


Introduction

This document details the Quality of Service features introduced in firmware version 1.0.4.7.

 **Caution** - QoS features should only be used by advanced networking professionals. Configuring this feature incorrectly will cause network performance and reliability issues.

QoS Feature Overview

The Araknis router implements the basics of IEEE protocol 802.1p and DSCP marking to provide both level 2 and level 3 service features. This allows two main benefits:


- Classification of network traffic in order to mitigate network congestion
- Improved service for mission-critical network flows.


Implementation requires an end-to-end solution including the router, switches, and other network devices that have the ability to read and respond to QoS tags appropriately.

The Araknis router design utilizes CoS (Class of Service–Level2) and DSCP (Differentiated Services Code Point–Level 3) to classify and manage network traffic.

Packets being managed include a tag containing Cos/DSCP information that tells the router how to classify the traffic. Then, packets are placed into queues based on the classification (reference tables). The router has 4 queues of increasing priority (from 1 to 4). Packets in a higher queue will take precedence for transmission over the packets in the lower numbered queues.

CoS/DSCP should only be used in networks where there is significant traffic congestion and/or critical services such as VoIP phone systems.

 **Note** - Packets without 802.1p Cos/DSCP tags will not be tagged by the router. They must be tagged by a managed switch or the client device (for example, VoIP phones may tag packets automatically).

 **Note** - Due to the advanced nature of the feature and the extra equipment that must be configured, specific examples and setup instructions are not included.



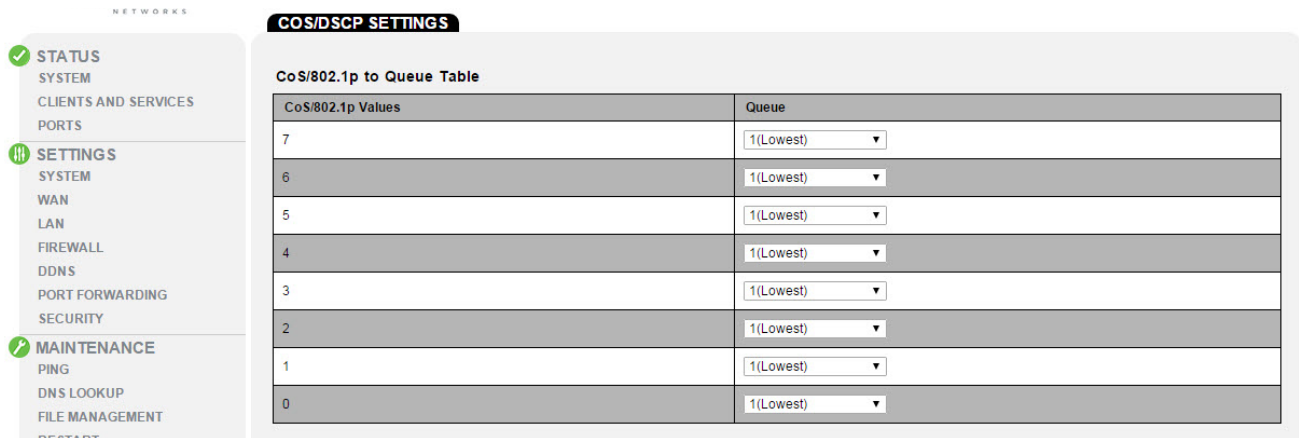
COS/DSCP Settings Menu Overview

Path - Advanced, QOS, COS/DSCP Settings

CoS/802.1p to Queue Table

Use this table to classify packets into the correct queue based on the CoS value of a tag. Use the drop downs to select the desired queue (1 to 4) for a given CoS value.

 **Note** - These settings will be superceded by **enabled** rules in the DSCP Markings menu.



The screenshot shows the 'COS/DSCP SETTINGS' menu. On the left is a navigation sidebar with categories: STATUS, CLIENTS AND SERVICES, PORTS, SETTINGS, WAN, LAN, FIREWALL, DDNS, PORT FORWARDING, SECURITY, MAINTENANCE, PING, DNS LOOKUP, FILE MANAGEMENT, and RESTART. The 'SETTINGS' category is selected. The main content area is titled 'COS/DSCP SETTINGS' and contains a table titled 'CoS/802.1p to Queue Table'.

CoS/802.1p Values	Queue
7	1(Lowest)
6	1(Lowest)
5	1(Lowest)
4	1(Lowest)
3	1(Lowest)
2	1(Lowest)
1	1(Lowest)
0	1(Lowest)


Parameters -

- **Cos/802.1p Values** - Lists the seven CoS priority levels.
- **Queue** - Select the desired queue for the specified priority level from the drop down. Options: 1(Lowest), 2, 3, 4(Highest)
Default: 1(Lowest)

You must click **Apply** at the bottom right of the page to save changes.

DSCP to Queue Table

Use this table to classify packets into the correct queue (1 to 4) based on the DSCP value of a tag. Use the drop downs to select the desired queue for a given CoS value.

 **Caution** – The default values in this table are based on IETF RFC standards for QoS. Change these values at your own risk.

LOG OUT

ADVANCED

ROUTING

VLANS

VPN

IPV6

LOCAL DNS

SNMP

ACLS

▶ QOS

▶ COS/DSCP SETTINGS

DSCP MARKINGS

RATE LIMITING

Quick Setup

DSCP to Queue Table

DSCP	Queue	DSCP	Queue	DSCP	Queue	DSCP	Queue
0(BE)	1(Lowest)	16(CS2)	2	32(CS4)	3	48(CS6)	3
1	1(Lowest)	17	2	33	3	49	3
2	1(Lowest)	18(AF21)	2	34(AF41)	3	50	3
3	1(Lowest)	19	2	35	3	51	3
4	1(Lowest)	20(AF22)	2	36(AF42)	3	52	3
5	1(Lowest)	21	2	37	3	53	3
6	1(Lowest)	22(AF23)	2	38(AF43)	3	54	3
7	1(Lowest)	23	2	39	3	55	3
8(CS1)	1(Lowest)	24(CS3)	3	40(CS5)	4(Highest)	56(CS7)	3
9	1(Lowest)	25	3	41	4(Highest)	57	3
10(AF11)	1(Lowest)	26(AF31)	3	42	4(Highest)	58	3
11	1(Lowest)	27	3	43	4(Highest)	59	3
12(AF12)	1(Lowest)	28(AF32)	3	44	4(Highest)	60	3
13	1(Lowest)	29	3	45	4(Highest)	61	3
14(AF13)	1(Lowest)	30(AF33)	3	46(EF)	4(Highest)	62	3
15	1(Lowest)	31	3	47	4(Highest)	63	3

Apply
Cancel

Parameters –

- **DSCP (all columns)** – Lists the 64 DSCP priority levels.
- **Queue (all columns)** – Select the desired queue for the specified priority level from the drop down.
Options: 1(Lowest), 2, 3, 4(Highest)

You must click **Apply** at the bottom right of the page to save changes.

DSCP Markings Menu Overview

Path - Advanced, QOS, COS/DSCP Settings

DSCP Markings Table

Use this table to convert CoS tags read by the router into DSCP values for queuing. Enabling settings in this table will supercede settings in the CoS/802.1p to Queue Table.

Caution - The default values in the Priority fields are based on IETF RFC standards for QoS. Change these values at your own risk.

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Cloud Service: Connected System Time: 2016-01-14 09:53:35 System Uptime: 1d 13:30:36

DSCP MARKINGS

DSCP Markings Table

Enable	CoS/802.1p Values	Action	Priority
<input checked="" type="checkbox"/>	0	Change DSCP	0
<input checked="" type="checkbox"/>	1	Change DSCP	8
<input checked="" type="checkbox"/>	2	Change DSCP	16
<input checked="" type="checkbox"/>	3	Change DSCP	26
<input checked="" type="checkbox"/>	4	Change DSCP	34
<input checked="" type="checkbox"/>	5	Change DSCP	46
<input checked="" type="checkbox"/>	6	Change DSCP	48
<input checked="" type="checkbox"/>	7	Change DSCP	56

Apply Cancel

Parameters -

- **Enable** - Check the box to enable DSCP conversion for the specified CoS priority level.
- **CoS/802.1p Values** - Lists the seven CoS priority levels.
- **Action** - What the rule does when enabled. All enabled rules will convert CoS to DSCP as specified.
- **Priority** - Enter the DSCP priority value the CoS value will be converted to. The default settings are commonly used conversion values (see caution, above).

You must click **Apply** at the bottom right of the page to save changes.

Contacting Technical Support

Phone: (866) 838-5052

Email: support@araknisnetworks.com