Quality of Service Setup Guide

(NB6Plus4Wn)

NetComm®
Broadband Solutions

NB6Plus4Wn Quality of Service Setup Guide

The following Quality of Service (QoS) settings offer a basic setup example, setting up 3 devices connecting to an NB6Plus4Wn router, one with the highest priority QoS priority data traffic, one with medium 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 Nb6Plus4Wn router to provide different priorities to different applications, users, or data flows, or to guarantee a certain level of performance to a data flow.

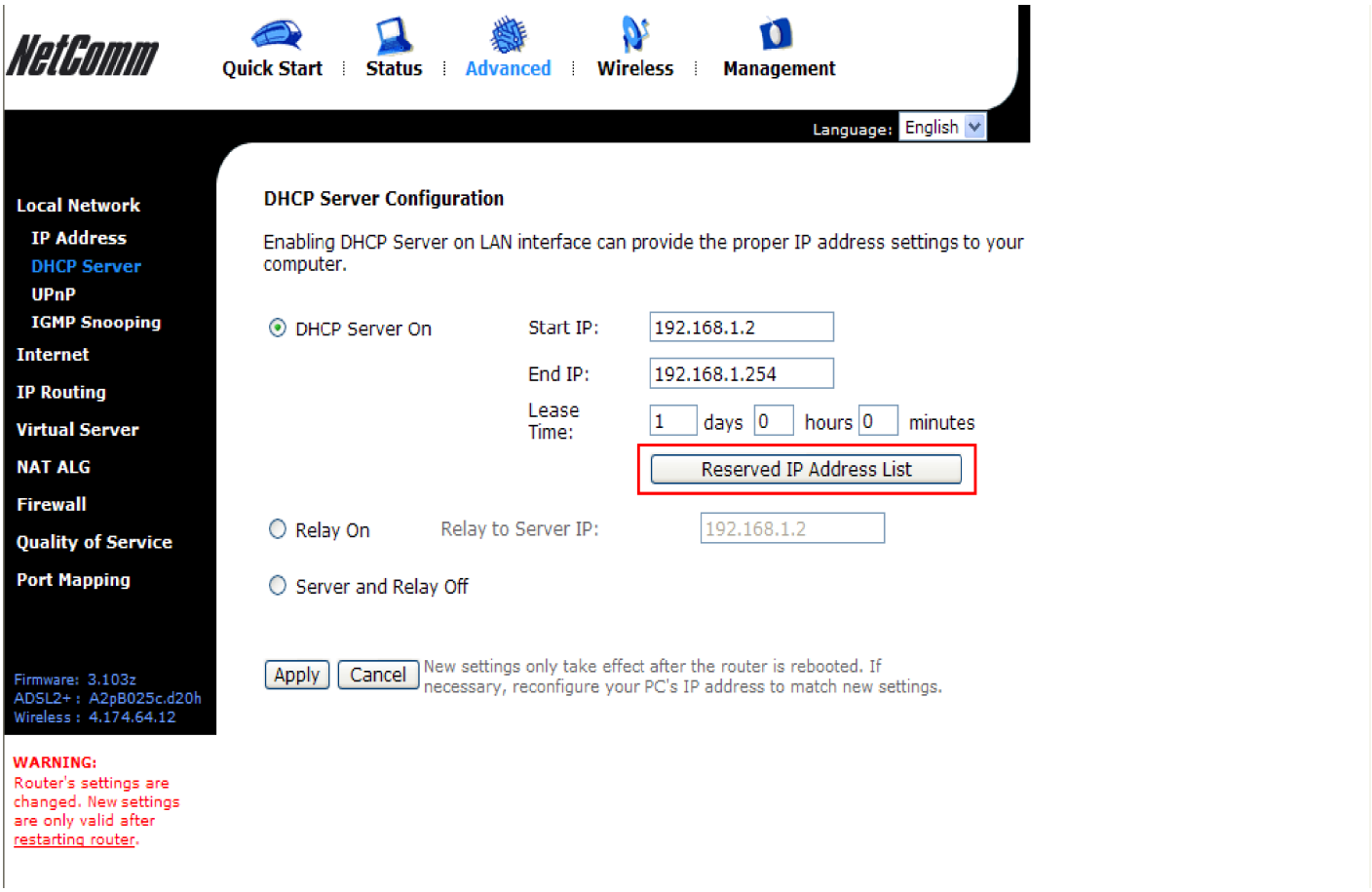
In this implementation Quality of Service employs DSCP – Differentiated Services Code Point – a computer networking architecture that specifies a simple, scalable and coarse-grained mechanism for classifying, managing network traffic.

This example guide sets up QoS with three devices (VoIP ATA, gaming console and laptop) connecting via ethernet cable and via wireless to the NB6Plus4Wn router. 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.

QoS Setup Part 1: Reserving an IP address

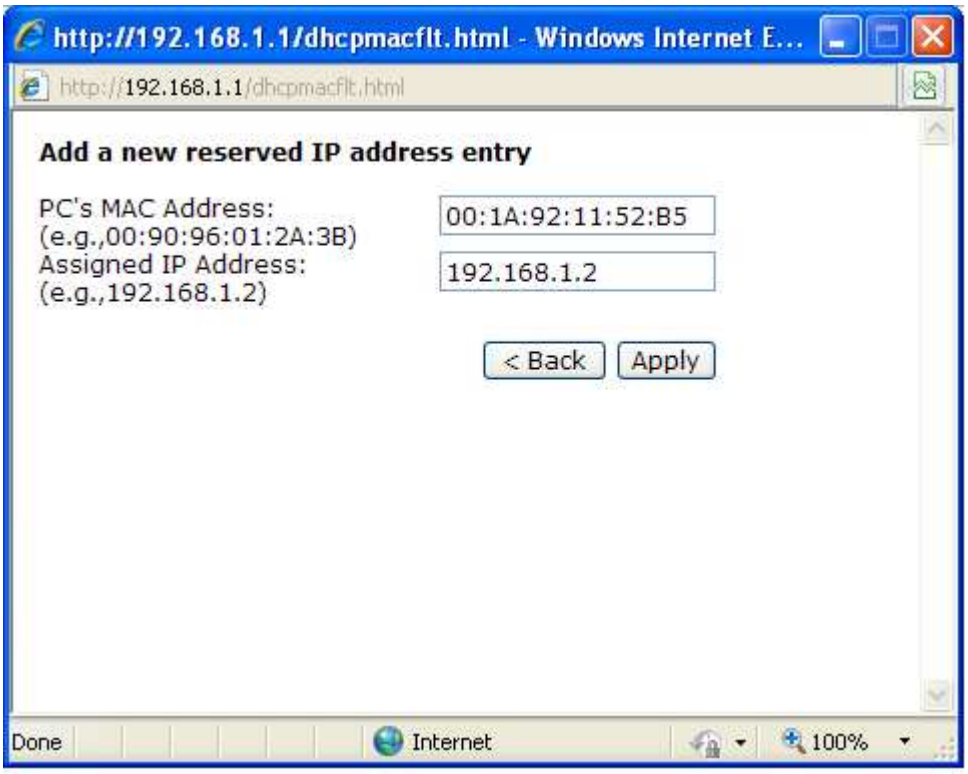
It is necessary to reserve an IP address for a device that is connecting to the NB6Plus4Wn router so that the QoS settings can manage each device and set data packet traffic priority by MAC and IP address.

1. Navigate to http://192.168.1.1 in a web browser.
2. Enter 'admin' (without quotes) for both the username and password and click Ok.
3. Select **Advanced** > **Local Network** > **DHCP Server**.



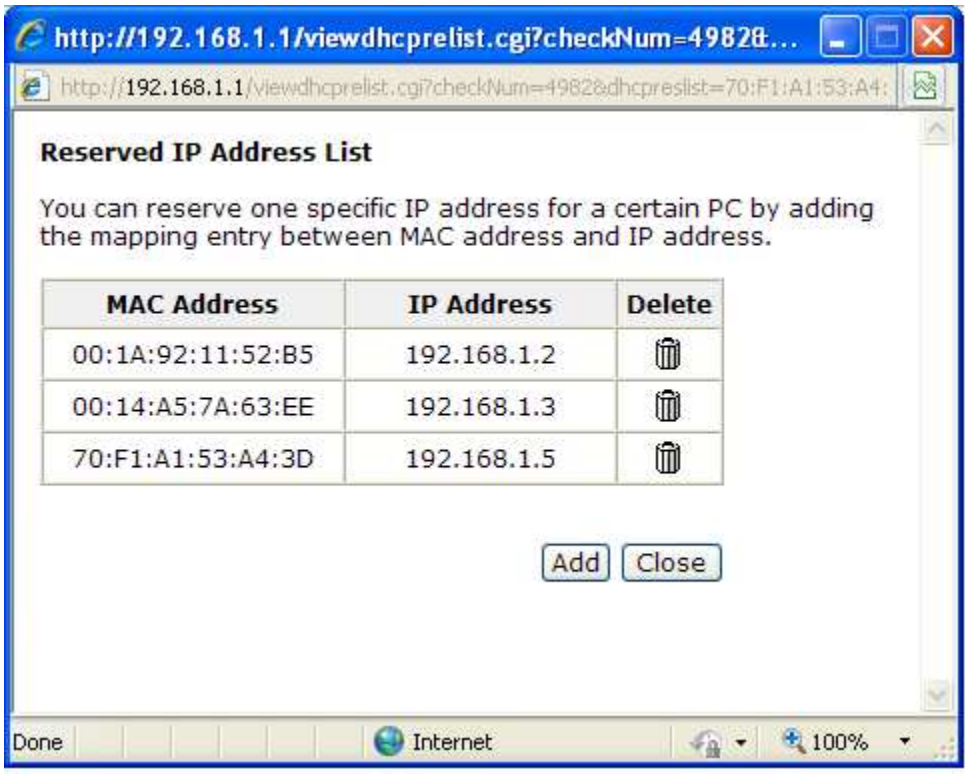
4. Press the Reserved IP Address List button.

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 192.168.1.x where x = 2 to 254.



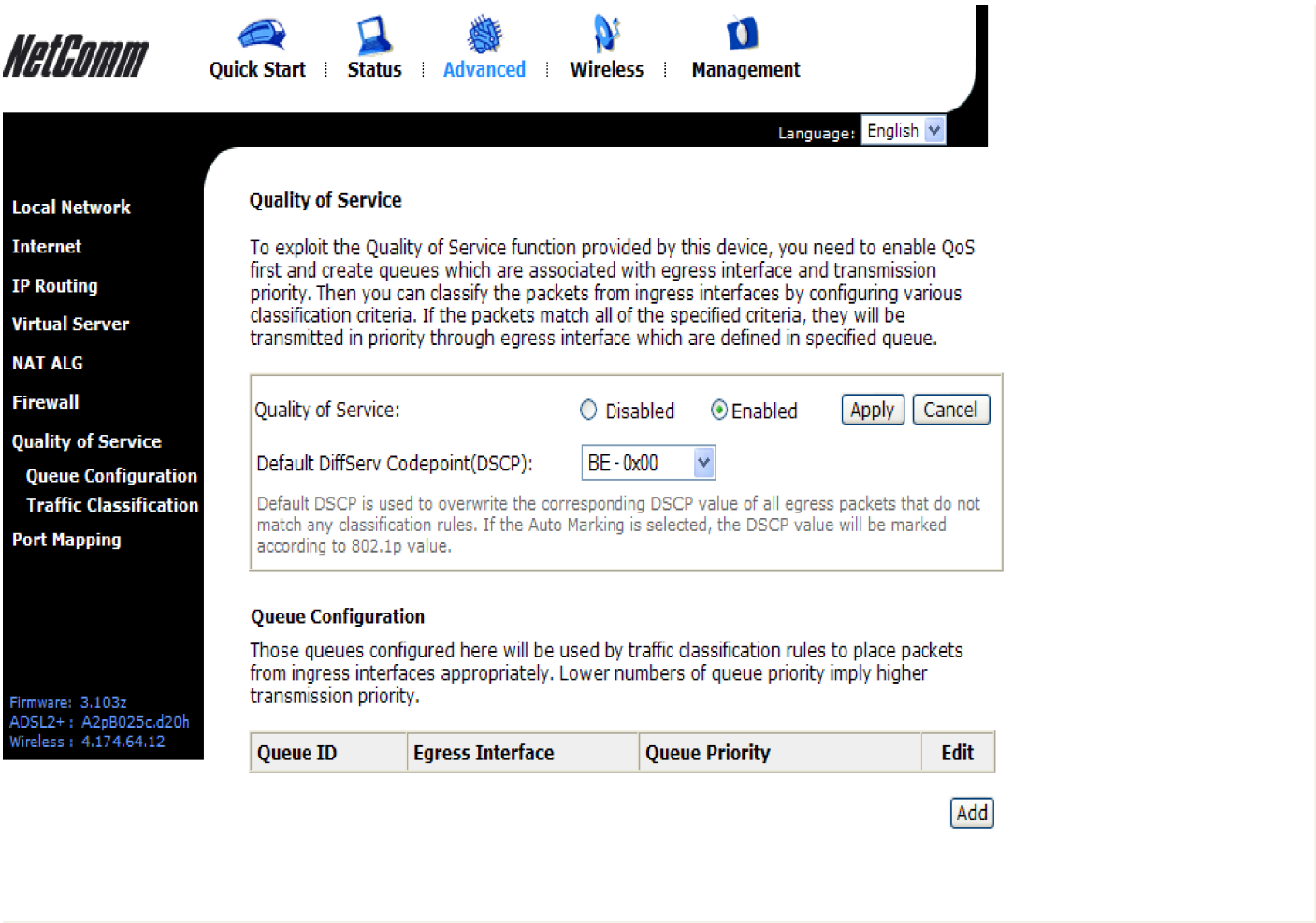
7. Press the Apply button.

8. Complete steps 4 through 7 for each device connected to the NB6 series 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

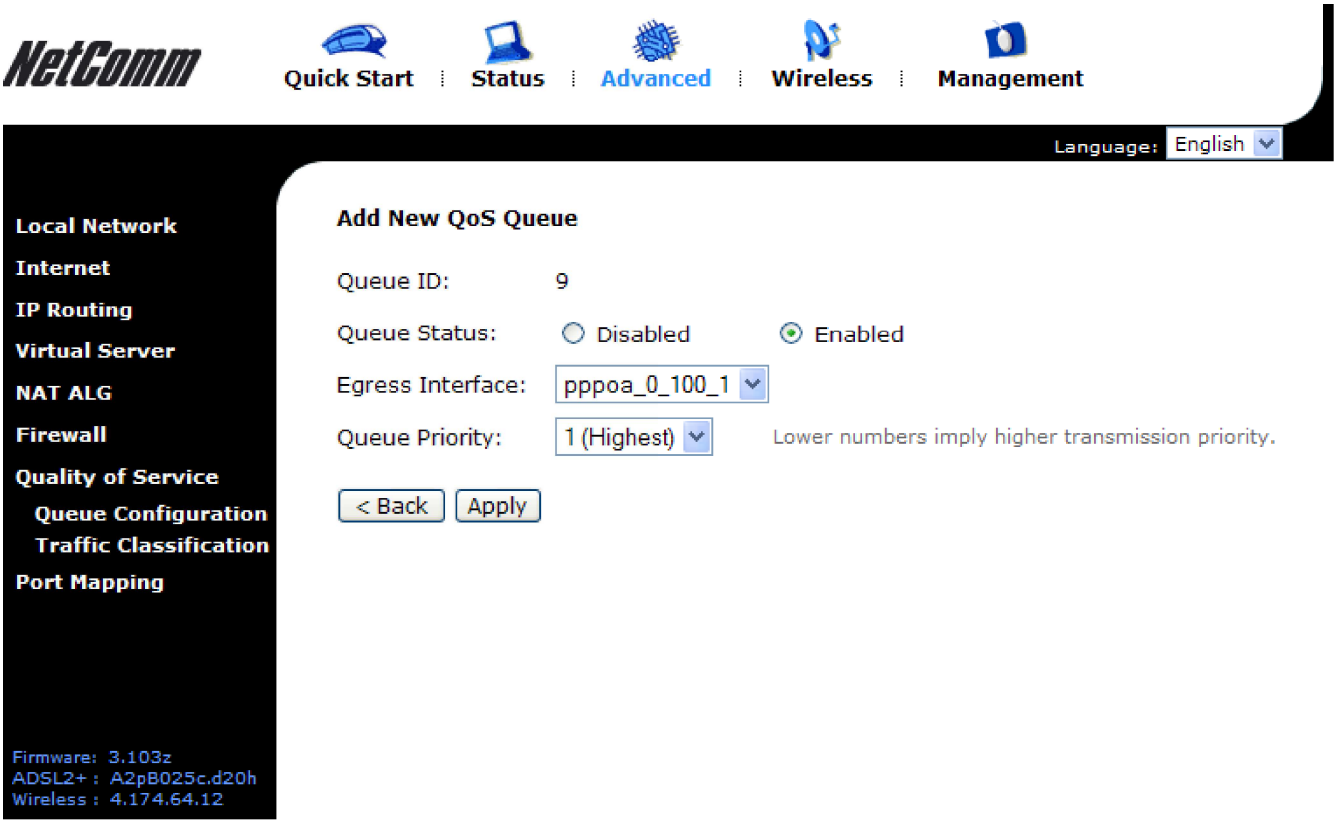
9. Select Advanced > Quality of Service
10. Select "**Enabled**" checkbox.
11. Select the **Default Differentiated Service Code Point (DSCP)** as **BE (0x00)** (Best Effort).



12. Press the Apply button.

High Priority QoS Queue Configuration

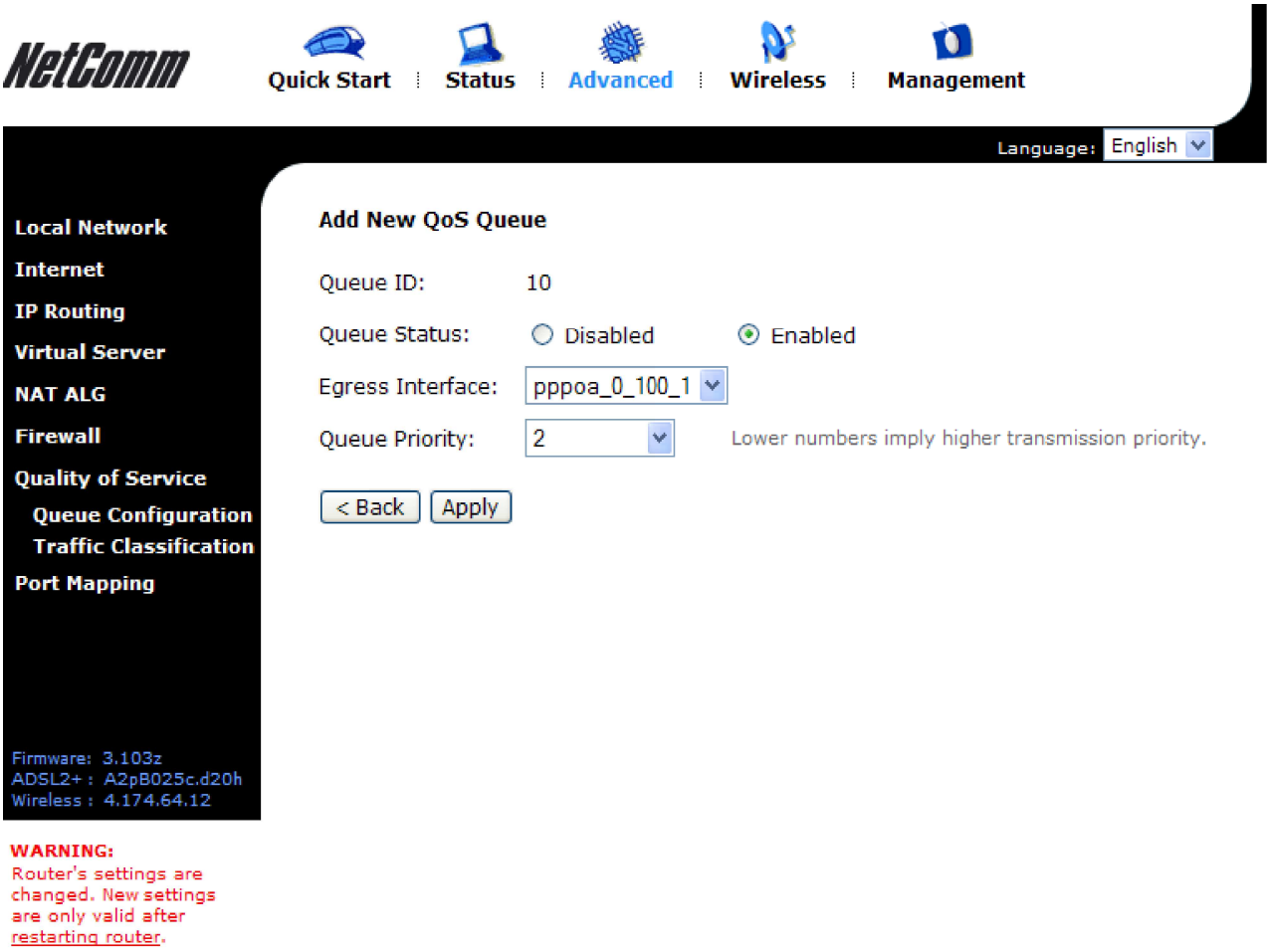
13. Select **Advanced** > **Quality of Service** > **Queue Configuration**.
14. Press the **Add** button.



15. Set the **Queue Status** to Enabled.
16. Set the **Egress Interface** as pppoa_0_100_1 if you are in New Zealand or pppoe_8_35_1 if you are in Australia.
17. Set the **Queue Priority** to 1(Highest).
18. Press the **Apply** button.

Medium Priority QoS Queue Configuration

19. Select **Advanced** > **Quality of Service** > **Queue Configuration**.
20. Press the **Add** button.



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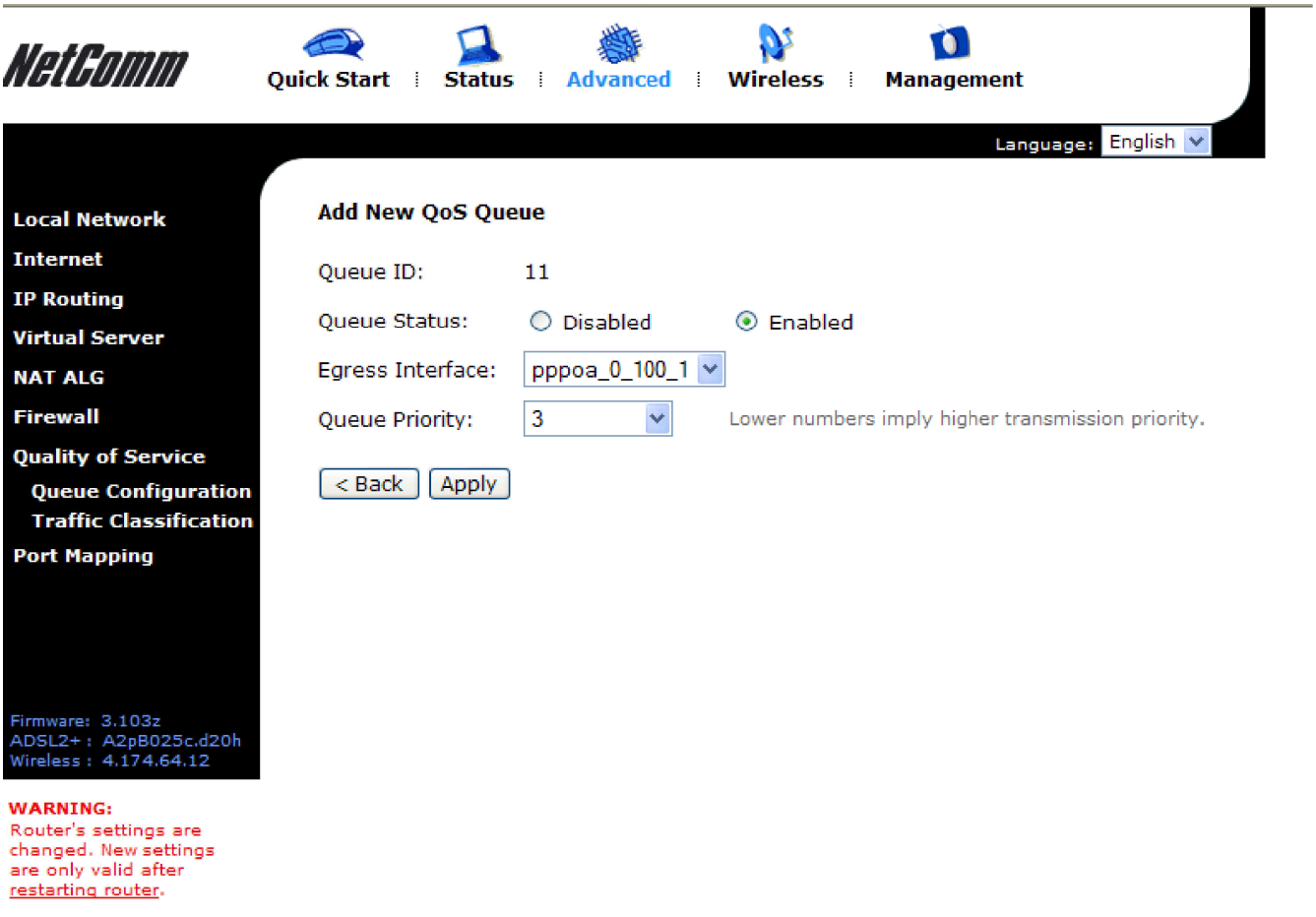
21. Set the **Queue Status** to Enabled.
22. Set the **Egress Interface** as pppoa_0_100_1 if you are in New Zealand or pppoe_8_35_1 if you are in Australia.
23. Set the **Queue Priority** to 2.
24. Press the **Apply** button.

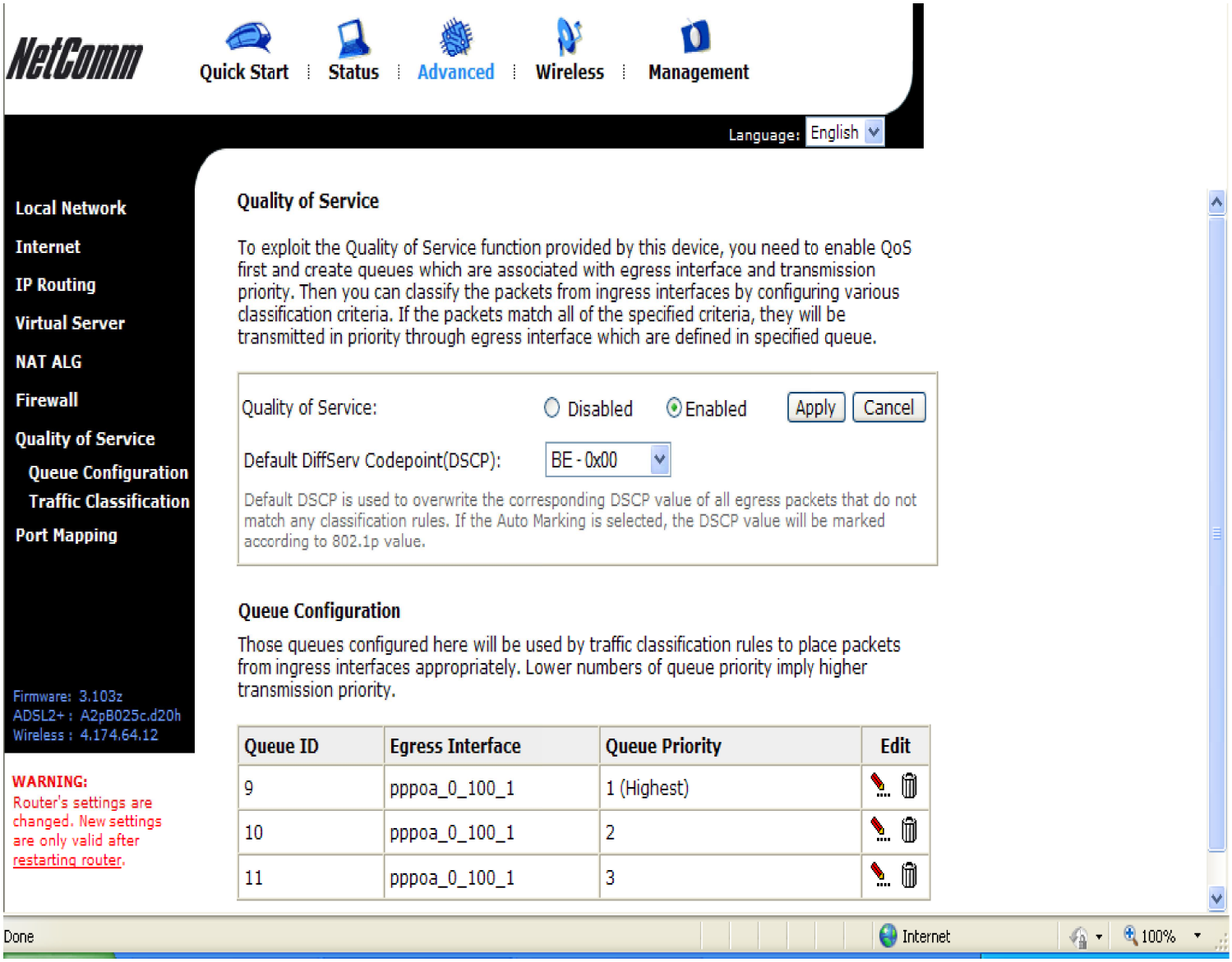
Low Priority QoS Queue Configuration

25. Select **Advanced** > **Quality of Service** > **Queue Configuration**.
26. Press the **Add** button.



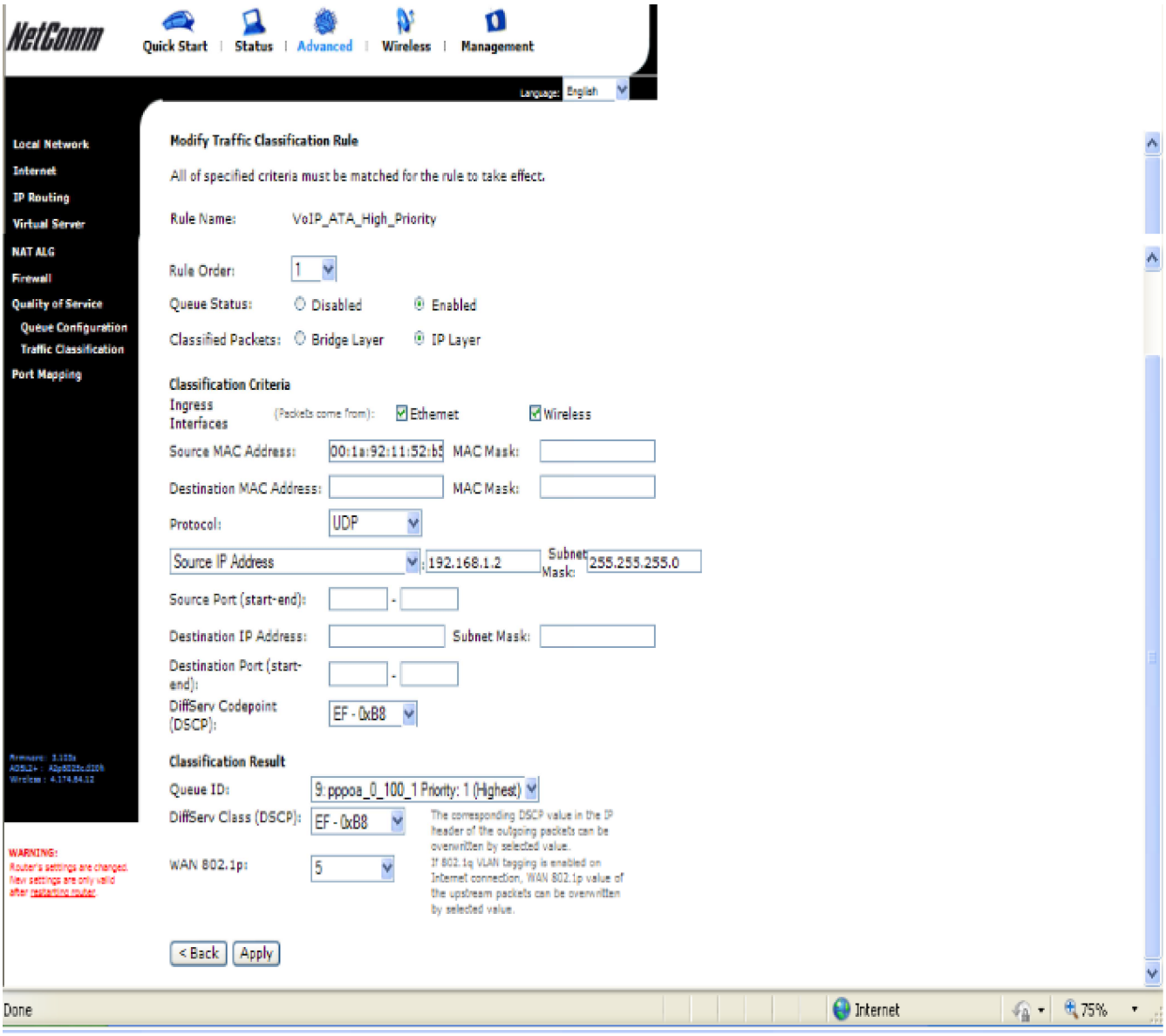
27. Set the **Queue Status** to Enabled.
28. Set the **Egress Interface** as pppoa_0_100_1 if you are in New Zealand or pppoe_8_35_1 if you are in Australia.
29. Set the **Queue Priority** to 3.
30. Press the **Apply** button.

You should now have three fields in the Queue Configuration table under Advanced > Quality of Service > Queue Configuration similar to the screenshot below.



High Priority QoS Classification

31. Select **Advanced** > **Quality of Service** > **Traffic Classification**.
32. Press the **Add** button.



33. Enter a **Rule Name** reflecting the High Priority QoS rule; eg. **VoIP_ATA_High_Priority.**

34. Leave the **Rule Order** as **Last,** set the **Queue Status** to **Enable**, set **Classified Packets** as **IP Layer**.

35. Set the **Ingress Interfaces** according to how the device connects to the router. In the example above **Ethernet** and **Wireless** are selected.

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.

39. Enter the **Source MAC Mask** of the device if required. If not required or if you are unsure leave the field blank.

40. 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.

41. Enter the **Protocol** from the options of TCP, UDP, ICMP, AH, ESP, GRE or User Defined.

42. Enter the **Source IP Address** of the device that you previously entered into the Static IP Lease List, in the range of 192.168.1.x In the example above the IP address is 192.168.1.2.

43. Enter the **Source Subnet Mask** as 255.255.255.0.

37. Enter the **Source Start and End Port Number(s)**. If the port is a single port enter the same port number in both fields. If you wish to use any port leave these fields blank.

38. 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.

39. 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.

40. Set the **Differentiated Service Code Point (DSCP) Check** to **EF(101110)**. EF stands for expedited forwarding and is ideal for VoIP or video data packets

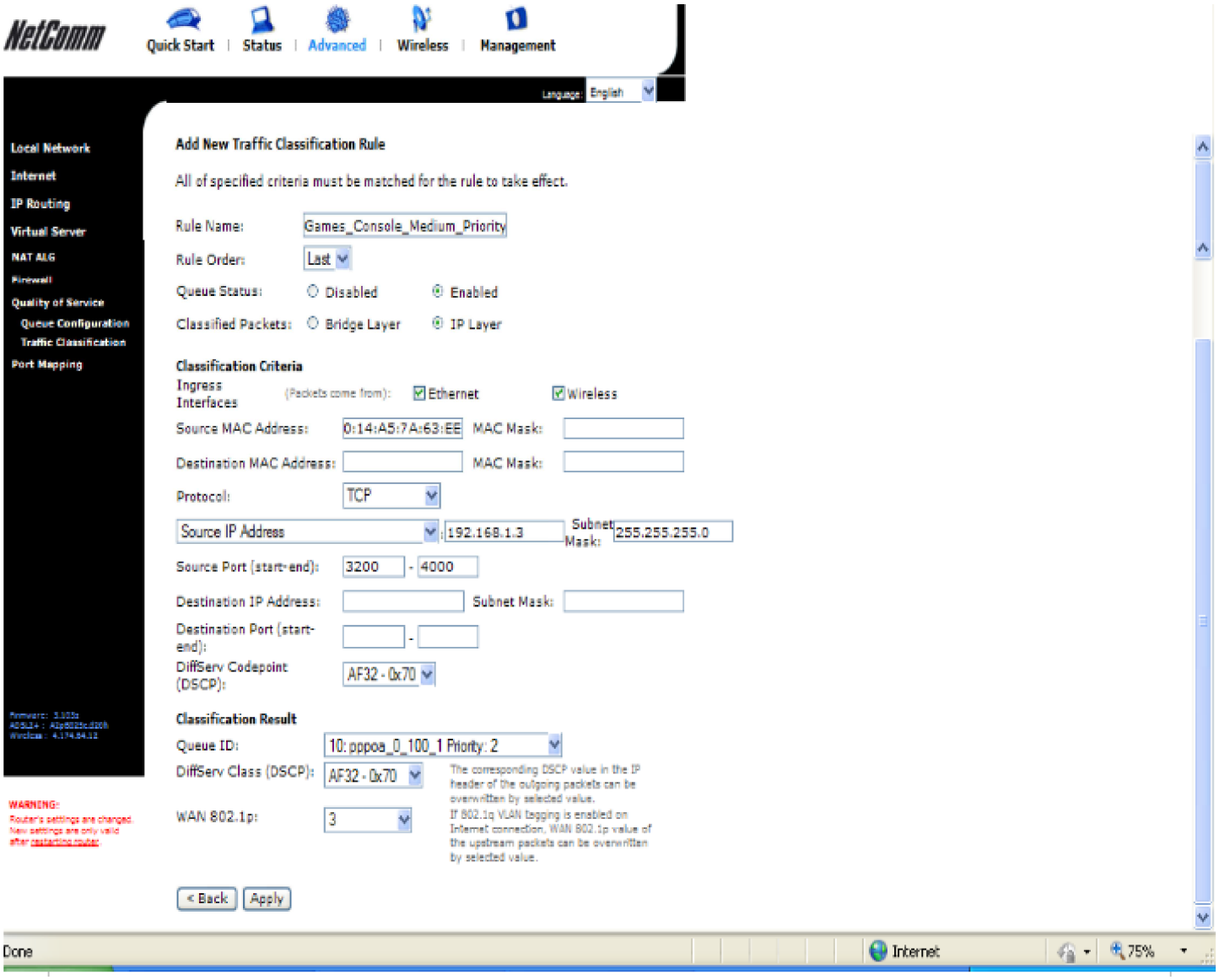
41. Set "**Queue ID**" to Priority 1 (in the example above 9 pppoa_0_100_1 Priority 1(Highest)). Other options or priority 2 and 3. Priority 1 gives the highest priority with priority 3 being the lowest.

42. Set **Mark Differentiated Service Code Point (DSCP)** as **EF(0xB8).**

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

Medium Priority QoS Classification

44. Select **Advanced** > **Quality of Service** > **Traffic Classification**.
45. Press the **Add** button.



46. Enter a **Rule Name** reflecting the High Priority QoS rule; eg. **Games_Console_High_Priority.**

47. Leave the **Rule Order** as **Last,** set the **Queue Status** to **Enable**, set **Classified Packets** as **IP Layer**.

48. Set the **Ingress Interfaces** according to how the device connects to the router. In the example above **Ethernet** and **Wireless** are selected.

49. 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.

44. Enter the **Source MAC Mask** of the device if required. If not required or if you are unsure leave the field blank.

45. 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.

46. Enter the **Protocol** from the options of TCP, UDP, ICMP, AH, ESP, GRE or User Defined.

47. Enter the **Source IP Address** of the device that you previously entered into the Static IP Lease List, in the range of 192.168.1.x In the example above the IP address is 192.168.1.4.

48. Enter the **Source Subnet Mask** as 255.255.255.0.

50. Enter the **Source Start and End Port Number(s)**. If the port is a single port enter the same port number in both fields. If you wish to use any port leave these fields blank.

51. 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.

52. 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.

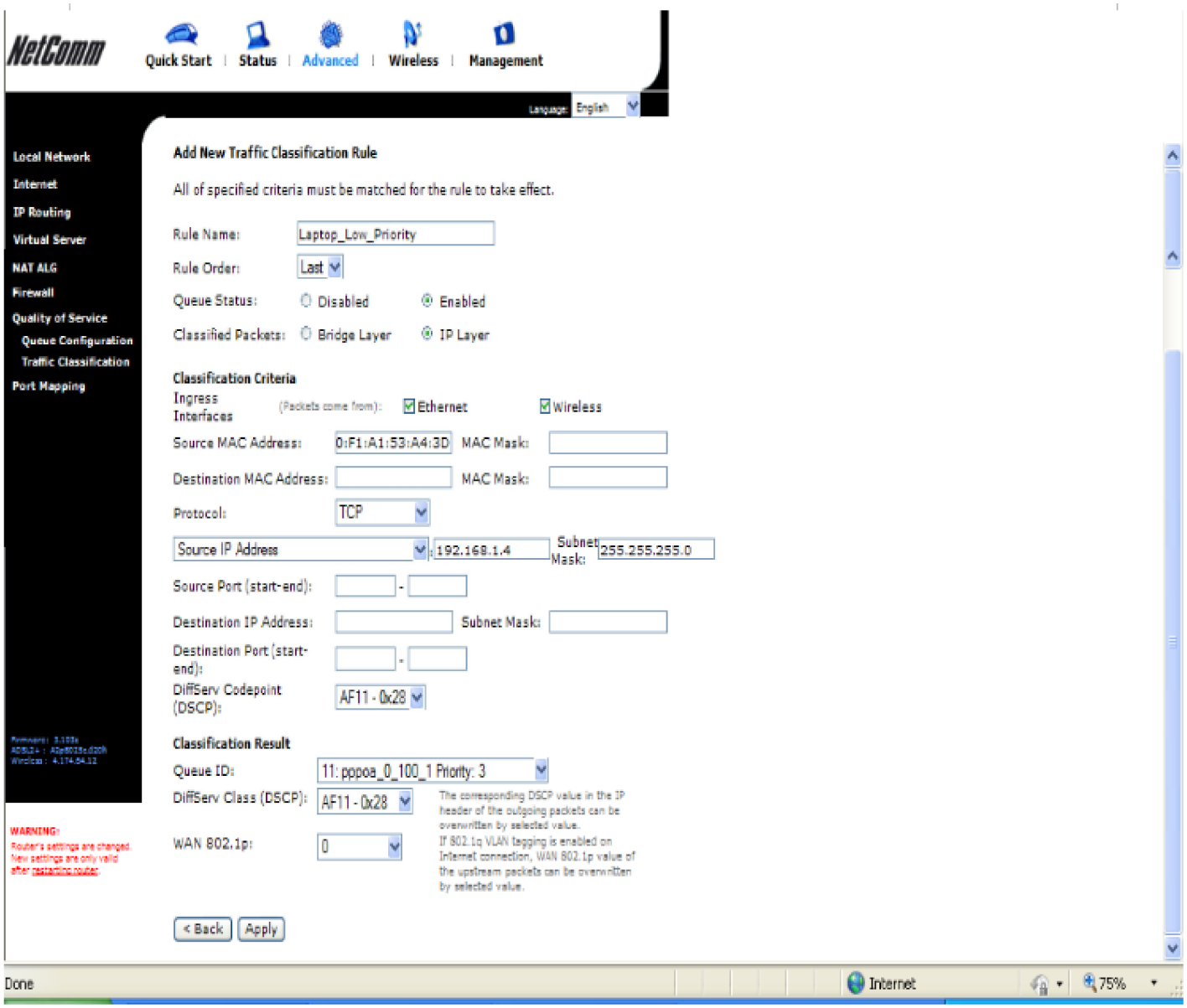
53. Set the **Differentiated Service Code Point (DSCP) Check** to **AF32(0x70)**. AF stands for assured forwarding.

54. Set "**Queue ID**" to Priority **2** (in the example above 10 pppoa_0_100_1 Priority 2). Other options or priority 1 and 3. Priority 1 gives the highest priority with priority 3 being the lowest.

55. Set **Mark Differentiated Service Code Point (DSCP)** as **AF32(0x70).**
56.
57. Set **WAN 802.1p Priority** as **3** and press Apply. In the scale 0-7, 0 is best effort, 6 and 7 are reserved for networking performance so set 5 as the highest priority.

Low Priority QoS Classification

58. Select **Advanced** > **Quality of Service** > **Traffic Classification**.
59. Press the **Add** button.



60. Enter a **Rule Name** reflecting the High Priority QoS rule; eg. **Laptop_Low_Priority.**

61. Leave the **Rule Order** as **Last,** set the **Queue Status** to **Enable**, set **Classified Packets** as **IP Layer**.

62. Set the **Ingress Interfaces** according to how the device connects to the router. In the example above **Ethernet** and **Wireless** are selected.

63. 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.

49. Enter the **Source MAC Mask** of the device if required. If not required or if you are unsure leave the field blank.

50. 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.

51. Enter the **Protocol** from the options of TCP, UDP, ICMP, AH, ESP, GRE or User Defined.

52. Enter the **Source IP Address** of the device that you previously entered into the Static IP Lease List, in the range of 192.168.1.x In the example above the IP address is 192.168.1.4.

53. Enter the **Source Subnet Mask** as 255.255.255.0.

64. Enter the **Source Start and End Port Number(s)**. If the port is a single port enter the same port number in both fields. If you wish to use any port leave these fields blank.

65. 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.

66. 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.

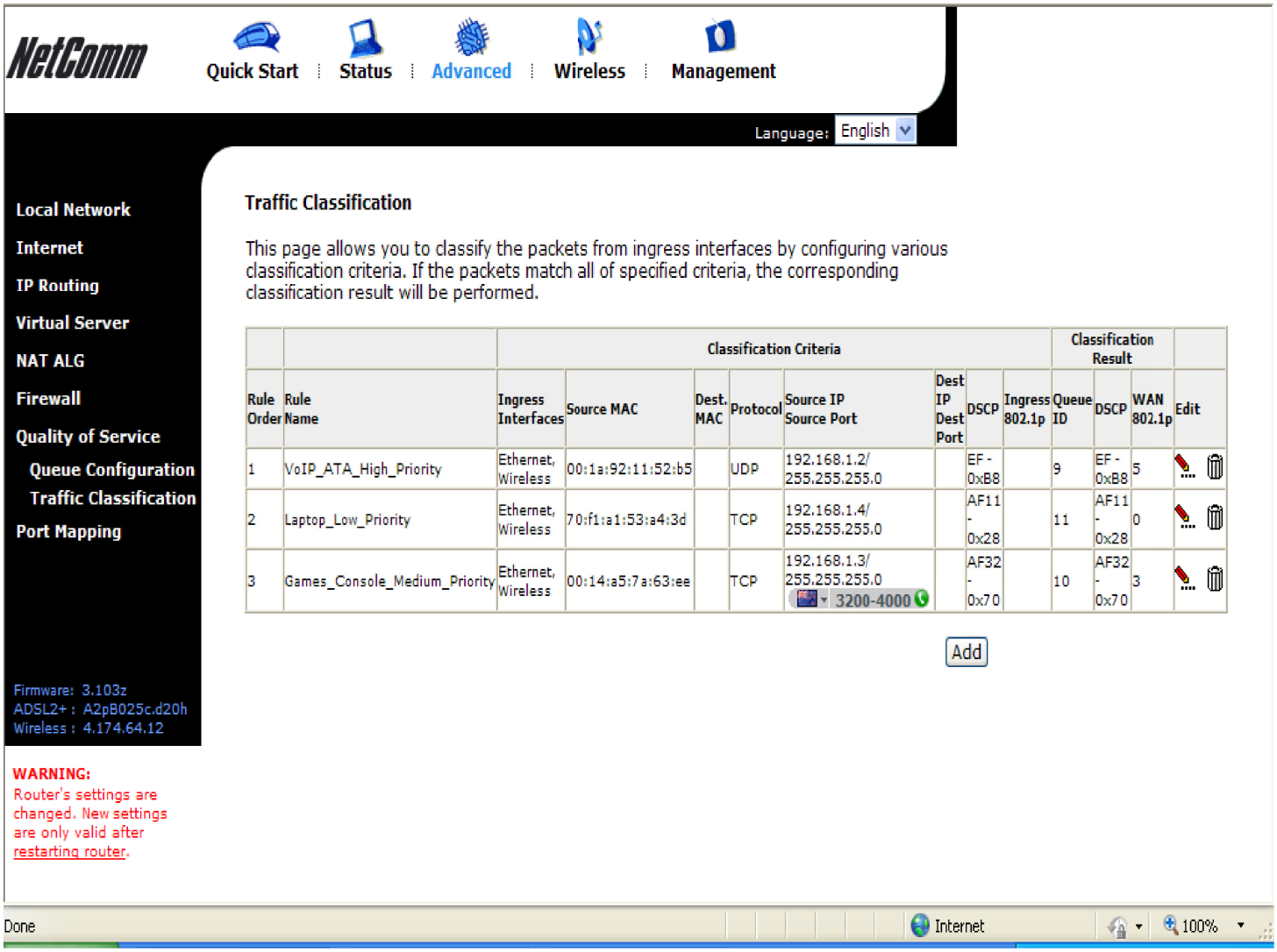
67. Set the **Differentiated Service Code Point (DSCP) Check** to **AF11(0x28)**.

68. Set "**Queue ID**" to Priority **3,** the lowest(in the example above 10 pppoa_0_100_1 Priority 3). Other options or priority 1 and 3. Priority 1 gives the highest priority with priority 3 being the lowest.

69. Set **Mark Differentiated Service Code Point (DSCP)** as **AF11(0x28).**

70. Set **WAN 802.1p Priority** as **3** and press Apply. In the scale 0-7, 0 is best effort, 6 and 7 are reserved for networking performance so set 5 as the highest priority.

71. You are now three QoS queue classification entries on the router at Advanced > Quality of Service > Traffic Classification similar to the screenshot below.



72. Select the Restarting Router option at the bottom left of the screen or select **Management** > **Reset Router** and press the reboot button to reboot the router and complete the QoS setup.