Quality of Service (QoS) Setup Guide

Modem Router - **NF4V**

NF4V and Quality of Service (QoS)

The following Quality of Service (QoS) settings offer a basic setup example, setting up 2 devices connecting to an NF4V router, one with the highest priority QoS priority data traffic and the other with the lowest priority QoS priority data traffic flow. All other data packet traffic through the router assumes a default best effort setting.

Quality of Service refers to the reservation of bandwidth resources on the NF4V router to provide different priorities to different applications, users, or data flows, or to guarantee a certain level of performance to a data flow.

In this implementation Quality of Service employs DSCP – Differentiated Services Code Point – a computer networking architecture that specifies a simple, scalable and coarse-grained mechanism for classifying, managing network traffic.

This example guide sets up QoS with two devices (PC and laptop) connecting via ethernet cable to an NF4V router. One device (PC) is assigned high priority traffic while the other device (laptop) is assigned a low priority. Before Quality of Service can be implemented the first step involves reserving an IP address for each device linking the MAC address of each device to each IP address.

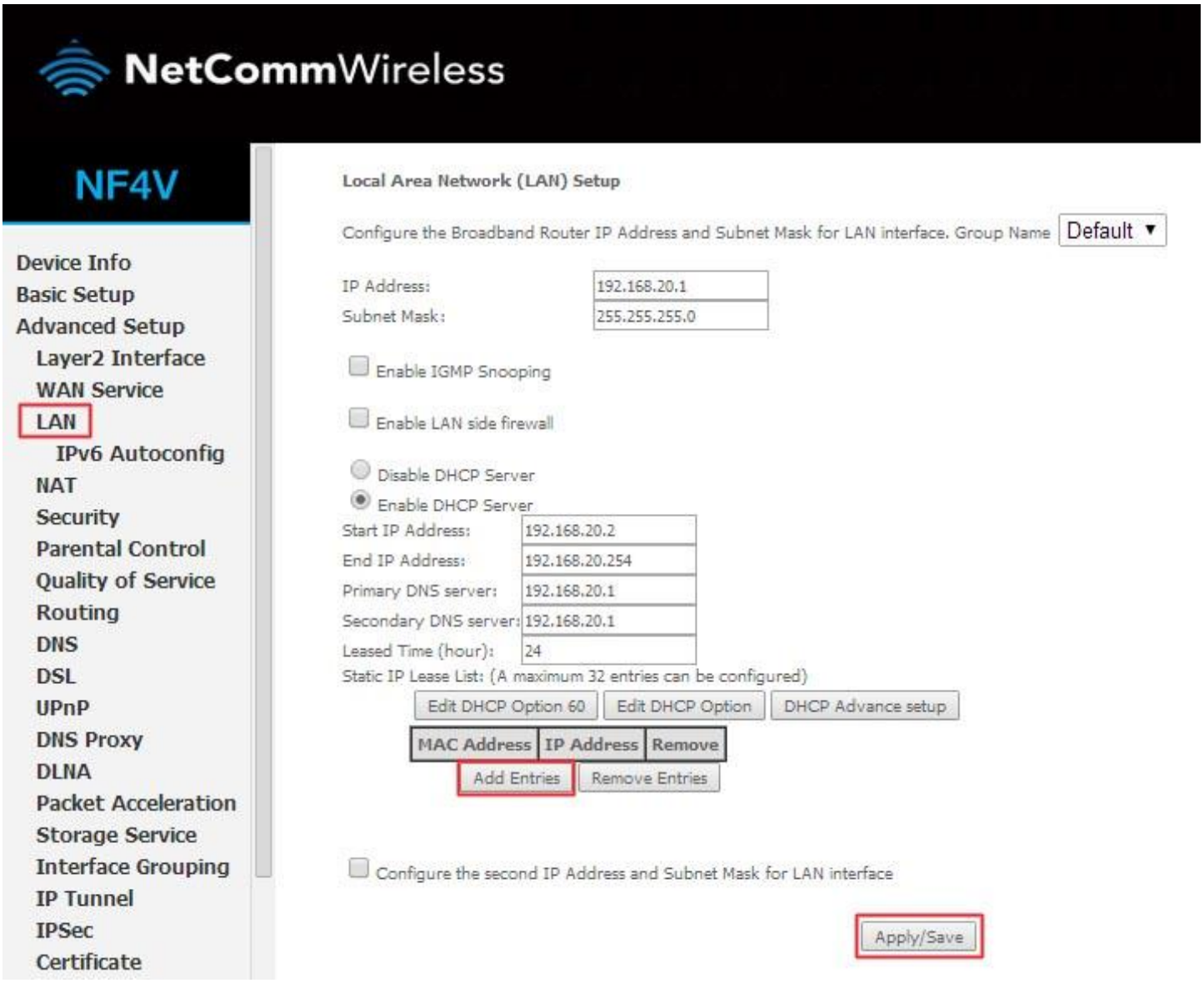
Quality of Service (QoS) Setup: Part 1 Reserve IP addresses

It is necessary to reserve an IP address for a device that is connecting to the NF4V router so that the QoS settings can manage each device and set data packet traffic priority by MAC and IP address.

LOGGING IN TO THE WEB INTERFACE

1. Open a web browser (such as Internet Explorer, Google Chrome or Firefox), type **http://192.168.20.1** into the address bar and press **enter**.
2. At the login screen, type **admin** into both the Username and the Password fields and click **OK**.

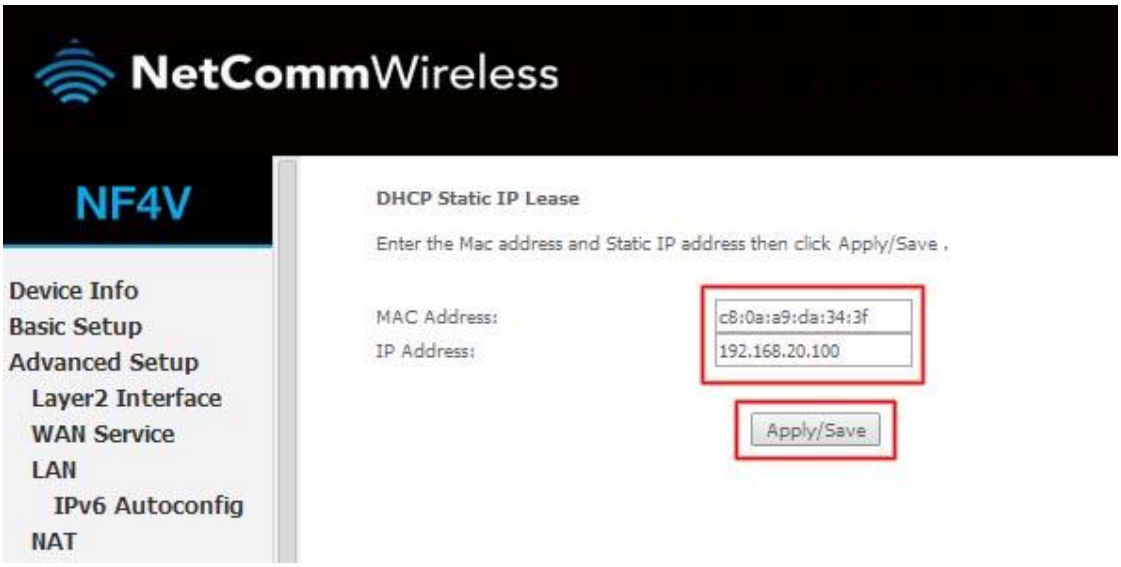
3. Click on the **Advanced** menu at the left of the page and then click on **LAN** option.



4. Click the **Add Entries** button.

5. Enter the MAC address of the computer/device you are connecting to the router.
   The MAC address is a 12 character set of numbers and letters (A-F), with every 2 characters separated by a colon.

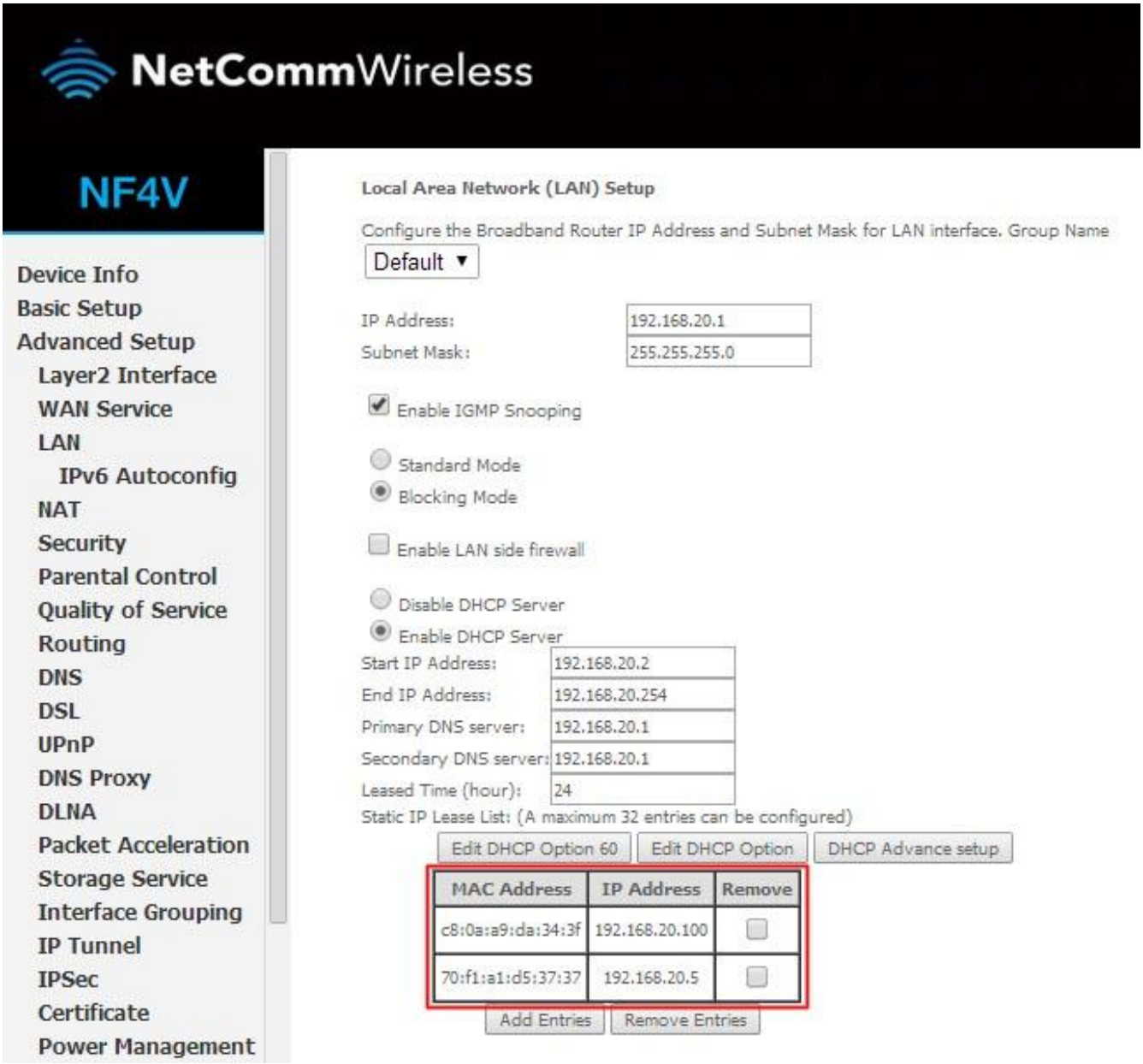
6. Enter the IP address of the computer/device. This is the local address in the range of 192.168.20.x where x = 2 to 254.



(the end of this page there is a description of how to find the Mac Address and IP Address)

7. Click the **Apply/Save** button.

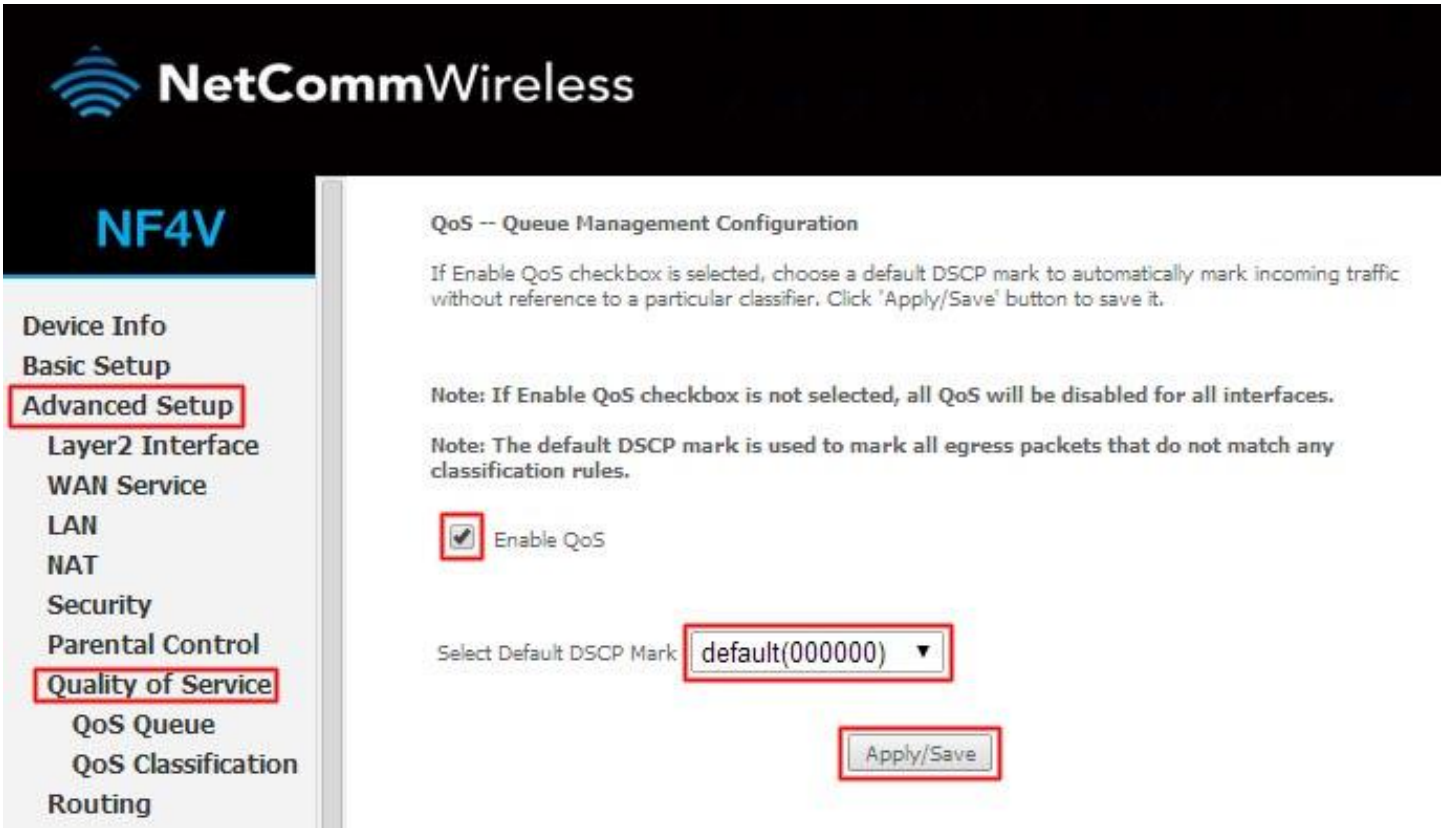
8. Complete steps 4 through 7 for each device connected to the NF4V router.
   Each entry will be listed in the Static IP Lease List as shown below.



Quality of Service (QoS) Setup: Part 2 QoS Configuration Settings

The following guide shows how to setup 2 devices to an NF4V router, one with high priority QoS,
one with low priority QoS.

9. Click on the **Advanced** menu at the left of the page and then click on **Quality of Service** option.



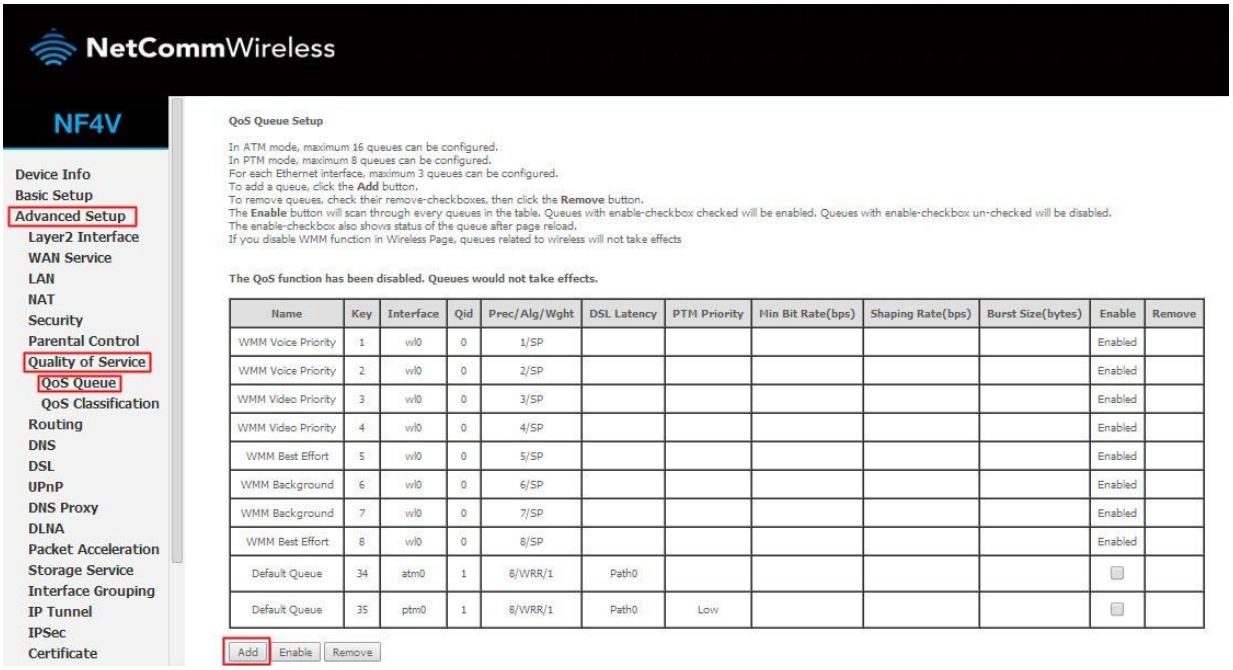
10. Check the "**Enable QoS**" checkbox.

11. Select the **Default DSCP Mark** as **default(000000).**

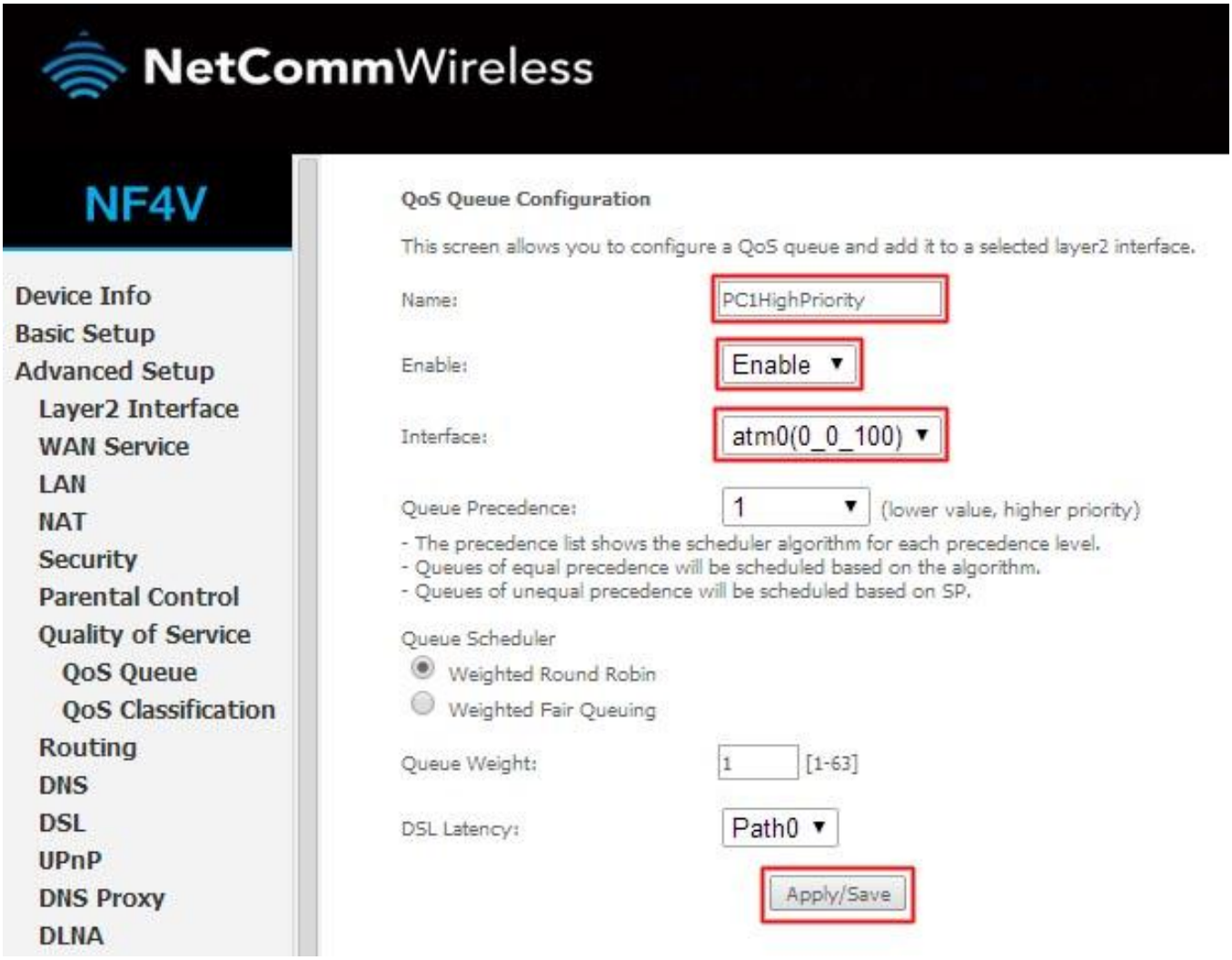
12. Click the **Apply/Save** button.

High Priority QoS Queue Configuration

13. Click on the **Advanced Setup** Menu at the left of page, then click on **Quality of Service** option and then click on **QoS Queue** option.



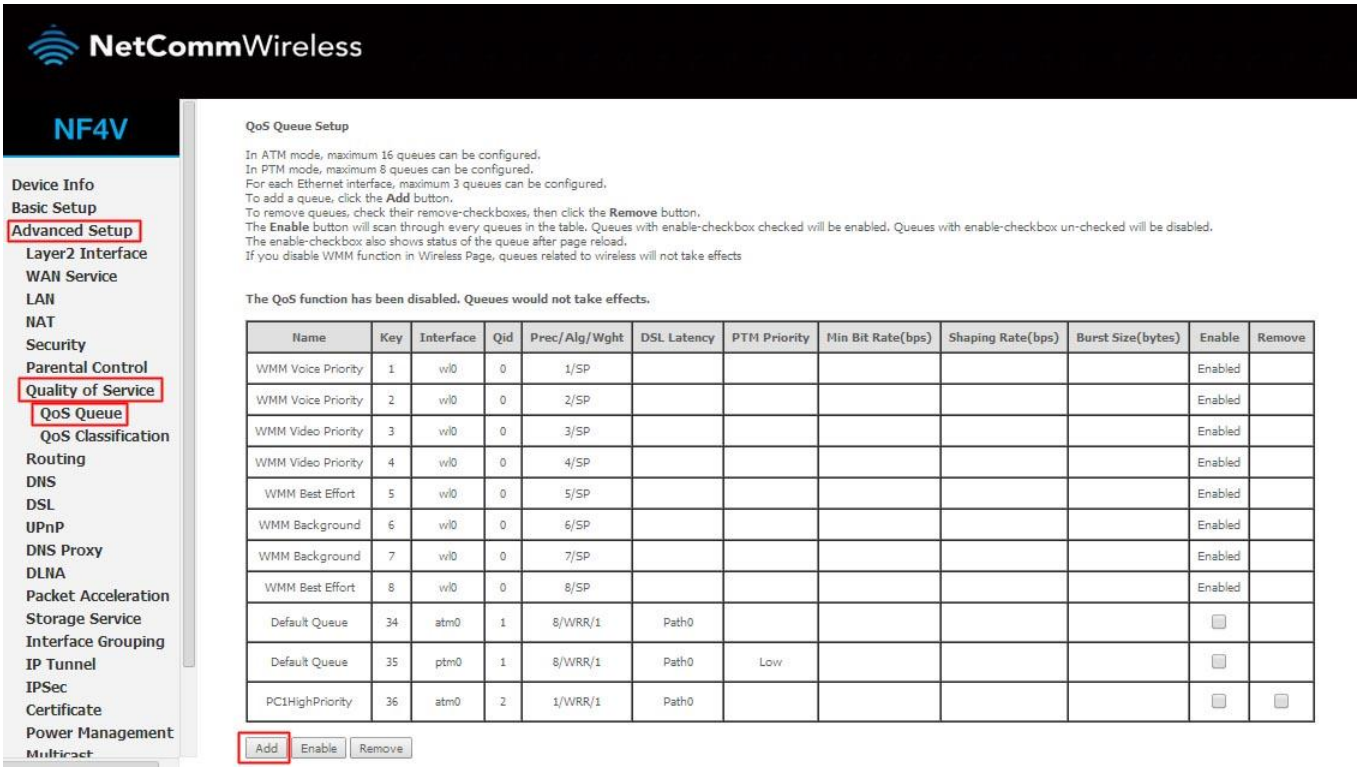
14. Click the **Add** Button



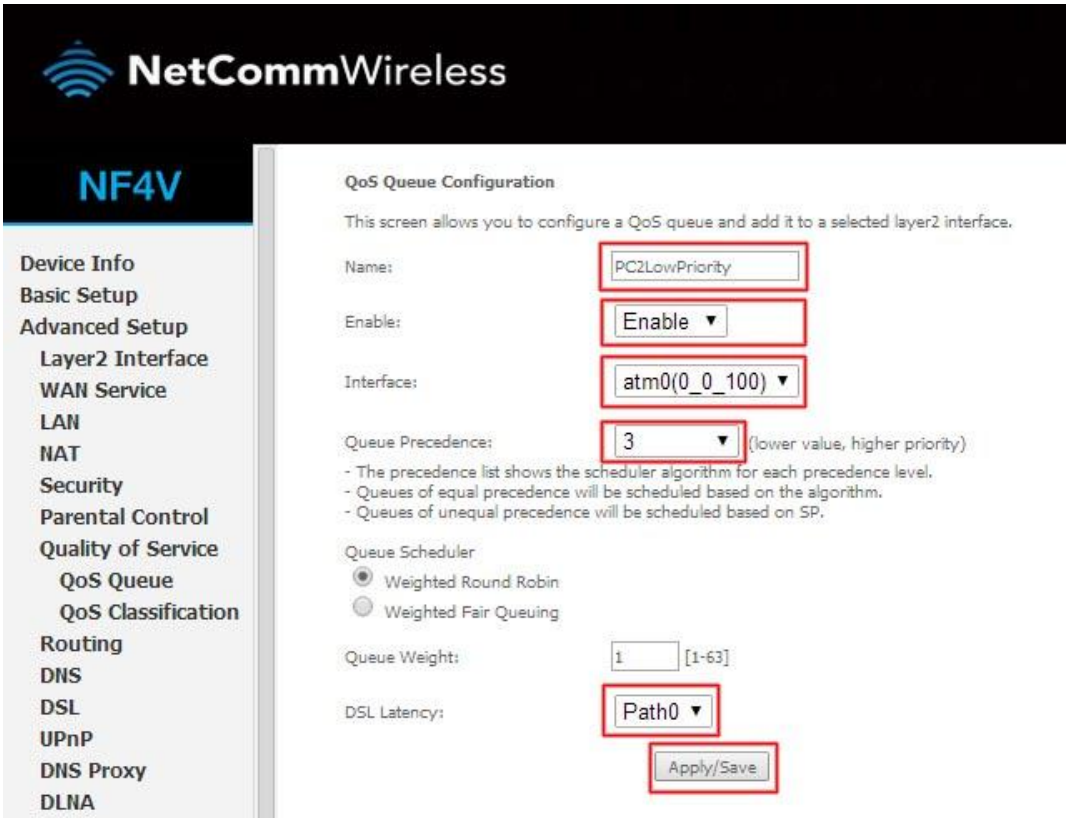
15. Enter a **name** of 15 characters or less to reflect the device will use high priority QoS – eg. **PC1HighPriority**
16. Set **Enable** to "**Enable**".
17. Set the **Interface** (Australian customers use **atm0(0_8_35**), NZ customers use **atm0(0_0_100**)).
18. Enter a **Precedence**. For the highest priority set it to **1**. For the lowest priority use **3**.
19. Set the **DSL Latency** as **Path0**.
20. Click the **Apply/Save** button.

Low Priority QoS Queue Configuration

21. Click on the **Advanced Setup** Menu at the left of page, then click on **Quality of Service** option and then click on **QoS Queue** option.



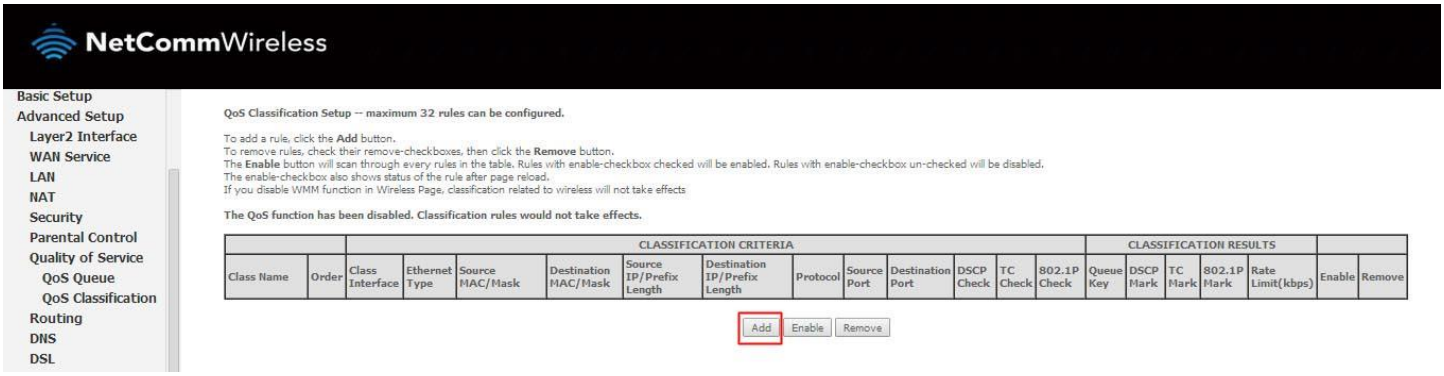
22. Click the **add** button.



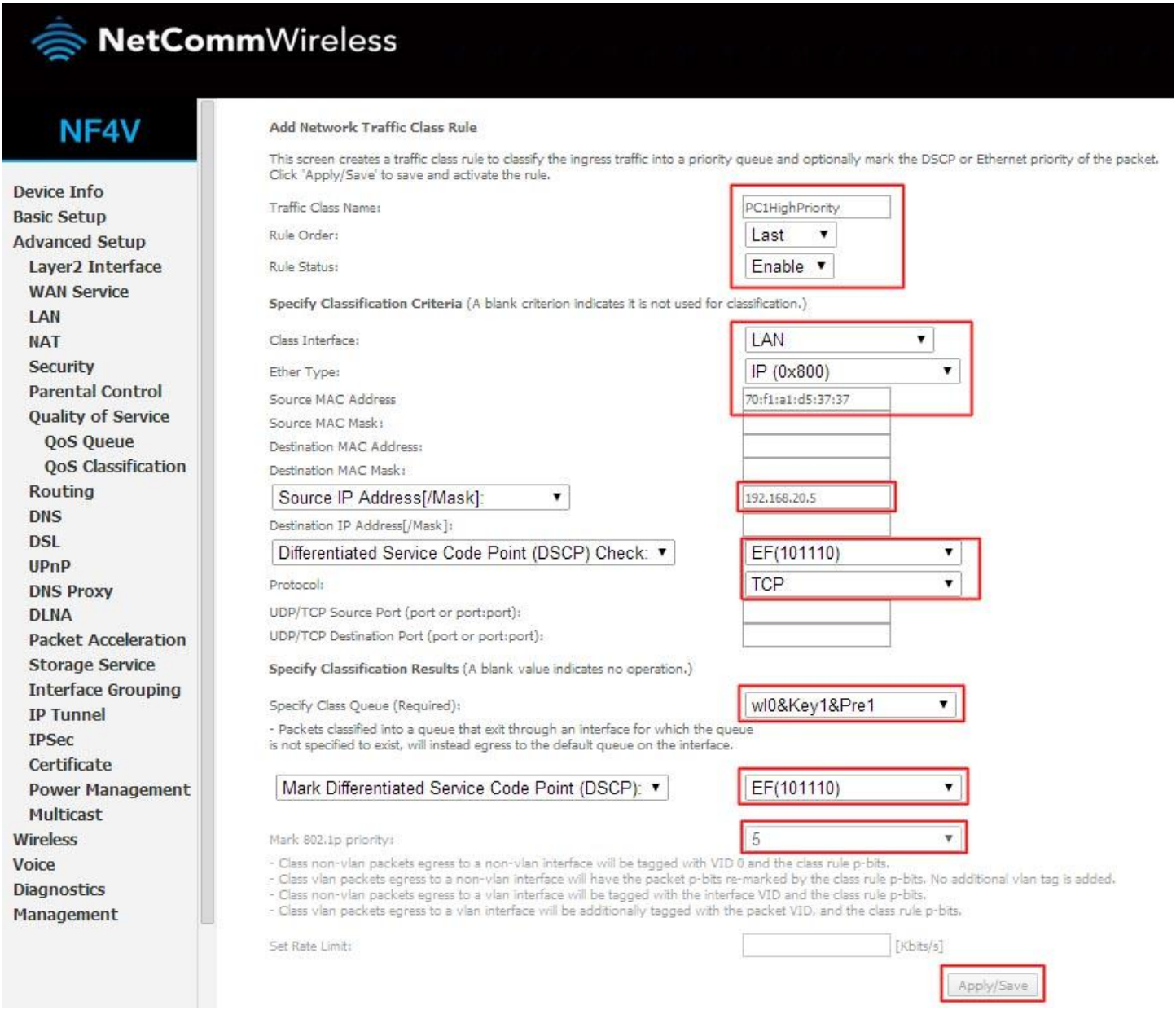
23. Enter a **name** of 15 characters or less to reflect the device will use low priority QoS – eg. **PC2LowPriority**.
24. Set **Enable** to "**Enable**".
25. Set the **Interface** (Australian customers use **atm0(0_8_35)**, NZ customers use **atm0(0_0_100)**).
26. Enter a **Precedence**. For the lowest priority set it to **3**. For the highest priority use **1**.
27. Set the **DSL Latency** as **Path0**.
28. Click the **Apply/Save** button.

High Priority QoS Classification

29. Click on the Advanced Setup menu, then click on Quality of Service option and then click on QoS Classification option.



30. Click the add buttom



31. Enter a Traffic Class **Name** reflecting the High Priority QoS rule; eg. **PC1HighPriority**.

32. Leave the Rule Order as **Last**.

33. Set the Rule Status to **Enable**.

34. Set the Class Interface according to how the device connects to the router. In the example above **LAN** is selected. Other options are **Wireless**, Local and **USB**.

35. Set the **Ether Type to IP(0x800).** Other options include ARP(0x8086), Ipv6(0x86DD), PPPoE_DISC(0x8863), 8865(0x8865), 8866(0x8866), 8021Q(0x8100).

36. Enter the **Source MAC Address** of the device, the unique 12 character signature with every 2 characters separated by a colon(:), that you previously entered to reserve the device's IP address.

37. Enter the **Source IP Address** of the device that you previously entered into the Static IP Lease List, in the range of 192.168.20.x In the example above the IP address is 192.168.20.5.

38. Enter a **Destination MAC Address** if the connection is to a single device. This is useful for VPN connections. If you wish the destination MAC address to be any address leave the field blank.

39. Enter a **Destination IP Address** if the connection is to a single device. This is useful for VPN connections. If you wish the destination IP address to be any address leave the field blank.

40. Enter a **Destination Subnet Mask** if you have entered a Destination MAC address and Destination IP address. This would normally be 255.255.255.0 unless your system administrator advises otherwise. If you have not entered a Destination MAC or IP address leave the field blank.

41. Set the **Differentiated Service Code Point (DSCP) Check** to **EF(101110).**

42. Set the **Protocol** to **TCP**. Other options include UDP, ICMP or IGMP.

43. Set "**Assign Classification Queue**" to Priority 1 (in the example above pppoa0&atm0&Path0&Key38&Pre1). Other options or priority 2 and 3. Priority 1 gives the highest priority with priority 3 being the lowest.

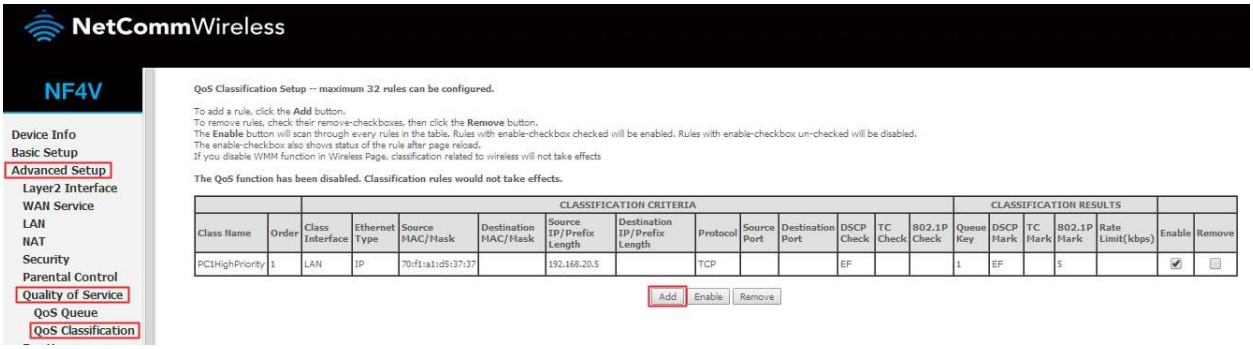
44. Set **Mark Differentiated Service Code Point (DSCP)** as **EF(101110).**

45. Set **Mark 802.1p Priority** as **5**. In the scale 0-7, 0 is best effort, 6 and 7 are reserved for networking performance so set 5 as the highest priority.

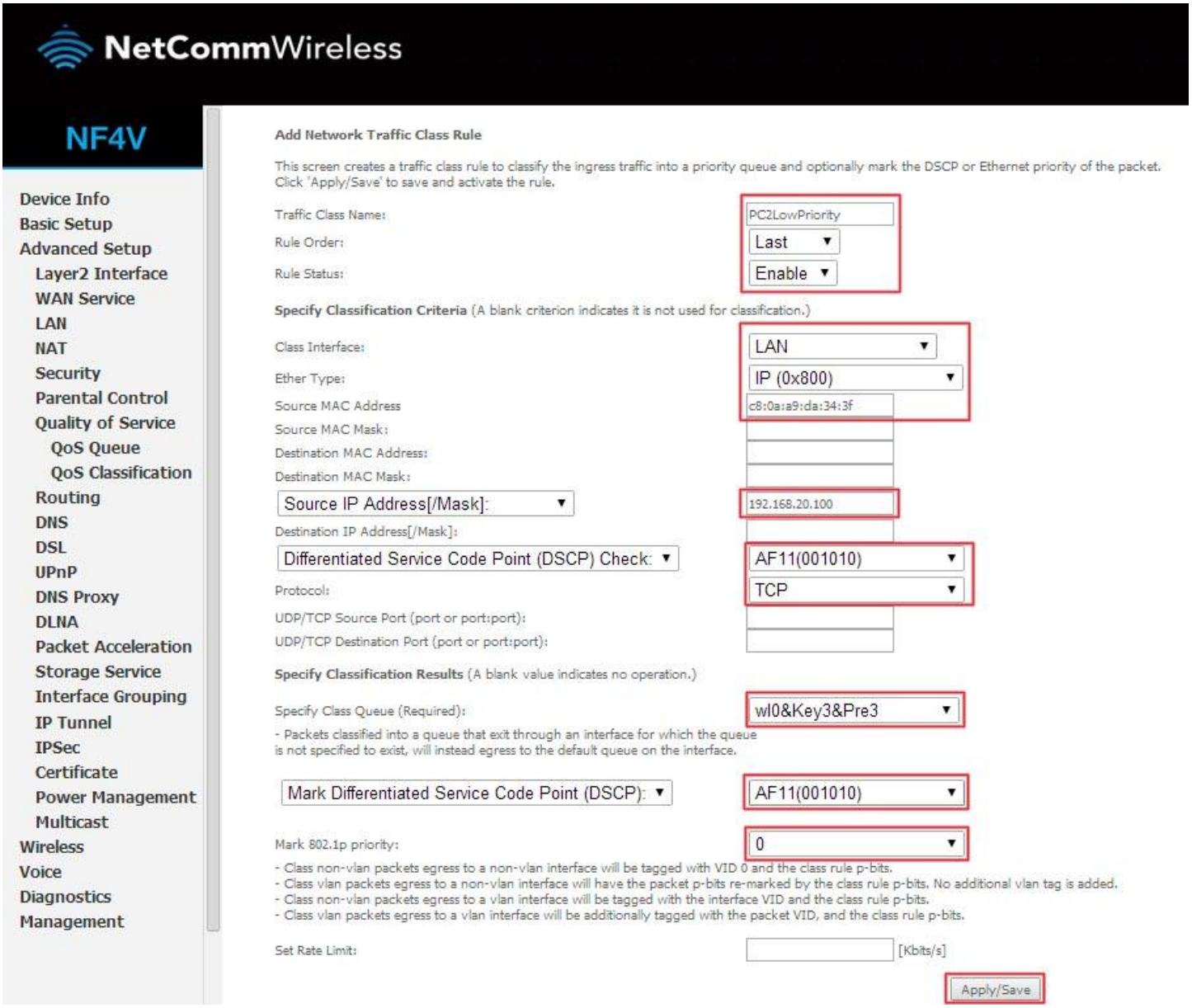
46. Click the **Apply/Save** button.

Low Priority QoS Classification

47. Click on the **Advanced Setup** Menu at the left of page, then click on **Quality of Service** option and then click on **QoS Classification** option.



48. Click the **Add** button.



49. Enter a **Traffic Class Name** reflecting the High Priority QoS rule; eg. **PC2LowPriority**.

50. Leave the **Rule Order** as **Last**.

51. Set the **Rule Status** to **Enable**.

52. Set the Class Interface according to how the device connects to the router. In the example above **LAN** is selected. Other options are **Wireless**, Local and **USB**.

53. Set the **Ether Type** to **IP(0x800).** Other options include ARP(0x8086), Ipv6(0x86DD), PPPoE_DISC(0x8863), 8865(0x8865), 8866(0x8866), 8021Q(0x8100).

54. Enter the **Source MAC Address** of the device, the unique 12 character signature with every 2 characters separated by a colon(**:**), that you previously entered to reserve the device's IP address.

55. Enter the **Source IP Address** of the device that you previously entered into the Static IP Lease List, in the range of 192.168.20.x In the example above the IP address is 192.168.20.100.

56. Enter a **Destination MAC Address** if the connection is to a single device. This is useful for VPN connections. If you wish the destination MAC address to be any address leave the field blank.

57. Enter a **Destination IP Address** if the connection is to a single device. This is useful for VPN connections. If you wish the destination IP address to be any address leave the field blank.

58. Enter a **Destination Subnet Mask** if you have entered a Destination MAC address and Destination IP address. This would normally be 255.255.255.0 unless your system administrator advises otherwise. If you have not entered a Destination MAC or IP address leave the field blank.

59. Set the **Differentiated Service Code Point (DSCP) Check** to **AF11(001010).**

60. Set the **Protocol** to **TCP**. Other options include UDP, ICMP or IGMP.

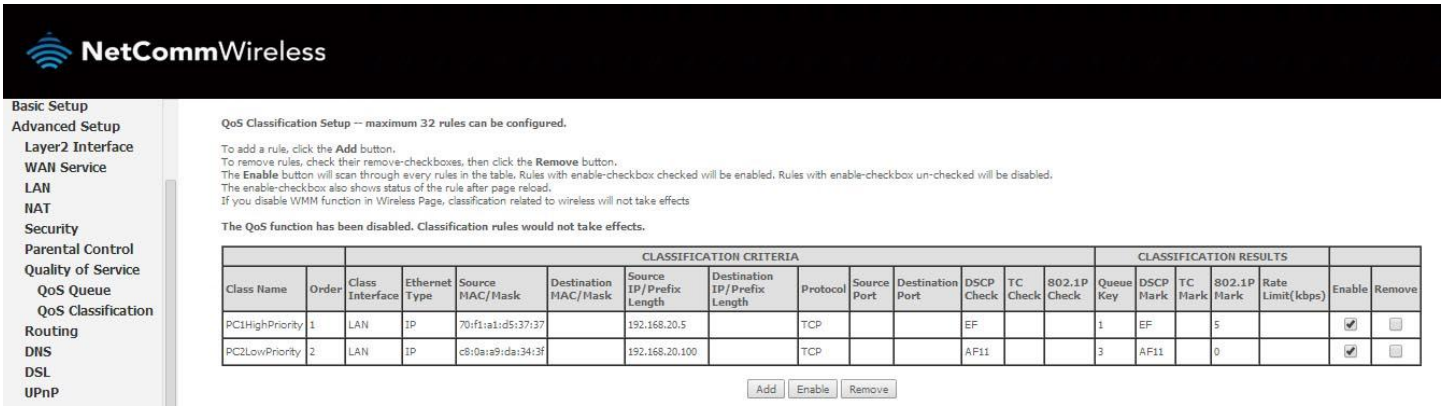
61. Set "**Assign Classification Queue**" to Priority 3 (in the example above pppoa0&atm0&Path0&Key39&Pre3). Other options are priority 1 and 2. Priority 1 gives the highest priority with priority 3 being the lowest.

62. Set **Mark Differentiated Service Code Point (DSCP)** as **AF11(001010).**

63. Set **Mark 802.1p Priority** as **0**. In the scale 0-7, 0 is best effort, 6 and 7 are reserved for networking performance so set 0 as the lowest priority.

64. Click the **Apply/Save** button.

65. You now have 2 Quality of Service rules implemented for 2 devices connecting to the NF4V router.



66. Click on the **Management** menu, then click on **Reboot** option and then Click the **Reboot button** to restart the router and save the new settings.

67. To test your Quality of Service settings try running speed-tests (http://speedtest.net) on both pcs/devices **simultaneously**.

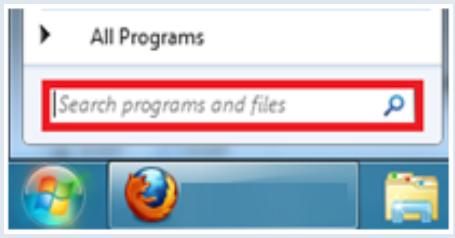
How to Find a Computer's MAC Address (Windows 7 and 8) PRINT EMAIL

Option 1:

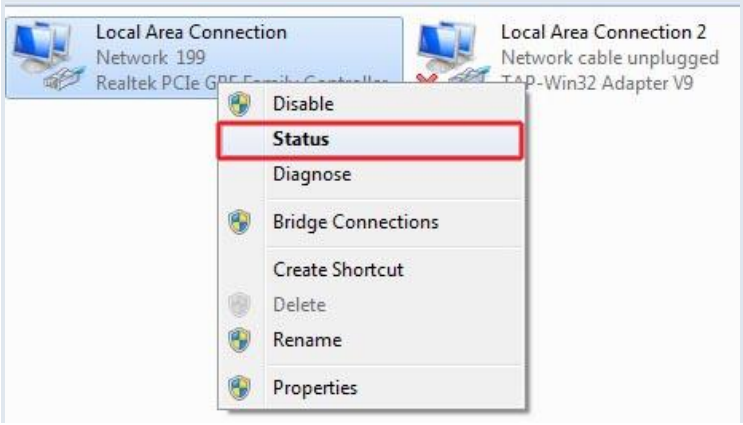
1) For windows 7 : *Click* the **Start** at the bottom left of your screen,

For Windows 8 : press Windows logo Icon and R together

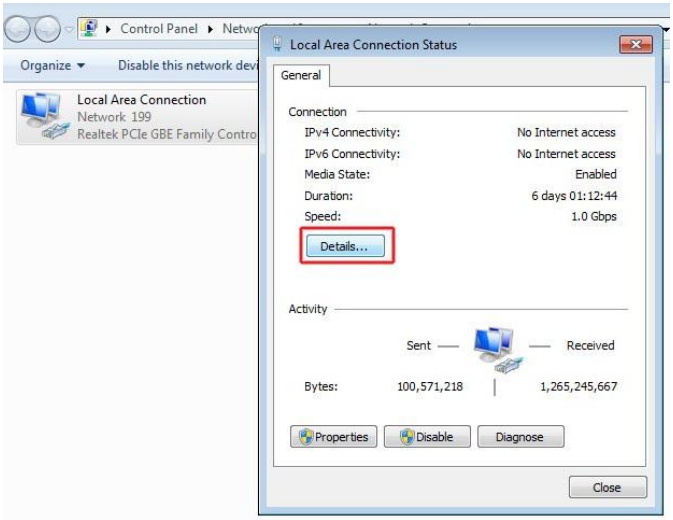
2) *Type* **ncpa.cpl** into the search box and *press* **ENTER**.

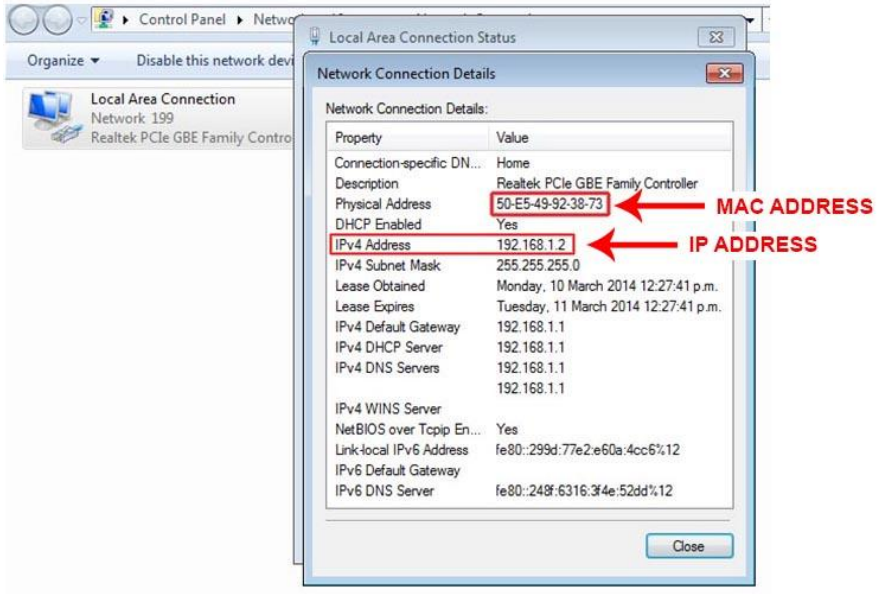


3) *Right-click* your **Local Area Connection** and *select* **Status**.



4) *Click* **Details** and the **Physical Address** is your MAC Address.



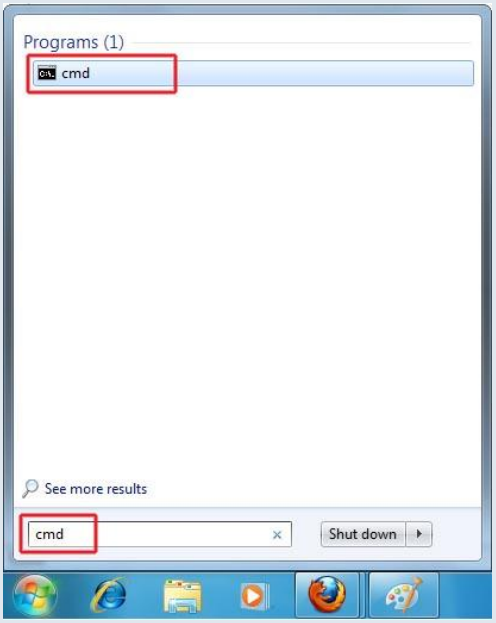


Option 2:

1) For windows 7 : *Click* the **Start** at the bottom left of your screen,

For Windows 8 : press Windows logo Icon and R together

2). In the search box, type in **cmd** and press enter.



3. In the command prompt, type in **getmac** (with no spaces) and push enter.