

C1004W - 10G EPON ONU

Installation and **Professional's** Guide

■ Version 1.4

* This manual should be provided to professional installers educated and trained with product installation method and product composition method.



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Safety Precautions



Warning Before you install the C1004W unit, read this section. Product installation should be conducted only by professional installer who has been accurately trained.

Electrical safety

- Always use caution whenever handling live electrical material and contacts.
- Do not install electrical equipment in wet or damp conditions.
- Ensure that the power source for the unit is adequately rated to assure safe operation and provides current overload protection.
- Do not allow anything to be put on the power cable, and do not place this unit where people will stand or walk on the power cable.
- This unit should be used with the approved power adaptor which is included in the product package.



Warning Do not open the enclosure without Commscope's permission and technical support, which voids the warranty.

Laser safety

- Use of controls or adjustments, or performance of procedures other than those specified herein may result in hazardous laser radiation exposure.
- To avoid exposure to radiation, do not stare into the aperture of a fiber-optic port. Invisible radiation might be emitted from the aperture of the port when no fiber cable is connected.
- Do not bend the optic fiber cables severely, which may damage the fiber or prevent the signal from being transmitted properly.
- Always keep unused fiber-optic ports capped with a clean dust cap.



Warning Invisible laser radiation may be emitted from disconnected fibers or connectors. Never stare into beams or look directly to optical connectors.

Preventing EMI

- When you run wires for any significant distance in an electromagnetic field, electro magnetic interference (EMI) can occur between the field and the signals on the wires.
- Bad plant wiring can result in radio frequency interference (RFI).
- If Strong EMI occurs in the installation place, consult RFI experts to get rid of it.

Accessibility Safeguards

**Warning**

Never use “Administrator” nor “Operator” login account except professional installer!

**Warning**

Supplier will not be liable for any damage or misoperation caused from incautious configuration attempted by end user who tries with “Administrator” or “Operator” login account.

Grade on accessibility

- Three login accounts are available as per their own authority and capability.
- “Administrator” account gives the top most authority and “User” account gives the least.
- The account information is presented in this manual but this does not mean any end user may dare to configure the unit.
- This product must be installed and configured by professional installer only.
- Should there be any mis-configuration made upon the device (e.g. RF band selection or country selection) by end user the device would not operate properly.”

Product Introduction

C1004W is a single family unit type ONU which has a 10G EPON uplink and 4 Gigabit Ethernet ports for service as well as dual band WiFi interfaces. Each service port can support upto 1 Gbps bandwidth meanwhile WiFi interface supports IEEE 802.11 b/g/n/ac. Besides, OAM functions like remote detection/configuration via ACS, web configuration and QoS control features are also obtainable for smoother operation and maintenance.

Features

- Various speed combination supported
 - Diverse Downstream/Upstream speed sets for the uplink segment are available
 - 10Gbps / 10Gbps
 - 10Gbps / 1Gbps
 - 2Gbps / 1Gbps (Turbo mode) - planned
 - 1Gbps / 1Gbps - planned
 - Uplink segment means the portion between OLT and ONU.
[Note] 2Gbps / 1Gbps (Turbo mode) and 1Gbps / 1Gbps are only available provided that appropriate optic module is equipped at the corresponding OLT port.
- Compliant to cablelab's DPoE specification
 - Right for the MSOs who want to migrate to EPON technology
- Management via efficient OAM
 - Remote detection and configuration by way of TR-069 (planned)
 - EPON OAM
 - Authentication
 - Charging
- Dualband wireless access in concurrent manner
 - IEEE 802.11 ac as well as b/g/n are supported.
 - At 2.4 GHz: IEEE 802.11 b/g/n
 - At 5 GHz: IEEE 802.11 ac
- Local Configuration via web GUI
 - For monitoring and settings

Appearance



Figure 1 Front view of C1004W

- Designed to be installed either wall mount or the desk placement.
- Physical dimension & weight
 - 288.50(W) x 186.6(D) x 150.00(H) mm
 - 820g
- Power adapter
 - Input: 100 ~ 200VAC, 50 ~ 60 Hz
 - Output: 12VDC, 3A

Ports

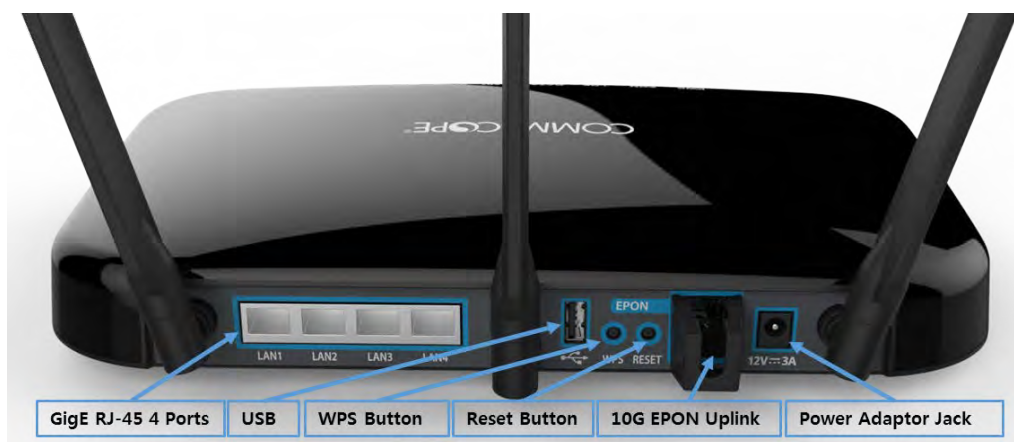


Figure 2 Rear view of C1004W

Table 1 Descriptions of the ports on the rear panel of the C1004W

Port and Button	Function
Four Gigabit Ethernet ports	Four 10/100/1000Base-TX ports used for service connection
USB port	Updated system image is downloaded via this. (To be operational in MP version)
WPS button	Activate Wi-Fi Protected Setting
Reset button	Press for 1~3 seconds to reset the unit. Press for more than 15 sec to get back to factory default setting.
10G EPON Uplink	10G EPON ports (SFP+ type) used for uplink connection
Power adapter jack	Hole for the power inlet from PA.

LEDs



Figure 3 Top view of C1004W

Table 2 Descriptions of the LEDs on the front panel of the C1004W

Silk Screen	Name	Status	Indication
PWR	Power supply LED	Green On	Power is fed.
		OFF	No power is fed.
PON	Authentication LED	Green On	10G Link On
		OFF	Link Off
LOS	Loss of Signal	Purple On	Optic transceiver is NOT equipped.
		Red On	PON Link is NOT established properly. Or, continuous optic signal is detected.
		OFF	PON Link is established properly. I.e. in normal status.
DATA	Data port LED	Blue Blink	Packets are being transmitted between OLT and ONU.
		OFF	No packets are being transmitted between OLT and ONU.
WLAN1	WLAN1 port LED	Blue On	5G Wi-Fi is in Active status.
		Blue Blink	5G WPS is in operation.
		OFF	5G Wi-Fi is in Inactive status
WLAN2	WLAN2 port LED	Blue On	2.4G Wi-Fi is in Active status.
		Blue Blink	2.4G WPS is in operation.
		OFF	2.4G Wi-Fi is in Inactive status.
WPS	WPS port LED	Blue Blink	WPS is in operation
		Off	WPS is NOT in operation
USB	USB port LED	Blue On	USB device is attached

Contents of the Package



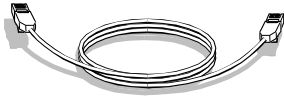
C1004W



Transceiver module



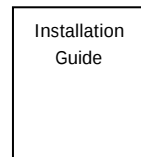
Power Adapter



Ethernet Cable



Star-shaped screws



Quick Install Guide

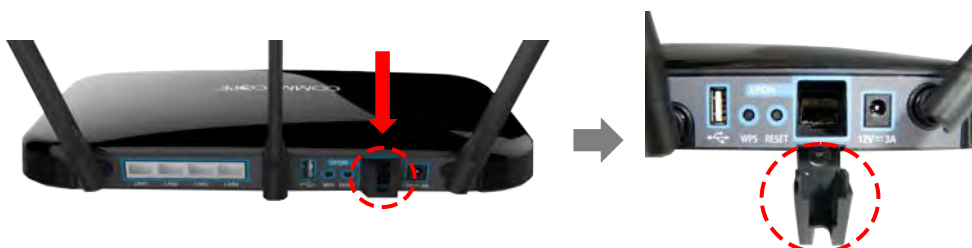
Installation



Warning Invisible laser radiation may be emitted from disconnected fibers or connectors. Do not stare into beams or view directly with optical instruments.

The sequence of installation is described from step 1 to 9 as below:

Step 1: Push gently down the hinged cover to connect the 10G SFP+ optic module.



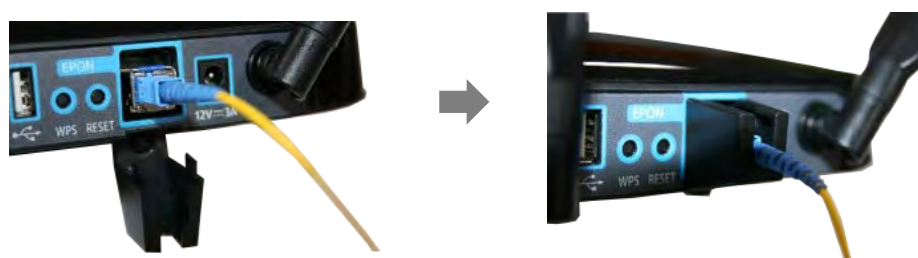
Step 2: Slide the 10G SFP+ optic module into the socket on the ONU.



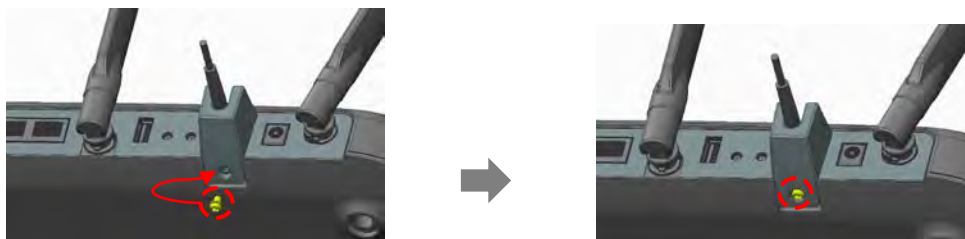
Step 3: Connect the SC/APC connector on one end of a single-mode optical fiber into the optical terminal of the optical outlet (it could be a splitter or PIM card of an OLT) and the other end into the PON port of C1004W by pushing it until a click sound is heard.



Step 4: Lift the hinged cover back into its position with care.



- Step 5:** Fix the hinged cover by fastening the enclosed screw at the screw hole at the bottom using 6-lobe star wrench (a special tool which is not enclosed).



- Step 6:** Connect any LAN port of C1004W and a PC with an Ethernet cable which has RJ-45 plug head. Up to 4 PCs or its equivalent (e.g. IP phone) can be accommodated.



- Step 7:** Connect the rated power adaptor (12VDC 3A) to the power jack in the unit.



- Step 8:** Raise the antennas positioning for the best WiFi performance.



- Step 9:** Now you are ready to use.

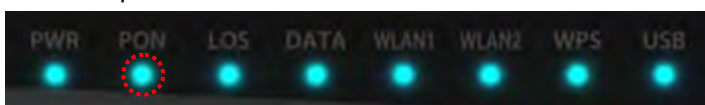
LED Indicator

The following steps can be referenced to see if the unit is in normal status when all the necessary connection for the unit is completed.

- Make sure that the POWER LED is ON.



- Make sure that the PON LED is ON in several seconds or minutes. If PON LED is red, the optical signal is very low, so please contact your service provider.



- If everything is installed properly, the user can see the DATA LED blink while Internet data is being sent or received.



- If you set the wireless configuration properly, the user can see the applicable wireless device WLAN LED blink while data is sent or received.



Web GUI configuration setting

Default configuration setting

When the installation of C1004W hardware is finished it is operable to get on internet access via wireline and wireless ports.

The uplink interface of 10G EPON is configured to operate as NAT mode as its default. Therefore once the uplink interface is properly connected all the LAN ports and wireless interface work out. In this case each LAN port will be assigned private address for the internal routing within C1004W.

If any changed mode of operation is required other than default configuration, web GUI configuration work will be needed. The actual modification will vary according to operator's requirement or service policy. An example of most frequently used configuration setting regarding VLAN assignment is presented later in this section.

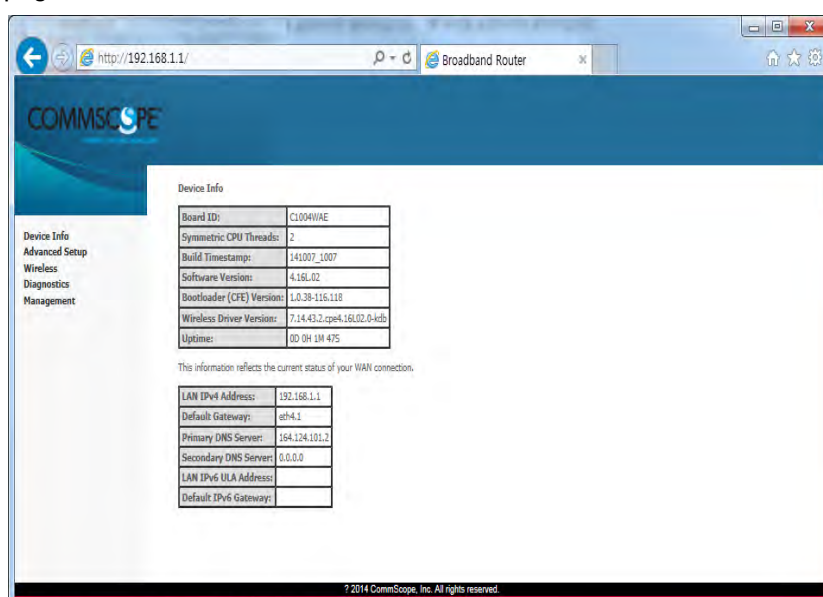
Web Login

In order to configure C1004W via Web GUI page, connect your PC to any port of C1004W service ports with the enclosed RJ-45/UTP cable. After connecting PC on a LAN port, type <http://192.168.1.1> in the URL window of your Web Browser.

C1004W provides 3 accounts as follows:

Account	Id / password	Usage
Administrator Login	admin / admin	For both changing and viewing the setting
Operator Login	support/support	Used when accessing the unit remotely
User Login	user / user	For viewing only

When you connect the unit via Web Browser, the following screen will show up as its starting page.





Note

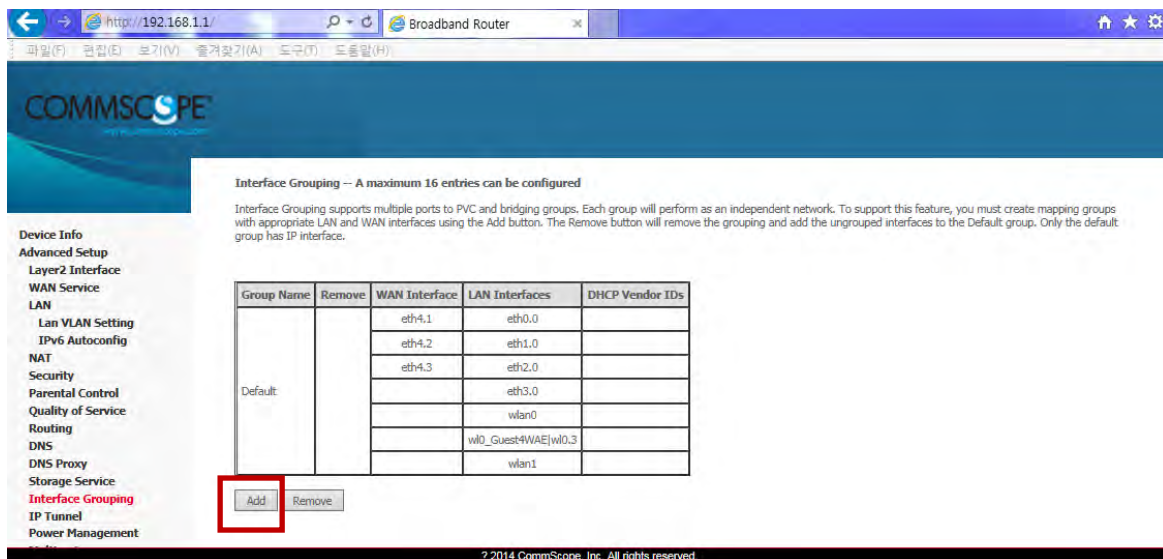
If it does not work, after pushing RESET button at the rear of system, then wait one or two minutes and try it again.

VLAN assignment

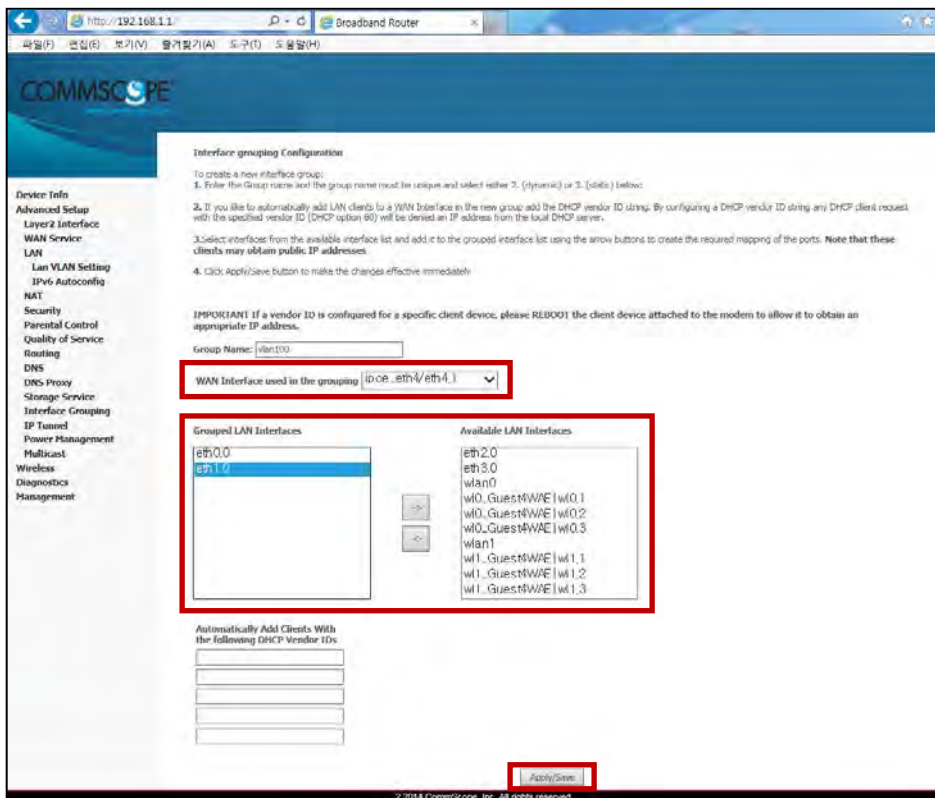
Go to the menu item in the left side of starting window.

- Select 'Advance setup' -> 'Wan Service'
- Configure interface and Vlan setup
- With respect to 'WAN Service Configuration'
 - IP over Ethernet is for NAT mode
 - Bridging is for Bridge mode
- Assign the COS value and VLAN ID to be used

- Select 'Advance setup' -> 'Interface Grouping'
- Click 'Add' button.



- Select an entry among 'WAN Interface used in the grouping' menu.
- Move as many interfaces as wish from the right box to left. Then the moved interface will be assigned to the newly created VLAN Id.



In the example two physical interfaces of port 1 and port 2 are moved to 'Group LAN Interface'.

- Check out to see if VLAN 100 is associated with port 1 and port 2 in the table shown below. (you may again select 'Advance setup' -> 'Interface Grouping')

Interface Grouping -- A maximum 16 entries can be configured

Interface Grouping supports multiple ports to PVC and bridging groups. Each group will perform as an independent network. To support this feature, you must create mapping groups with appropriate LAN and WAN interfaces using the Add button. The Remove button will remove the grouping and add the ungrouped interfaces to the Default group. Only the default group has IP interface.

Group Name	Remove	WAN Interface	LAN Interfaces	DHCP Vendor IDs
Default	☐	eth4.2	eth2.0	
		eth4.3	eth3.0	
			wlan0	
			wlan1	
vlan100	☐	eth4.1	eth0.0	
			eth1.0	

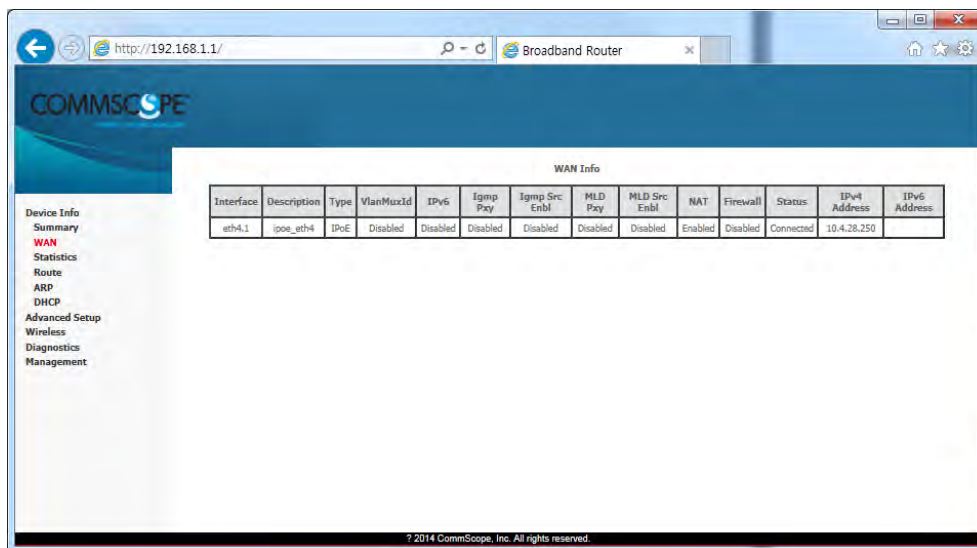
Add Remove

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Device Info

Device Info shows the basic information about ONU. The information to be able to search is as follows:

- WAN status and IP Information

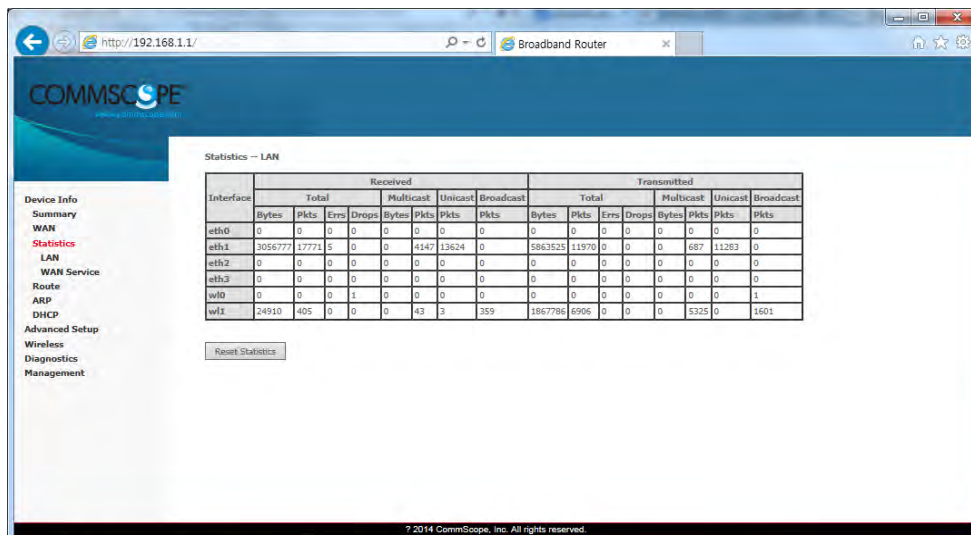


The screenshot shows the CommScope Broadband Router web interface. The left sidebar contains a menu with options: Device Info, Summary, WAN, Statistics, Route, ARP, DHCP, Advanced Setup, Wireless, Diagnostics, and Management. The main content area is titled "WAN Info" and displays a table with the following data:

Interface	Description	Type	VlanMuxId	IPv6	Icmp Pxy	Icmp Src Enbl	MLD Pxy	MLD Src Enbl	NAT	Firewall	Status	IPv4 Address	IPv6 Address
eth4.1	pos_eth4	IPv4	Disabled	Disabled	Disabled	Disabled	Disabled	Disabled	Enabled	Disabled	Connected	10.4.28.250	

At the bottom of the page, it says "© 2014 CommScope, Inc. All rights reserved."

- Statistics information about WAN / LAN / WLAN

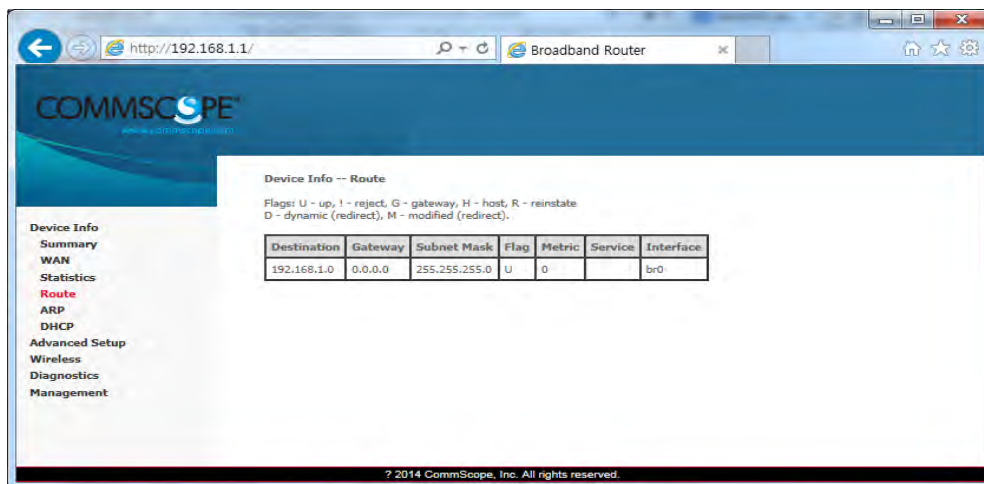


The screenshot shows the CommScope Broadband Router web interface with the "Statistics - LAN" section selected. The left sidebar is the same as in the previous screenshot. The main content area displays a table with the following data:

Interface	Received								Transmitted							
	Total				Multicast				Unicast				Broadcast			
	Bytes	Pkts	Errs	Drops	Bytes	Pkts	Pkts	Pkts	Bytes	Pkts	Errs	Drops	Bytes	Pkts	Pkts	Pkts
eth0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
eth1	3056777	17771	5	0	0	4147	13624	0	5863525	11970	0	0	687	11263	0	0
eth2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
eth3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
wl0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
wl1	24910	405	0	0	0	43	3	359	1867786	6906	0	0	5325	0	1601	0

Below the table is a "Reset Statistics" button. At the bottom of the page, it says "© 2014 CommScope, Inc. All rights reserved."

- Route Information

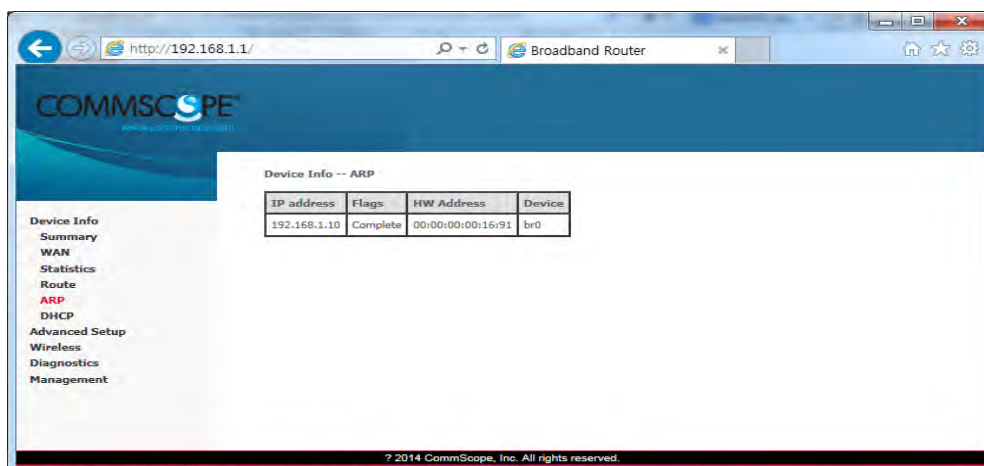


The screenshot shows the CommScope Broadband Router web interface. The browser address bar displays 'http://192.168.1.1/'. The page title is 'Broadband Router'. The CommScope logo is at the top left. A sidebar on the left contains a menu with the following items: Device Info, Summary, WAN, Statistics, Route (highlighted in red), ARP, DHCP, Advanced Setup, Wireless, Diagnostics, and Management. The main content area is titled 'Device Info -- Route'. Below the title, there is a legend: 'Flags: U - up, I - reject, G - gateway, H - host, R - reinstall, D - dynamic (redirect), M - modified (redirect)'. A table follows with the following data:

Destination	Gateway	Subnet Mask	Flag	Metric	Service	Interface
192.168.1.0	0.0.0.0	255.255.255.0	U	0		br0

At the bottom of the page, it says '? 2014 CommScope, Inc. All rights reserved.'

- ARP Information

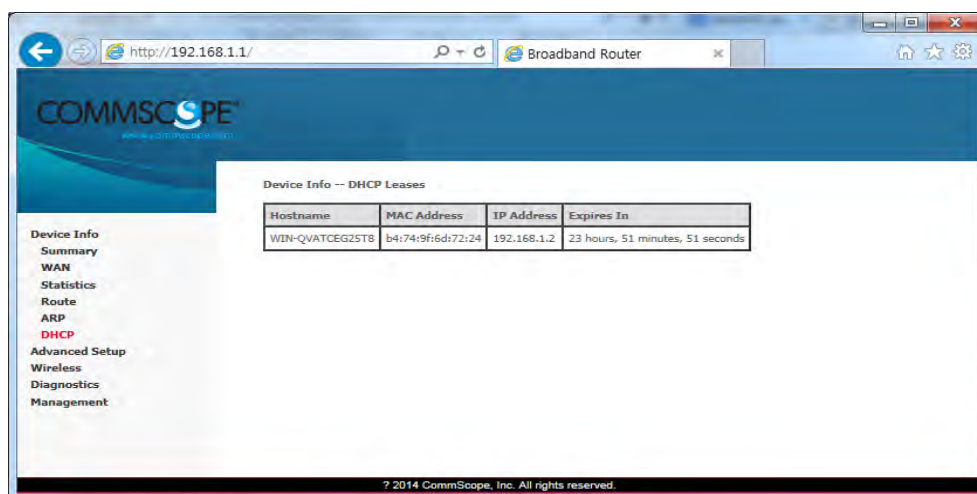


The screenshot shows the CommScope Broadband Router web interface. The browser address bar displays 'http://192.168.1.1/'. The page title is 'Broadband Router'. The CommScope logo is at the top left. A sidebar on the left contains a menu with the following items: Device Info, Summary, WAN, Statistics, Route, ARP (highlighted in red), DHCP, Advanced Setup, Wireless, Diagnostics, and Management. The main content area is titled 'Device Info -- ARP'. A table follows with the following data:

IP address	Flags	HW Address	Device
192.168.1.10	Complete	00:00:00:00:16:91	br0

At the bottom of the page, it says '? 2014 CommScope, Inc. All rights reserved.'

- DHCP Information assigned with LAN / WLAN



The screenshot shows the CommScope Broadband Router web interface. The browser address bar displays 'http://192.168.1.1/'. The page title is 'Broadband Router'. The CommScope logo is at the top left. A sidebar on the left contains a menu with the following items: Device Info, Summary, WAN, Statistics, Route, ARP, DHCP (highlighted in red), Advanced Setup, Wireless, Diagnostics, and Management. The main content area is titled 'Device Info -- DHCP Leases'. A table follows with the following data:

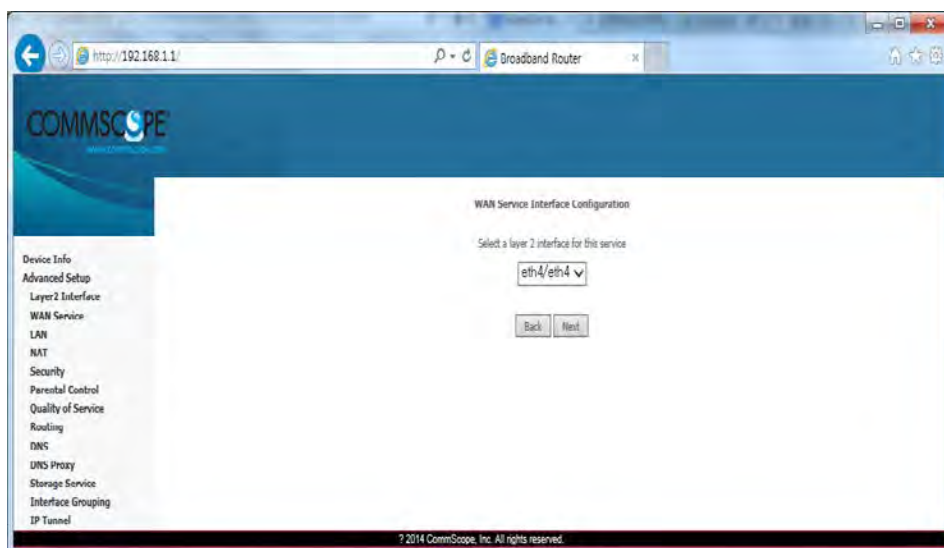
Hostname	MAC Address	IP Address	Expires In
WIN-QVATCEG2ST8	b4:74:9f:6d:72:24	192.168.1.2	23 hours, 51 minutes, 51 seconds

At the bottom of the page, it says '? 2014 CommScope, Inc. All rights reserved.'

Advanced Setup / WAN Service

You can create the Interface for various WAN service based on the assigned WAN Physical Port.

To create WAN Service Interface, click [Add] button on [WAN Service Setup Display].



If you click [Next] button, you can assign VLAN ID about 802.1Q and a priority about WAN service type and 802.1P.

WAN Service Configuration

Select WAN service type:

☐ PPP over Ethernet (PPPoE)

☒ IP over Ethernet

☐ Bridging

Enter Service Description:

For tagged service, enter valid 802.1P Priority and 802.1Q VLAN ID.
For untagged service, set -1 to both 802.1P Priority and 802.1Q VLAN ID.

Enter 802.1P Priority [0-7]:

Enter 802.1Q VLAN ID [0-4094]:

Select VLAN TPID:

Internet Protocol Selection:

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Note

In case of assigning as Untagged Service from WAN Service Interface, you must set it as '-1'.

If you click [Next] button, you can set IP about WAN Service Interface. When the system needs to obtain an IP address automatically from DHCP server connected with WAN network, select [Obtain an IP address automatically] radio button.

When the system uses the static IP address on WAN Service Interface, select [Use the following Static IP address]. Then set Static IP Address, Subnet Mask and Gateway IP Address.

WAN IP Settings

Enter information provided to you by your ISP to configure the WAN IP settings.
Notice: If "Obtain an IP address automatically" is chosen, DHCP will be enabled for PVC in IPoE mode.
If "Use the following Static IP address" is chosen, enter the WAN IP address, subnet mask and interface gateway.

☒ Obtain an IP address automatically

Option 60 Vendor ID: (8 hexadecimal digits)

Option 61 IAID: (hexadecimal digit)

Option 61 DUID: (hexadecimal digit)

Option 125: ☒ Disable ☐ Enable

☐ Use the following Static IP address:

WAN IP Address:

WAN Subnet Mask:

WAN gateway IP Address:

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If you click [Next] button, you can enable NAT and Multicast function on the WAN service Interface.

Network Address Translation Settings

Network Address Translation (NAT) allows you to share one Wide Area Network (WAN) IP address for multiple computers on your Local Area Network (LAN).

☒ Enable NAT

☐ Enable Fullcone NAT

☐ Enable Firewall

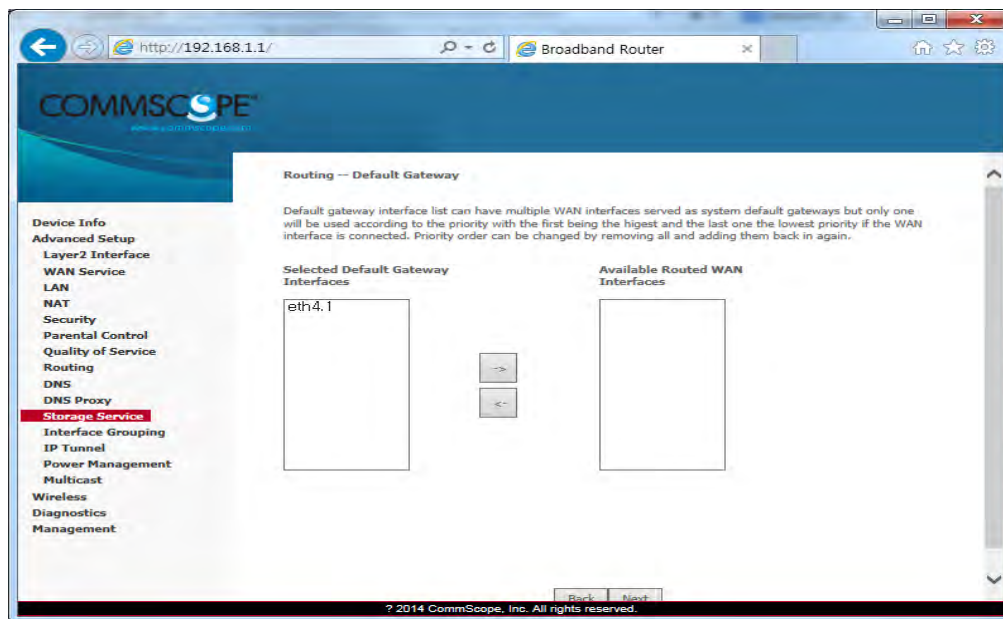
IGMP Multicast

☐ Enable IGMP Multicast Proxy

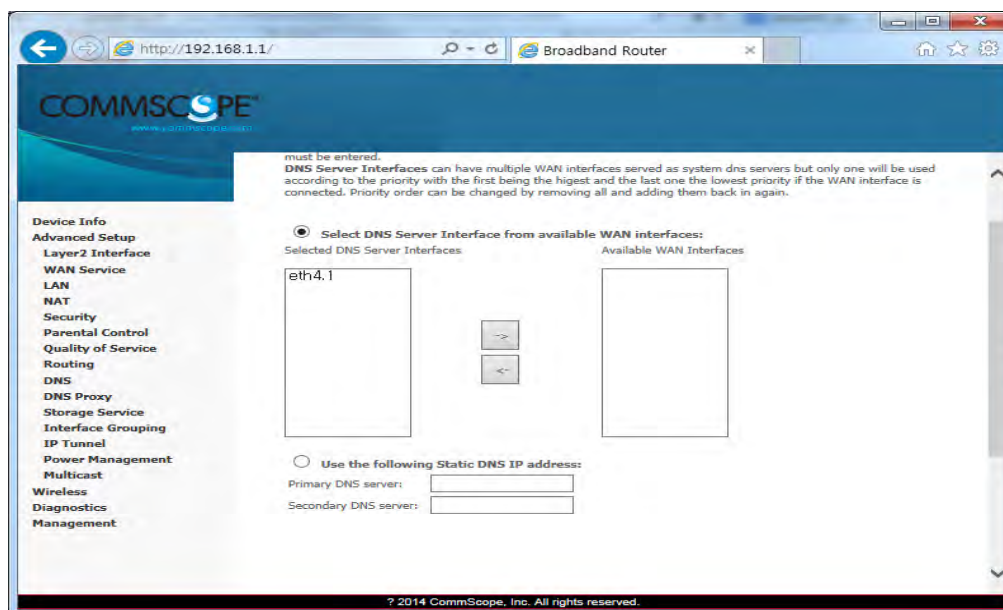
☐ Enable IGMP Multicast Source

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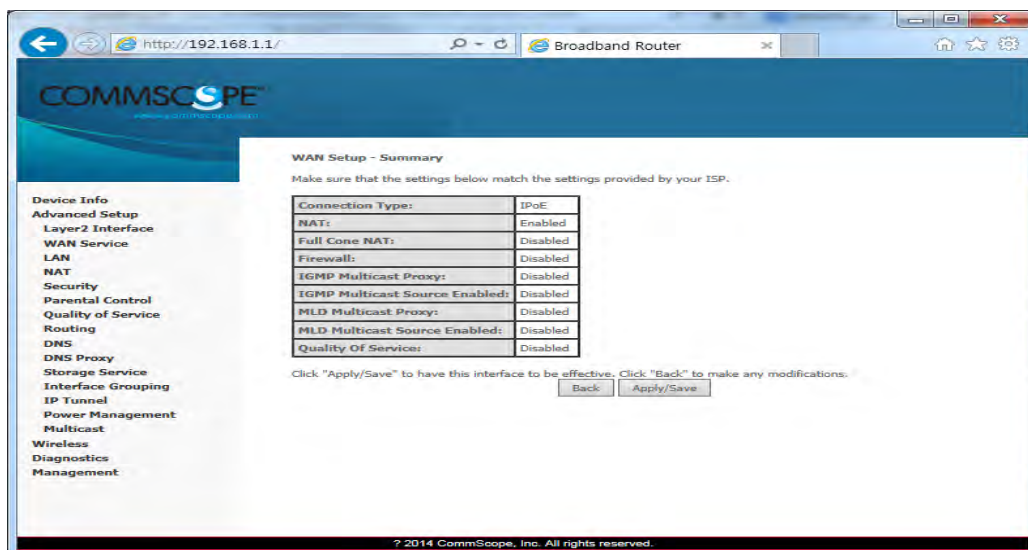
If you click [Next] button, you can assign Default Gateway about WAN Service Interface.



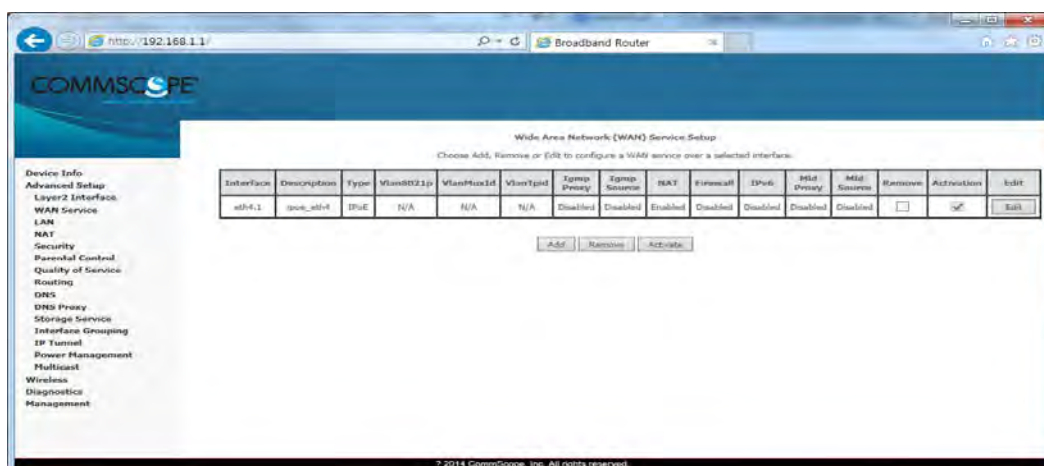
If you click [Next] button, you can set DNS Server about WAN Service Interface.



When the above procedure is done, it shows the information about WAN Service to be applied finally.



When you click [Apply/Save] button, the information of the set WAN Service Interface is listed and it is done about WAN Service Interface.



Note

If you change 802.1P, 802.1Q on the created WAN Service Interface, you must register again after deleting WAN Service.



Note

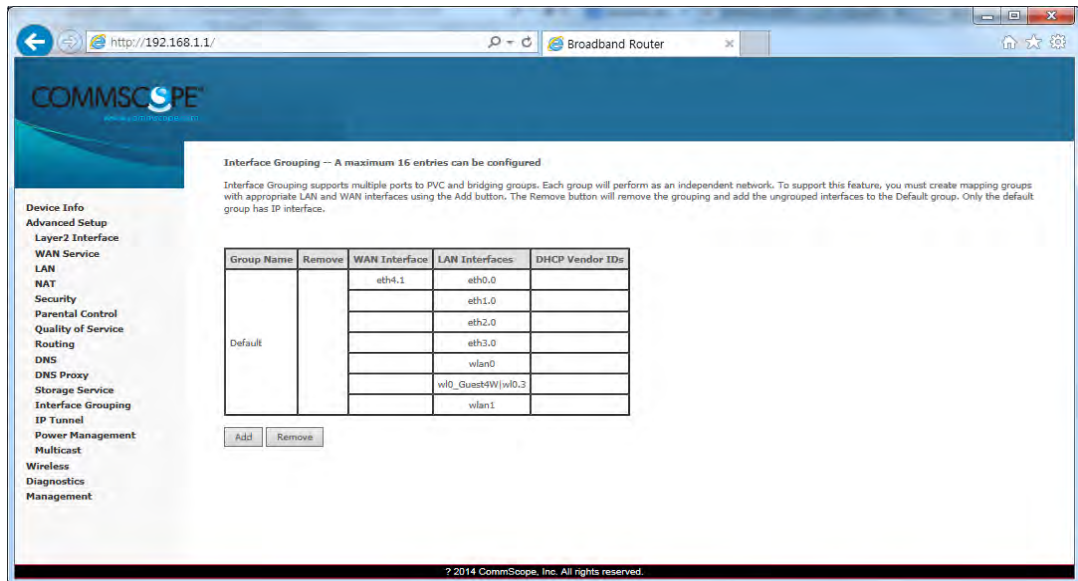
In case that you assign 802.1Q VLAN-ID individually on the several WAN Service and do grouping LAN Interfaces, refer to Interface Grouping setting on Advanced Setup Section.

Advanced Setup / Interface Grouping

By creating several groups, you can manage several LAN Interfaces with Interface grouping provided from Advanced setup.

By default, one default group includes all LAN Interfaces.

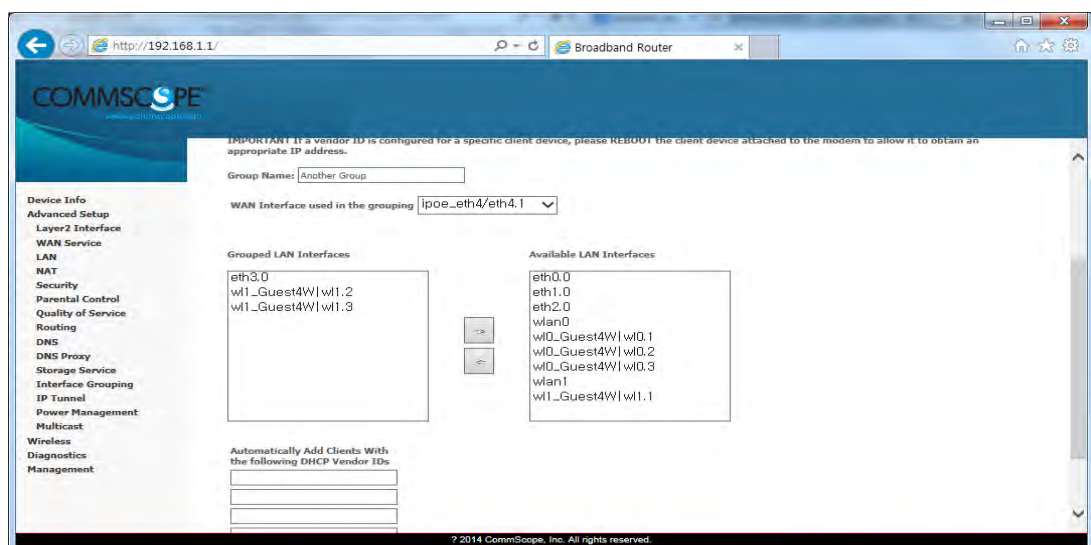
To create Interface Group, click [Add] button on [Interface Group Display]



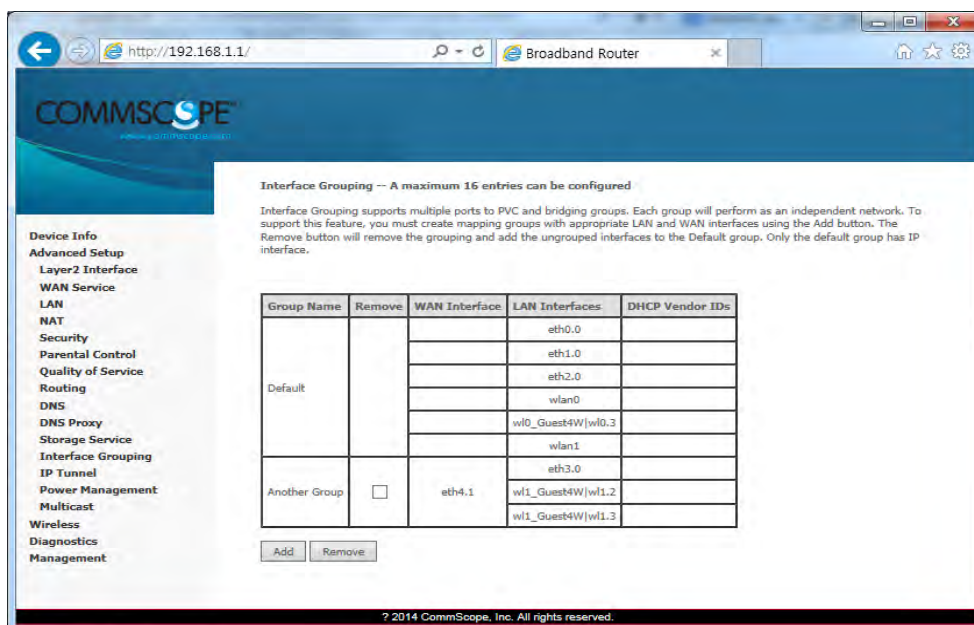
Set Group Name with easy name to acknowledge. To set WAN Interface for using to create Group, select list box. After selecting WAN Interface, select LAN Interface for including to group to create.

Select LAN Interface to move on the [Available LAN Interfaces] BOX.

If you click arrow button, it moves to the [Grouped LAN Interfaces] BOX.



After the creating Group by clicking [Apply/Save] button, the Group is created like following screen.



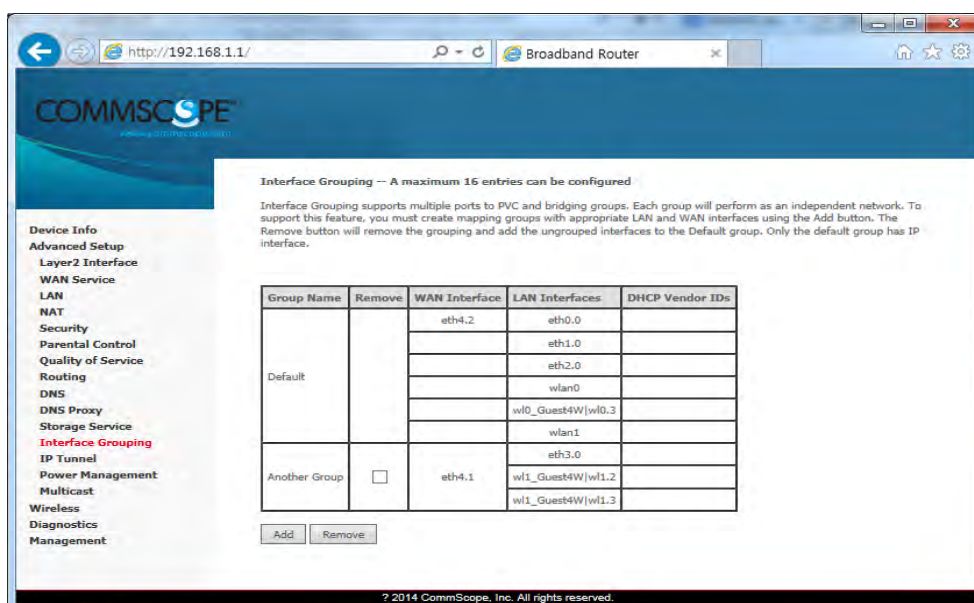
Note

To process incoming traffic after applying VLAN ID per each Group, one WAN interface per Group system is applied. Thus, to set like the following screen, you must add WAN interface before creating Group.



Note

To know the way of adding WAN Interface, refer to [Advanced Setup / WAN Service].



Wireless / Basic

You can set the basic Wireless configuration. It provides 4 Wireless interfaces and you can set each WLAN activation and Scanning activation from network list. It is possible to set SSID and a nation for wireless channel.

The screenshot shows the CommScope Broadband Router web interface. The browser address bar displays 'http://192.168.1.1/' and the page title is 'Broadband Router'. The CommScope logo is visible in the top left corner of the interface.

On the left sidebar, the navigation menu includes: Device Info, Advanced Setup, **Wireless**, vl0, vl1, Diagnostics, and Management.

The main content area is titled 'Wireless -- Basic'. It contains the following configuration options:

- ☒ Enable Wireless
- ☐ Hide Access Point
- ☐ Clients Isolation
- ☐ Disable WMM Advertise
- ☐ Enable Wireless Multicast Forwarding (WMF)

Below these options, the following fields are present:

- SSID:
- BSSID:
- Country:
- Country RegRev:
- Max Clients:

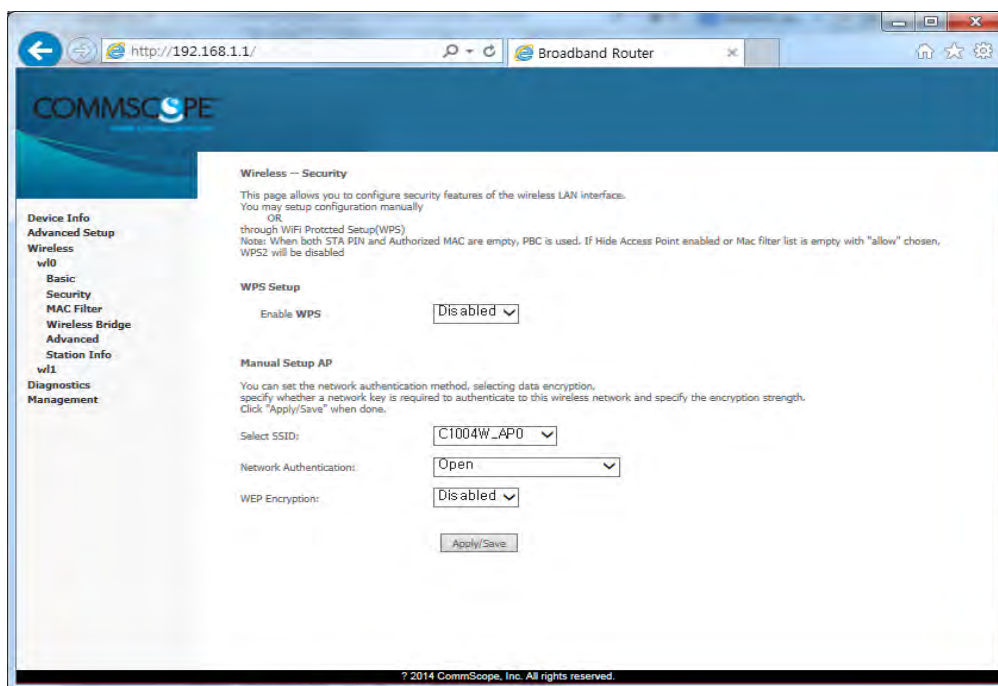
Below the main configuration area, there is a section titled 'Wireless - Guest/Virtual Access Points' containing a table:

Enabled	SSID	Hidden	Isolate Clients	Disable WMM Advertise	Enable WMF	Max Clients	BSSID
☐	C1004W_AP0.1	☐	☐	☐	☐	16	N/A
☐	C1004W_AP0.2	☐	☐	☐	☐	16	N/A
☐	C1004W_AP0.3	☐	☐	☐	☐	16	N/A

At the bottom of the page, there is an 'Apply/Save' button and a footer that reads: '? 2014 CommScope, Inc. All rights reserved.'

Wireless / Security

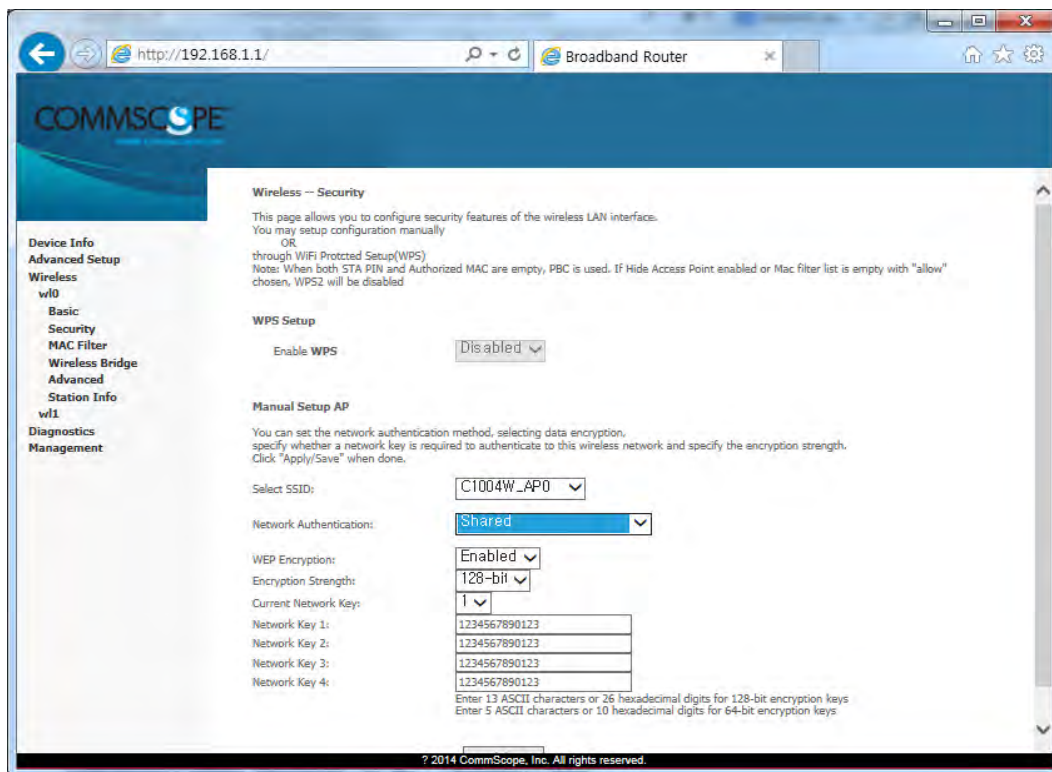
You can set the security of wireless. It is possible to apply the specific network authentication per each SSID. It is also possible to set the key encryption for authentication or not.



Network authentication Way

Authentication way	Description
Open	No Encryption.
Shared	WEP 64Bit : 5 or 10 numbers security key 128Bit : 13 or 26 security key
802.1X	Uses Radius Server / WEP key
WPA2	Advanced WPA
WPA2-PSK	WPA / WAPI passphrase Key
Mixed WPA2 /WPA	Mixed WPA and WPA2
Mixed WPA2 / WPA-PSK	Mixed WPA-PSK and WPA2-PSK

To apply “Shared” that is the most basic Network Authentication way, Select “Shared” on the Authentication Select Box.



Note

When you select each Network Authentication way, the screen shows the different setting options.



Note

You can select Current Network Key among 1~4. We recommend changing a new Network key value instead of default value.

Wireless / Advanced

It is possible to set the advanced setting about Wireless LAN Interface. You can set the specific channel to want to run. You can set the transmission speed according to bandwidth and Beacon interval for AP.

Wireless - Advanced

This page allows you to configure advanced features of the wireless LAN interface. You can select a particular channel on which to operate, force the transmission rate to a particular speed, set the fragmentation threshold, set the RTS threshold, set the wakeup interval for clients in power-save mode, set the beacon interval for the access point, set XPress mode and set whether short or long preambles are used. Click "Apply/Save" to configure the advanced wireless options.

Band:	5GHz	Current: 36
Channel:	36	
Auto Channel Timer(min)	15	
802.11n/EWC:	Auto	
Bandwidth:	20MHz in 2.4G Band and 40MHz in 5G Band	Current: 20MHz
Control Sideband:	Lower	Current: N/A
802.11n Rate:	Auto	
802.11n Protection:	Auto	
Support 802.11n Client Only:	Off	
RIFS Advertisement:	Auto	
OBSS Coexistence:	Enable	
RX Chain Power Save:	Enable	Power Save status: Low Power
RX Chain Power Save Quiet Time:	10	
RX Chain Power Save PPS:	10	
54g™ Rate:	6 Mbps	
Multicast Rate:	Auto	
Basic Rate:	Default	
Fragmentation Threshold:	2346	
RTS Threshold:	2347	
DTIM Interval:	1	
Beacon Interval:	100	
Global Max Clients:	16	

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Note You can use 2.4GHZ Band in w11, 5GHZ Band in w10.

Troubleshooting

Possible troubles and its quick remedy:

Symptom 1: "Can not access to the Internet" -

- Step 1** Make sure that the ONU is turned on. Once you turn on the power, the POWER LED on the front panel of C1004W should be lit. If the POWER LED is not lit, please check if the power cable is connected to the power inlet of ONU properly. If the problem persists, please call Service Provider.
- Step 2** Make sure that the optical line is connected properly. Once the optic fiber is connected, the PON LED on the front panel of C1004W should be lit on within few seconds. If the PON LED blinks, call Service Provider to check the optical line connection.
- Step 3** Make sure that the LAN cable is connected properly. Once the LAN cable is connected and user PC is turned on, LAN LED should be lit on. If the LED is not lit, check the cable connection.
- Step 4** Make sure that network setting of your PC is correct. Select "set to 'Obtain IP address automatically'".

Symptom 2: "All the cables are connected, but still can not obtain IP address"

- Step 1** Look for the Network Neighborhood or My Network Places icon in your PC. If it is not there, try your Start Menu.
- Step 2** Right-click the Network Neighborhood/My Network Places icon. A drop-down menu will appear.
- Step 3** Choose the "Properties" option, which is generally found at the bottom of the menu.
- Step 4** Look for an icon named "Local Area Connection". The icon looks like a pair of computer connected by a link. Double-click this icon.
- Step 5** Click the "General" tab, if it is not already selected. You will see a list of protocols to choose.
- Step 6** Scroll down and choose Internet Protocol (TCP/IP), and then click the button that is labeled "Properties".
- Step 7** Again, click the "General" tab, it is not already selected. You will see two choices:
 - 1) "Obtain an IP address Automatically"
 - 2) "Use the following IP address..."
- Step 8** Choose option "1)"
- Step 9** Click OK

Symptom 3: “WiFi access to the unit is not available”

Step 1 Make sure DPoE provisioning has been finished normally by checking out PON LED.

Step 2 Power cycle the unit to reboot.

Symptom 4: “DPoE Provisioning for the unit is not finished properly, i.e. the PON LED on C1004W does not light up or blink”

Step 1 Connect to the console port or management port of the associated OLT.

Step 2 Execute the following CLIs to diagnosis the status of the C1004W.

CLI	Target action
show cable modem	To see if the unit is on-line
show cable modem mac_address verbose	To retrieve the DDML information which proves its integrity
show cable modem cpe	To check out CPE information (e.g. IP address, MAC address)
show epon onu	To see if the unit is on-line
show 10gpon olt ddmi slot/port mac_address	To check out the strength of the RX signal from C1004W
show slot	To check out the active status of PIM slot
show epon olt	To get the MAC address of 10G PIM card
show cable firmware	To get the cable firmware information (Xenu)
show logging cable	To see the DML log to find the reason why provisioning hasn't worked out right
show bundle	To see the DHCP server configuration whether it works out properly
tcpdump interface vlan4001	To look into the packets that flows through the default bundle

Step 3 If the diagnosis result of step 2 says that C1004W has got any fault at its uplink interface(i.e. Xenu), then reboot the uplink interface part of the unit.

Use the CLI of 'clear cable modem all reset' to reboot the unit.

Specification

Item	Description	
Standard	IEEE 802.1q	
System Architecture	Type	Desktop
	Size (mm)	288.50(W) x 186.60 (D) x 150.00(H) (incl. antenna)
	Weight	820g
Power	Input: 100 ~ 220VAC, 50~60Hz	
	Output: 12VDC, 3A (The input terminal that a power adaptor is connected to)	
	Consumption: Max 34W	
Available Interface	PON interface	10/10, 10/1, 2/1, 1/1 Gbps supported
	User interface	Four 10/100/1000base-Tx, MDI/MDIX Auto-Negotiation
	Wi-Fi Interface	802.11b/g/n/ac compliant
Environmental Condition	Operating Temperature/humidity: 0°C ~ 50°C	
	Storage Temperature/humidity: -20°C ~ 60°C	
	In compliance with EMI/EMC Class	
Function and Performance	EPON	IEEE802.3ah MPCP, OAM compliant
		802.1Q VLAN
		Per LLID Filtering/Classification
		Supports up to four Logical Link IDs (LLID)
		AES-128 Downstream decryption
		Dying Gasp
		Automatic Plug and Play function for WAN PON Port (Discovery and Authorization)
	L2 Features	IEEE802.1Q VLAN(Tagged, untagged by Port) for WAN Port
		Maximum 16 active VLAN
		VLAN ID range of 1~4094
		Support up to 64 MAC Address
	L3 Features	DHCP Client/Server
		In NAT mode, IP will be assigned from the IP Pool of the device, and in Bridge mode, the IP will be assigned from the DHCP server in the network
		Support DNS/DNS Proxy
	Multicasting	IGMP v1/v2/v3
		IGMP proxy/snooping for IPTV service
		IGMP Immediate Leave on/off
		32 Multicast Group entry
	NAT/NAPT	Multicast throughput 1Gbps
		Selectable between NAT mode and bridge mode
		Dynamic/static private IP in NAT mode
		Port Forwarding and DMZ Host function
	QoS	Maximum 8K bi-directional concurrent sessions(full-wire-speed)
		Rate limiting (±10%)
		QoS for both upstream and downstream
	Security & filtering	Rate limiting
		Broadcast storm control
		MAC filtering
	WiFi	IP filtering
		IEEE 802.11b/g/n/ac
		Automatic Fallback

		Manual or automatic selectable channel
		Mixed use of 802.11b, 802.11g, 802.11n, 802.11ac
		Support 11n/11ac dual current mode
		Encryption (Keys such as Hex, ASCII, special character should be supported)
		64/128bit Static WEP Key
		WPA/WPA2/WPA-PSK/ WPA2-PSK
		4 or more Virtual AP (Multi SSID), and each SSID supports different encryption
		SSID should support alphabet, numeric, special character
		Hidden SSID
		Support WMM(Wireless LAN QoS function: IEEE 802.11e)
		IEEE 802.1x
		EAP MD5/EAP TTLS/PEAP
		RADIUS Client function
		Support TR-069
		WDS
		WMF
		Client isolation
		Support WPS with hardware PUSH button and 'configured' mode.
	O&M	System or module LED.
		Memory structure that allows to save or modify Configuration File
		Memory should keep the contents of the memory even when power supply is stopped.
		Local and remote Firmware Upgrade (The existing Image should be kept when upgrade fails).
		Normal session for system management even when CPU overload
		Remote Management
		Remote access through Telnet(RFC 854, 855)
		CPE Management Server
		Device Reset
		Setting and changing Config
		Firmware download only through Web Server by TR069
		Time sync through NTP Server
		Device status and performance management
		Support storage function and SAMBA by USB
	IPv6	Support Dualstack
		Support DHCP Server and IPv6 addressing type: SLAAC (Stateless Address)
		Using DHCP Server and IPv6 addressing type: Stateful
		Support ICMPv6
		Support IPv6 Filtering
System Operation and Maintenance	Link Measurement and diagnostic	Support OAM Remote Loop back test. OLT detects EPON Signal Strength to check the status of ONU signal received/transmitted based on
Physical Characteristics	Optical characteristics	Transmission distance: 10Km or 20Km(Optional)
		Transmission quality: BER 10-10 or lower
	Dielectric resistance	Transmission level : -1~4dBm 100Mohm or higher (based on DC 500V)

Technical Standard and Protocol	IEEE Std 802.3™-2002 Carrier sense multiple access with collision detection (CSMA/CD) access method and physical layer specifications
	IEEE Std 802.11n: Wireless Local Area Networks
	IEEE Std 802.1D, 1998 Edition Media Access Control (MAC) Bridges
	IEEE Std 802.1Q, 2003 Edition Virtual Bridged Local Area Networks
	IEEE Std 802.1w-2001 Media Access Control (MAC) Bridges — Amendment 2: Rapid Reconfiguration
	IEEE Std 802.1s™-2002 Virtual Bridged Local Area Networks— Amendment 3: Multiple Spanning Trees
	IEEE Std 802.1X-2001 Port-Based Network Access Control
	IEEE Std 802.3ah.-2004 Carrier Sense Multiple Access with Collision Detection (CSMA/CD) Access Method and Physical Layer Specifications Amendment:
	Media Access Control Parameters, Physical Layers, and Management Parameters for Subscriber Access Networks
	IEEE P802.1ad/D6.0 Draft Standard for Local and Metropolitan Area Networks—Virtual

FCC STATEMENTS

Caution : Any changes or modifications in construction of this device which are not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This device complies with part 15 of the 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.

Note : This equipment has been tested and found to comply with the limits 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 equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with 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 equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment 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 equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

The antenna(s) used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter. End-Users must be provided with transmitter operation conditions for satisfying RF exposure compliance.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment. Indoor use only.

Manual Information to the End User

The integrator has to be aware not to provide information to the end user regarding how to install or remove this AP in the user's manual of the end product which integrates this module.

The end user manual shall include all required regulatory information/warning as show in this manual.

Professional installation instruction

1. Installation personal

This product is designed for specific application and needs to be installed by a qualified personal who has RF and related rule knowledge. The general user shall not attempt to install or change the setting.

2. Installation location

The product shall be installed at a location where the radiating antenna can be kept 20cm from nearby person in normal operation condition to meet regulatory RF exposure requirement.

3. External antenna

Use only the antennas which have been approved by the applicant. The non-approved antenna(s) may produce unwanted spurious or excessive RF transmitting power which may lead to the violation of FCC/IC limit and is prohibited.

4. Installation procedure

Please refer to professional's manual for the detail.

5. Warning

Please carefully select the installation position and make sure that the final output power does not exceed the limit set force in relevant rules. The violation of the rule could lead to serious federal penalty.