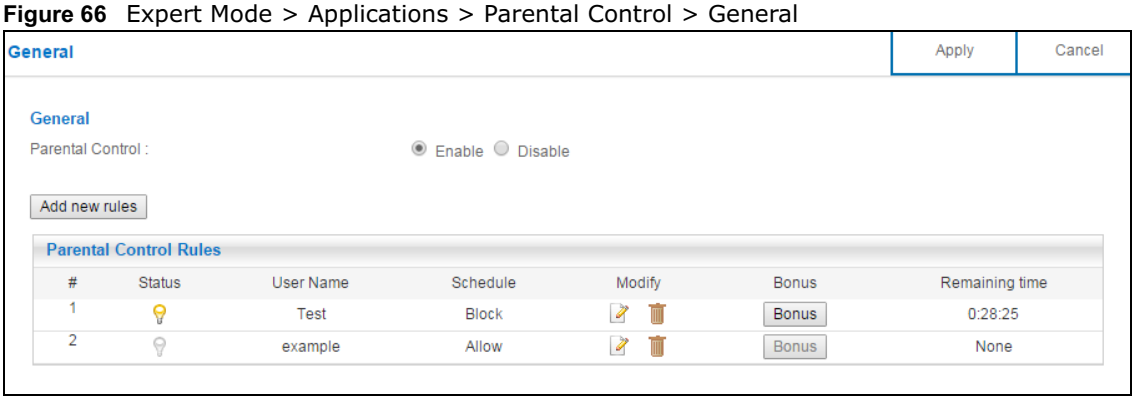
Parental Control allows you to block specific URLs. You can also define time periods and days during which the NBG6617 performs parental control on a specific user.

13.2.1 General Screen

Use this screen to enable parental control, view the parental control rules and schedules.

In **Expert** mode, click **Applications** > **Parental Control > General** to open the following screen.

Figure 66 Expert Mode > Applications > Parental Control > General



The following table describes the fields in this screen.

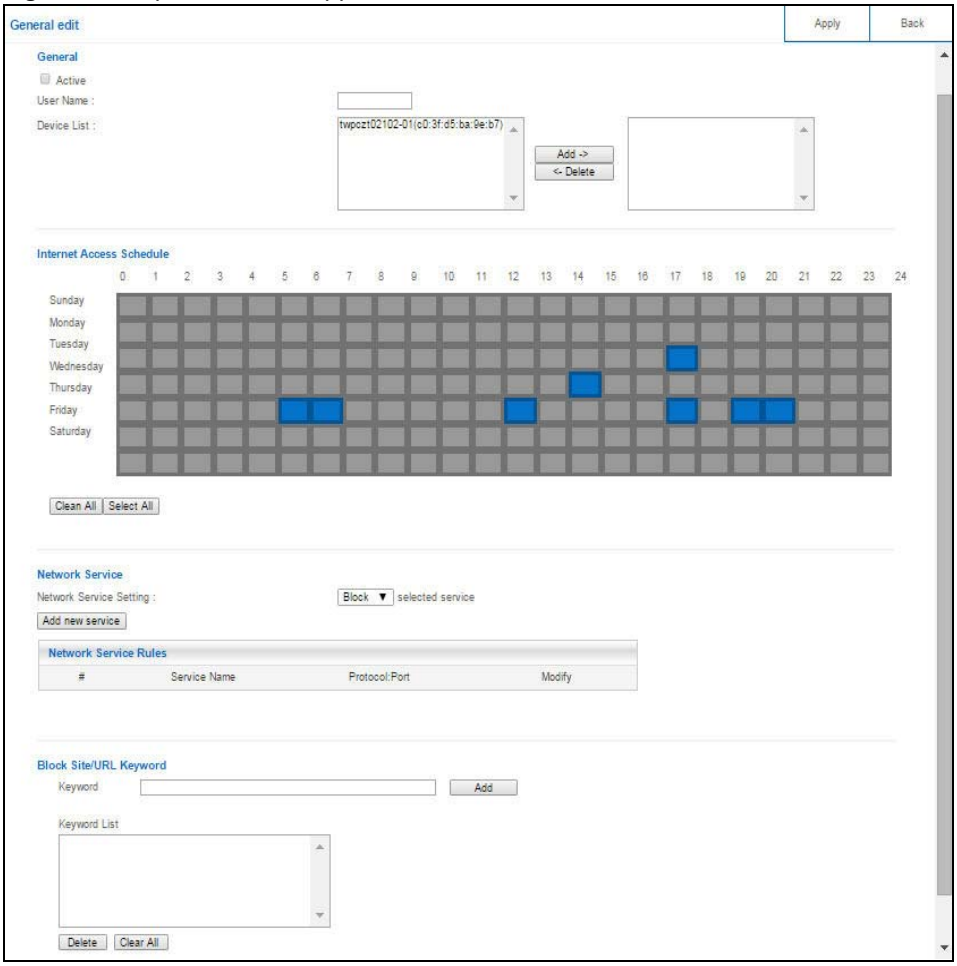
Table 40 Expert Mode > Applications > Parental Control > General

LABEL	DESCRIPTION
General	
Parental Control	Select **Enable** to activate parental control. Otherwise, select **Disable** to turn it off.
Add new rules	Click this if you want to configure a new parental control rule.
Parental Control Rules	
#	This shows the index number of the rule.
Status	This indicates whether the rule is active or not. A yellow bulb signifies that this rule is active. A gray bulb signifies that this rule is not active.
User Name	This shows the name of the user to which this rule applies.
Schedule	This shows whether the user is able to access the Internet through the NBG6617 (**Allow**) or not (**Block**) at the moment.
Modify	Click the **Edit** icon to go to the screen where you can edit the rule. Click the **Delete** icon to delete an existing rule.
Bonus	If the user is currently not permitted to access the Internet, you can click the **Bonus** to allow access for a specified period of time. A screen then displays allowing you to set how long (in minutes) the user is allowed to access the Internet. This button is grayed out if the user is now able to access the Internet.
Remaining Time	This field displays the amount of Internet access time that remains for each user before the NBG6617 blocks the user from accessing the Internet. **None** means there is no extra Internet access time.
Apply	Click **Apply** to save your changes.
Cancel	Click **Cancel** to restore your previously saved settings.

13.2.1.1 Add/Edit a Parental Control Rule

Click **Add new rules** in the **Parental Control** screen to add a new rule or click the **Edit** icon next to an existing rule to edit it. Use this screen to configure a restricted access schedule and/or URL filtering settings to block the users on your network from accessing certain web sites.

Figure 67 Expert Mode > Applications > Parental Control > General: Add/Edit new rules



The following table describes the fields in this screen.

Table 41 Expert Mode > Applications > Parental Control > General: Add/Edit new rules

LABEL	DESCRIPTION
General	
Active	Select the checkbox to activate this parental control rule.
User Name	Enter a descriptive name for the user.
Device List	The left text box lists the system name of the LAN user device which is connected to the NBG6617 and assigned an IP address. From the left text box, select the LAN user device to which you want to apply this rule and click **Add** to move it to the right text box. To remove a user device, select it from the right text box and click **Delete**.
Internet Access Schedule	The y-axis shows the days that you want the NBG6617 to perform parental control and allow the user to access the Internet. The x-axis shows the time period during which the LAN user is allowed access. A blue block signifies that this rule is active. A gray block signifies that this rule is not active.
Clean All	Click **Clean All** to remove blocks you selected.
Select All	Click **Select All** to choose all blocks.

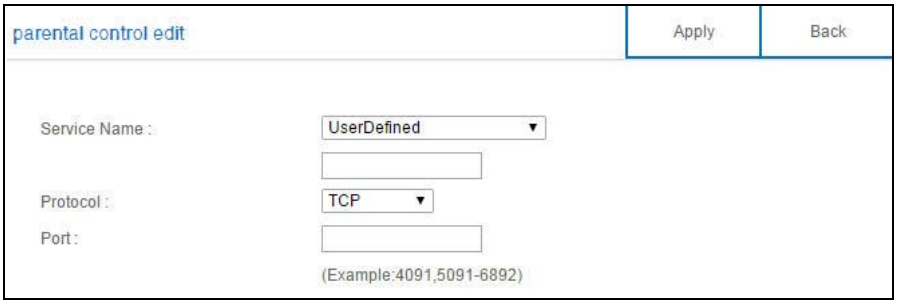
Table 41 Expert Mode > Applications > Parental Control > General: Add/Edit new rules (continued)

LABEL	DESCRIPTION
Network Service	
Network Service Setting	If you select **Block**, the NBG6617 prohibits the users from using the services listed below. If you select **Allow**, the NBG6617 blocks all services except ones listed below.
Add new service	Click this to show a screen in which you can add a new service rule. You can configure the **Service Name**, **Protocol**, and **Port** of the new rule.
#	This shows the index number of the rule. Select the checkbox next to the rule to activate it.
Service Name	This shows the name of the service.
Protocol:Port	This shows the protocol and the port of the service.
Modify	Click the **Edit** icon to go to the screen where you can edit the rule. Click the **Delete** icon to delete an existing rule.
Block Site/URL Keyword	
Keyword	Enter a keyword and click **Add** to add it to the keyword list. This has the NBG6617 block access to the website URLs that contain the keyword.
Keyword List	Select a keyword and click **Delete** to remove it. Click **Clear All** to remove all keywords from the keyword list.
Apply	Click **Apply** to save your settings back to the NBG6617.
Back	Click **Back** to return to the previous screen.

13.2.1.2 Add/Edit a Service

Click **Add new service** in the **Parental Control** > **Add new rules** screen to add a new entry or click the **Edit** icon next to an existing entry to edit it. Use this screen to configure a service rule.

Figure 68 Expert Mode > Applications > Parental Control > General: Add/Edit new rules: Add new service



The following table describes the fields in this screen.

Table 42 Expert Mode > Applications > Parental Control > General: Add/Edit new rules: Add new service

LABEL	DESCRIPTION
Service Name	Select the name of the service. Otherwise, select **UserDefined** and manually specify the protocol and the port of the service. If you have chosen a pre-defined service in the **Service Name** field, this field will not be configurable.
Protocol	Select the transport layer protocol used for the service. Choices are **TCP**, **UDP**, or **TCP/UDP**.

Table 42 Expert Mode > Applications > Parental Control > General: Add/Edit new rules: Add new service (continued)

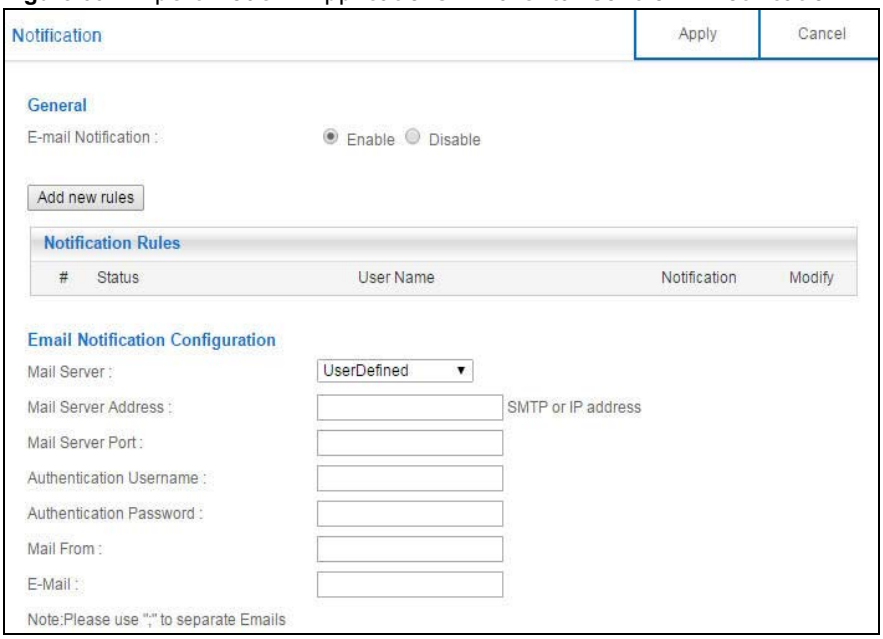
LABEL	DESCRIPTION
Port	Enter the port of the service. If you have chosen a pre-defined service in the **Service Name** field, this field will not be configurable.
Apply	Click **Apply** to save your settings with the NBG6617.
Back	Click **Back** to return to the previous screen.

13.2.2 Notification Screen

Use this screen to have the NBG6617 send e-mail notifications when the user(s) is connected to the NBG6617 for Internet access during the specified time periods.

In **Expert** mode, click **Applications** > **Parental Control > Notification** to open the following screen.

Figure 69 Expert Mode > Applications > Parental Control > Notification



The following table describes the fields in this screen.

Table 43 Expert Mode > Applications > Parental Control > Notification

LABEL	DESCRIPTION
General	
E-mail Notification	Select **Enable** to activate e-mail notifications.
Add new rules	Click this if you want to configure a new parental monitor rule.
Notification Rules	
#	This shows the index number of the rule.

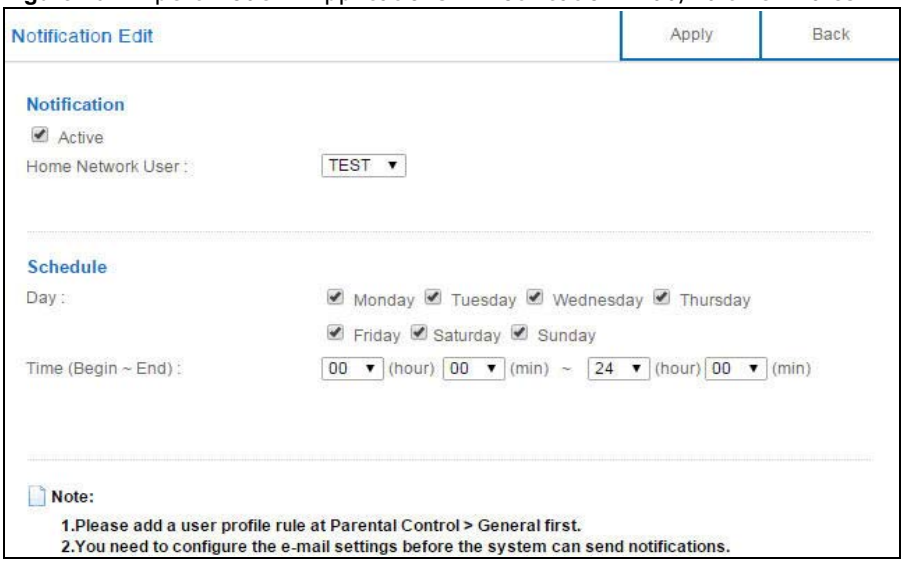
Table 43 Expert Mode > Applications > Parental Control > Notification (continued)

LABEL	DESCRIPTION
Status	This indicates whether the rule is active or not. A yellow bulb signifies that this rule is active. A gray bulb signifies that this rule is not active.
User Name	This shows the name of the user to which this rule applies.
Notification	This shows the e-mail address to which the notification is sent.
Modify	Click the **Edit** icon to go to the screen where you can edit the rule. Click the **Delete** icon to delete an existing rule.
Email Notification Configuration	
Mail Server	Select the mail server. Otherwise, select **UserDefined** and manually specify the mail server address and the port of the mail server.
Mail Server Address	Type the name or IP address of the outgoing SMTP server.
Mail Server Port	Enter the same port number here as is on the mail server for mail traffic.
Authentication Username	Type the user name to provide to the SMTP server for authentication when the notification is e-mailed.
Authentication Password	Type the password to provide to the SMTP server for authentication when the notification is e-mailed.
Mail From	Type the e-mail address from which the outgoing e-mail is delivered. This address is used in replies.
E-Mail	Type the e-mail address (or addresses) to which the outgoing e-mail is delivered.
Apply	Click **Apply** to save your changes.
Cancel	Click **Cancel** to restore your previously saved settings.

13.2.2.1 Add/Edit a Notification Rule

Click **Add new rules** in the **Notification** screen to add a new rule or click the **Edit** icon next to an existing rule to edit it. Use this screen to set a schedule and have the NBG6617 send a notification when the specified user connects to the NBG6617 at the scheduled time.

Figure 70 Expert Mode > Applications > Notification: Add/Edit new rules



The following table describes the fields in this screen.

Table 44 Expert Mode > Applications > Notification: Add/Edit new rules

LABEL	DESCRIPTION
Notification	
Active	Select the checkbox to activate this notification rule.
Home Network User	Select the user that you want to apply this rule to from the drop-down list box. Note: You should have configured a parental control rule already for the specified user.
Schedule	
Day	Select check boxes for the days that you want the NBG6617 to perform notification.
Time (Begin ~ End)	Define the time period during that you want the NBG6617 to perform notification.
Apply	Click **Apply** to save your settings back to the NBG6617.
Back	Click **Back** to return to the previous screen.

13.3 Bandwidth Management

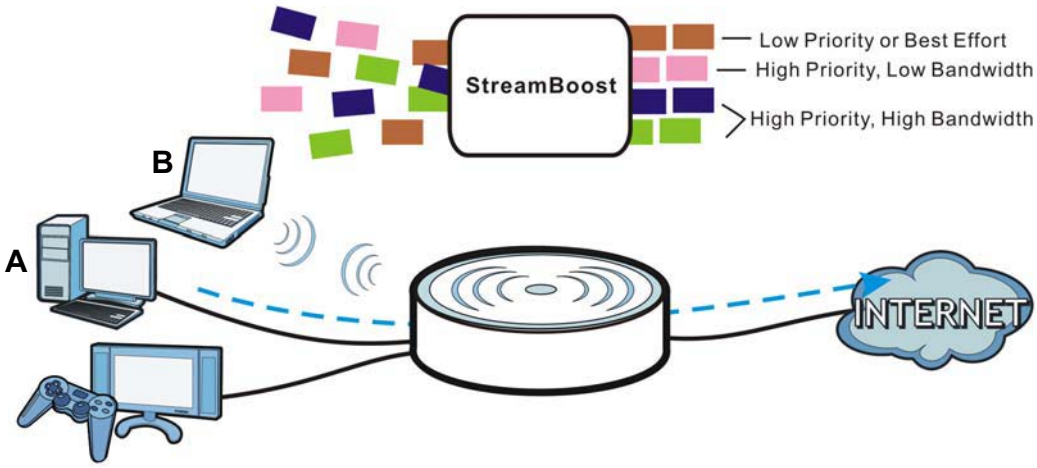
The NBG6617 supports the new StreamBoost technology, introduced by Qualcomm, to redistribute traffic over the NBG6617 for the best possible performance in a home network.

Streamboost is smart Quality of Service (QoS). Streamboost detects traffic flow and applies traffic shaping policies automatically. It gives each device and each application priority and provides the exact amount of bandwidth they need at a given time. This helps free up bandwidth for other applications or connected devices. If there is not enough bandwidth for optimal performance, Streamboost makes sure the application or device has the minimum acceptable bandwidth which is determined according to StreamBoost's cloud-based database.

Real-time application traffic (such as on-line games or communications) and video/audio streaming are given the highest priority. Downloads or torrent files are classified as best effort and placed lower than general network traffic (general browsing).

In the figure below, the StreamBoost-enabled NBG6617 differentiates incoming traffic flow going from the LAN device (**A**) or wireless device (**B**) to the Internet. It shapes traffic and gives priority and allocates bandwidth according to traffic types.

Figure 71 StreamBoost Management Example



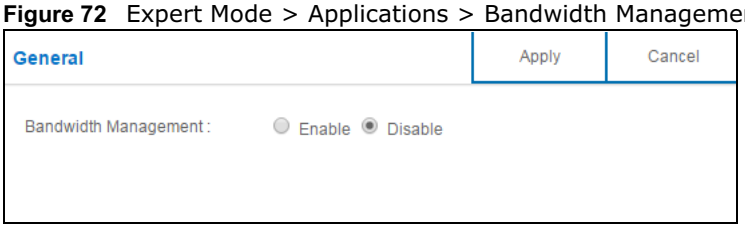
The StreamBoost engine on the NBG6617 can identify the types of connected devices (such as PC, smart phone, tablet, TV or game console) in your network. When there is not enough bandwidth to support traffic of the same priority, the NBG6617 refers to the connected device priority. Traffic from the device with the lowest priority is classified as best-effort traffic. Use the **Advanced** screen to prioritize the connected devices (Section 13.3.2 on page 113).

13.3.1 General Screen

Use this screen to enable StreamBoost.

In **Expert** mode, click **Applications** > **Bandwidth Management** > **General** to open the following screen.

Figure 72 Expert Mode > Applications > Bandwidth Management > General



The following table describes the labels in this screen.

Table 45 Expert Mode > Applications > Bandwidth Management > General

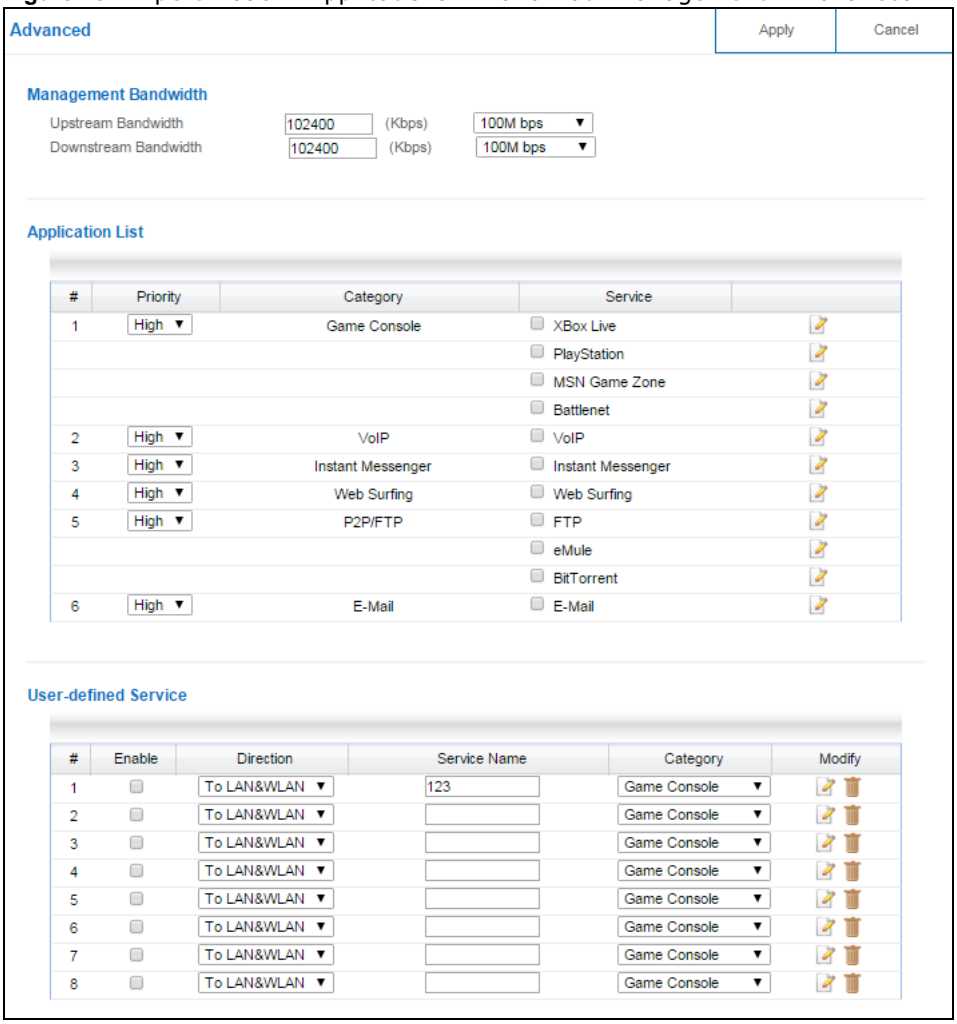
LABEL	DESCRIPTION
Enable StreamBoost	Select this option to turn on Streamboost management on the NBG6617.
Apply	Click **Apply** to save your customized settings.
Cancel	Click **Cancel** to begin configuring this screen afresh.

13.3.2 Advanced Screen

Use this screen to configure the maximum allowable bandwidth on the NBG6617 and allow the NBG6617 to get StreamBoost database updates automatically.

In **Expert** mode, click **Applications** > **Bandwidth Management** > **Advanced** to open the following screen.

Figure 73 Expert Mode > Applications > Bandwidth Management > Advanced



The following table describes the labels in this screen.

Table 46 Expert Mode > Applications > Bandwidth Management > Advanced

LABEL	DESCRIPTION
Management Bandwidth	
Upstream Bandwidth	Select the total amount of bandwidth that you want to dedicate to uplink (or outgoing) traffic. Otherwise, select **User Defined** to manually enter the bandwidth. This is traffic from LAN/WLAN to WAN.
Downstream Bandwidth	Select the total amount of bandwidth that you want to dedicate to downlink (or incoming) traffic. Otherwise, select **User Defined** to manually enter the bandwidth. This is traffic from WAN to LAN/WLAN.
Application List	
#	This is the index number of the application on the NBG6617.
Priority	Use the drop-down list box to select the priority of the connected device.

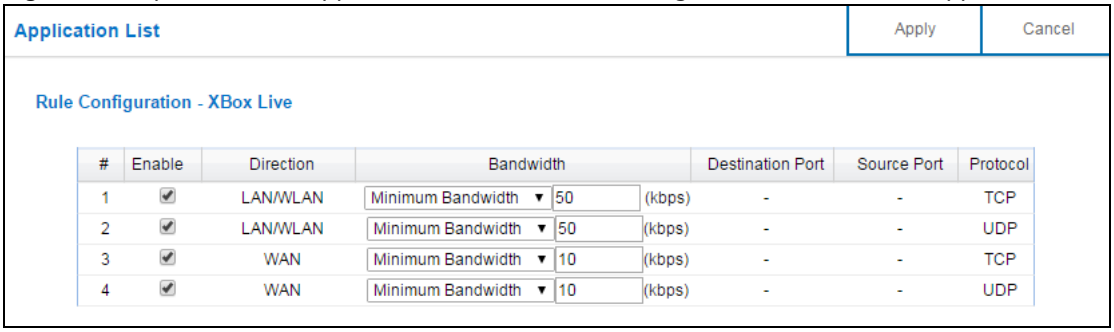
Table 46 Expert Mode > Applications > Bandwidth Management > Advanced (continued)

LABEL	DESCRIPTION
Category	This column displays the categories to which the connected device applies.
Service	This displays the name of the service.
Edit	Click the **Edit** icon to open the edit screen where you can modify an existing rule.
User-defined Service	
#	This is the index number of the user-defined service.
Enable	Select the check box to enable the service. Clear the check box to disable the service.
Direction	Use the drop-down list box to select a direction of travel of packets for which you want to configure services.
Service Name	Enter a descriptive name for the service.
Category	Use the drop-down list box to select a category of the service.
Modify	Click the **Edit** icon to open the edit screen where you can modify an existing rule. Click the **Delete** icon to remove a rule.
Apply	Click **Apply** to save your customized settings.
Cancel	Click **Cancel** to begin configuring this screen afresh.

13.3.2.1 Application List Edit

Click the **Edit** icon next to an existing rule to edit it. Use this screen to view and configure the application rules.

Figure 74 Expert Mode > Applications > Bandwidth Management > Advanced: Application List: Edit



The following table describes the labels in this screen.

Table 47 Expert Mode > Applications > Bandwidth Management > Advanced: Application List: Edit

LABEL	DESCRIPTION
#	This is the index number of the service rule.
Enable	Select the check box to enable the rule. Clear the check box to disable the rule.
Direction	This displays traffic direction of the service.
Bandwidth	Select **Maximum Bandwidth** or **Minimum Bandwidth** and enter the maximum bandwidth or minimum bandwidth (in Kbps) next to the drop-down list box allowed for the traffic.
Destination Port	This displays the port number of the destination that define the traffic type.
Source Port	This displays the port number of the source that define the traffic type.
Protocol	This is the transport layer protocol used for the service.

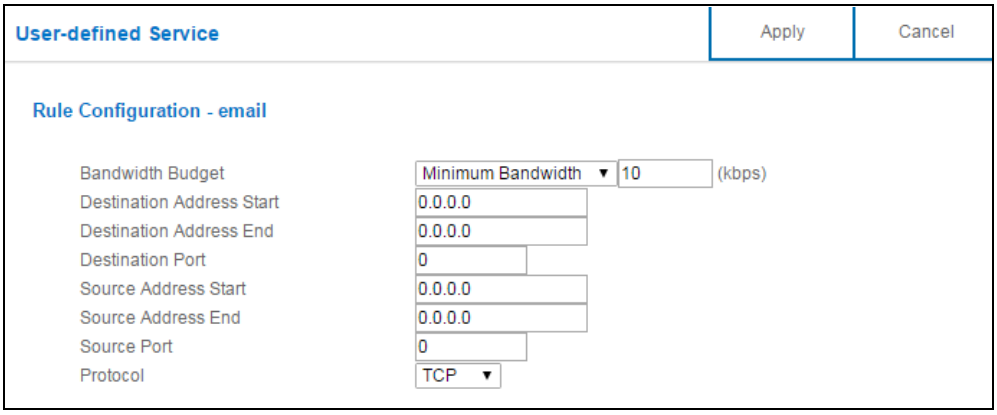
Table 47 Expert Mode > Applications > Bandwidth Management > Advanced: Application List: Edit

LABEL	DESCRIPTION
Apply	Click **Apply** to save your customized settings.
Cancel	Click **Cancel** to begin configuring this screen afresh.

13.3.2.2 User-defined Service Edit

Click the **Edit** icon in the **Modify** field to open the edit screen. Use this screen to configure user-defined service rules.

Figure 75 Expert Mode > Applications > Bandwidth Management > Advanced: User-defined Service: Edit



The following table describes the labels in this screen.

Table 48 Expert Mode > Applications > Bandwidth Management > Advanced: User-defined Service: Edit

LABEL	DESCRIPTION
Bandwidth Budget	Select **Maximum Bandwidth** or **Minimum Bandwidth** and enter the maximum bandwidth or minimum bandwidth (in Kbps) next to the drop-down list box allowed for the service.
Destination Address Start	Enter the single IP address or the starting IP address in a range here.
Destination Address End	Enter the ending IP address in a range here.
Destination Port	This is a single port number that defines your user-defined service.
Source Address Start	Enter the single IP address or the starting IP address in a range here.
Source Address End	Enter the ending IP address in a range here.
Source Port	This is a single port number that defines your user-defined service.
Protocol	Select the transport layer protocol (**TCP**, **UDP** or **BOTH**) that defines your user-defined service.
Apply	Click **Apply** to save your customized settings.
Cancel	Click **Cancel** to begin configuring this screen afresh.

13.4 USB Media Sharing Screen

You can set up your NBG6617 to act as a media server to provide media (like video) to DLNA-compliant players, such as Windows Media Player, ZyXEL DMAs (Digital Media Adapters), Xboxes or PS3s. The media server and clients must have IP addresses in the same subnet.

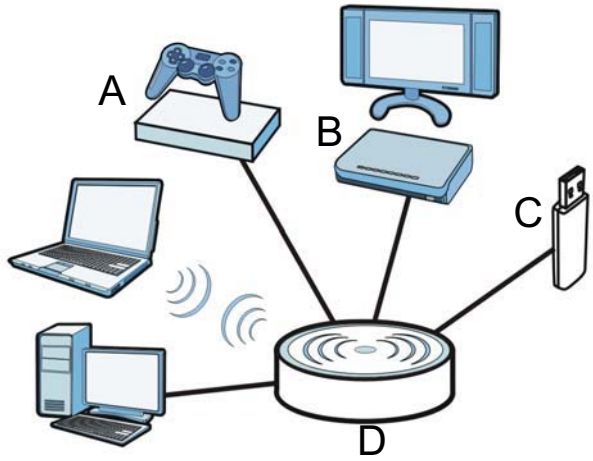
The NBG6617 media server enables you to:

- Publish all folders for everyone to play media files in the USB storage device connected to the NBG6617.
- Use hardware-based media clients like the DMA-2500 to play the files.

Note: Anyone on your network can play the media files in the published folders. No user name and password nor other form of security is required.

The following figure is an overview of the NBG6617's media server feature. DLNA devices **A** and **B** can access and play files on a USB device (**C**) which is connected to the NBG6617 (**D**).

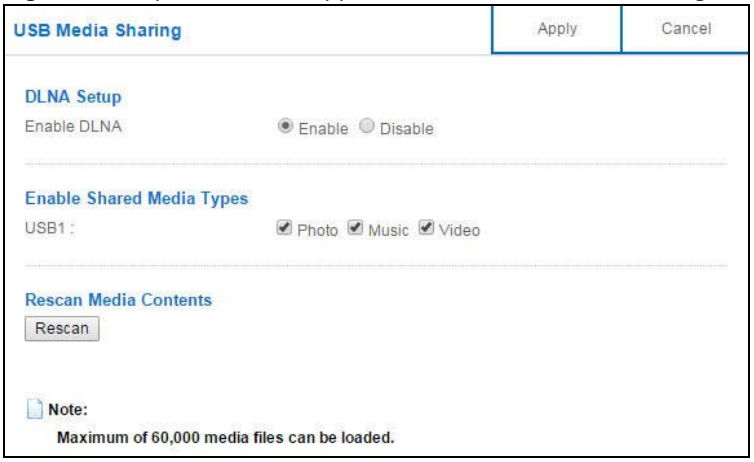
Figure 76 Media Server Overview



Use this screen to have the NBG6617 act as a DLNA-compliant media server that lets DLNA-compliant media clients on your network play video, music, and photos from the NBG6617 (without having to copy them to another computer).

In **Expert** mode, click **Applications** > **USB Media Sharing** to open the following screen.

Figure 77 Expert Mode > Applications > USB Media Sharing



The following table describes the labels in this screen.

Table 49 Expert Mode > Applications > USB Media Sharing

LABEL	DESCRIPTION
DLNA Setup	
Enable DLNA	Select this to have the NBG6617 function as a DLNA-compliant media server.
Enable Shared Media Types	
USB1	Select the media type that you want to share on the USB device connected to the NBG6617's USB port.
Rescan Media Contents	
Rescan	Click this button to have the NBG6617 scan the media files on the connected USB device and do indexing of the file list again so that DLNA clients can find the new files if any.
Apply	Click **Apply** to save your changes back to the NBG6617.
Cancel	Click **Cancel** to begin configuring this screen afresh.

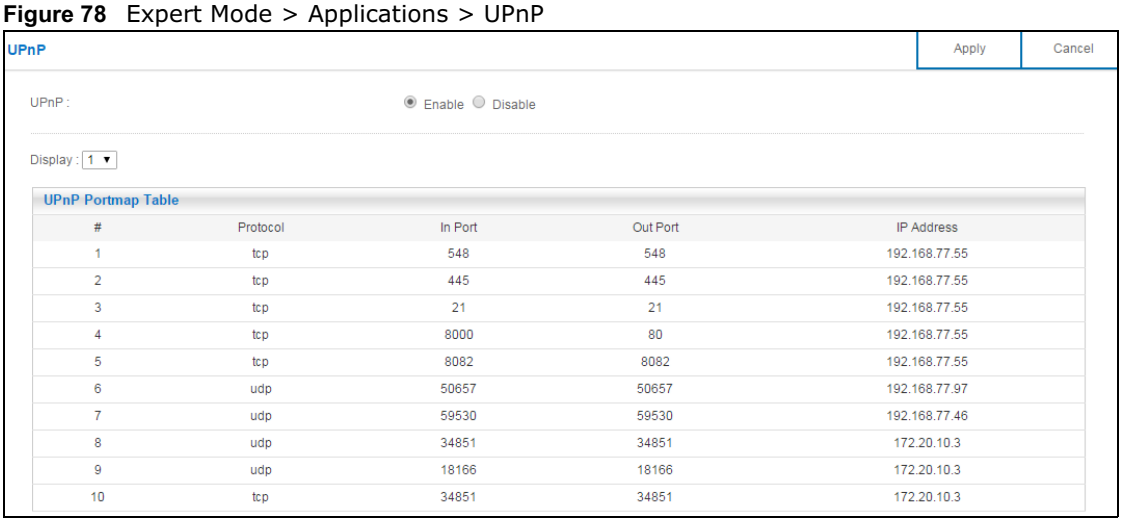
13.5 UPnP Screen

Universal Plug and Play (UPnP) is a distributed, open networking standard that uses TCP/IP for simple peer-to-peer network connectivity between devices. A UPnP device can dynamically join a network, obtain an IP address, convey its capabilities and learn about other devices on the network. In turn, a device can leave a network smoothly and automatically when it is no longer in use.

Use this screen to enable UPnP on your NBG6617.

In **Expert** mode, click **Applications** > **UPnP** to open the following screen.

Figure 78 Expert Mode > Applications > UPnP



The following table describes the fields in this screen.

Table 50 Expert Mode > Applications > UPnP

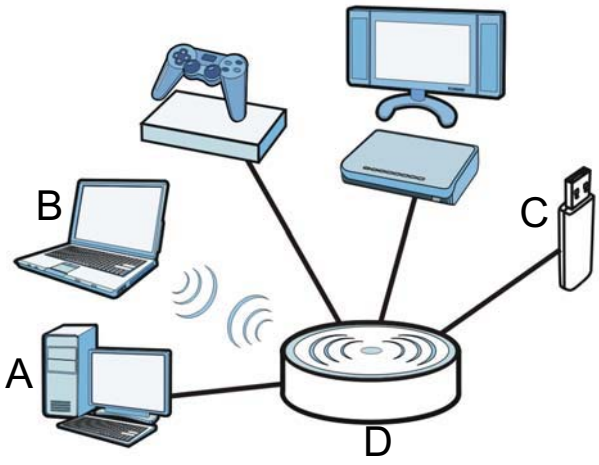
LABEL	DESCRIPTION
UPnP	Select **Enable** to activate UPnP. Be aware that anyone could use a UPnP application to open the web configurator's login screen without entering the NBG6617's IP address (although you must still enter the password to access the web configurator).
Display	Select the page number from the drop-down list box to display the UPnP port mapping rules.
UPnP Portmap Table	
#	This is the number of an individual UPnP entry.
Protocol	This is the transport layer protocol used for the service.
In Port	**In Port** is a port that a LAN computer uses when it requests a particular service. This port is only applicable to the local network. This field displays the port number of the UPnP entry.
Out Port	**Out Port** is the well-known port that the WAN server uses to reply to the LAN computer that made the request using **In Port**. In the below example, **In Port** 8000 is paired with **Out Port** 80. A user on the WAN could enter http://A.B.C.D:8000 to access the internal computer with private IP address 192.168.77.55 where A.B.C.D is the WAN IP address or URL of the NBG6617. This field displays the port number of the UPnP entry.
IP Address	This field displays the IP address of this UPnP entry.
Apply	Click **Apply** to save the setting to the NBG6617.
Cancel	Click **Cancel** to return to the previously saved settings.

13.6 File Sharing

You can also share files on a USB memory stick or hard drive connected to your NBG6617 with users on your network.

The following figure is an overview of the NBG6617's file-sharing server feature. Computers **A** and **B** can access files on a USB device (**C**) which is connected to the NBG6617 (**D**).

Figure 79 File Sharing Overview



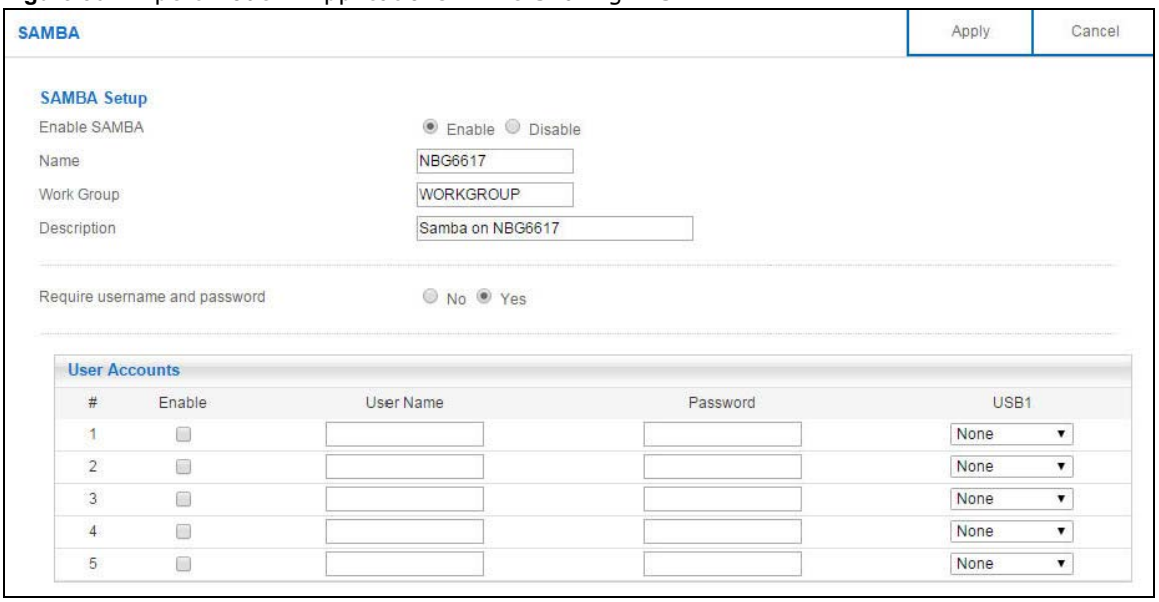
Note: The read and write performance may be affected by amount of file-sharing traffic on your network, type of connected USB device and your USB version (1.1 or 2.0).

13.6.1 SAMBA Server Screen

Use this screen to set up file-sharing via the NBG6617 using Windows Explorer or the workgroup name. You can also configure the workgroup name and create file-sharing user accounts.

In **Expert** mode, click **Applications** > **File Sharing > SAMBA** to open the following screen.

Figure 80 Expert Mode > Applications > File Sharing > SAMBA



The following table describes the labels in this screen.

Table 51 Expert Mode > Applications > File Sharing > SAMBA

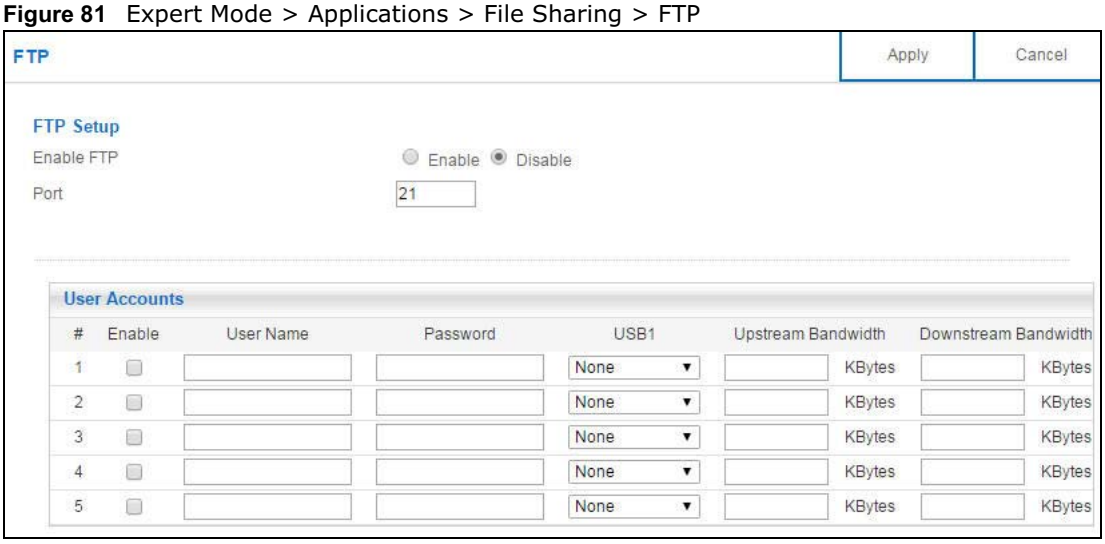
LABEL	DESCRIPTION
SAMBA Setup	
Enable SAMBA	Select this to enable file sharing through the NBG6617 using Windows Explorer or by browsing to your work group.
Name	Specify the name to identify the NBG6617 in a work group.
Work Group	You can add the NBG6617 to an existing or a new workgroup on your network. Enter the name of the workgroup which your NBG6617 automatically joins. You can set the NBG6617's workgroup name to be exactly the same as the workgroup name to which your computer belongs to. Note: The NBG6617 will not be able to join the workgroup if your local area network has restrictions set up that do not allow devices to join a workgroup. In this case, contact your network administrator.
Description	Enter the description of the NBG6617 in a work group.
Require username and password	Select **Yes** to need a user account for access to the connected USB stick from any computer. Otherwise, select **No**.
User Accounts	Before you can share files you need a user account. Configure the following fields to set up a file-sharing account.
#	This is the index number of the user account.
Enable	This field displays whether a user account is activated or not. Select the check box to enable the account. Clear the check box to disable the account.
User Name	Enter a user name that will be allowed to access the shared files. You can enter up to 20 characters. Only letters and numbers allowed.
Password	Enter the password used to access the shared files. You can enter up to 20 characters. Only letters and numbers are allowed. The password is case sensitive.
USB1	Specify the user's access rights to the USB storage device which is connected to the NBG6617's USB port. **Read & Write** - The user has read and write rights, meaning that the user can create and edit the files on the connected USB device. **Read** - The user has read rights only and can not create or edit the files on the connected USB device.
Apply	Click **Apply** to save your changes back to the NBG6617.
Cancel	Click **Cancel** to begin configuring this screen afresh.

13.6.2 FTP Server Screen

Use this screen to set up file sharing via the NBG6617 using FTP and create user accounts.

In **Expert** mode, click **Applications** > **File Sharing > FTP** to open the following screen.

Figure 81 Expert Mode > Applications > File Sharing > FTP



The following table describes the labels in this screen.

Table 52 Expert Mode > Applications > File Sharing > FTP

LABEL	DESCRIPTION
Enable FTP	Select this to enable the FTP server on the NBG6617 for file sharing using FTP.
Port	You may change the server port number for FTP if needed, however you must use the same port number in order to use that service for file sharing.
User Accounts	Before you can share files you need a user account. Configure the following fields to set up a file-sharing account.
#	This is the index number of the user account.
Enable	This field displays whether a user account is activated or not. Select the check box to enable the account. Clear the check box to disable the account.
User Name	Enter a user name that will be allowed to access the shared files. You can enter up to 20 characters. Only letters and numbers allowed.
Password	Enter the password used to access the shared files. You can enter up to 20 characters. Only letters and numbers are allowed. The password is case sensitive.
USB1	Specify the user's access rights to the USB storage device which is connected to the NBG6617's USB port. **Read & Write** - The user has read and write rights, meaning that the user can create and edit the files on the connected USB device. **Read** - The user has read rights only and can not create or edit the files on the connected USB device. **None** - The user cannot access the files on the USB device(s) connected to the USB port.
Upstream Bandwidth	Enter the maximum bandwidth (in Kbps) allowed for incoming FTP traffic.
Downstream Bandwidth	Enter the maximum bandwidth (in Kbps) allowed for outgoing FTP traffic.
Apply	Click **Apply** to save your changes back to the NBG6617.
Cancel	Click **Cancel** to begin configuring this screen afresh.

13.6.3 Example of Accessing Your Shared Files From a Computer

You can use Windows Explorer or FTP to access the USB storage devices connected to the NBG6617.

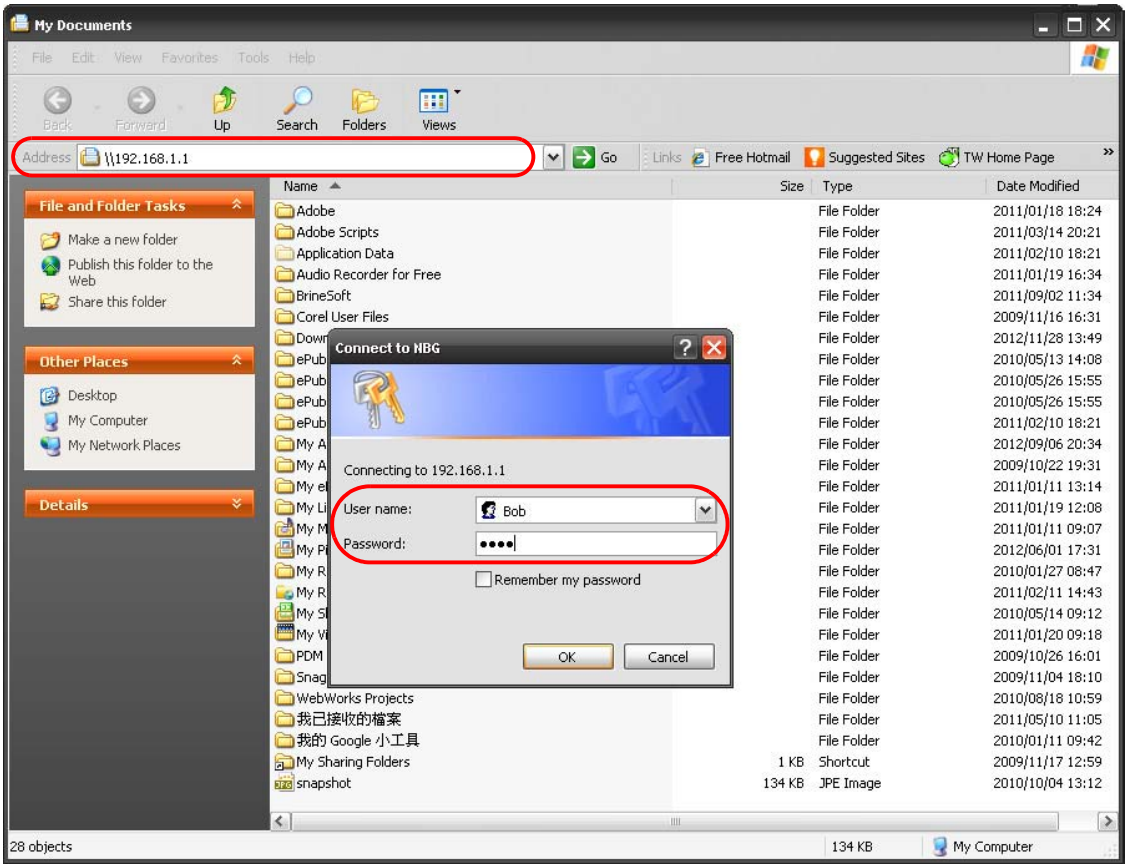
This example shows you how to use Microsoft's Windows XP to browse your shared files. Refer to your operating system's documentation for how to browse your file structure.

Use Windows Explorer to Share Files

You should have enabled file sharing and create a user account (Bob/1234 for example) with read and write access to USB 1 in the **Applications** > **File Sharing** > **SAMBA** screen.

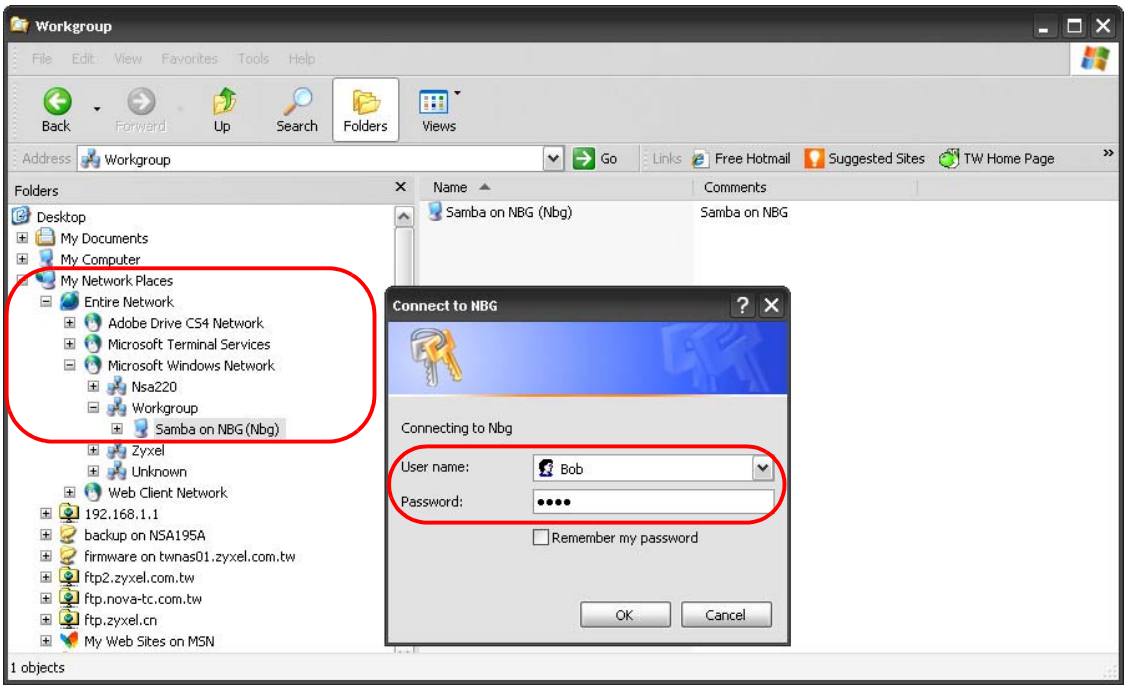
Open Windows Explorer to access the connected USB device using either Windows Explorer browser or by browsing to your workgroup.

1 In Windows Explorer's Address bar type a double backslash "\\" followed by the IP address of the NBG6617 (the default IP address of the NBG6617 in router mode is 192.168.1.1) and press [ENTER]. A screen asking for password authentication appears. Type the user name and password (Bob and 1234 in this example) and click **OK**.



Note: Once you log into the shared folder via your NBG6617, you do not have to relogin unless you restart your computer.

2 You can also use the workgroup name to access files by browsing to the workgroup folder using the folder tree on the left side of the screen. It is located under **My Network Places**. In this example the workgroup name is the default "Workgroup".



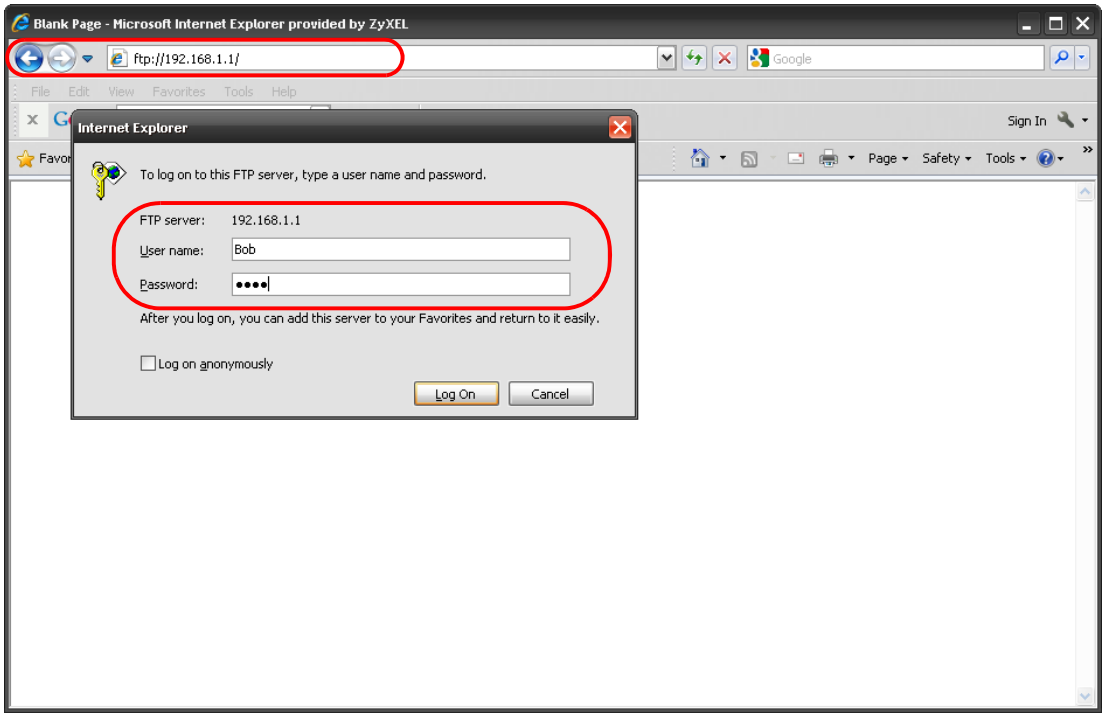
Use FTP to Share Files

You can use FTP to access the USB storage devices connected to the NBG6617. In this example, we use the web browser to share files via FTP from the LAN. The way or screen you log into the FTP server (on the NBG6617) varies depending on your FTP client. See your FTP client documentation for more information.

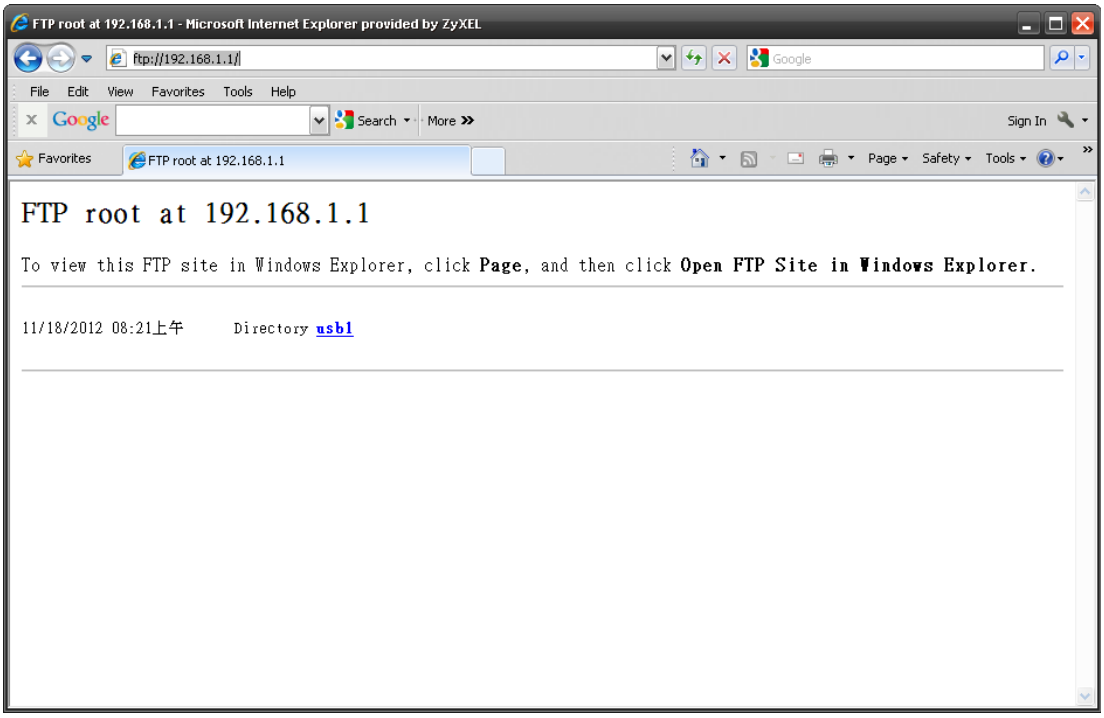
You should have enabled file sharing and create a user account (Bob/1234 for example) with read and write access to USB 1 in the **Applications** > **File Sharing** > **FTP** screen.

1 In your web browser's address or URL bar type "ftp://" followed by the IP address of the NBG6617 (the default LAN IP address of the NBG6617 in router mode is 192.168.1.1) and click **Go** or press [ENTER].

2 A screen asking for password authentication appears. Enter the user name and password (you configured in the **Applications** > **File Sharing** > **FTP** screen) and click **Log On**.



3 The screen changes and shows you the folder for the USB storage device connected to your NBG6617. Double-click the folder to display the contents in it.



13.7 ONE Connect Screen

One Connect is a ZyXEL-proprietary feature. It complies with the IEEE 1905.1 standard and allows auto-detection and auto-configuration.

If your wireless router supports ZyXEL One Connect, NBG6617 for example, you can download and install the ZyXEL One Connect App in your mobile device to check the connection status, do speed test, turn on or turn off the devices in your network, block or allow a device's access and set up a guest Wi-Fi network from the mobile device. You can even use the App to access the NBG6617's web configurator. The mobile device with the App installed must be connected to the NBG6617 wirelessly.

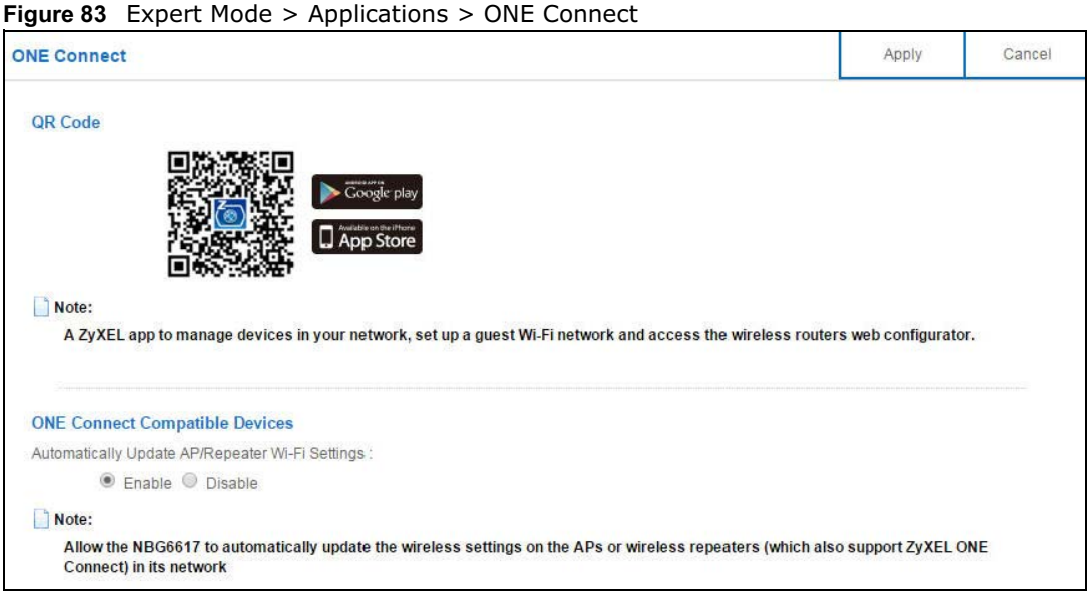
Note: You have to go to https://mycloud.zyxel.com and pair your device again when you reset the NBG6617.

Figure 82 ZyXEL ONE Connect App

Use this screen to enable or disable Wi-Fi auto-configuration on the NBG6617.

In **Expert** mode, click **Applications** > **ONE Connect** to open the following screen.

Figure 83 Expert Mode > Applications > ONE Connect



The following table describes the labels in this screen.

Table 53 Expert Mode > Applications > ONE Connect

LABEL	DESCRIPTION
ONE Connect	
QR Code	Scan the QR code and go to a website to download the ZyXEL One Connect App in your mobile device. One is for the iTunes App Store, and the other is for Google Play.

Table 53 Expert Mode > Applications > ONE Connect

LABEL	DESCRIPTION
One Connect Compatible Devices	
Automatically Update AP/ Repeater Wi-Fi Settings	Select **Enable** to allow the NBG6617 to automatically update the wireless settings on the APs or wireless repeaters (which also support ZyXEL One Connect) in its network. Select **Disable** to turn this feature off if you want to have the APs or repeaters in the network use different wireless settings.
Apply	Click **Apply** to save your changes back to the NBG6617.
Cancel	Click **Cancel** to begin configuring this screen afresh.

13.8 Technical Reference

The following section contains additional technical information about the NBG6617 features described in this chapter.

Customizing Keyword Blocking URL Checking

You can use commands to set how much of a website's URL the content filter is to check for keyword blocking. See the appendices for information on how to access and use the command interpreter.

Domain Name or IP Address URL Checking

By default, the NBG6617 checks the URL's domain name or IP address when performing keyword blocking.

This means that the NBG6617 checks the characters that come before the first slash in the URL.

For example, with the URL www.zyxel.com.tw/news/pressroom.php, content filtering only searches for keywords within www.zyxel.com.tw.

Full Path URL Checking

Full path URL checking has the NBG6617 check the characters that come before the last slash in the URL.

For example, with the URL www.zyxel.com.tw/news/pressroom.php, full path URL checking searches for keywords within www.zyxel.com.tw/news/.

Use the `ip urlfilter customize actionFlags 6 [disable | enable]` command to extend (or not extend) the keyword blocking search to include the URL's full path.

File Name URL Checking

Filename URL checking has the NBG6617 check all of the characters in the URL.

For example, filename URL checking searches for keywords within the URL www.zyxel.com.tw/news/pressroom.php.

Use the `ip urlfilter customize actionFlags 8 [disable | enable]` command to extend (or not extend) the keyword blocking search to include the URL's complete filename.

NAT Traversal

UPnP NAT traversal automates the process of allowing an application to operate through NAT. UPnP network devices can automatically configure network addressing, announce their presence in the network to other UPnP devices and enable exchange of simple product and service descriptions. NAT traversal allows the following:

- Dynamic port mapping
- Learning public IP addresses
- Assigning lease times to mappings

Windows Messenger is an example of an application that supports NAT traversal and UPnP.

See the NAT chapter for more information on NAT.

Cautions with UPnP

The automated nature of NAT traversal applications in establishing their own services and opening firewall ports may present network security issues. Network information and configuration may also be obtained and modified by users in some network environments.

When a UPnP device joins a network, it announces its presence with a multicast message. For security reasons, the NBG6617 allows multicast messages on the LAN only.

All UPnP-enabled devices may communicate freely with each other without additional configuration. Disable UPnP if this is not your intention.

14 Security

14.1 Overview

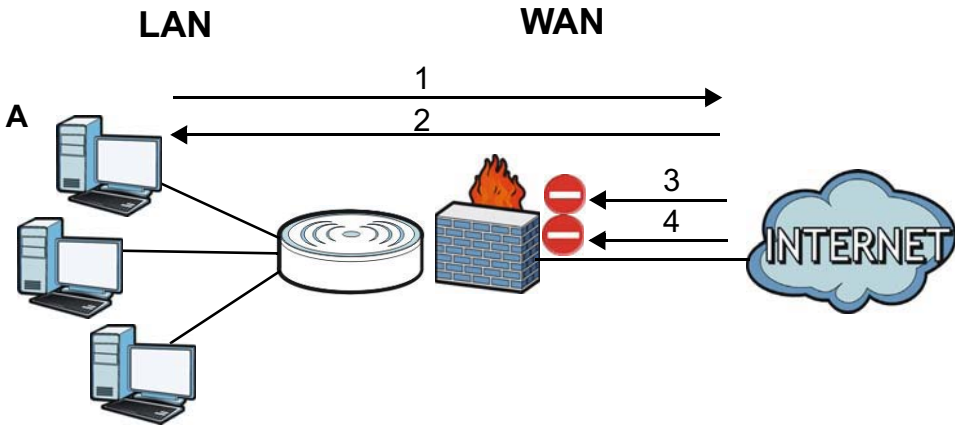
Use these screens to enable and configure the firewall that protects your NBG6617 and your LAN from unwanted or malicious traffic.

Enable the firewall to protect your LAN computers from attacks by hackers on the Internet and control access between the LAN and WAN. By default the firewall:

- allows traffic that originates from your LAN computers to go to all of the networks.
- blocks traffic that originates on the other networks from going to the LAN.

The following figure illustrates the default firewall action. User **A** can initiate an IM (Instant Messaging) session from the LAN to the WAN (1). Return traffic for this session is also allowed (2). However other traffic initiated from the WAN is blocked (3 and 4).

Figure 84 Default Firewall Action



14.1.1 What You Can Do

- Use the **IPv4 Firewall** screen to enable or disable the NBG6617's IPv4 firewall (Section 14.2 on page 130).
- Use the **IPv6 Firewall** screen to enable or disable the NBG6617's IPv6 firewall (Section 14.3 on page 132).

14.1.2 What You Need To Know

The following terms and concepts may help as you read through this chapter.

About the NBG6617 Firewall

The NBG6617’s firewall feature physically separates the LAN and the WAN and acts as a secure gateway for all data passing between the networks.

It is a stateful inspection firewall and is designed to protect against Denial of Service attacks when activated (click the **IPv4 Firewall** or **IPv6 Firewall** tab under **Security** and then click the **Enable Firewall** check box). The NBG6617's purpose is to allow a private Local Area Network (LAN) to be securely connected to the Internet. The NBG6617 can be used to prevent theft, destruction and modification of data, as well as log events, which may be important to the security of your network.

The NBG6617 is installed between the LAN and a broadband modem connecting to the Internet. This allows it to act as a secure gateway for all data passing between the Internet and the LAN.

The NBG6617 has one Ethernet WAN port and four Ethernet LAN ports, which are used to physically separate the network into two areas.The WAN (Wide Area Network) port attaches to the broadband (cable or DSL) modem to the Internet.

The LAN (Local Area Network) port attaches to a network of computers, which needs security from the outside world. These computers will have access to Internet services such as e-mail, FTP and the World Wide Web. However, "inbound access" is not allowed (by default) unless the remote host is authorized to use a specific service.

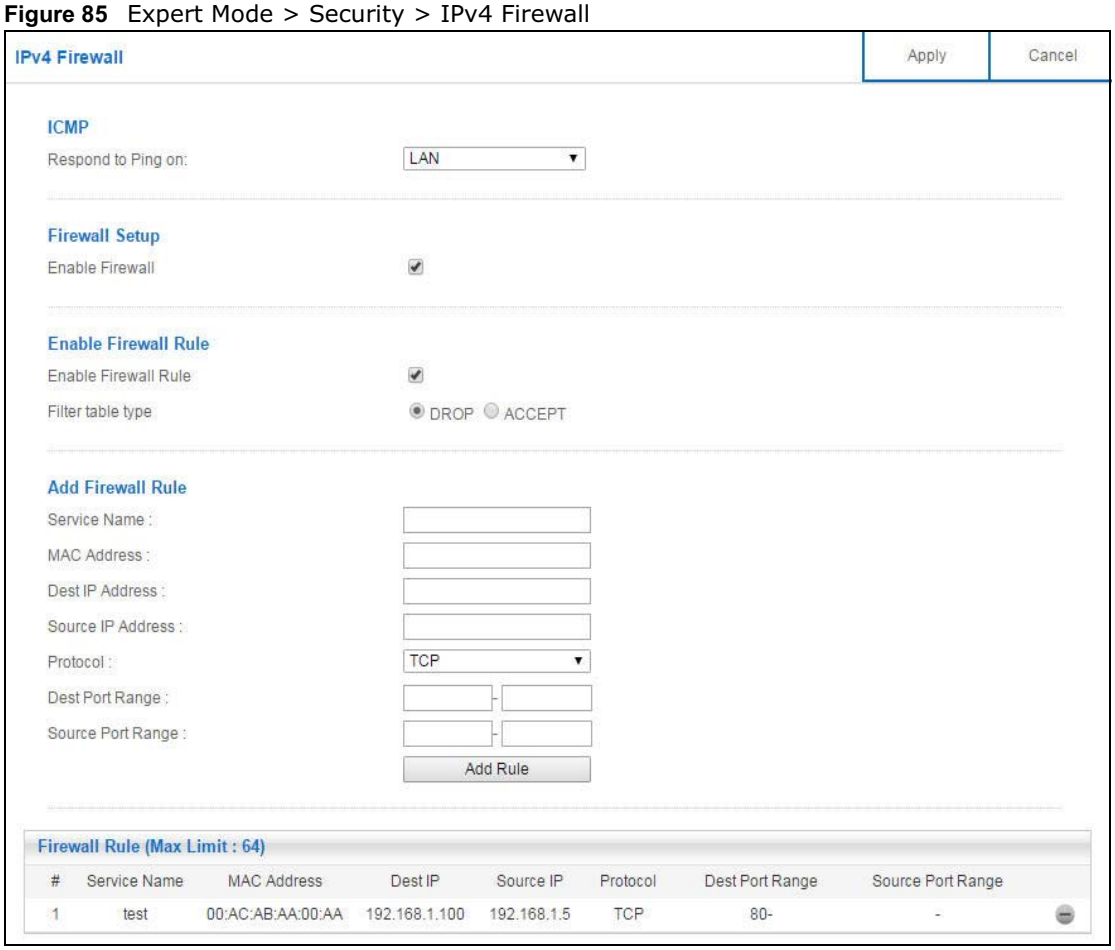
Guidelines For Enhancing Security With Your Firewall

1. Change the default password via Web Configurator.
2. Think about access control before you connect to the network in any way, including attaching a modem to the port.
3. Limit who can access your router.
4. Don't enable any local service (such as NTP) that you don't use. Any enabled service could present a potential security risk. A determined hacker might be able to find creative ways to misuse the enabled services to access the firewall or the network.
5. For local services that are enabled, protect against misuse. Protect by configuring the services to communicate only with specific peers, and protect by configuring rules to block packets for the services at specific interfaces.
6. Protect against IP spoofing by making sure the firewall is active.
7. Keep the firewall in a secured (locked) room.

14.2 IPv4 Firewall Screen

Use this screen to enable or disable the NBG6617’s IPv4 firewall, and set up firewall logs. Click **Expert Mode** > **Security** > **IPv4 Firewall** to open the firewall setup screen.

Figure 85 Expert Mode > Security > IPv4 Firewall



The following table describes the labels in this screen.

Table 54 Expert Mode > Security > IPv4 Firewall

LABEL	DESCRIPTION
ICMP	Internet Control Message Protocol is a message control and error-reporting protocol between a host server and a gateway to the Internet. ICMP uses Internet Protocol (IP) datagrams, but the messages are processed by the TCP/IP software and directly apparent to the application user.
Respond to Ping on	The NBG6617 will not respond to any incoming Ping requests when **Disable** is selected. Select **LAN** to reply to incoming LAN Ping requests. Select **WAN** to reply to incoming WAN Ping requests. Otherwise select **LAN&WAN** to reply to all incoming LAN and WAN Ping requests.
Firewall Setup	
Enable Firewall	Select this check box to activate the firewall. The NBG6617 performs access control and protects against Denial of Service (DoS) attacks when the firewall is activated.
Enable Firewall Rule	
Enable Firewall Rule	Select this check box to activate the firewall rules that you define (see Add Firewall Rule below).
Filter table type	Select **DROP** to silently discard the packets which meet the firewall rules. The others are accepted.Select **ACCEPT** to allow the passage of the packets which meet the firewall rules. The others are blocked.
Add Firewall Rule	

Table 54 Expert Mode > Security > IPv4 Firewall (continued)

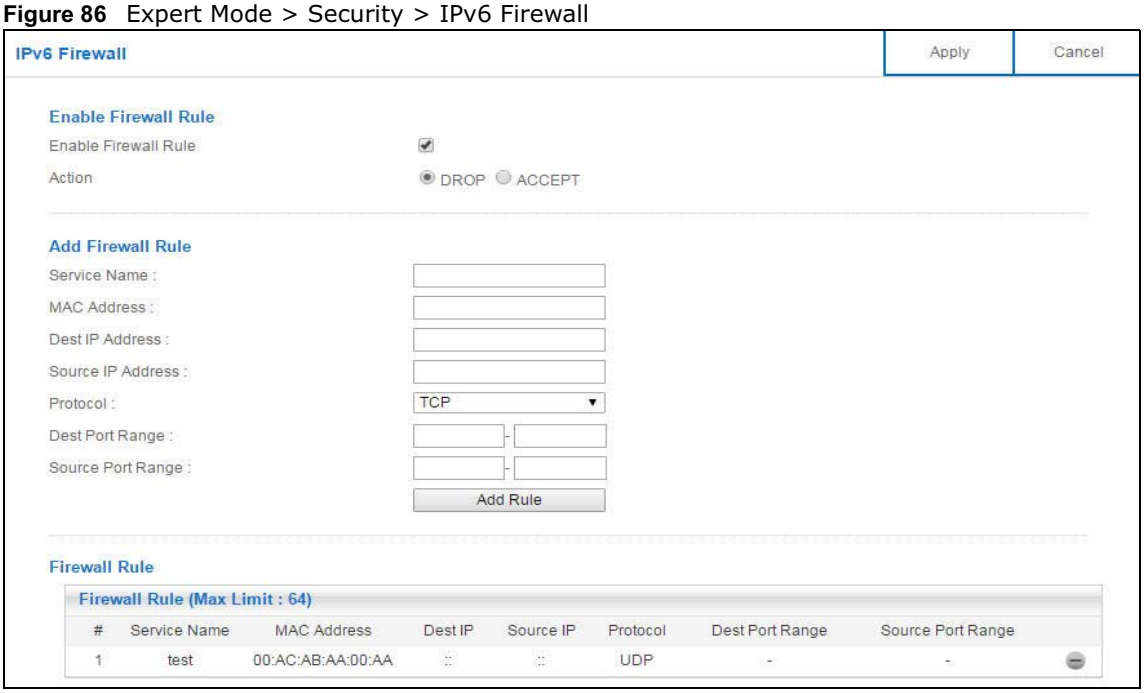
LABEL	DESCRIPTION
Service Name	Enter a name that identifies or describes the firewall rule.
MAC Address	Enter the MAC address of the computer for which the firewall rule applies.
Dest IP Address	Enter the IP address of the computer to which traffic for the application or service is entering. The NBG6617 applies the firewall rule to traffic initiating from this computer.
Source IP Address	Enter the IP address of the computer that initializes traffic for the application or service. The NBG6617 applies the firewall rule to traffic initiating from this computer.
Protocol	Select the protocol (**TCP**, **UDP** or **ICMP**) used to transport the packets for which you want to apply the firewall rule.
Dest Port Range	This is the port number/range of the destination that define the traffic type, for example TCP port 80 defines web traffic.
Source Port Range	This is the port number/range of the source that define the traffic type, for example TCP port 80 defines web traffic.
Add Rule	Click **Add Rule** to save the firewall rule.
Firewall Rule	
#	This is your firewall rule number. The ordering of your rules is important as rules are applied in turn.
Service Name	This is a name that identifies or describes the firewall rule.
MAC addresse	This is the MAC address of the computer for which the firewall rule applies.
Dest IP	This is the IP address of the computer to which traffic for the application or service is entering.
Source IP	This is the IP address of the computer from which traffic for the application or service is initialized.
Protocol	This is the protocol (**TCP**, **UDP** or **ICMP**) used to transport the packets for which you want to apply the firewall rule.
Dest Port Range	This is the port number/range of the destination that define the traffic type, for example TCP port 80 defines web traffic.
Source Port Range	This is the port number/range of the source that define the traffic type, for example TCP port 80 defines web traffic.
	Click ⊖ to remove the firewall rule.
Apply	Click **Apply** to save the settings.
Cancel	Click **Cancel** to start configuring this screen again.

14.3 IPv6 Firewall Screen

This chapter shows you how to enable and create IPv6 firewall rules to block unwanted IPv6 traffic.

Click **Expert Mode** > **Security** > **IPv6 Firewall**. The **IPv6 Firewall** screen appears as shown.

Figure 86 Expert Mode > Security > IPv6 Firewall



The following table describes the labels in this screen.

Table 55 Expert Mode > Security > IPv6 Firewall

LABEL	DESCRIPTION
Enable Firewall Rule	
Enable Firewall Rule	Select this check box to activate the firewall rules that you define (see **Add Firewall Rule** below).
Action	Select **DROP** to silently discard the packets which meet the firewall rules. The others are accepted. Select **ACCEPT** to allow the passage of the packets which meet the firewall rules. The others are blocked.
Add Firewall Rule	
Service Name	Enter a name that identifies or describes the firewall rule.
MAC Address	Enter the MAC address of the computer for which the firewall rule applies.
Dest IP Address	Enter the IPv6 address of the computer to which traffic for the application or service is entering. The NBG6617 applies the firewall rule to traffic destined for this computer.
Source IP Address	Enter the IPv6 address of the computer that initializes traffic for the application or service. The NBG6617 applies the firewall rule to traffic initiating from this computer.
Protocol	Select the protocol (**TCP**, **UDP** or **ICMPv6**) used to transport the packets for which you want to apply the firewall rule.
Dest Port Range	Enter the port number/range of the destination that defines the traffic type, for example TCP port 80 defines web traffic.
Source Port Range	Enter the port number/range of the source that defines the traffic type, for example TCP port 80 defines web traffic.

Table 55 Expert Mode > Security > IPv6 Firewall (continued)

LABEL	DESCRIPTION
Add Rule	Click **Add Rule** to save the firewall rule.
Firewall Rule	
#	This is your firewall rule number. The ordering of your rules is important as rules are applied in turn.
ServiceName	This is a name that identifies or describes the firewall rule.
MAC Address	This is the MAC address of the computer for which the firewall rule applies.
Dest IP	This is the IP address of the computer to which traffic for the application or service is entering.
Source IP	This is the IP address of the computer to which traffic for the application or service is initialized.
Protocol	This is the protocol (**TCP**, **UDP** or **ICMPv6**) used to transport the packets for which you want to apply the firewall rule.
Dest Port Range	This is the port number/range of the destination that defines the traffic type, for example TCP port 80 defines web traffic.
Source Port Range	This is the port number/range of the source that defines the traffic type, for example TCP port 80 defines web traffic.
	Click ⊖ to remove the firewall rule.
Apply	Click **Apply** to save the settings.
Cancel	Click **Cancel** to restore your previously saved settings.

15

Maintenance

15.1 Overview

This chapter provides information on the **Maintenance** screens.

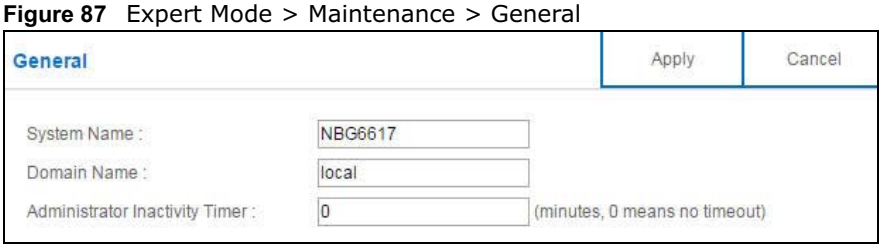
15.2 What You Can Do

- Use the **General** screen to set the timeout period of the management session (Section 15.3 on page 135).
- Use the **Password** screen to change your NBG6617's system password (Section 15.4 on page 136).
- Use the **Time** screen to change your NBG6617's time and date (Section 15.5 on page 137).
- Use the **Firmware Upgrade** screen to upload firmware to your NBG6617 (Section 15.6 on page 139).
- Use the **Backup/Restore** screen to view information related to factory defaults, backup configuration, and restoring configuration (Section 15.7 on page 140).
- Use the **Restart** screen to reboot the NBG6617 without turning the power off (Section 15.8 on page 141).
- Use the **Language** screen to change the language for the Web Configurator (Section 15.9 on page 141).
- Use the **Remote Management** screen to configure the interface/s from which the NBG6617 can be managed remotely and specify a secure client that can manage the NBG6617. (Section 15.10 on page 142).
- Use the **Log** screen to see the logs for the activity on the NBG6617 (Section 15.11 on page 145).
- Use the **Operation Mode** screen to select how you want to use your NBG6617 (Section 15.13 on page 147).

15.3 General Screen

Use this screen to set the management session timeout period. Click **Expert Mode** > **Maintenance** > **General**. The following screen displays.

Figure 87 Expert Mode > Maintenance > General



The following table describes the labels in this screen.

Table 56 Expert Mode > Maintenance > General

LABEL	DESCRIPTION
System Name	System Name is a unique name to identify the NBG6617 in an Ethernet network.
Domain Name	Enter the domain name you want to give to the NBG6617.
Administrator Inactivity Timer	Type how many minutes a management session can be left idle before the session times out. The default is 5 minutes. After it times out you have to log in with your password again. Very long idle timeouts may have security risks. A value of "0" means a management session never times out, no matter how long it has been left idle (not recommended).
Apply	Click **Apply** to save your changes back to the NBG6617.
Cancel	Click **Cancel** to begin configuring this screen afresh.

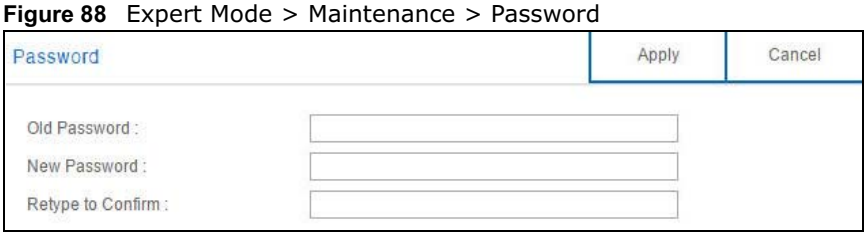
15.4 Password Screen

It is strongly recommended that you change your NBG6617's password.

If you forget your NBG6617's password (or IP address), you will need to reset the device. See Section 15.8 on page 141 for details.

Click **Expert Mode** > **Maintenance** > **Password**. The screen appears as shown.

Figure 88 Expert Mode > Maintenance > Password



The following table describes the labels in this screen.

Table 57 Expert Mode > Maintenance > Password

LABEL	DESCRIPTION
Old Password	Type the default password or the existing password you use to access the system in this field.
New Password	Type your new system password (up to 30 characters). Note that as you type a password, the screen displays an asterisk (*) for each character you type.
Retype to Confirm	Type the new password again in this field.

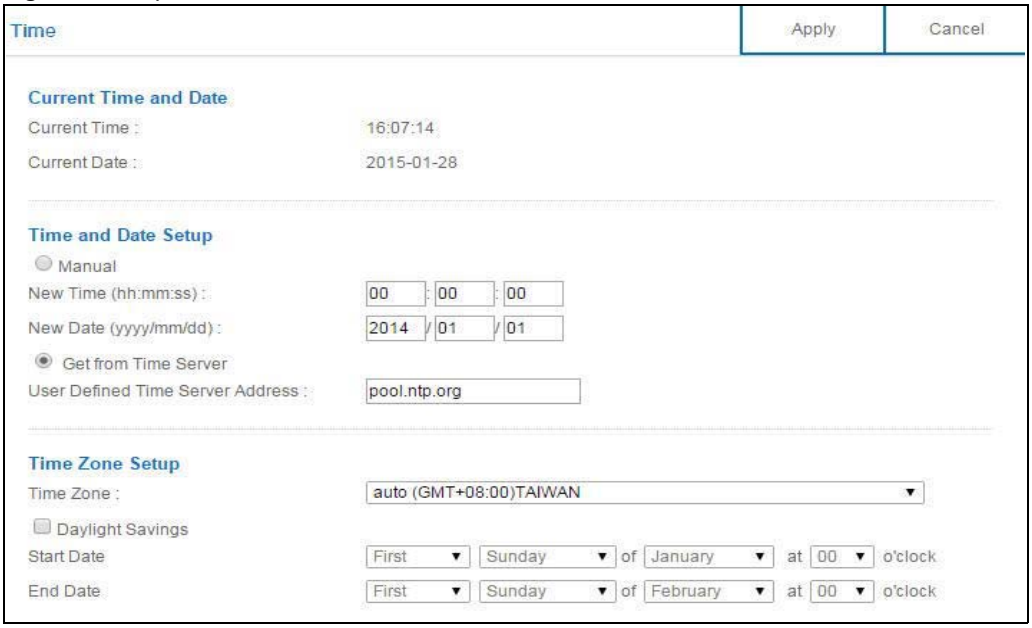
Table 57 Expert Mode > Maintenance > Password (continued)

LABEL	DESCRIPTION
Apply	Click **Apply** to save your changes back to the NBG6617.
Cancel	Click **Cancel** to begin configuring this screen afresh.

15.5 Time Screen

Use this screen to configure the NBG6617's time based on your local time zone. To change your NBG6617's time and date, click **Expert Mode** > **Maintenance** > **Time**. The screen appears as shown.

Figure 89 Expert Mode > Maintenance > Time



The following table describes the labels in this screen.

Table 58 Expert Mode > Maintenance > Time

LABEL	DESCRIPTION
Current Time and Date	
Current Time	This field displays the time of your NBG6617. Each time you reload this page, the NBG6617 synchronizes the time with the time server.
Current Date	This field displays the date of your NBG6617. Each time you reload this page, the NBG6617 synchronizes the date with the time server.
Time and Date Setup	
Manual	Select this radio button to enter the time and date manually. If you configure a new time and date, Time Zone and Daylight Saving at the same time, the new time and date you entered has priority and the Time Zone and Daylight Saving settings do not affect it.

Table 58 Expert Mode > Maintenance > Time (continued)

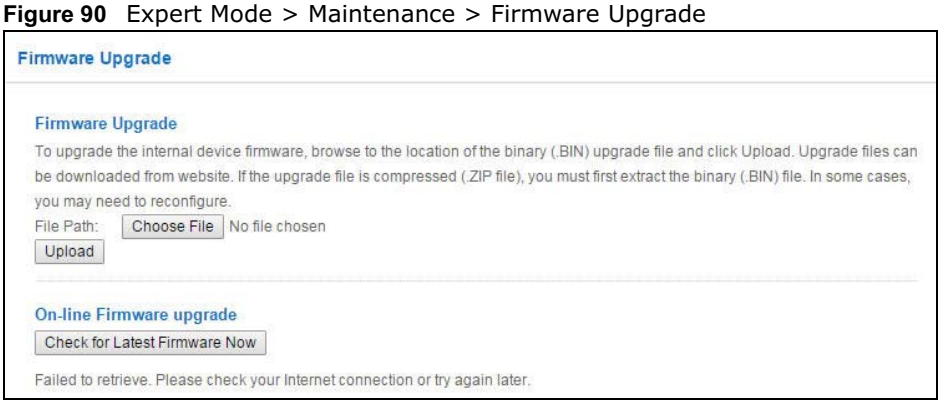
LABEL	DESCRIPTION
New Time (hh:mm:ss)	This field displays the last updated time from the time server or the last time configured manually. When you select **Manual**, enter the new time in this field and then click **Apply**.
New Date (yyyy/mm/dd)	This field displays the last updated date from the time server or the last date configured manually. When you select **Manual**, enter the new date in this field and then click **Apply**.
Get from Time Server	Select this radio button to have the NBG6617 get the time and date from the time server you specified below.
User Defined Time Server Address	Select **User Defined Time Server Address** and enter the IP address or URL (up to 20 extended ASCII characters in length) of your time server. Check with your ISP/network administrator if you are unsure of this information.
Time Zone Setup	
Time Zone	Choose the time zone of your location. This will set the time difference between your time zone and Greenwich Mean Time (GMT).
Daylight Savings	Daylight saving is a period from late spring to early fall when many countries set their clocks ahead of normal local time by one hour to give more daytime light in the evening. Select this option if you use Daylight Saving Time.
Start Date	Configure the day and time when Daylight Saving Time starts if you selected **Daylight Savings**. The **at** field uses the 24 hour format. Here are a couple of examples: Daylight Saving Time starts in most parts of the United States on the second Sunday of March. Each time zone in the United States starts using Daylight Saving Time at 2 A.M. local time. So in the United States you would select **Second**, **Sunday**, **March** and select **2** in the **at** field. Daylight Saving Time starts in the European Union on the last Sunday of March. All of the time zones in the European Union start using Daylight Saving Time at the same moment (1 A.M. GMT or UTC). So in the European Union you would select **Last**, **Sunday**, **March**. The time you select in the **at** field depends on your time zone. In Germany for instance, you would select 2 because Germany's time zone is one hour ahead of GMT or UTC (GMT+1).
End Date	Configure the day and time when Daylight Saving Time ends if you selected **Daylight Savings**. The **at** field uses the 24 hour format. Here are a couple of examples: Daylight Saving Time ends in the United States on the first Sunday of November. Each time zone in the United States stops using Daylight Saving Time at 2 A.M. local time. So in the United States you would select **First**, **Sunday**, **November** and select 2 in the **at** field. Daylight Saving Time ends in the European Union on the last Sunday of October. All of the time zones in the European Union stop using Daylight Saving Time at the same moment (1 A.M. GMT or UTC). So in the European Union you would select **Last**, **Sunday**, **October**. The time you select in the **at** field depends on your time zone. In Germany for instance, you would select 2 because Germany's time zone is one hour ahead of GMT or UTC (GMT+1).
Apply	Click **Apply** to save your changes back to the NBG6617.
Cancel	Click **Cancel** to begin configuring this screen afresh.

15.6 Firmware Upgrade Screen

Find firmware at www.zyxel.com in a file that uses the version number and project code with a "*.bin" extension, e.g., "V1.00(AARO.0).bin". The upload process uses HTTP (Hypertext Transfer Protocol) and may take up to two minutes. After a successful upload, the system will reboot.

Click **Expert Mode** > **Maintenance** > **Firmware Upgrade**. Follow the instructions in this screen to upload firmware to your NBG6617.

Figure 90 Expert Mode > Maintenance > Firmware Upgrade



The following table describes the labels in this screen.

Table 59 Expert Mode > Maintenance > Firmware Upgrade

LABEL	DESCRIPTION
File Path	Click **Choose File** to find the location of the file you want to upload in this field.
Choose File	Click **Choose File** to find the .bin file you want to upload. Remember that you must decompress compressed (.zip) files before you can upload them.
Upload	Click **Upload** to begin the upload process. This process may take up to two minutes.
Check for Latest Firmware Now	Click this to check for the latest updated firmware.

Note: Do not turn off the NBG6617 while firmware upload is in progress!

After you see the **Firmware Upload In Process** screen, wait two minutes before logging into the NBG6617 again.

The NBG6617 automatically restarts in this time causing a temporary network disconnect. In some operating systems, you may see the following icon on your desktop.

Figure 91 Network Temporarily Disconnected

After two minutes, log in again and check your new firmware version in the **Status** screen.

If the upload was not successful, an error message appears. Click **Return** to go back to the **Firmware Upgrade** screen.

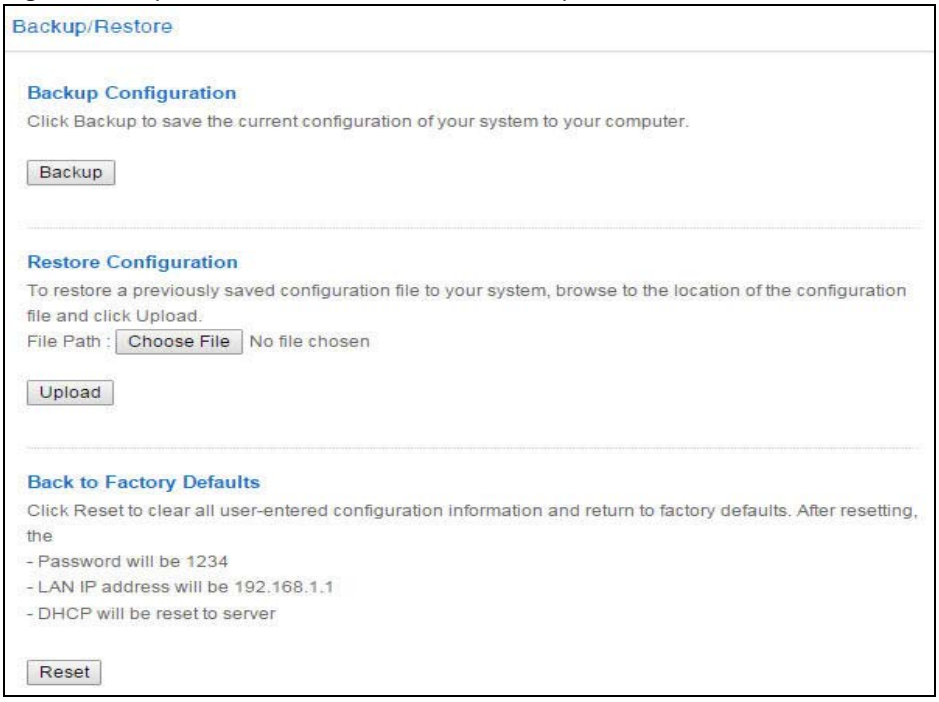
15.7 Backup/Restore Screen

Backup configuration allows you to back up (save) the NBG6617's current configuration to a file on your computer. Once your NBG6617 is configured and functioning properly, it is highly recommended that you back up your configuration file before making configuration changes. The backup configuration file will be useful in case you need to return to your previous settings.

Restore configuration allows you to upload a new or previously saved configuration file from your computer to your NBG6617.

Click **Expert Mode** > **Maintenance > Backup/Restore**. Information related to factory defaults, backup configuration, and restoring configuration appears as shown next.

Figure 92 Expert Mode > Maintenance > Backup/Restore



The following table describes the labels in this screen.

Table 60 Expert Mode > Maintenance > Backup/Restore

LABEL	DESCRIPTION
Backup	Click **Backup** to save the NBG6617's current configuration to your computer.
File Path	Click **Choose File** to find the location of the file you want to upload in this field.
Choose File	Click **Choose File** to find the file you want to upload. Remember that you must decompress compressed (.ZIP) files before you can upload them.

Table 60 Expert Mode > Maintenance > Backup/Restore (continued)

LABEL	DESCRIPTION
Upload	Click **Upload** to begin the upload process. Note: Do not turn off the NBG6617 while configuration file upload is in progress. After you see a "configuration upload successful" screen, you must then wait one minute before logging into the NBG6617 again. The NBG6617 automatically restarts in this time causing a temporary network disconnect. If you see an error screen, click Back to return to the Backup/Restore screen.
Reset	Pressing the **Reset** button in this section clears all user-entered configuration information and returns the NBG6617 to its factory defaults. You can also press the **RESET** button on the rear panel to reset the factory defaults of your NBG6617. Refer to the chapter about introducing the Web Configurator for more information on the **RESET** button.

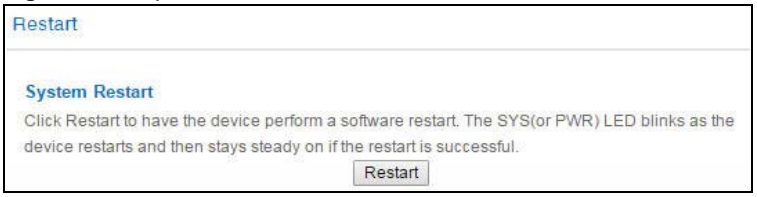
Note: If you uploaded the default configuration file you may need to change the IP address of your computer to be in the same subnet as that of the default NBG6617 IP address (192.168.1.1). See Appendix B on page 162 for details on how to set up your computer's IP address.

15.8 Restart Screen

System restart allows you to reboot the NBG6617 without turning the power off.

Click **Expert Mode** > **Maintenance** > **Restart** to open the following screen.

Figure 93 Expert Mode > Maintenance > Restart



Click **Restart** to have the NBG6617 reboot. This does not affect the NBG6617's configuration.

15.9 Language Screen

Use this screen to change the language for the Web Configurator.

Select the language you prefer and click **Apply**. The Web Configurator language changes after a while without restarting the NBG6617. Click **Expert Mode** > **Maintenance** > **Language** to open the following screen.

Figure 94 Expert Mode > Maintenance > Language

15.10 Remote Management Screen

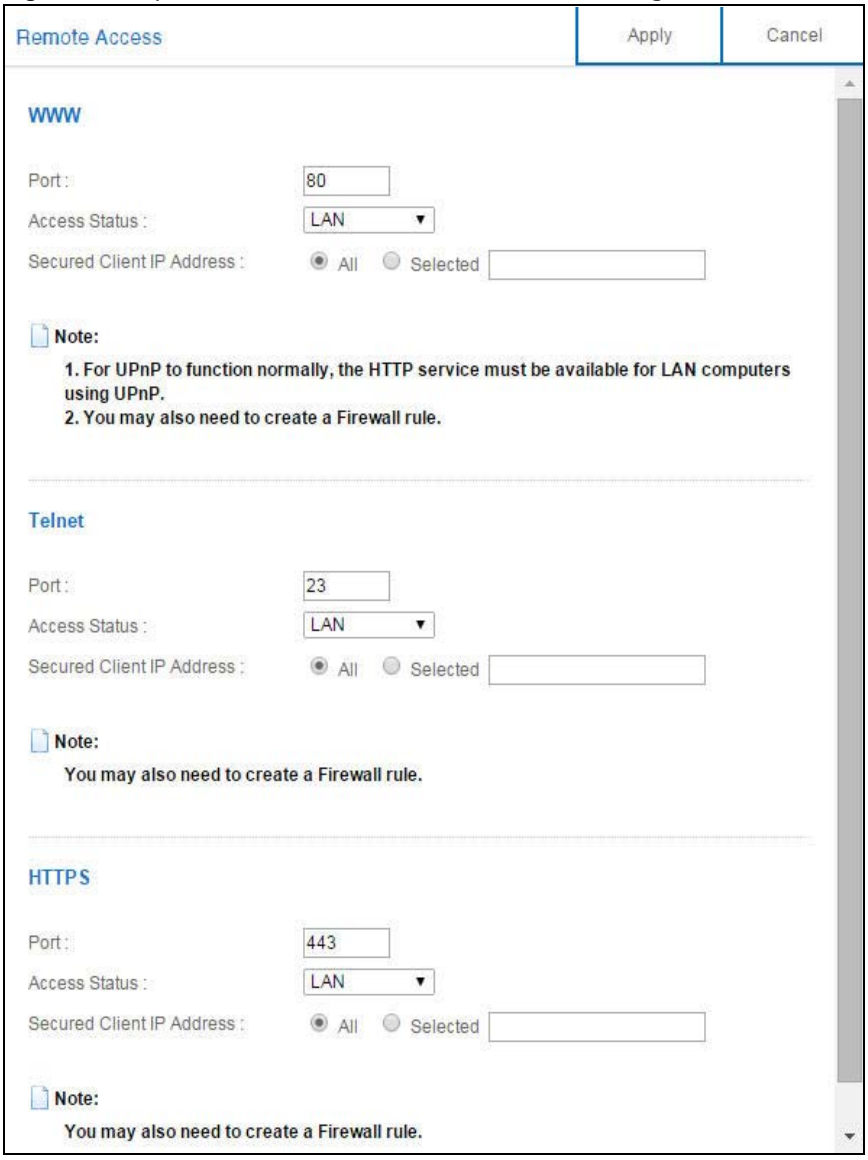
Remote Management allows you to manage your NBG6617 from a remote location through the LAN/WLAN or WAN interface.

15.10.1 Remote Access

Use this screen to change your NBG6617's remote management settings. You can use Telnet, HTTP or HTTPS to access and manage the NBG6617.

Click **Expert Mode** > **Maintenance** > **Remote Management** > **Remote Access** to open the following screen.

Figure 95 Expert Mode > Maintenance > Remote Management > Remote Access



The following table describes the labels in this screen.

Table 61 Expert Mode > Maintenance > Remote Management > WAN Access

LABEL	DESCRIPTION
WWW	
Port	You may change the server port number for a service if needed, however you must use the same port number in order to use that service for remote management.
Access Status	Select the interface(s) through which a computer may access the NBG6617 using this service.
Secured Client IP Address	Select **All** to allow all computes to access the NBG6617. Otherwise, check **Selected** and specify the IP address of the computer that can access the NBG6617.
Telnet	

Table 61 Expert Mode > Maintenance > Remote Management > WAN Access

LABEL	DESCRIPTION
Port	You may change the server port number for a service if needed, however you must use the same port number in order to use that service for remote management.
Access Status	Select the interface(s) through which a computer may access the NBG6617 using this service.
Secured Client IP Address	Select **All** to allow all computes to access the NBG6617. Otherwise, check **Selected** and specify the IP address of the computer that can access the NBG6617.
HTTPS	
Port	You may change the server port number for a service if needed, however you must use the same port number in order to use that service for remote management.
Access Status	Select the interface(s) through which a computer may access the NBG6617 using this service.
Secured Client IP Address	Select **All** to allow all computes to access the NBG6617. Otherwise, check **Selected** and specify the IP address of the computer that can access the NBG6617.
Apply	Click **Apply** to save your changes back to the NBG6617.
Cancel	Click **Cancel** to begin configuring this screen afresh.

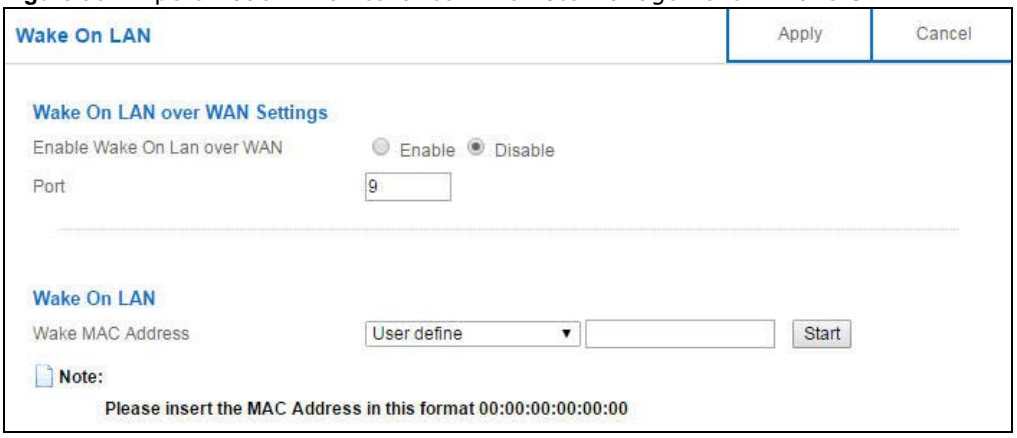
15.10.2 Wake On LAN

Wake On LAN (WoL) allows you to remotely turn on a device on the network, such as a computer, storage device or media server. To use this feature the remote hardware (for example the network adapter on a computer) must support Wake On LAN using the "Magic Packet" method.

You need to know the MAC address of the remote device. It may be on a label on the device.

Use this screen to remotely turn on a device on the network. Click the **Expert Mode** > **Maintenance** > **Remote Management** > **Wake On LAN** to open the following screen.

Figure 96 Expert Mode > Maintenance > Remote Management > Wake On LAN



The following table describes the labels in this screen.

Table 62 Expert Mode > Maintenance > Remote Management > Wake On LAN

LABEL	DESCRIPTION
Wake On LAN over WAN Settings	
Enable Wake On LAN over WAN	Select **Enable** to have the NBG6617 forward a WoL "Magic Packet" to all devices on the LAN if the packet comes from the WAN or remote network and uses the port number specified in the **Port** field. A LAN device whose hardware supports Wake on LAN then will be powered on if it is turned off previously.
Port	Type a port number from which a WoL packet is forwarded to the LAN.
Wake On LAN	
Wake MAC Address	This field displays the hostname and MAC address of the LAN device by default. Otherwise, select **User define** to enter the MAC Address of the device on the network that will be turned on. A MAC address consists of six hexadecimal character pairs.
Start	Click this to have the NBG6617 generate a WoL packet and forward it to turn the specified device on. A screen pops up displaying MAC address error if you input the MAC address incorrectly.
Apply	Click **Apply** to save your changes back to the NBG6617.
Cancel	Click **Cancel** to begin configuring this screen afresh.

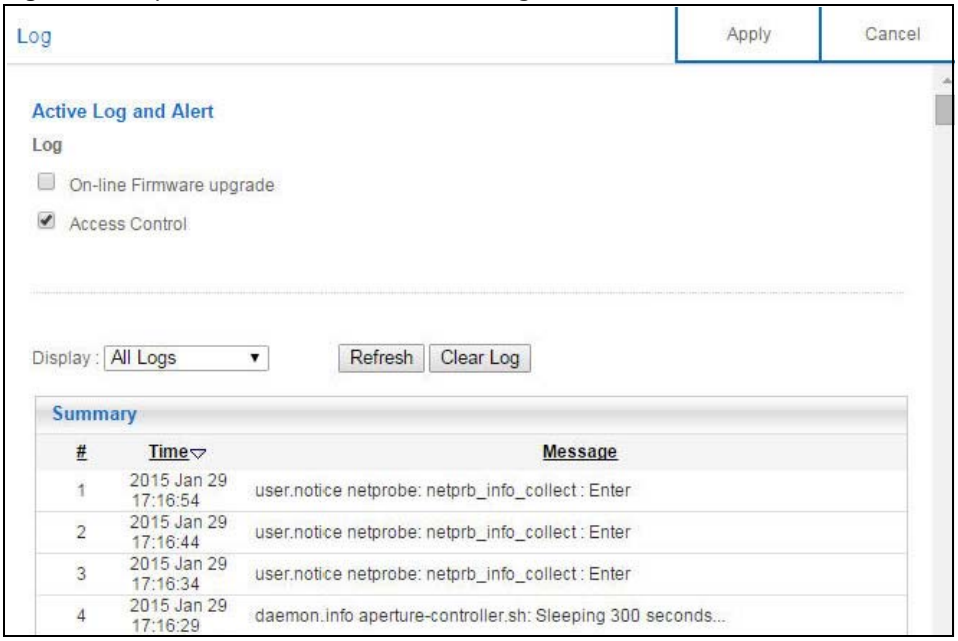
15.11 Log Screen

The Web Configurator allows you to look at all of the NBG6617's logs in one location.

You can configure which logs to display in the Log screen. Select the logs you wish to display. Click **Apply** to save your settings. Click **Cancel** to start the screen afresh.

Use this screen to see the logged messages for the NBG6617. The log wraps around and deletes the old entries after it fills. Select what logs you want to see from the **Display** drop list. The log choices depend on your settings above this screen. Click **Refresh** to renew the log screen. Click **Clear Log** to delete all the logs.

Figure 97 Expert Mode > Maintenance > Log



15.12 System Operation Mode Overview

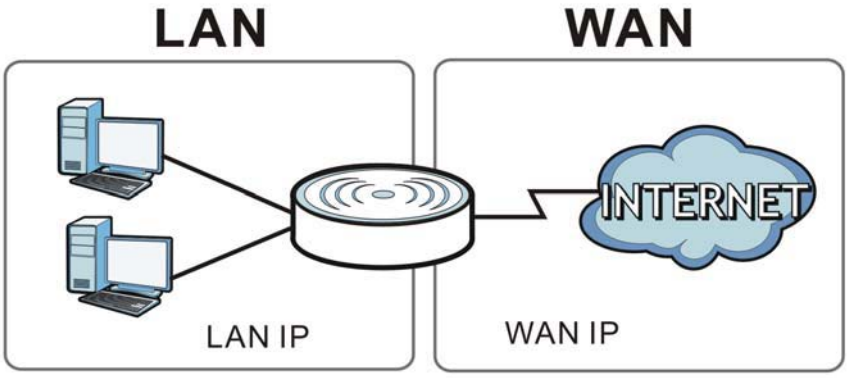
The **Sys OP Mode** (System Operation Mode) function lets you configure your NBG6617 as a router or access point. You can choose between **Router Mode**, and **Access Point Mode** depending on your network topology and the features you require from your device.

The following describes the device modes available in your NBG6617.

Router

A router connects your local network with another network, such as the Internet. The router has two IP addresses, the LAN IP address and the WAN IP address.

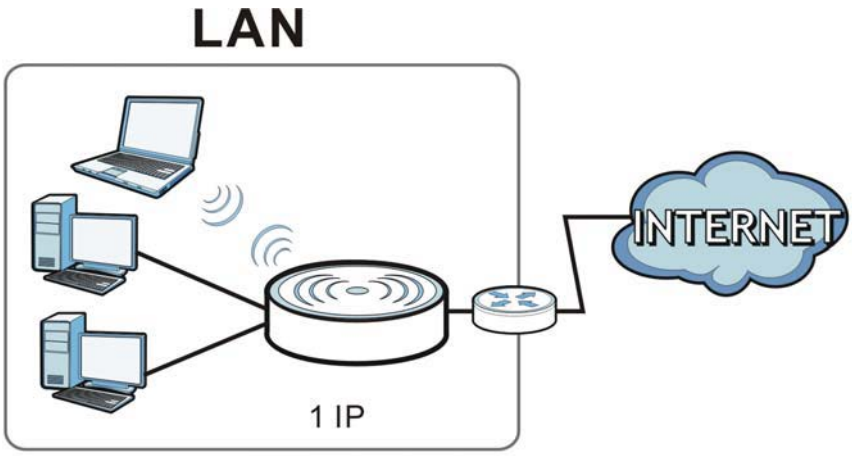
Figure 98 LAN and WAN IP Addresses in Router Mode



Access Point

An access point enabled all ethernet ports to be bridged together and be in the same subnet. To connect to the Internet, another device, such as a router, is required.

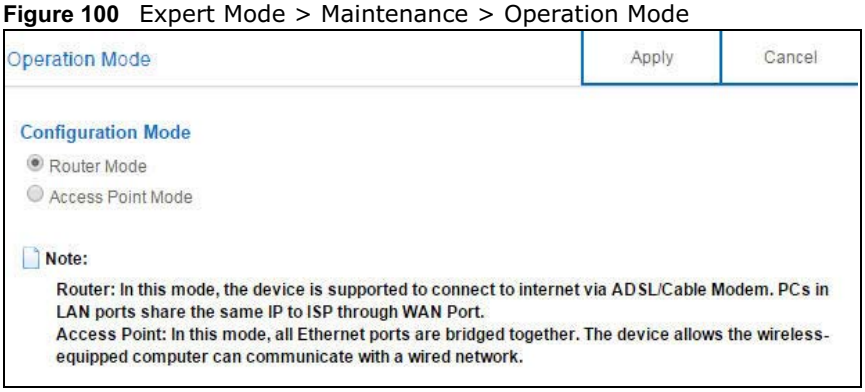
Figure 99 Access Point Mode



15.13 Operation Mode Screen

Use this screen to select how you want to use your NBG6617.

Figure 100 Expert Mode > Maintenance > Operation Mode



The following table describes the labels in the **Operation Mode** screen.

Table 63 Expert Mode > Maintenance > Operation Mode

LABEL	DESCRIPTION
Configuration Mode	
Router Mode	Select **Router Mode** if your device routes traffic between a local network and another network such as the Internet. This mode offers services such as a firewall or bandwidth management. You can configure the IP address settings on your WAN port. Contact your ISP or system administrator for more information on appropriate settings.

Table 63 Expert Mode > Maintenance > Operation Mode (continued)

LABEL	DESCRIPTION
Access Point Mode	Select **Access Point Mode** if your device bridges traffic between clients on the same network. • In **Access Point Mode**, all Ethernet ports have the same IP address. • All ports on the rear panel of the device are LAN ports, including the port labeled WAN. There is no WAN port. • The DHCP server on your device is disabled. • Router functions (such as NAT, bandwidth management, remote management, firewall and so on) are not available when the NBG6617 is in **Access Point Mode**. • The IP address of the device on the local network is set to 192.168.1.2.
Apply	Click **Apply** to save your settings.
Cancel	Click **Cancel** to return your settings to the default (**Router**).

Note: If you select the incorrect system operation Mode you may not be able to connect to the Internet.

16

Troubleshooting

16.1 Overview

This chapter offers some suggestions to solve problems you might encounter. The potential problems are divided into the following categories.

- Power, Hardware Connections, and LEDs
- NBG6617 Access and Login
- Internet Access
- Resetting the NBG6617 to Its Factory Defaults
- Wireless Connections
- USB Device Problems

16.2 Power, Hardware Connections, and LEDs

The NBG6617 does not turn on. None of the LEDs turn on.

1. Make sure you are using the power adaptor or cord included with the NBG6617.
2. Make sure the power adaptor or cord is connected to the NBG6617 and plugged in to an appropriate power source. Make sure the power source is turned on.
3. Disconnect and re-connect the power adaptor or cord to the NBG6617.
4. If the problem continues, contact the vendor.

One of the LEDs does not behave as expected.

1. Make sure you understand the normal behavior of the LED. See Section 1.7 on page 12.
2. Check the hardware connections. See the Quick Start Guide.
3. Inspect your cables for damage. Contact the vendor to replace any damaged cables.
4. Disconnect and re-connect the power adaptor to the NBG6617.

5 If the problem continues, contact the vendor.

16.3 NBG6617 Access and Login

I don't know the IP address of my NBG6617.

6 The default IP address of the NBG6617 in **Router Mode** is **192.168.1.1**. If the NBG6617 obtains a WAN IP address in the same subnet as the LAN IP address 192.168.1.1, the default LAN IP address will be changed to 10.0.0.1 automatically. See Auto-IP Change on page 64 for more information. The default IP address of the NBG6617 in **Access Point Mode** is **192.168.1.2**.

7 If you changed the IP address and have forgotten it, you might get the IP address of the NBG6617 in **Router Mode** by looking up the IP address of the default gateway for your computer. To do this in most Windows computers, click **Start > Run**, enter **cmd**, and then enter **ipconfig**. The IP address of the **Default Gateway** might be the IP address of the NBG6617 (it depends on the network), so enter this IP address in your Internet browser.

8 If your NBG6617 in **Access Point Mode** is a DHCP client, you can find your IP address from the DHCP server. This information is only available from the DHCP server which allocates IP addresses on your network. Find this information directly from the DHCP server or contact your system administrator for more information.

9 Reset your NBG6617 to change all settings back to their default. This means your current settings are lost. See Section 16.5 on page 153 in the **Troubleshooting** for information on resetting your NBG6617.

I forgot the password.

1 The default password is **1234**.

2 If this does not work, you have to reset the device to its factory defaults. See Section 16.5 on page 153.

I cannot see or access the **Login** screen in the Web Configurator.

1 Make sure you are using the correct IP address.

2 The default IP address of the NBG6617 in **Router Mode** is **192.168.1.1**. If the NBG6617 obtains a WAN IP address in the same subnet as the LAN IP address 192.168.1.1, the default LAN IP address will be changed to 10.0.0.1 automatically. See Auto-IP Change on page 64 for more information. The default IP address of the NBG6617 in **Access Point Mode** is **192.168.1.2**.

- If you changed the IP address (Section 12.4 on page 100), use the new IP address.

- If you changed the IP address and have forgotten it, see the troubleshooting suggestions for I don't know the IP address of my NBG6617.

3 Check the hardware connections, and make sure the LEDs are behaving as expected. See the Quick Start Guide.

4 Make sure your Internet browser does not block pop-up windows and has JavaScript and Java enabled.

5 Make sure your computer is in the same subnet as the NBG6617. (If you know that there are routers between your computer and the NBG6617, skip this step.)

- If there is a DHCP server on your network, make sure your computer is using a dynamic IP address. See Section 12.4 on page 100.
- If there is no DHCP server on your network, make sure your computer's IP address is in the same subnet as the NBG6617. See Section 12.4 on page 100.

6 Reset the device to its factory defaults, and try to access the NBG6617 with the default IP address. See Section 1.5 on page 11.

7 If the problem continues, contact the network administrator or vendor, or try one of the advanced suggestions.

Advanced Suggestions

- Try to access the NBG6617 using another service, such as Telnet. If you can access the NBG6617, check the remote management settings and firewall rules to find out why the NBG6617 does not respond to HTTP.
- If your computer is connected to the **WAN** port or is connected wirelessly, use a computer that is connected to a **LAN**/**ETHERNET** port.

I can see the **Login** screen, but I cannot log in to the NBG6617.

1 Make sure you have entered the password correctly. The default password is **1234**. This field is case-sensitive, so make sure [Caps Lock] is not on.

2 This can happen when you fail to log out properly from your last session. Try logging in again after 5 minutes.

3 Disconnect and re-connect the power adaptor or cord to the NBG6617.

4 If this does not work, you have to reset the device to its factory defaults. See Section 16.5 on page 153.

16.4 Internet Access

I cannot access the Internet.

1. Check the hardware connections, and make sure the LEDs are behaving as expected. See the Quick Start Guide.
2. Go to **Expert** > **Maintenance > Operation Mode**. Check your System Operation Mode setting.
   - If the NBG6617 is in **Router Mode**, make sure the WAN port is connected to a broadband modem or router with Internet access. Your computer and the NBG6617 should be in the same subnet.
   - If the NBG6617 is in **Access Point Mode**, make sure the WAN port is connected to a broadband modem or router with Internet access and your computer is set to obtain an dynamic IP address.
3. If the NBG6617 is in **Router Mode**, make sure you entered your ISP account information correctly in the wizard or the WAN screen. These fields are case-sensitive, so make sure [Caps Lock] is not on.
4. If you are trying to access the Internet wirelessly, make sure the wireless settings in the wireless client are the same as the settings in the AP.
5. Disconnect all the cables from your device, and follow the directions in the Quick Start Guide again.
6. If the problem continues, contact your ISP.

I cannot access the Internet anymore. I had access to the Internet (with the NBG6617), but my Internet connection is not available anymore.

1. Check the hardware connections, and make sure the LEDs are behaving as expected. See the Quick Start Guide and Section 1.7 on page 12.
2. Reboot the NBG6617.
3. If the problem continues, contact your ISP.

The Internet connection is slow or intermittent.

1. There might be a lot of traffic on the network. Look at the LEDs, and check Section 1.7 on page 12. If the NBG6617 is sending or receiving a lot of information, try closing some programs that use the Internet, especially peer-to-peer applications.
2. Check the signal strength. If the signal strength is low, try moving the NBG6617 closer to the AP if possible, and look around to see if there are any devices that might be interfering with the wireless network (for example, microwaves, other wireless networks, and so on).
3. Reboot the NBG6617.
4. If the problem continues, contact the network administrator or vendor, or try one of the advanced suggestions.

   Advanced Suggestion

- Check the settings for QoS. If it is disabled, you might consider activating it.

16.5 Resetting the NBG6617 to Its Factory Defaults

If you reset the NBG6617, you lose all of the changes you have made. The NBG6617 re-loads its default settings, and the password resets to **1234**. You have to make all of your changes again.

You will lose all of your changes when you push the **RESET** button.

To reset the NBG6617:

1. Make sure the power LED is on.
2. Press the **RESET** button for one to four seconds to restart/reboot the NBG6617.
3. Press the **RESET** button for longer than five seconds to set the NBG6617 back to its factory-default configurations.

   If the NBG6617 restarts automatically, wait for the NBG6617 to finish restarting, and log in to the Web Configurator. The password is "1234".

   If the NBG6617 does not restart automatically, disconnect and reconnect the NBG6617's power. Then, follow the directions above again.

16.6 Wireless Connections

I cannot access the NBG6617 or ping any computer from the WLAN.

1. Make sure the wireless LAN is enabled on the NBG6617.
2. Make sure the wireless adapter on your computer is working properly.
3. Make sure the wireless adapter installed on your computer is IEEE 802.11 compatible and supports the same wireless standard as the NBG6617.
4. Make sure your computer (with a wireless adapter installed) is within the transmission range of the NBG6617.
5. Check that both the NBG6617 and the wireless adapter on your computer are using the same wireless and wireless security settings.
6. Make sure traffic between the WLAN and the LAN is not blocked by the firewall on the NBG6617.

7 Make sure you allow the NBG6617 to be remotely accessed through the WLAN interface. Check your remote management settings.

- See the chapter on Wireless LAN in the User's Guide for more information.

I set up URL keyword blocking, but I can still access a website that should be blocked.

Make sure that you enable parental control in the **Parental Control** screen, set up rules and turn on the rules. Make sure that the keywords that you type are listed in the rule's **Keyword List**.

If a keyword that is listed in the **Keyword List** is not blocked when it is found in a URL, customize the keyword blocking using commands. See the Keyword Blocking URL Checking section in the Applications chapter.

I cannot access the Web Configurator after I switched to AP mode.

When you change from router mode to AP mode, your computer must have an IP address in the range between "192.168.1.3" and "192.168.1.254".

Refer to Appendix B on page 162 for instructions on how to change your computer's IP address.

What factors may cause intermittent or unstabled wireless connection? How can I solve this problem?

The following factors may cause interference:

- Obstacles: walls, ceilings, furniture, and so on.
- Building Materials: metal doors, aluminum studs.
- Electrical devices: microwaves, monitors, electric motors, cordless phones, and other wireless devices.

To optimize the speed and quality of your wireless connection, you can:

- Move your wireless device closer to the AP if the signal strength is low.
- Reduce wireless interference that may be caused by other wireless networks or surrounding wireless electronics such as cordless phones.
- Place the AP where there are minimum obstacles (such as walls and ceilings) between the AP and the wireless client.
- Reduce the number of wireless clients connecting to the same AP simultaneously, or add additional APs if necessary.
- Try closing some programs that use the Internet, especially peer-to-peer applications. If the wireless client is sending or receiving a lot of information, it may have too many programs open that use the Internet.

- Position the antennas for best reception. If the AP is placed on a table or floor, point the antennas upwards. If the AP is placed at a high position, point the antennas downwards. Try pointing the antennas in different directions and check which provides the strongest signal to the wireless clients.

16.7 USB Device Problems

I cannot access or see a USB device that is connected to the NBG6617.

1. Disconnect the problematic USB device, then reconnect it to the NBG6617.
2. Ensure that the USB device has power.
3. Check your cable connections.
4. Restart the NBG6617 by disconnecting the power and then reconnecting it.
5. If the USB device requires a special driver, install the driver from the installation disc that came with the device. After driver installation, reconnect the USB device to the NBG6617 and try to connect to it again with your computer.
6. If the problem persists, contact your vendor.

What kind of USB devices do the NBG6617 support?

1. It is strongly recommended to use version 2.0 or lower USB storage devices (such as memory sticks, USB hard drives) and/or USB devices. Other USB products are not guaranteed to function properly with the NBG6617.

A

Customer Support

In the event of problems that cannot be solved by using this manual, you should contact your vendor. If you cannot contact your vendor, then contact a ZyXEL office for the region in which you bought the device.

See *http://www.zyxel.com/homepage.shtml* and also

http://www.zyxel.com/about_zyxel/zyxel_worldwide.shtml for the latest information.

Please have the following information ready when you contact an office.

Required Information

- Product model and serial number.
- Warranty Information.
- Date that you received your device.
- Brief description of the problem and the steps you took to solve it.

Corporate Headquarters (Worldwide)

Taiwan

- ZyXEL Communications Corporation
- http://www.zyxel.com

Asia

China

- ZyXEL Communications (Shanghai) Corp.
  ZyXEL Communications (Beijing) Corp.
  ZyXEL Communications (Tianjin) Corp.
- http://www.zyxel.cn

India

- ZyXEL Technology India Pvt Ltd
- http://www.zyxel.in

Kazakhstan

- ZyXEL Kazakhstan

- http://www.zyxel.kz

Korea

- ZyXEL Korea Corp.
- http://www.zyxel.kr

Malaysia

- ZyXEL Malaysia Sdn Bhd.
- http://www.zyxel.com.my

Pakistan

- ZyXEL Pakistan (Pvt.) Ltd.
- http://www.zyxel.com.pk

Philippines

- ZyXEL Philippines
- http://www.zyxel.com.ph

Singapore

- ZyXEL Singapore Pte Ltd.
- http://www.zyxel.com.sg

Taiwan

- ZyXEL Communications Corporation
- http://www.zyxel.com/tw/zh/

Thailand

- ZyXEL Thailand Co., Ltd
- http://www.zyxel.co.th

Vietnam

- ZyXEL Communications Corporation-Vietnam Office
- http://www.zyxel.com/vn/vi

Europe

Austria

- ZyXEL Deutschland GmbH
- http://www.zyxel.de

Belarus

- ZyXEL BY
- http://www.zyxel.by

Belgium

- ZyXEL Communications B.V.
- http://www.zyxel.com/be/nl/
- http://www.zyxel.com/be/fr/

Bulgaria

- ZyXEL България
- http://www.zyxel.com/bg/bg/

Czech Republic

- ZyXEL Communications Czech s.r.o
- http://www.zyxel.cz

Denmark

- ZyXEL Communications A/S
- http://www.zyxel.dk

Estonia

- ZyXEL Estonia
- http://www.zyxel.com/ee/et/

Finland

- ZyXEL Communications
- http://www.zyxel.fi

France

- ZyXEL France
- http://www.zyxel.fr

Germany

- ZyXEL Deutschland GmbH
- http://www.zyxel.de

Hungary

- ZyXEL Hungary & SEE
- http://www.zyxel.hu

Italy

- ZyXEL Communications Italy
- http://www.zyxel.it/

Latvia

- ZyXEL Latvia
- http://www.zyxel.com/lv/lv/homepage.shtml

Lithuania

- ZyXEL Lithuania
- http://www.zyxel.com/lt/lt/homepage.shtml

Netherlands

- ZyXEL Benelux
- http://www.zyxel.nl

Norway

- ZyXEL Communications
- http://www.zyxel.no

Poland

- ZyXEL Communications Poland
- http://www.zyxel.pl

Romania

- ZyXEL Romania
- http://www.zyxel.com/ro/ro

Russia

- ZyXEL Russia
- http://www.zyxel.ru

Slovakia

- ZyXEL Communications Czech s.r.o. organizacna zlozka
- http://www.zyxel.sk

Spain

- ZyXEL Communications ES Ltd
- http://www.zyxel.es

Sweden

- ZyXEL Communications

- http://www.zyxel.se

Switzerland

- Studerus AG
- http://www.zyxel.ch/

Turkey

- ZyXEL Turkey A.S.
- http://www.zyxel.com.tr

UK

- ZyXEL Communications UK Ltd.
- http://www.zyxel.co.uk

Ukraine

- ZyXEL Ukraine
- http://www.ua.zyxel.com

Latin America

Argentina

- ZyXEL Communication Corporation
- http://www.zyxel.com/ec/es/

Brazil

- ZyXEL Communications Brasil Ltda.
- https://www.zyxel.com/br/pt/

Ecuador

- ZyXEL Communication Corporation
- http://www.zyxel.com/ec/es/

Middle East

Israel

- ZyXEL Communication Corporation
- http://il.zyxel.com/homepage.shtml

Middle East

- ZyXEL Communication Corporation

- http://www.zyxel.com/me/en/

North America

USA

- ZyXEL Communications, Inc. - North America Headquarters
- http://www.zyxel.com/us/en/

Oceania

Australia

- ZyXEL Communications Corporation
- http://www.zyxel.com/au/en/

Africa

South Africa

- Nology (Pty) Ltd.
- http://www.zyxel.co.za

B

Setting Up Your Computer's IP Address

Note: Your specific NBG6617 may not support all of the operating systems described in this appendix. See the product specifications for more information about which operating systems are supported.

This appendix shows you how to configure the IP settings on your computer in order for it to be able to communicate with the other devices on your network. Windows Vista/XP/2000, Mac OS 9/OS X, and all versions of UNIX/LINUX include the software components you need to use TCP/IP on your computer.

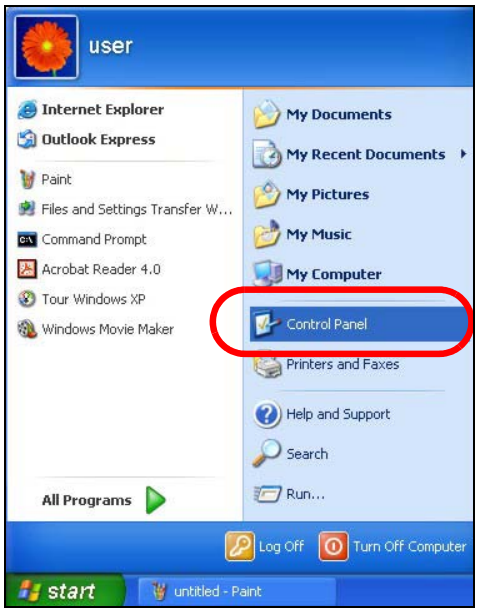
If you manually assign IP information instead of using a dynamic IP, make sure that your network's computers have IP addresses that place them in the same subnet.

In this appendix, you can set up an IP address for:

Windows XP/NT/2000

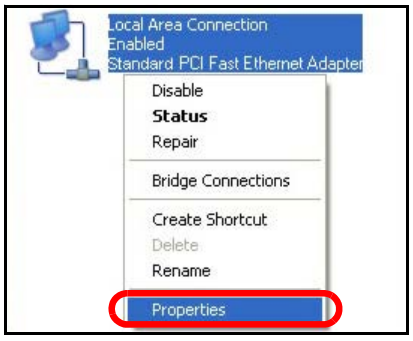
The following example uses the default Windows XP display theme but can also apply to Windows 2000 and Windows NT.

1 Click **Start** > **Control Panel**.

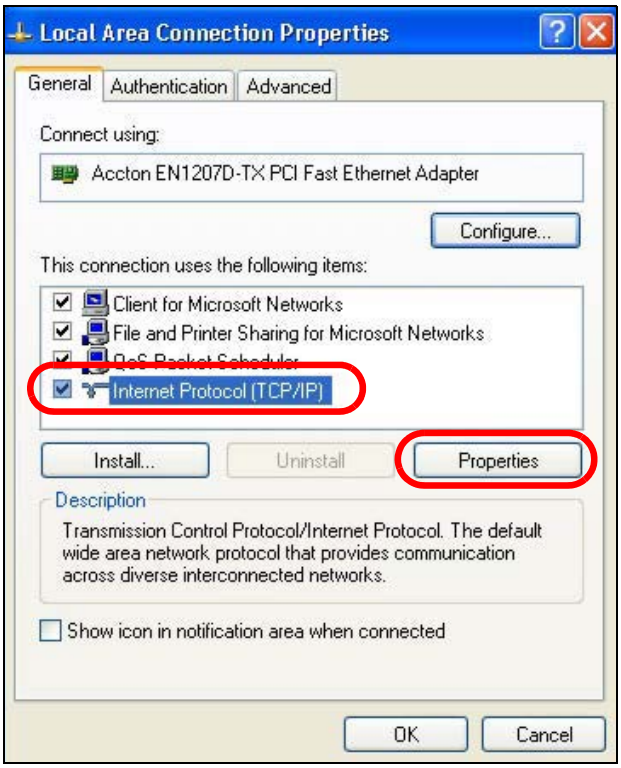


2 In the **Control Panel**, click the **Network Connections** icon.

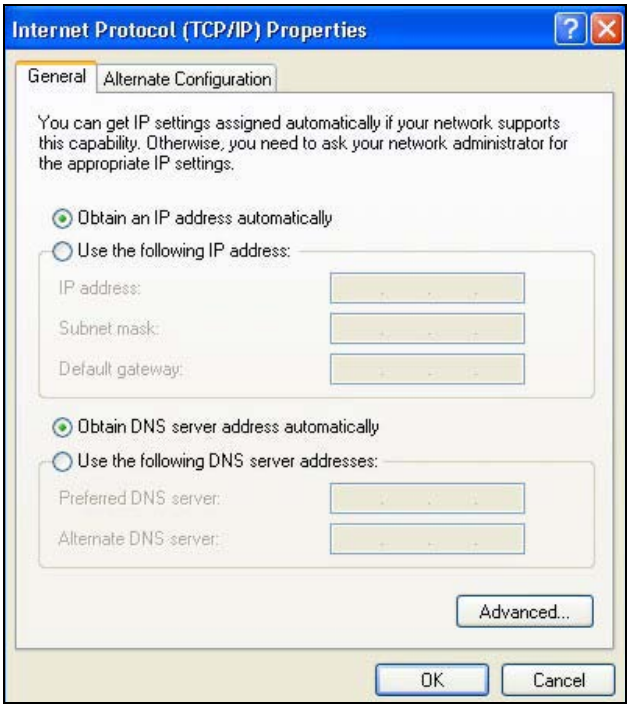
3 Right-click **Local Area Connection** and then select **Properties**.



4 On the **General** tab, select **Internet Protocol (TCP/IP)** and then click **Properties**.



5 The **Internet Protocol TCP/IP Properties** window opens.



6 Select **Obtain an IP address automatically** if your network administrator or ISP assigns your IP address dynamically.

Select **Use the following IP Address** and fill in the **IP address**, **Subnet mask**, and **Default gateway** fields if you have a static IP address that was assigned to you by your network administrator or ISP. You may also have to enter a **Preferred DNS server** and an **Alternate DNS server,** if that information was provided.

7 Click **OK** to close the **Internet Protocol (TCP/IP) Properties** window.

8 Click **OK** to close the **Local Area Connection Properties** window.

Verifying Settings

1 Click **Start** > **All Programs** > **Accessories** > **Command Prompt**.

2 In the **Command Prompt** window, type "ipconfig" and then press [ENTER].

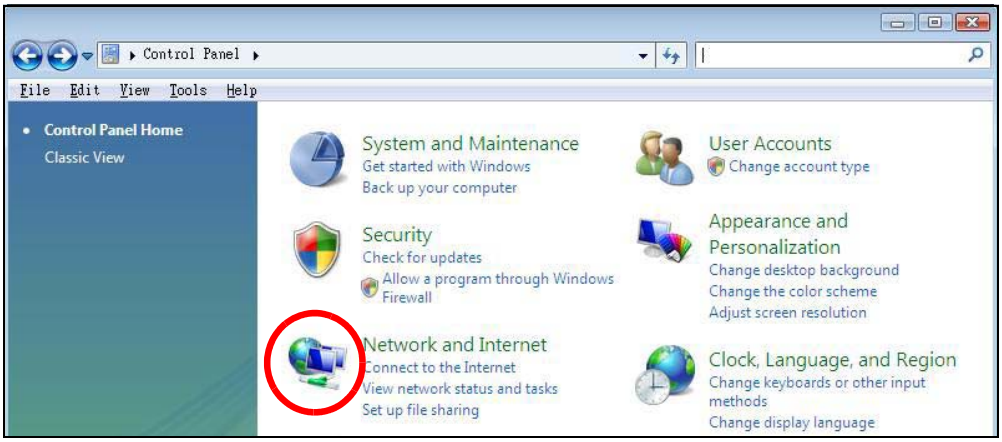
You can also go to **Start > Control Panel > Network Connections**, right-click a network connection, click **Status** and then click the **Support** tab to view your IP address and connection information.

Windows Vista

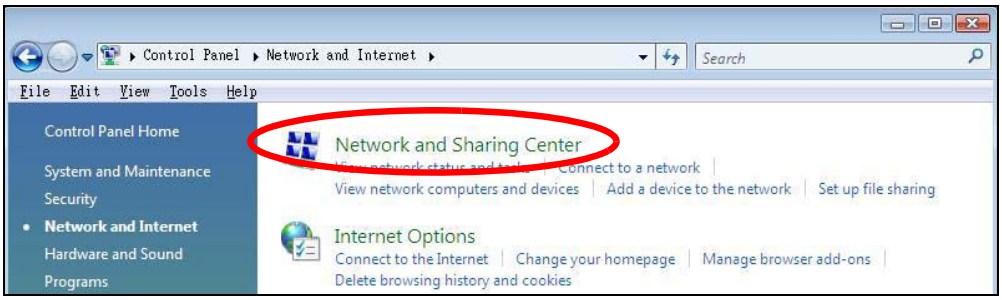
This section shows screens from Windows Vista Professional.

1 Click **Start** > **Control Panel**.

2 In the **Control Panel**, click the **Network and Internet** icon.

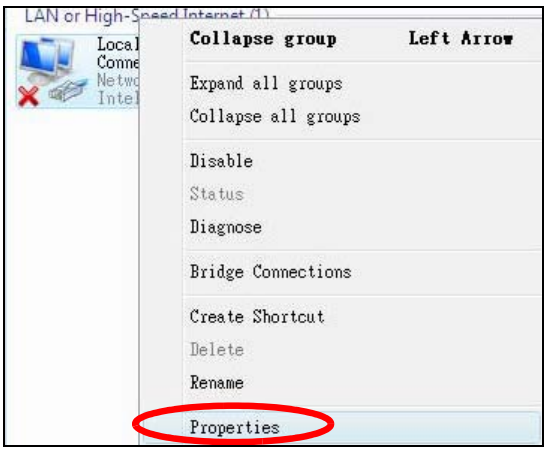


3 Click the **Network and Sharing Center** icon.



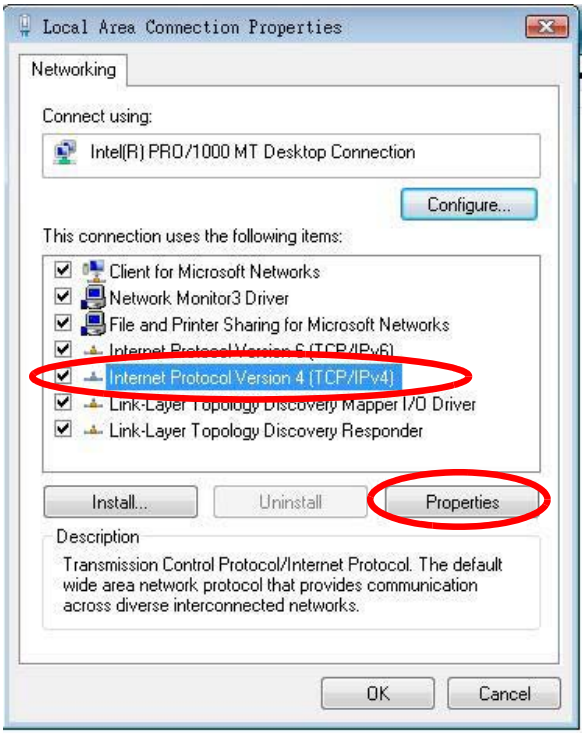
4 Click **Manage network connections**.

5 Right-click **Local Area Connection** and then select **Properties**.

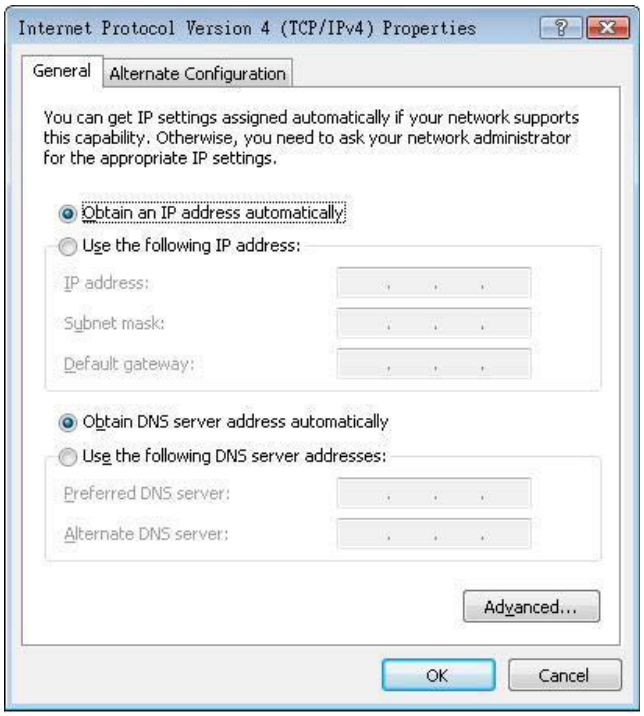


Note: During this procedure, click **Continue** whenever Windows displays a screen saying that it needs your permission to continue.

6 Select **Internet Protocol Version 4 (TCP/IPv4)** and then select **Properties**.



7 The **Internet Protocol Version 4 (TCP/IPv4) Properties** window opens.



8 Select **Obtain an IP address automatically** if your network administrator or ISP assigns your IP address dynamically.

Select **Use the following IP Address** and fill in the **IP address**, **Subnet mask**, and **Default gateway** fields if you have a static IP address that was assigned to you by your network administrator or ISP. You may also have to enter a **Preferred DNS server** and an **Alternate DNS server,** if that information was provided.Click **Advanced**.

9 Click **OK** to close the **Internet Protocol (TCP/IP) Properties** window.

10 Click **OK** to close the **Local Area Connection Properties** window.

Verifying Settings

1 Click **Start** > **All Programs** > **Accessories** > **Command Prompt**.

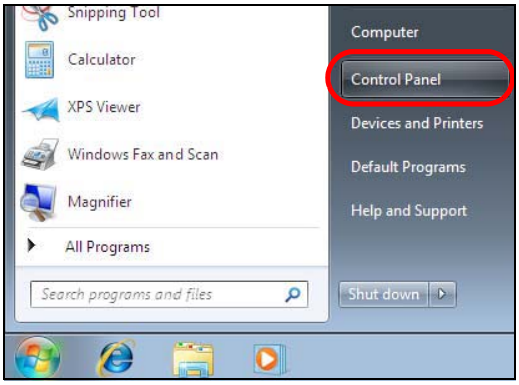
2 In the **Command Prompt** window, type "ipconfig" and then press [ENTER].

You can also go to **Start > Control Panel > Network Connections**, right-click a network connection, click **Status** and then click the **Support** tab to view your IP address and connection information.

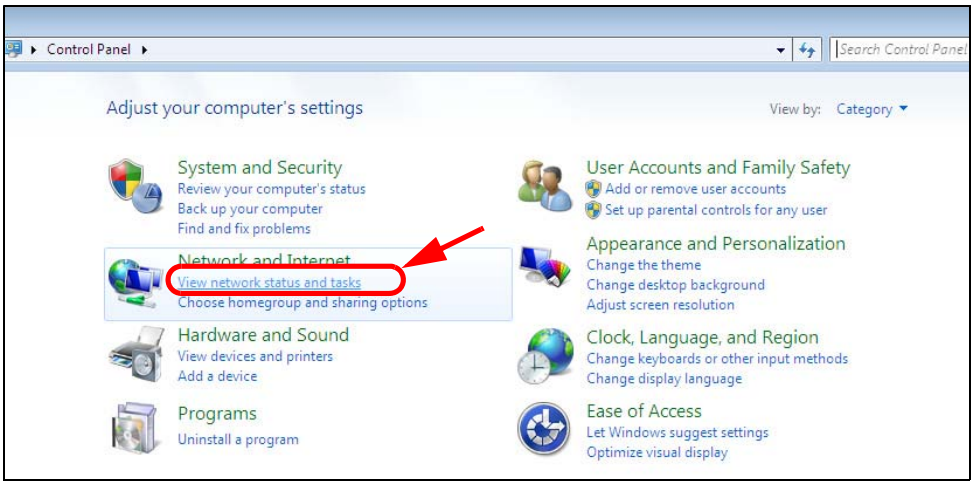
Windows 7

This section shows screens from Windows 7 Enterprise.

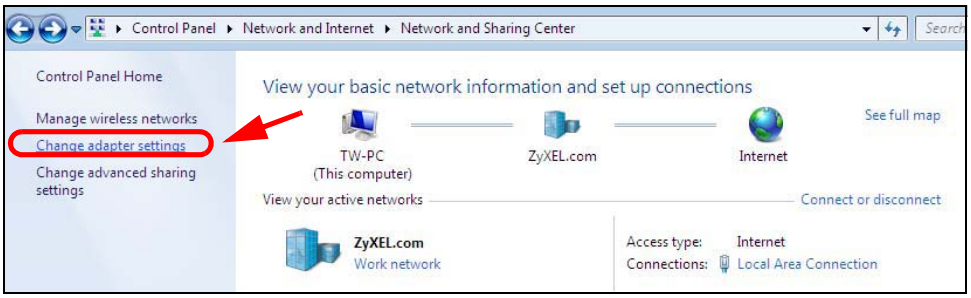
1 Click **Start** > **Control Panel**.



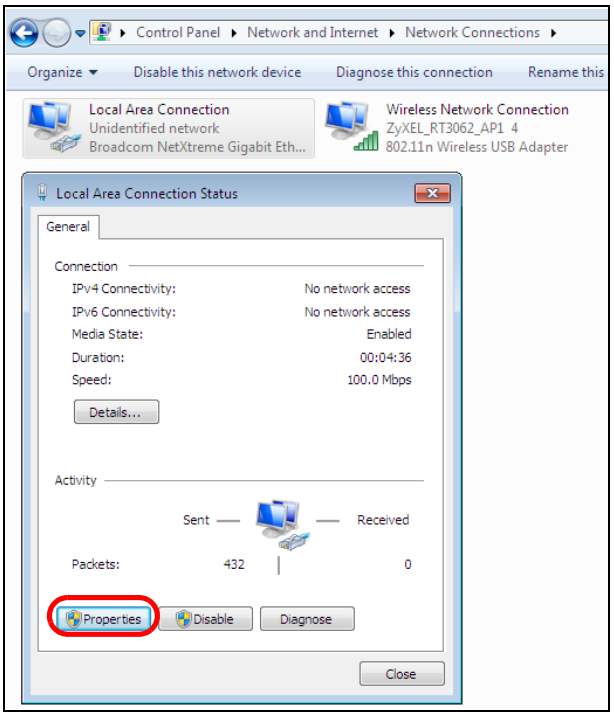
2 In the **Control Panel**, click **View network status and tasks** under the **Network and Internet** category.



3 Click **Change adapter settings**.

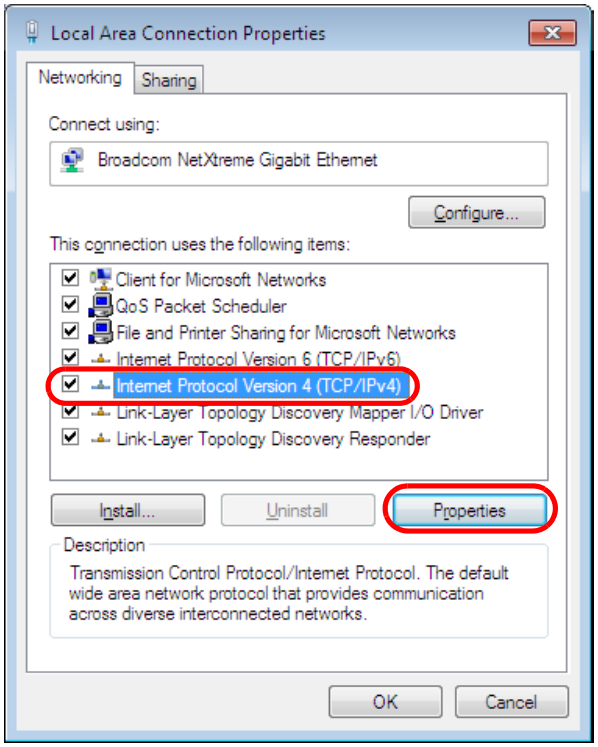


4 Double click **Local Area Connection** and then select **Properties**.

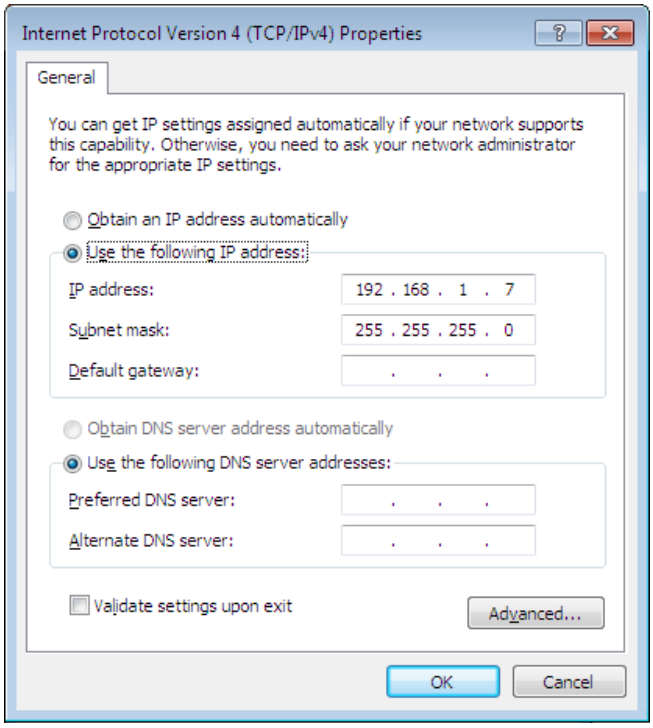


Note: During this procedure, click **Continue** whenever Windows displays a screen saying that it needs your permission to continue.

5 Select **Internet Protocol Version 4 (TCP/IPv4)** and then select **Properties**.



6 The **Internet Protocol Version 4 (TCP/IPv4) Properties** window opens.



7 Select **Obtain an IP address automatically** if your network administrator or ISP assigns your IP address dynamically.

Select **Use the following IP Address** and fill in the **IP address**, **Subnet mask**, and **Default gateway** fields if you have a static IP address that was assigned to you by your network administrator or ISP. You may also have to enter a **Preferred DNS server** and an **Alternate DNS server,** if that information was provided. Click **Advanced** if you want to configure advanced settings for IP, DNS and WINS.

8 Click **OK** to close the **Internet Protocol (TCP/IP) Properties** window.

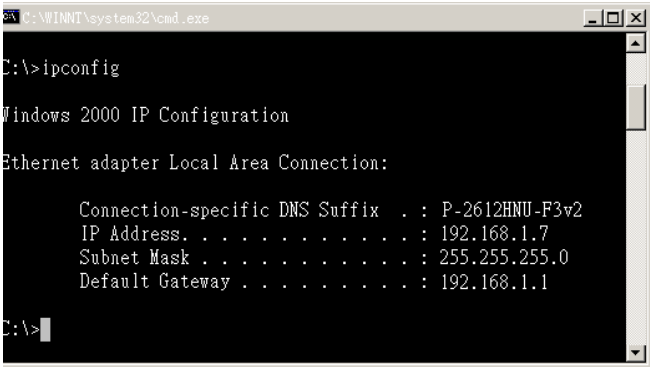
9 Click **OK** to close the **Local Area Connection Properties** window.

Verifying Settings

1 Click **Start** > **All Programs** > **Accessories** > **Command Prompt**.

2 In the **Command Prompt** window, type "ipconfig" and then press [ENTER].

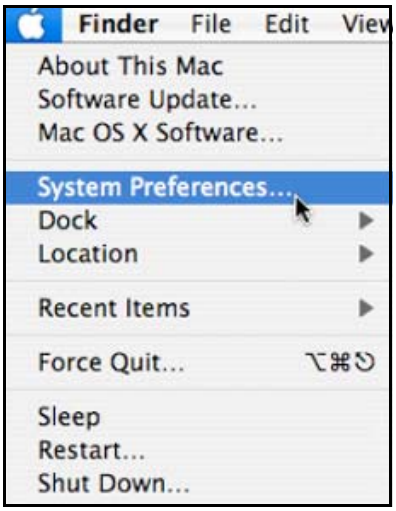
3 The IP settings are displayed as follows.



Mac OS X: 10.3 and 10.4

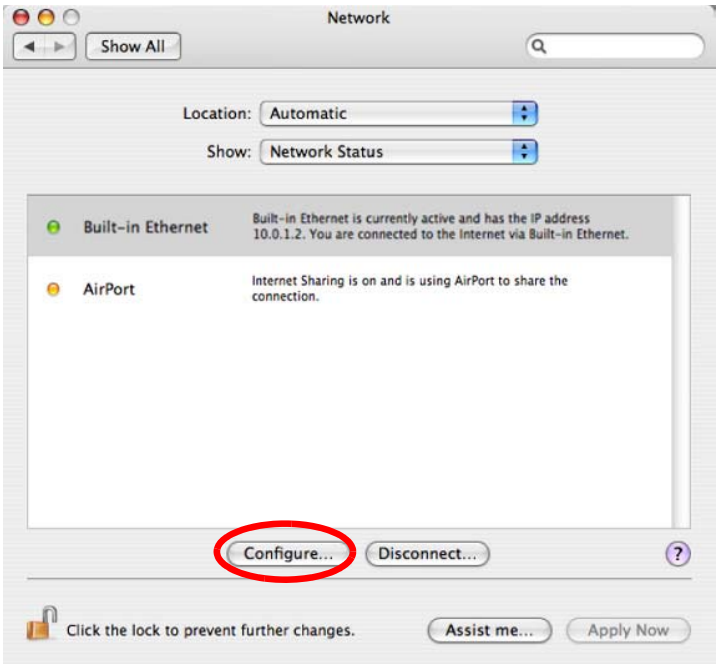
The screens in this section are from Mac OS X 10.4 but can also apply to 10.3.

1 Click **Apple** > **System Preferences**.

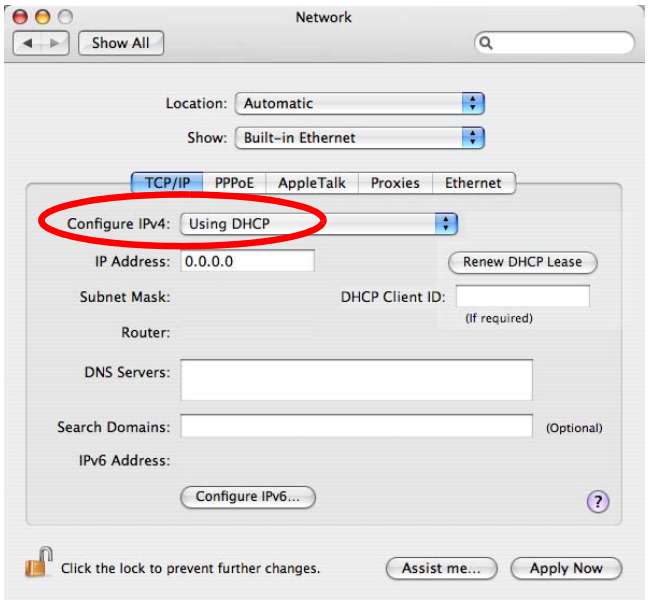


2 In the **System Preferences** window, click the **Network** icon.

3 When the **Network** preferences pane opens, select **Built-in Ethernet** from the network connection type list, and then click **Configure.**

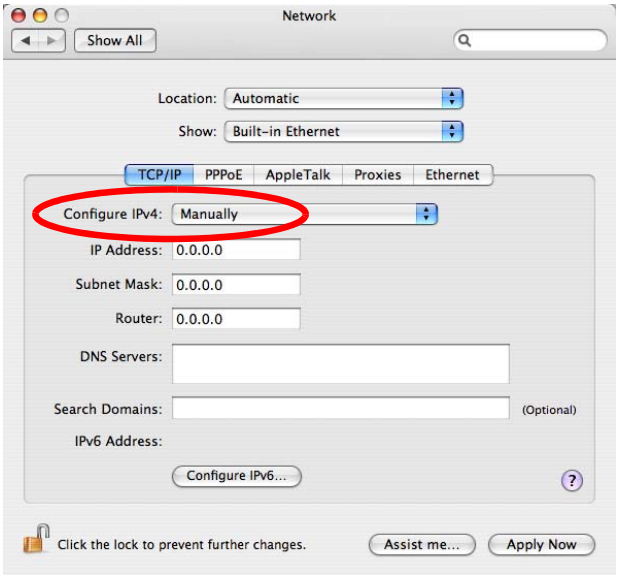


4 For dynamically assigned settings, select **Using DHCP** from the **Configure IPv4** list in the **TCP/IP** tab.



5 For statically assigned settings, do the following:

- From the **Configure IPv4** list, select **Manually**.
- In the **IP Address** field, type your IP address.
- In the **Subnet Mask** field, type your subnet mask.
- In the **Router** field, type the IP address of your device.

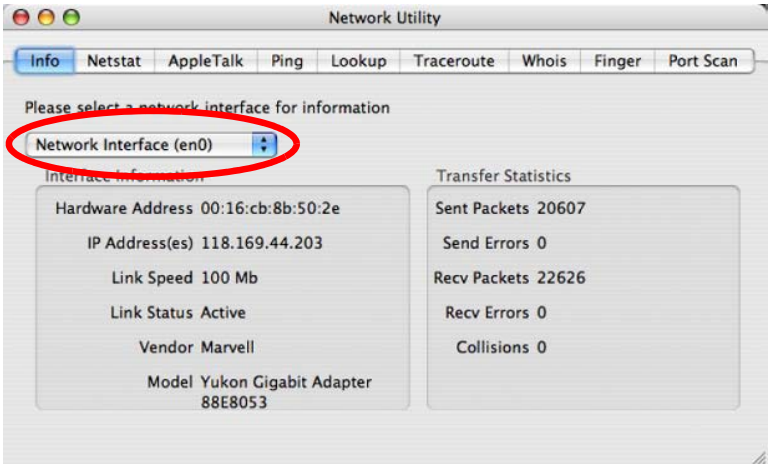


6 Click **Apply Now** and close the window.

Verifying Settings

Check your TCP/IP properties by clicking **Applications > Utilities > Network Utilities**, and then selecting the appropriate **Network Interface** from the **Info** tab.

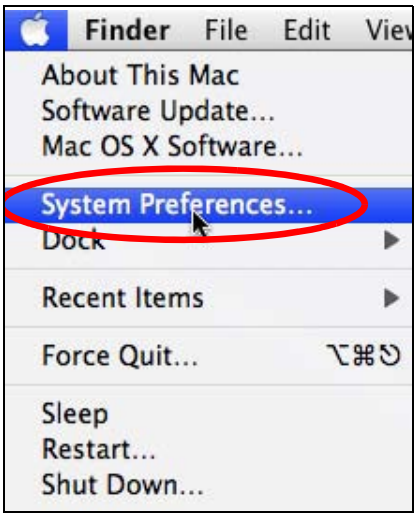
Figure 101 Mac OS X 10.4: Network Utility



Mac OS X: 10.5 and 10.6

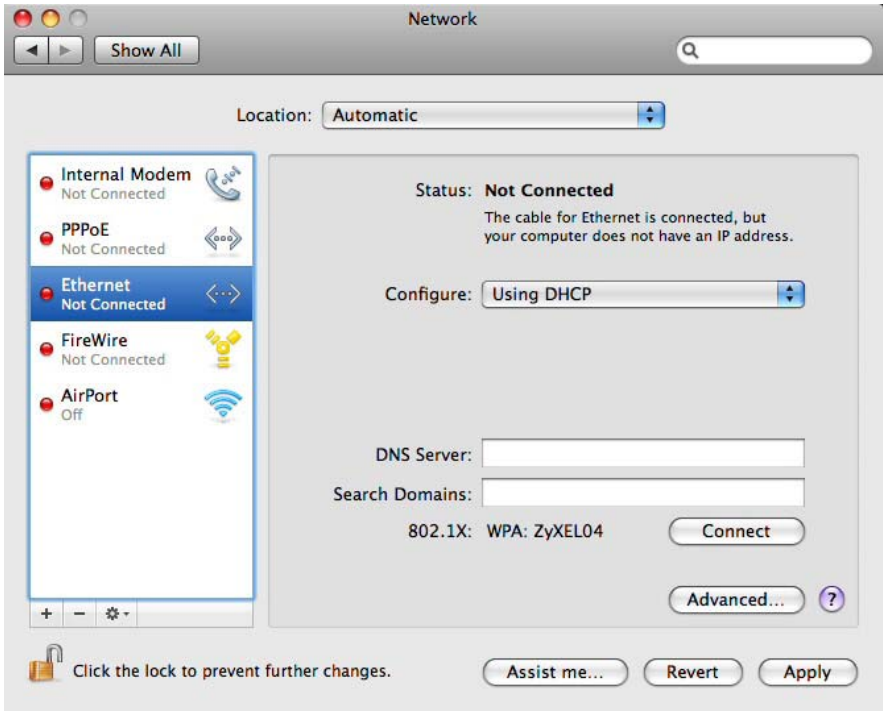
The screens in this section are from Mac OS X 10.5 but can also apply to 10.6.

1 Click **Apple** > **System Preferences**.



2 In **System Preferences**, click the **Network** icon.

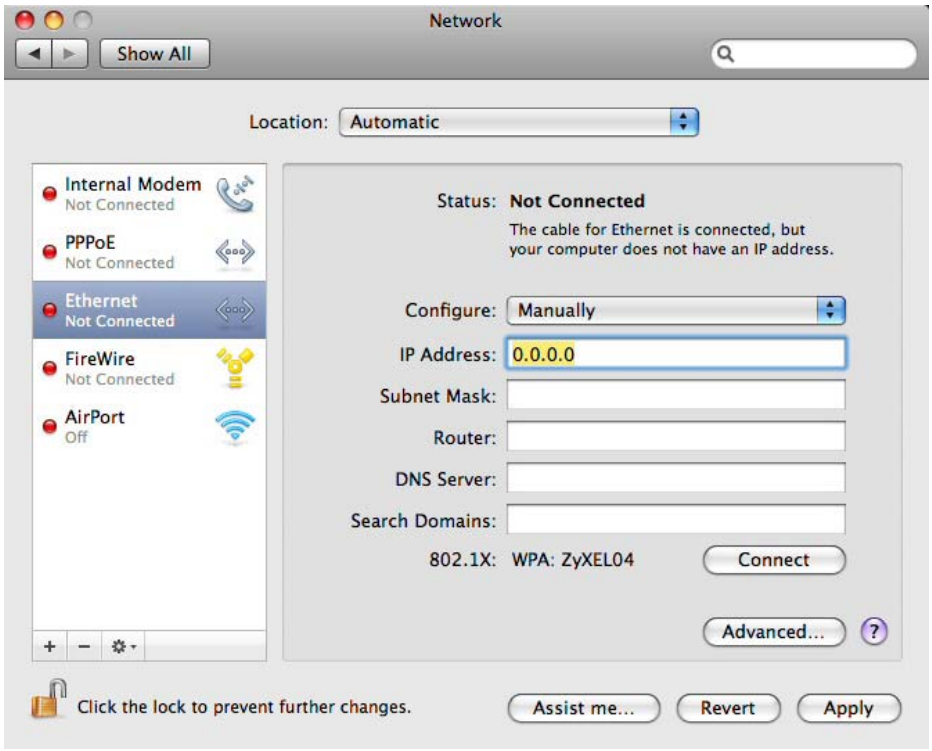
3 When the **Network** preferences pane opens, select **Ethernet** from the list of available connection types.



4 From the **Configure** list, select **Using DHCP** for dynamically assigned settings.

5 For statically assigned settings, do the following:

- From the **Configure** list, select **Manually**.
- In the **IP Address** field, enter your IP address.
- In the **Subnet Mask** field, enter your subnet mask.
- In the **Router** field, enter the IP address of your NBG6617.

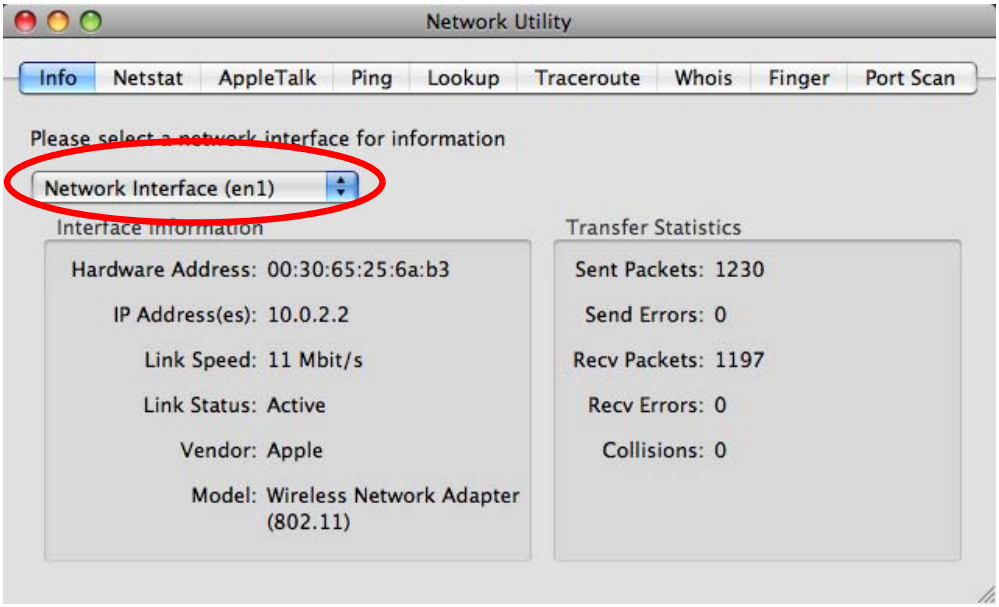


6 Click **Apply** and close the window.

Verifying Settings

Check your TCP/IP properties by clicking **Applications > Utilities > Network Utilities**, and then selecting the appropriate **Network interface** from the **Info** tab.

Figure 102 Mac OS X 10.5: Network Utility



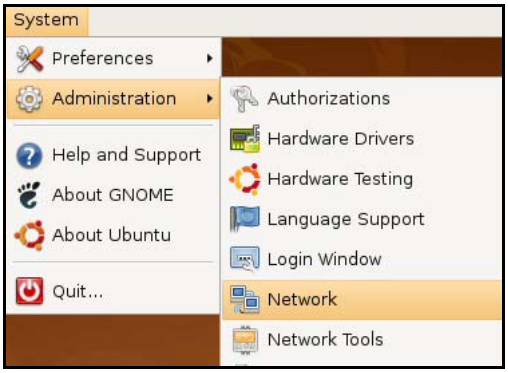
Linux: Ubuntu 8 (GNOME)

This section shows you how to configure your computer's TCP/IP settings in the GNU Object Model Environment (GNOME) using the Ubuntu 8 Linux distribution. The procedure, screens and file locations may vary depending on your specific distribution, release version, and individual configuration. The following screens use the default Ubuntu 8 installation.

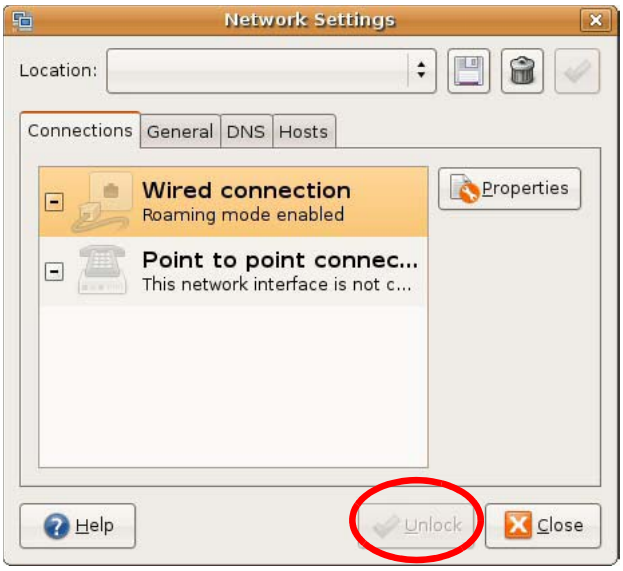
Note: Make sure you are logged in as the root administrator.

Follow the steps below to configure your computer IP address in GNOME:

1 Click **System > Administration > Network**.



2 When the **Network Settings** window opens, click **Unlock** to open the **Authenticate** window. (By default, the **Unlock** button is greyed out until clicked.) You cannot make changes to your configuration unless you first enter your admin password.



3 In the **Authenticate** window, enter your admin account name and password then click the **Authenticate** button.

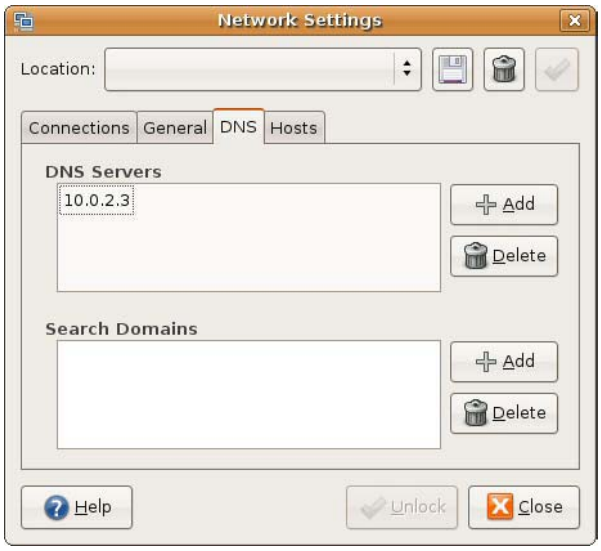
4 In the **Network Settings** window, select the connection that you want to configure, then click **Properties**.

5 The **Properties** dialog box opens.

- In the **Configuration** list, select **Automatic Configuration (DHCP)** if you have a dynamic IP address.
- In the **Configuration** list, select **Static IP address** if you have a static IP address. Fill in the **IP address**, **Subnet mask**, and **Gateway address** fields.

6 Click **OK** to save the changes and close the **Properties** dialog box and return to the **Network Settings** screen.

7 If you know your DNS server IP address(es), click the **DNS** tab in the **Network Settings** window and then enter the DNS server information in the fields provided.

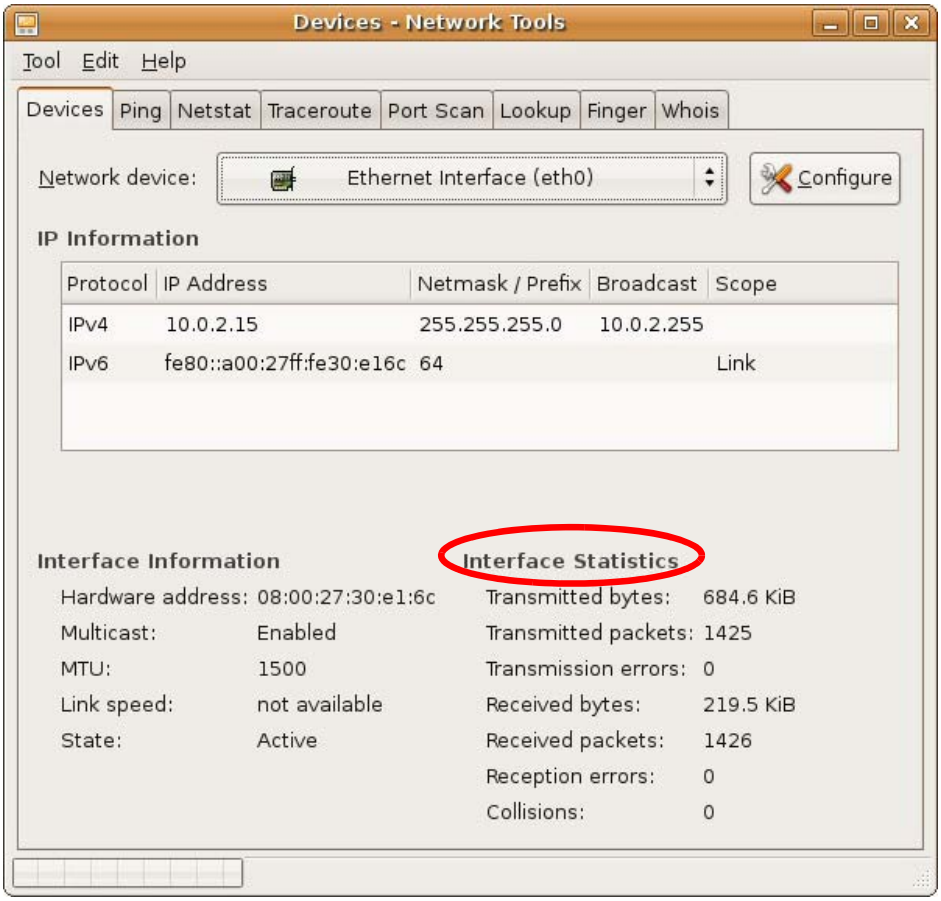


8 Click the **Close** button to apply the changes.

Verifying Settings

Check your TCP/IP properties by clicking **System > Administration > Network Tools**, and then selecting the appropriate **Network device** from the **Devices** tab. The **Interface Statistics** column shows data if your connection is working properly.

Figure 103 Ubuntu 8: Network Tools



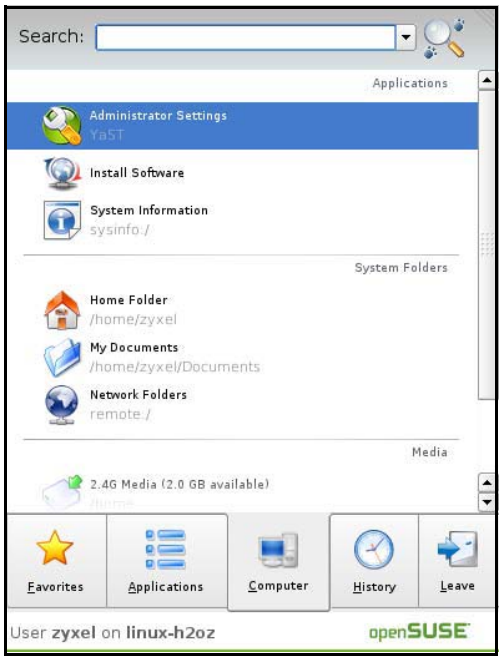
Linux: openSUSE 10.3 (KDE)

This section shows you how to configure your computer's TCP/IP settings in the K Desktop Environment (KDE) using the openSUSE 10.3 Linux distribution. The procedure, screens and file locations may vary depending on your specific distribution, release version, and individual configuration. The following screens use the default openSUSE 10.3 installation.

Note: Make sure you are logged in as the root administrator.

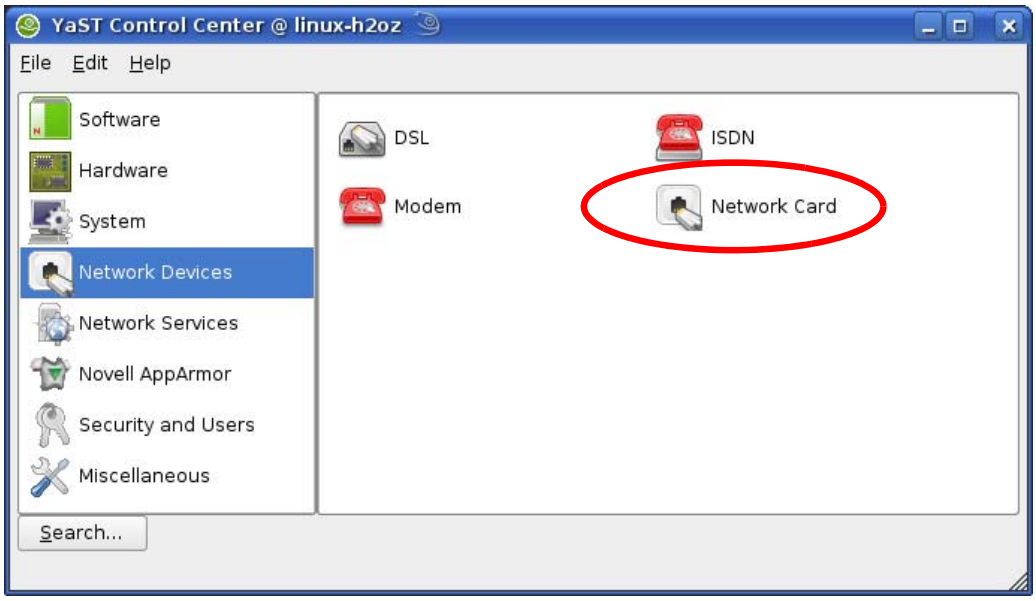
Follow the steps below to configure your computer IP address in the KDE:

1 Click **K Menu > Computer > Administrator Settings (YaST)**.

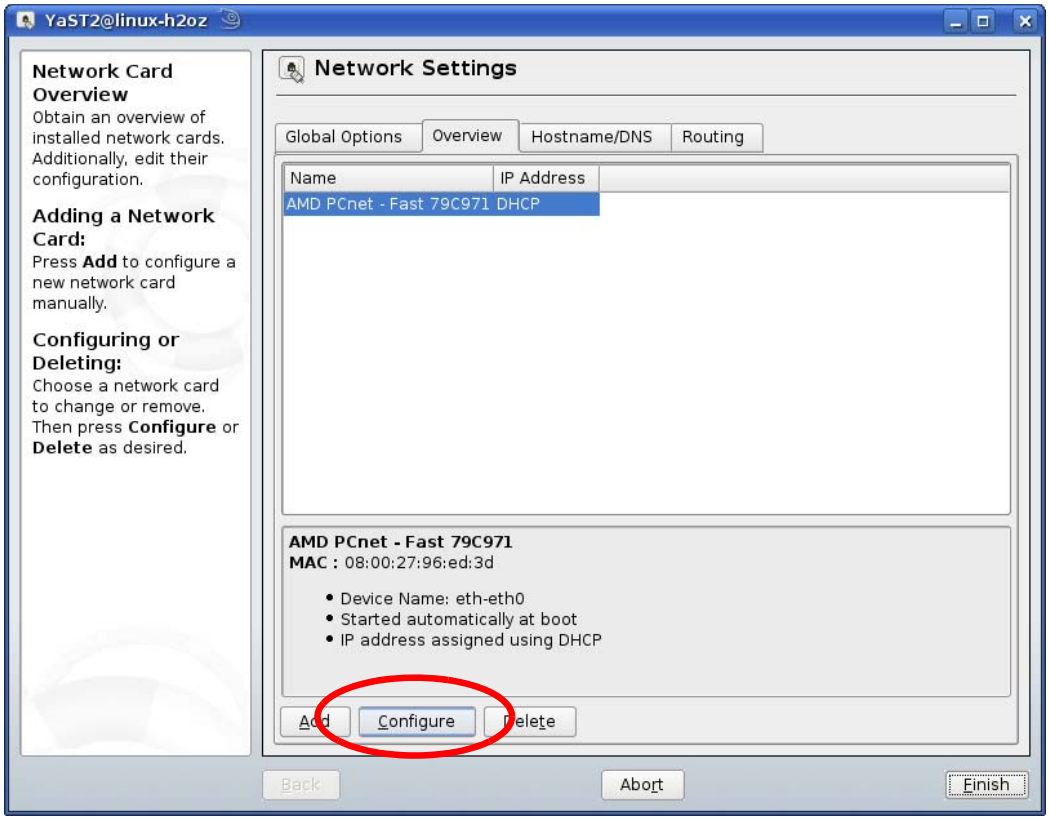


2 When the **Run as Root - KDE su** dialog opens, enter the admin password and click **OK**.

3 When the **YaST Control Center** window opens, select **Network Devices** and then click the **Network Card** icon.

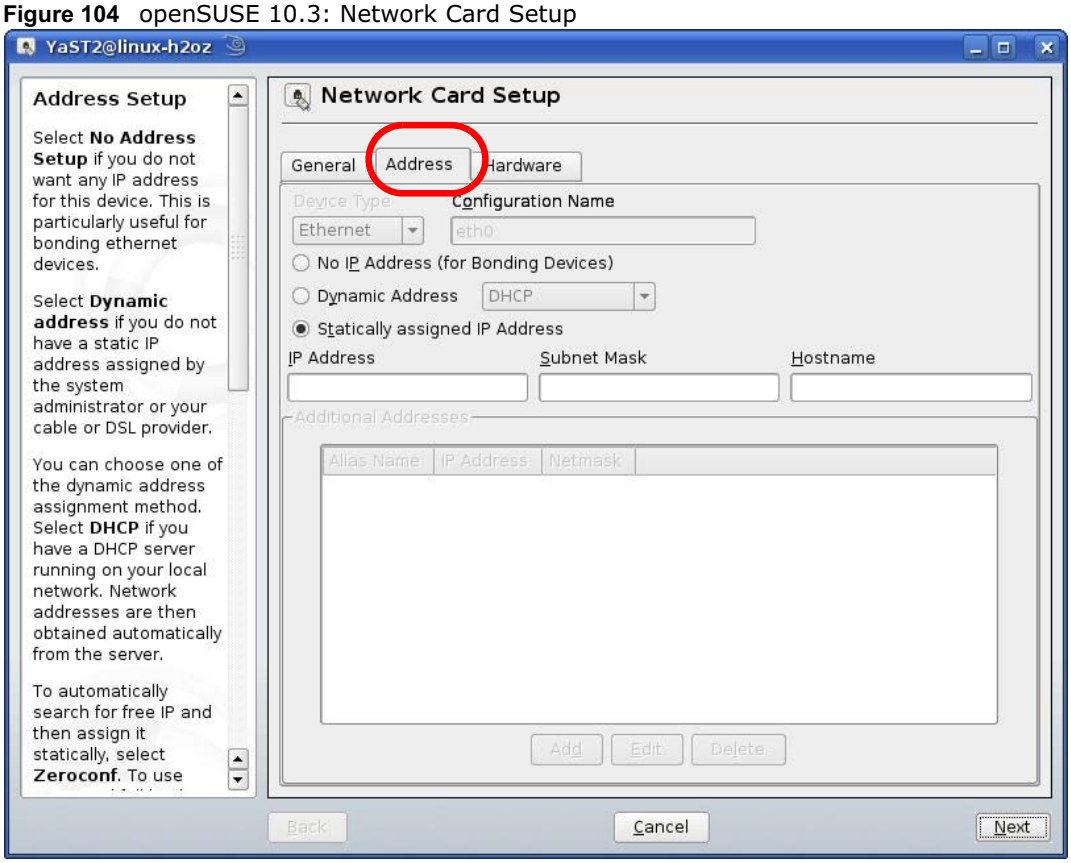


4 When the **Network Settings** window opens, click the **Overview** tab, select the appropriate connection **Name** from the list, and then click the **Configure** button.



5 When the **Network Card Setup** window opens, click the **Address** tab

Figure 104 openSUSE 10.3: Network Card Setup

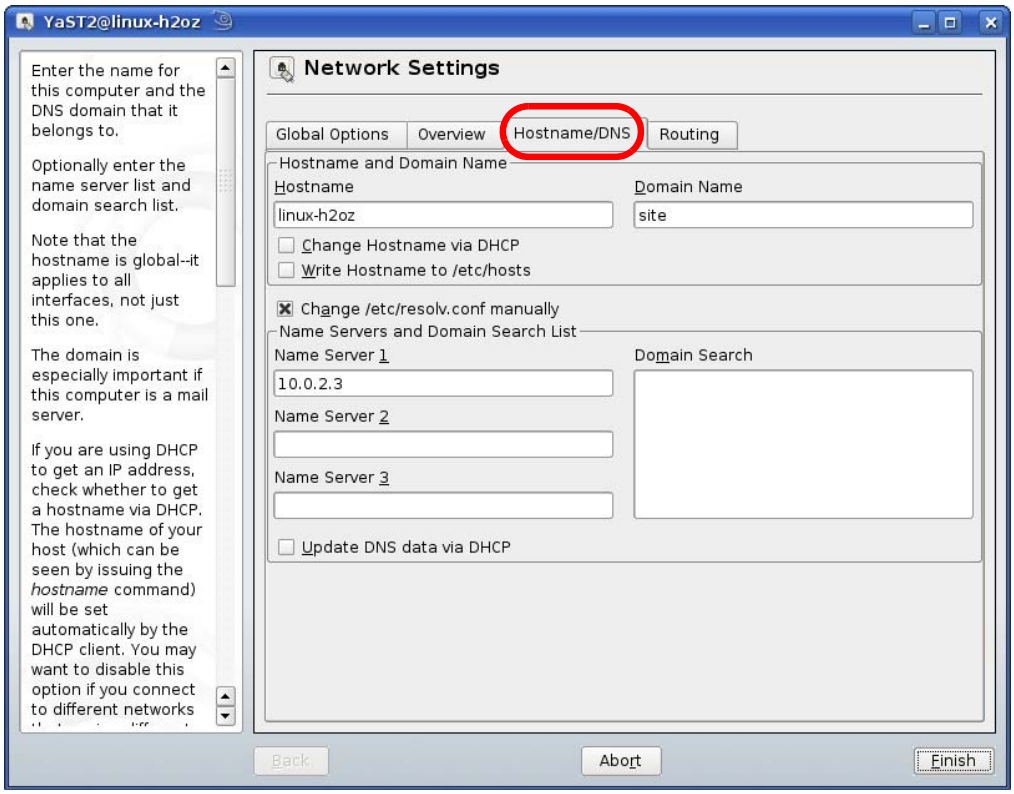


6 Select **Dynamic Address (DHCP)** if you have a dynamic IP address.

Select **Statically assigned IP Address** if you have a static IP address. Fill in the **IP address**, **Subnet mask**, and **Hostname** fields.

7 Click **Next** to save the changes and close the **Network Card Setup** window.

8 If you know your DNS server IP address(es), click the **Hostname/DNS** tab in **Network Settings** and then enter the DNS server information in the fields provided.



9 Click **Finish** to save your settings and close the window.

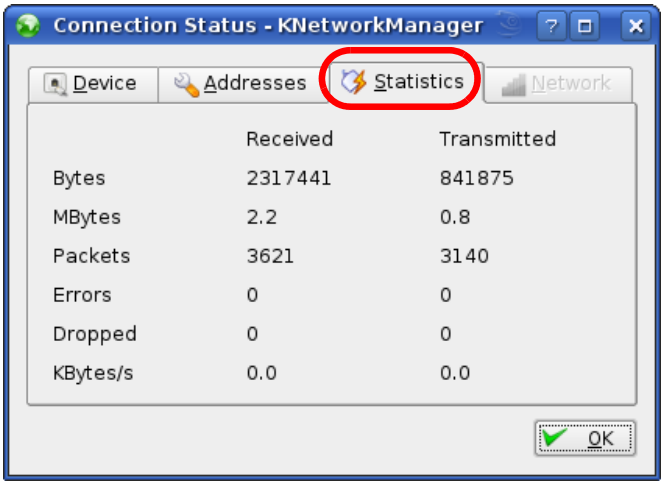
Verifying Settings

Click the **KNetwork Manager** icon on the **Task bar** to check your TCP/IP properties. From the **Options** sub-menu, select **Show Connection Information**.

Figure 105 openSUSE 10.3: KNetwork Manager

When the **Connection Status - KNetwork Manager** window opens, click the **Statistics tab** to see if your connection is working properly.

Figure 106 openSUSE: Connection Status - KNetwork Manager



C

Common Services

The following table lists some commonly-used services and their associated protocols and port numbers. For a comprehensive list of port numbers, ICMP type/code numbers and services, visit the IANA (Internet Assigned Number Authority) web site.

- **Name**: This is a short, descriptive name for the service. You can use this one or create a different one, if you like.
- **Protocol**: This is the type of IP protocol used by the service. If this is **TCP/UDP**, then the service uses the same port number with TCP and UDP. If this is **USER-DEFINED**, the **Port(s**) is the IP protocol number, not the port number.
- **Port(s)**: This value depends on the **Protocol**. Please refer to RFC 1700 for further information about port numbers.
  - If the **Protocol** is **TCP**, **UDP**, or **TCP/UDP**, this is the IP port number.
  - If the **Protocol** is **USER**, this is the IP protocol number.
- **Description**: This is a brief explanation of the applications that use this service or the situations in which this service is used.

Table 64 Commonly Used Services

NAME	PROTOCOL	PORT(S)	DESCRIPTION
AH (IPSEC_TUNNEL)	User-Defined	51	The IPSEC AH (Authentication Header) tunneling protocol uses this service.
AIM/New-ICQ	TCP	5190	AOL's Internet Messenger service. It is also used as a listening port by ICQ.
AUTH	TCP	113	Authentication protocol used by some servers.
BGP	TCP	179	Border Gateway Protocol.
BOOTP_CLIENT	UDP	68	DHCP Client.
BOOTP_SERVER	UDP	67	DHCP Server.
CU-SEEME	TCP UDP	7648 24032	A popular videoconferencing solution from White Pines Software.
DNS	TCP/UDP	53	Domain Name Server, a service that matches web names (for example www.zyxel.com) to IP numbers.
ESP (IPSEC_TUNNEL)	User-Defined	50	The IPSEC ESP (Encapsulation Security Protocol) tunneling protocol uses this service.
FINGER	TCP	79	Finger is a UNIX or Internet related command that can be used to find out if a user is logged on.
FTP	TCP TCP	20 21	File Transfer Program, a program to enable fast transfer of files, including large files that may not be possible by e-mail.
H.323	TCP	1720	NetMeeting uses this protocol.
HTTP	TCP	80	Hyper Text Transfer Protocol - a client/server protocol for the world wide web.

Table 64 Commonly Used Services (continued)

NAME	PROTOCOL	PORT(S)	DESCRIPTION
HTTPS	TCP	443	HTTPS is a secured http session often used in e-commerce.
ICMP	User-Defined	1	Internet Control Message Protocol is often used for diagnostic or routing purposes.
ICQ	UDP	4000	This is a popular Internet chat program.
IGMP (MULTICAST)	User-Defined	2	Internet Group Management Protocol is used when sending packets to a specific group of hosts.
IKE	UDP	500	The Internet Key Exchange algorithm is used for key distribution and management.
IRC	TCP/UDP	6667	This is another popular Internet chat program.
MSN Messenger	TCP	1863	Microsoft Networks' messenger service uses this protocol.
NEW-ICQ	TCP	5190	An Internet chat program.
NEWS	TCP	144	A protocol for news groups.
NFS	UDP	2049	Network File System - NFS is a client/server distributed file service that provides transparent file sharing for network environments.
NNTP	TCP	119	Network News Transport Protocol is the delivery mechanism for the USENET newsgroup service.
PING	User-Defined	1	Packet INternet Groper is a protocol that sends out ICMP echo requests to test whether or not a remote host is reachable.
POP3	TCP	110	Post Office Protocol version 3 lets a client computer get e-mail from a POP3 server through a temporary connection (TCP/IP or other).
PPTP	TCP	1723	Point-to-Point Tunneling Protocol enables secure transfer of data over public networks. This is the control channel.
PPTP_TUNNEL (GRE)	User-Defined	47	PPTP (Point-to-Point Tunneling Protocol) enables secure transfer of data over public networks. This is the data channel.
RCMD	TCP	512	Remote Command Service.
REAL_AUDIO	TCP	7070	A streaming audio service that enables real time sound over the web.
REXEC	TCP	514	Remote Execution Daemon.
RLOGIN	TCP	513	Remote Login.
RTELNET	TCP	107	Remote Telnet.
RTSP	TCP/UDP	554	The Real Time Streaming (media control) Protocol (RTSP) is a remote control for multimedia on the Internet.
SFTP	TCP	115	Simple File Transfer Protocol.
SMTP	TCP	25	Simple Mail Transfer Protocol is the message-exchange standard for the Internet. SMTP enables you to move messages from one e-mail server to another.
SNMP	TCP/UDP	161	Simple Network Management Program.
SNMP-TRAPS	TCP/UDP	162	Traps for use with the SNMP (RFC:1215).

Table 64 Commonly Used Services (continued)

NAME	PROTOCOL	PORT(S)	DESCRIPTION
SQL-NET	TCP	1521	Structured Query Language is an interface to access data on many different types of database systems, including mainframes, midrange systems, UNIX systems and network servers.
SSH	TCP/UDP	22	Secure Shell Remote Login Program.
STRM WORKS	UDP	1558	Stream Works Protocol.
SYSLOG	UDP	514	Syslog allows you to send system logs to a UNIX server.
TACACS	UDP	49	Login Host Protocol used for (Terminal Access Controller Access Control System).
TELNET	TCP	23	Telnet is the login and terminal emulation protocol common on the Internet and in UNIX environments. It operates over TCP/IP networks. Its primary function is to allow users to log into remote host systems.
TFTP	UDP	69	Trivial File Transfer Protocol is an Internet file transfer protocol similar to FTP, but uses the UDP (User Datagram Protocol) rather than TCP (Transmission Control Protocol).
VDOLIVE	TCP	7000	Another videoconferencing solution.

D

Legal Information

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Regulatory Notice and Statement

UNITED STATES of AMERICA

The following information applies if you use the product within USA area.

FCC EMC Statement

- The device complies with Part 15 of FCC rules. Operation is subject to the following two conditions:

(1) This device may not cause harmful interference, and

(2) This device must accept any interference received, including interference that may cause undesired operation.

- Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the device.
- This product has been tested and complies with the specifications for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This device generates, uses, and can radiate radio frequency energy and, if not installed and used according to the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.
- If this device does cause harmful interference to radio or television reception, which is found by turning the device off and on, the user is encouraged to try to correct the interference by one or more of the following measures:
  - •Reorient or relocate the receiving antenna
  - •Increase the separation between the devices
  - •Connect the equipment to an outlet other than the receiver's
  - •Consult a dealer or an experienced radio/TV technician for assistance

FCC Radiation Exposure Statement

- This device complies with FCC RF radiation exposure limits set forth for an uncontrolled environment.

This transmitter must be at least 20 cm from the user and must not be co-located or operating in conjunction with any other antenna or transmitter.

For operation within 5.15 ~ 5.25GHz frequency range, it is restricted to indoor environment.

Industry Canada RSS-GEN & RSS-247 statement

- This device complies with Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.
- This radio transmitter (2468C-NBG6617) has been approved by Industry Canada to operate with the antenna types listed below with the maximum permissible gain and required antenna impedance for each antenna type indicated. Antenna types not included in this list, having a gain greater than the maximum gain indicated for that type, are strictly prohibited for use with this device.

Antenna Information (For External Antenna)

TYPE	MANUFACTURER	GAIN	CONNECTOR
Dipole 1	Aristotle	1.44dBi (2400-2500MHz) 0.37dBi (5260-5320MHz)	UFL
Dipole 2	Aristotle	1.78dBi (2400-2500MHz) 3.23dBi (5745-5825MHz)	UFL

If the product with 5G wireless function operating in 5150-5250 MHz and 5725-5850 MHz , the following attention must be paid,

- The device for operation in the band 5150-5250 MHz is only for indoor use to reduce the potential for harmful interference to co-channel mobile satellite systems.
- For devices with detachable antenna(s), the maximum antenna gain permitted for devices in the band 5725-5850 MHz shall be such that the equipment still complies with the e.i.r.p. limits specified for point-to-point and non-point-to-point operation as appropriate; and
- The worst-case tilt angle(s) necessary to remain compliant with the e.i.r.p. elevation mask requirement set forth in Section 6.2.2(3) of RSS 247 shall be clearly indicated.

If the product with 5G wireless function operating in 5250-5350 MHz and 5470-5725 MHz , the following attention must be paid.

- For devices with detachable antenna(s), the maximum antenna gain permitted for devices in the bands 5250-5350 MHz and 5470-5725 MHz shall be such that the equipment still complies with the e.i.r.p. limit
- Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.
- Le présent émetteur radio (2468C-NBG6617) de modèle s'il fait partie du matériel de catégorieI) a été approuvé par Industrie Canada pour fonctionner avec les types d'antenne énumérés ci-dessous et ayant un gain admissible maximal et l'impédance requise pour chaque type d'antenne. Les types d'antenne non inclus dans cette liste, ou dont le gain est supérieur au gain maximal indiqué, sont strictement interdits pour l'exploitation de l'émetteur.

Informations Antenne (For External Antenna)

TYPE	FABRICANT	GAIN	CONNECTEUR
Dipole 1	Aristotle	1.44dBi (2400-2500MHz) 0.37dBi (5260-5320MHz)	UFL
Dipole 2	Aristotle	1.78dBi (2400-2500MHz) 3.23dBi (5745-5825MHz)	UFL

Lorsque la fonction sans fil 5G fonctionnant en5150-5250 MHz and 5725-5850 MHz est activée pour ce produit , il est nécessaire de porter une attention particulière aux choses suivantes

- Les dispositifs fonctionnant dans la bande 5150-5250 MHz sont réservés uniquement pour une utilisation à l'intérieur afin de réduire les risques de brouillage préjudiciable aux systèmes de satellites mobiles utilisant les mêmes canaux;
- Pour les dispositifs munis d'antennes amovibles, le gain maximal d'antenne permis (pour les dispositifs utilisant la bande de 5 725 à 5 850 MHz) doit être conforme à la limite de la p.i.r.e. spécifiée pour l'exploitation point à point et l'exploitation non point à point, selon le cas;
- Les pires angles d'inclinaison nécessaires pour rester conforme à l'exigence de la p.i.r.e. applicable au masque d'élévation, et énoncée à la section 6.2.2 3) du CNR-247, doivent être clairement indiqués.

  Lorsque la fonction sans fil 5G fonctionnant en 5250-5350 MHz et 5470-5725 MHz est activée pour ce produit , il est nécessaire de porter une attention particulière aux choses suivantes
- Pour les dispositifs munis d'antennes amovibles, le gain maximal d'antenne permis pour les dispositifs utilisant les bandes de 5 250 à 5 350 MHz et de 5 470 à 5 725 MHz doit être conforme à la limite de la p.i.r.e.

Industry Canada radiation exposure statement

This device complies with IC radiation exposure limits set forth for an uncontrolled environment. This device should be installed and operated with a minimum distance of 20 cm between the radiator and your body.

Déclaration d'exposition aux radiations:

Cet équipement est conforme aux limites d'exposition aux rayonnements IC établies pour un environnement non contrôlé. Cet équipement doit être installé et utilisé avec un minimum de 20 cm de distance entre la source de rayonnement et votre corps.

EUROPEAN UNION

The following information applies if you use the product within the European Union.

Declaration of Conformity with Regard to EU Directive 1999/5/EC (R&TTE Directive)

Compliance information for 2.4GHz and/or 5GHz wireless products relevant to the EU and other Countries following the EU Directive 1999/5/EC (R&TTE)

Български (Bulgarian)	С настоящото ZyXEL декларира, че това оборудване е в съответствие със съществените изисквания и другите приложими разпоредбите на Директива 1999/5/ЕС.
Español (Spanish)	Por medio de la presente ZyXEL declara que el equipo cumple con los requisitos esenciales y cualesquiera otras disposiciones aplicables o exigibles de la Directiva 1999/5/CE.
Čeština (Czech)	ZyXEL tímto prohlašuje, že tento zařízení je ve shodě se základními požadavky a dalšími příslušnými ustanoveními směrnice 1999/5/EC.
Dansk (Danish)	Undertegnede ZyXEL erklærer herved, at følgende udstyr udstyr overholder de væsentlige krav og øvrige relevante krav i direktiv 1999/5/EF.
Deutsch (German)	Hiermit erklärt ZyXEL, dass sich das Gerät Ausstattung in Übereinstimmung mit den grundlegenden Anforderungen und den übrigen einschlägigen Bestimmungen der Richtlinie 1999/5/EU befindet.
Eesti keel (Estonian)	Käesolevaga kinnitab ZyXEL seadme seadmed vastavust direktiivi 1999/5/EÜ põhinõuetele ja nimetatud direktiivist tulenevatele teistele asjakohastele sätetele.
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English	Hereby, ZyXEL declares that this device is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC.
Français (French)	Par la présente ZyXEL déclare que l'appareil équipements est conforme aux exigences essentielles et aux autres dispositions pertinentes de la directive 1999/5/EC.
Hrvatski (Croatian)	ZyXEL ovime izjavljuje da je radijska oprema tipa u skladu s Direktivom 1999/5/EC.
Íslenska (Icelandic)	Hér með lýsir, ZyXEL því yfir að þessi búnaður er í samræmi við grunnkröfur og önnur viðeigandi ákvæði tilskipunar 1999/5/EC.
Italiano (Italian)	Con la presente ZyXEL dichiara che questo attrezzatura è conforme ai requisiti essenziali ed alle altre disposizioni pertinenti stabilite dalla direttiva 1999/5/CE.
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Lietuvių kalba (Lithuanian)	Šiuo ZyXEL deklaruoja, kad šis įranga atitinka esminius reikalavimus ir kitas 1999/5/EB Direktyvos nuostatas.
Magyar (Hungarian)	Alulírott, ZyXEL nyilatkozom, hogy a berendezés megfelel a vonatkozó alapvetõ követelményeknek és az 1999/5/EK irányelv egyéb elõírásainak.
Malti (Maltese)	Hawnhekk, ZyXEL, jiddikjara li dan tagħmir jikkonforma mal-ħtiġijiet essenzjali u ma provvedimenti oħrajn relevanti li hemm fid-Dirrettiva 1999/5/EC.
Nederlands (Dutch)	Hierbij verklaart ZyXEL dat het toestel uitrusting in overeenstemming is met de essentiële eisen en de andere relevante bepalingen van richtlijn 1999/5/EC.
Polski (Polish)	Niniejszym ZyXEL oświadcza, że sprzęt jest zgodny z zasadniczymi wymogami oraz pozostałymi stosownymi postanowieniami Dyrektywy 1999/5/EC.
Português (Portuguese)	ZyXEL declara que este equipamento está conforme com os requisitos essenciais e outras disposições da Directiva 1999/5/EC.
Română (Romanian)	Prin prezenta, ZyXEL declară că acest echipament este în conformitate cu cerinţele esenţiale şi alte prevederi relevante ale Directivei 1999/5/EC.

Slovenčina (Slovak)	ZyXEL týmto vyhlasuje, že zariadenia spĺňa základné požiadavky a všetky príslušné ustanovenia Smernice 1999/5/EC.
Slovenščina (Slovene)	ZyXEL izjavlja, da je ta oprema v skladu z bistvenimi zahtevami in ostalimi relevantnimi določili direktive 1999/5/EC.
Suomi (Finnish)	ZyXEL vakuuttaa täten että laitteet tyyppinen laite on direktiivin 1999/5/EY oleellisten vaatimusten ja sitä koskevien direktiivin muiden ehtojen mukainen.
Svenska (Swedish)	Härmed intygar ZyXEL att denna utrustning står I överensstämmelse med de väsentliga egenskapskrav och övriga relevanta bestämmelser som framgår av direktiv 1999/5/EC.
Norsk (Norwegian)	Erklærer herved ZyXEL at dette utstyret er I samsvar med de grunnleggende kravene og andre relevante bestemmelser I direktiv 1999/5/EF.

This device is restricted to indoor use only when operating in the 5150 to 5350 MHz frequency range.

National Restrictions

This product may be used in all EU countries (and other countries following the EU Directive 1999/5/EC) without any limitation except for the countries mentioned below:

Ce produit peut être utilisé dans tous les pays de l'UE (et dans tous les pays ayant transposés la directive 1999/5/CE) sans aucune limitation, excepté pour les pays mentionnés ci-dessous:

Questo prodotto è utilizzabile in tutte i paesi EU (ed in tutti gli altri paesi che seguono le direttiva 1999/5/EC) senza nessuna limitazione, eccetto per i paesii menzionati di seguito:

Das Produkt kann in allen EU Staaten ohne Einschränkungen eingesetzt werden (sowie in anderen Staaten die der Richtlinie 1999/5/CE folgen) mit Außnahme der folgenden aufgeführten Staaten:

In the majority of the EU and other European countries, the 2.4GHz and 5GHz bands have been made available for the use of wireless local area networks (LANs). Later in this document you will find an overview of countries in which additional restrictions or requirements or both are applicable.

The requirements for any country may evolve. ZyXEL recommends that you check with the local authorities for the latest status of their national regulations for both the 2.4GHz and 5GHz wireless LANs.

The following countries have restrictions and/or requirements in addition to those given in the table labeled "*Overview of Regulatory Requirements for Wireless LANs*":.

Belgium

The Belgian Institute for Postal Services and Telecommunications (BIPT) must be notified of any outdoor wireless link having a range exceeding 300 meters. Please check http://www.bipt.be for more details.

Draadloze verbindingen voor buitengebruik en met een reikwijdte van meer dan 300 meter dienen aangemeld te worden bij het Belgisch Instituut voor postdiensten en telecommunicatie (BIPT). Zie http://www.bipt.be voor meer gegevens.

Les liaisons sans fil pour une utilisation en extérieur d'une distance supérieure à 300 mètres doivent être notifiées à l'Institut Belge des services Postaux et des Télécommunications (IBPT). Visitez http://www.ibpt.be pour de plus amples détails.

Denmark

In Denmark, the band 5150 - 5350 MHz is also allowed for outdoor usage.

I Danmark må frekvensbåndet 5150 - 5350 også anvendes udendørs.

Italy

This product meets the National Radio Interface and the requirements specified in the National Frequency Allocation Table for Italy. Unless this wireless LAN product is operating within the boundaries of the owner's property, its use requires a "general authorization." Please check http://www.sviluppoeconomico.gov.it/ for more details.

Questo prodotto è conforme alla specifiche di Interfaccia Radio Nazionali e rispetta il Piano Nazionale di ripartizione delle frequenze in Italia. Se non viene installato all 'interno del proprio fondo, l'utilizzo di prodotti Wireless LAN richiede una "Autorizzazione Generale". Consultare http://www.sviluppoeconomico.gov.it/ per maggiori dettagli.

Latvia

The outdoor usage of the 2.4 GHz band requires an authorization from the Electronic Communications Office. Please check http://www.esd.lv for more details.

2.4 GHz frekvenèu joslas izmantoðanai ârpus telpâm nepiecieðama atïauja no Elektronisko sakaru direkcijas. Vairâk informâcijas: http://www.esd.lv.

Notes:

1. Although Norway, Switzerland and Liechtenstein are not EU member states, the EU Directive 1999/5/EC has also been implemented in those countries.

2. The regulatory limits for maximum output power are specified in EIRP. The EIRP level (in dBm) of a device can be calculated by adding the gain of the antenna used(specified in dBi) to the output power available at the connector (specified in dBm).

List of national codes

COUNTRY	ISO 3166 2 LETTER CODE	COUNTRY	ISO 3166 2 LETTER CODE
Austria	AT	Liechtenstein	LI
Belgium	BE	Lithuania	LT
Bulgaria	BG	Luxembourg	LU
Croatia	HR	Malta	MT
Cyprus	CY	Netherlands	NL
Czech Republic	CZ	Norway	NO
Denmark	DK	Poland	PL
Estonia	EE	Portugal	PT
Finland	FI	Romania	RO
France	FR	Serbia	RS
Germany	DE	Slovakia	SK
Greece	GR	Slovenia	SI
Hungary	HU	Spain	ES
Iceland	IS	Switzerland	CH
Ireland	IE	Sweden	SE
Italy	IT	Turkey	TR
Latvia	LV	United Kingdom	GB

Safety Warnings

- Do not use this product near water, for example, in a wet basement or near a swimming pool.
- Do not expose your device to dampness, dust or corrosive liquids.
- Do not store things on the device.
- Do not obstruct the device ventillation slots as insufficient airflow may harm your device. For example, do not place the device in an enclosed space such as a box or on a very soft surface such as a bed or sofa.
- Do not install, use, or service this device during a thunderstorm. There is a remote risk of electric shock from lightning.
- Connect ONLY suitable accessories to the device.
- Do not open the device or unit. Opening or removing covers can expose you to dangerous high voltage points or other risks. ONLY qualified service personnel should service or disassemble this device. Please contact your vendor for further information.
- Make sure to connect the cables to the correct ports.
- Place connecting cables carefully so that no one will step on them or stumble over them.
- Always disconnect all cables from this device before servicing or disassembling.
- Do not remove the plug and connect it to a power outlet by itself; always attach the plug to the power adaptor first before connecting it to a power outlet.
- Do not allow anything to rest on the power adaptor or cord and do NOT place the product where anyone can walk on the power adaptor or cord.
- Please use the provided or designated connection cables/power cables/ adaptors. Connect it to the right supply voltage (for example, 110V AC in North America or 230V AC in Europe). If the power adaptor or cord is damaged, it might cause electrocution. Remove it from the device and the power source, repairing the power adapter or cord is prohibited. Contact your local vendor to order a new one.
- Do not use the device outside, and make sure all the connections are indoors. There is a remote risk of electric shock from lightning.
- CAUTION: Risk of explosion if battery is replaced by an incorrect type, dispose of used batteries according to the instruction. Dispose them at the applicable collection point for the recycling of electrical and electronic devices. For detailed information about recycling of this product, please contact your local city office, your household waste disposal service or the store where you purchased the product.
- If you wall mount your device, make sure that no electrical lines, gas or water pipes will be damaged.

The following warning statements apply, where the disconnect device is not incorporated in the device or where the plug on the power supply cord is intended to serve as the disconnect device,

- For permanently connected devices, a readily accessible disconnect device shall be incorporated external to the device;
- For pluggable devices, the socket-outlet shall be installed near the device and shall be easily accessible.

Environment Statement

ErP (Energy-related Products)

ZyXEL products put on the EU market in compliance with the requirement of the European Parliament and the Council published Directive 2009/125/EC establishing a framework for the setting of ecodesign requirements for energy-related products (recast), so called

as "ErP Directive (Energy-related Products directive) as well as ecodesign requirement laid down in applicable implementing measures, power consumption has satisfied regulation requirements which are:

Network standby power consumption < 12W, and/or

Off mode power consumption < 0.5W, and/or

Standby mode power consumption < 0.5W.

Wireless setting, please refer to "Wireless" chapter for more detail.

European Union - Disposal and Recycling Information

The symbol below means that according to local regulations your product and/or its battery shall be disposed of separately from domestic waste. If this product is end of life, take it to a recycling station designated by local authorities. At the time of disposal, the separate collection of your product and/or its battery will help save natural resources and ensure that the environment is sustainable development.

Die folgende Symbol bedeutet, dass Ihr Produkt und/oder seine Batterie gemäß den örtlichen Bestimmungen getrennt vom Hausmüll entsorgt werden muss. Wenden Sie sich an eine Recyclingstation, wenn dieses Produkt das Ende seiner Lebensdauer erreicht hat. Zum Zeitpunkt der Entsorgung wird die getrennte Sammlung von Produkt und/oder seiner Batterie dazu beitragen, natürliche Ressourcen zu sparen und die Umwelt und die menschliche Gesundheit zu schützen.

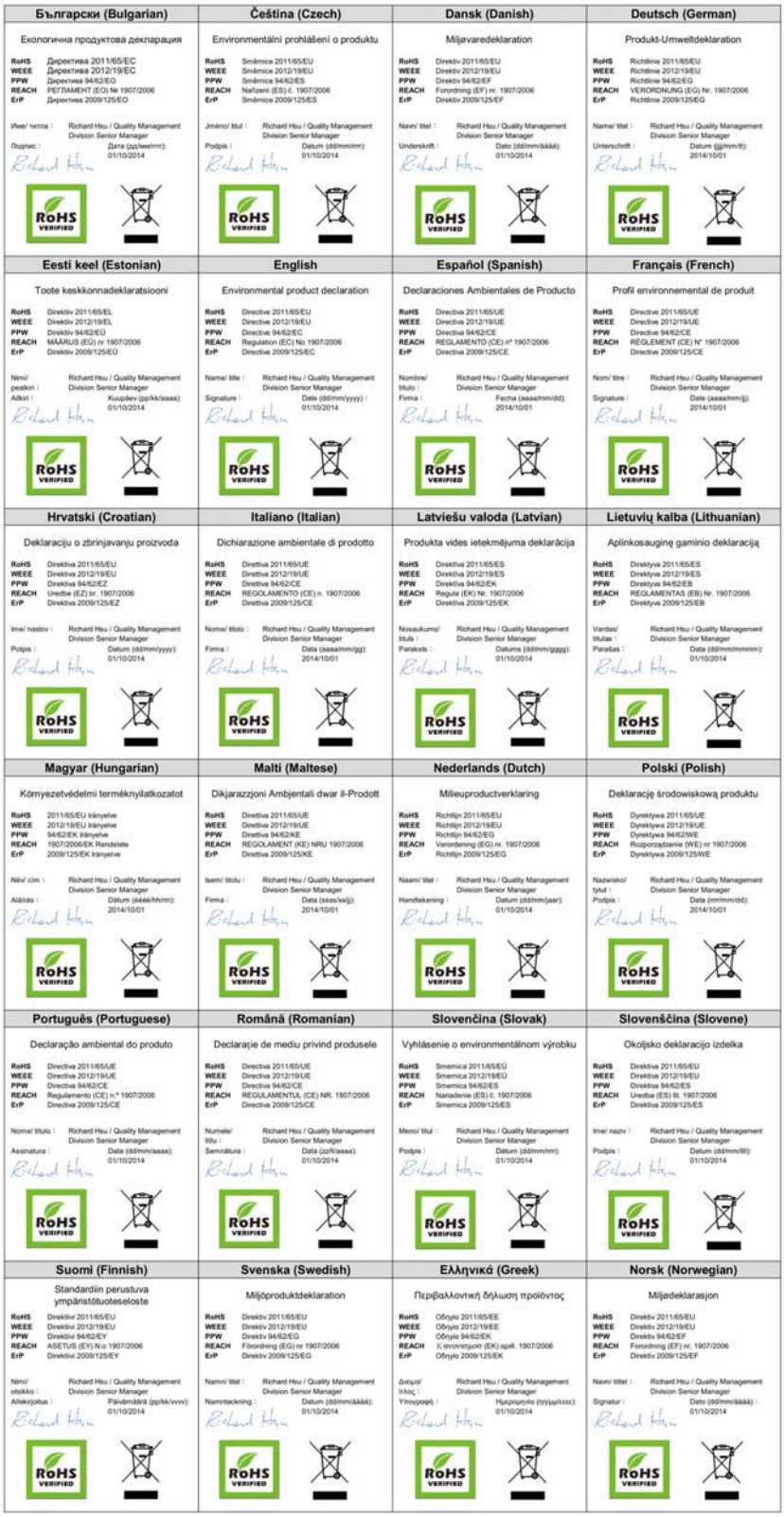
El símbolo de abajo indica que según las regulaciones locales, su producto y/o su batería deberán depositarse como basura separada de la doméstica. Cuando este producto alcance el final de su vida útil, llévelo a un punto limpio. Cuando llegue el momento de desechar el producto, la recogida por separado éste y/o su batería ayudará a salvar los recursos naturales y a proteger la salud humana y medioambiental.

Le symbole ci-dessous signifie que selon les réglementations locales votre produit et/ou sa batterie doivent être éliminés séparément des ordures ménagères. Lorsque ce produit atteint sa fin de vie, amenez-le à un centre de recyclage. Au moment de la mise au rebut, la collecte séparée de votre produit et/ou de sa batterie aidera à économiser les ressources naturelles et protéger l'environnement et la santé humaine.

Il simbolo sotto significa che secondo i regolamenti locali il vostro prodotto e/o batteria deve essere smaltito separatamente dai rifiuti domestici. Quando questo prodotto raggiunge la fine della vita di servizio portarlo a una stazione di riciclaggio. Al momento dello smaltimento, la raccolta separata del vostro prodotto e/o della sua batteria aiuta a risparmiare risorse naturali e a proteggere l'ambiente e la salute umana.

Symbolen innebär att enligt lokal lagstiftning ska produkten och/eller dess batteri kastas separat från hushållsavfallet. När den här produkten når slutet av sin livslängd ska du ta den till en återvinningsstation. Vid tiden för kasseringen bidrar du till en bättre miljö och mänsklig hälsa genom att göra dig av med den på ett återvinningsställe.

Environmental Product Declaration



台灣

以下訊息僅適用於產品具有無線功能且銷售至台灣地區

第十二條 經型式認證合格之低功率射頻電機，非經許可，公司，商號或使用者均不得擅自變更頻率、加大功率或變更原設計之特性及功能。

第十四條 低功率射頻電機之使用不得影響飛航安全及干擾合法通信；經發現有干擾現象時，應立即停用，並改善至無干擾時方得繼續使用。

前項合法通信，指依電信法規定作業之無線電通信。 低功率射頻電機須忍受合法通信或工業、科學及醫療用電波輻射性電機設備之干擾。

「電磁波曝露量MPE標準值1mW/cm^2，送測產品實測值為 0.57110mW/cm^2」

無線資訊傳輸設備忍受合法通信之干擾且不得干擾合法通信；如造成干擾，應立即停用， 俟無干擾之虞，始得繼續使用。

無線資訊傳設備的製造廠商應確保頻率穩定性，如依製造廠商使用手冊上所述正常操作， 發射的信號應維持於操作頻帶中

以下訊息僅適用於產品操作於 5.25-5.35 秭赫頻帶內並銷售至台灣地區

- 在 5.25-5.35 秭赫頻帶內操作之無線資訊傳輸設備，限於室內使用。

安全警告

為了您的安全，請先閱讀以下警告及指示：

- 請勿將此產品接近水、火焰或放置在高溫的環境。
- 避免設備接觸任何液體 - 切勿讓設備接觸水、雨水、高濕度、污水腐蝕性的液體或其他水份。
- 灰塵及污物 - 切勿接觸灰塵、污物、沙土、食物或其他不合適的材料。
- 雷雨天氣時，不要安裝，使用或維修此設備。有遭受電擊的風險。
- 切勿重摔或撞擊設備，並勿使用不正確的電源變壓器。
- 若接上不正確的電源變壓器會有爆炸的風險。
- 請勿隨意更換產品內的電池。
- 如果更換不正確之電池型式，會有爆炸的風險，請依製造商說明書處理使用過之電池。
- 請將廢電池丟棄在適當的電器或電子設備回收處。
- 請勿將設備解體。
- 請勿阻礙設備的散熱孔，空氣對流不足將會造成設備損害。
- 請插在正確的電壓供給插座 (如：北美 / 台灣電壓 110V AC，歐洲是 230V AC)。
- 假若電源變壓器或電源變壓器的纜線損壞，請從插座拔除，若您還繼續插電使用，會有觸電死亡的風險。
- 請勿試圖修理電源變壓器或電源變壓器的纜線，若有毀損，請直接聯絡您購買的店家，購買一個新的電源變壓器。
- 請勿將此設備安裝於室外，此設備僅適合放置於室內。
- 請勿隨一般垃圾丟棄。
- 請參閱產品背貼上的設備額定功率。
- 請參考產品型錄或是彩盒上的作業溫度。
- 產品沒有斷電裝置或者採用電源線的插頭視為斷電裝置的一部分，以下警語將適用：
  - 對永久連接之設備， 在設備外部須安裝可觸及之斷電裝置；
  - 對插接式之設備， 插座必須接近安裝之地點而且是易於觸及的。

Viewing Certifications

Go to http://www.zyxel.com to view this product's documentation and certifications.

ZyXEL Limited Warranty

ZyXEL warrants to the original end user (purchaser) that this product is free from any defects in material or workmanship for a specific period (the Warranty Period) from the date of purchase. The Warranty Period varies by region. Check with your vendor and/or the authorized ZyXEL local distributor for details about the Warranty Period of this product. During the warranty period, and upon proof of purchase, should the product have indications of failure due to faulty workmanship and/or materials, ZyXEL will, at its discretion, repair or replace the defective products or components without charge for either parts or labor, and to whatever extent it shall deem necessary to restore the product or components to proper operating condition. Any replacement will consist of a new or re-manufactured functionally equivalent product of equal or higher value, and will be solely at the discretion of ZyXEL. This warranty shall not apply if the product has been modified, misused, tampered with, damaged by an act of God, or subjected to abnormal working conditions.

Note

Repair or replacement, as provided under this warranty, is the exclusive remedy of the purchaser. This warranty is in lieu of all other warranties, express or implied, including any implied warranty of merchantability or fitness for a particular use or purpose. ZyXEL shall in no event be held liable for indirect or consequential damages of any kind to the purchaser.

To obtain the services of this warranty, contact your vendor. You may also refer to the warranty policy for the region in which you bought the device at http://www.zyxel.com/web/support_warranty_info.php.

Registration

Register your product online to receive e-mail notices of firmware upgrades and information at www.zyxel.com for global products, or at www.us.zyxel.com for North American products.

Open Source Licenses

This product contains in part some free software distributed under GPL license terms and/or GPL like licenses. Open source licenses are provided with the firmware package. You can download the latest firmware at www.zyxel.com. To obtain the source code covered under those Licenses, please contact support@zyxel.com.tw to get it.

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