Ruckus ICX Switch
Dante Configuration Guide

V1.1 June 2024

Overview

For complex Dante AV applications, IGMP, Precision Time Protocol, and QoS must be correctly configured to guarantee optimal Dante signaling and routing functionality.

This guide provides the configuration necessary for Ruckus ICX switches to be used in a Dante audio network.

Pre-requisites

This document assumes that you have experience with Ruckus ICX CLI and are able to identify the ports within the switch/stack that are connected to Dante Devices. It is recommended that the switch(es) are running Fastiron 8.095.

Configuration of the switch should be via serial console or SSH.

Switch Configuration

Recommended Default switch configuration

This script provides a starting point for configuring your switch. It includes settings for time synchronization (NTP), generating a security key (SSL Crypto), and setting a default IP address and gateway. **Remember to modify these options to fit your specific network environment.**

```
enable
configure terminal

# Setup IP Address and Gateway
ip address 192.168.1.224/24
ip default-gateway 192.168.1.1

# Set clock and NTP

clock timezone europe GMT
ntp
server 81.128.218.110
server 104.131.155.175
exit

# Generate SSL Crypto Key
crypto-ssl certificate generate

# Set password and allow password changes
password-change any
username ruckus password ruckus

# Setup Authentication
!
aaa authentication login default local
aaa authentication web-server default local
enable telnet authentication
enable aaa console
telnet server

# Enable Web management over HTTPS
web-management https
```

AVoIP Support

This section configures two key features for AVoIP and Dante applications:

- **Jumbo Frames:** These allow the switch to handle larger data packets, which is essential for transmitting audio and video data efficiently.

- **IGMP Snooping:** This optimizes network traffic by directing multicast streams (used by AVoIP and Dante) only to devices that need them.

- **VLAN Usage:** IGMP configuration is **per VLAN**. This example assumes that the Dante devices are on VLAN 1

- **Setting multicast as Active or Passive:** In multis witch applications use the command `multicast active` for the core switch and `multicast passive` for the other connected switches.

- **Multicast querier-address:** This should be set to the address of the first switch.

```
# Enable Jumbo Frames
jumbo

# IGMP Configuration with querier address
vlan 1
multicast fast-leave-v2
multicast passive
multicast querier-address 192.168.1.224
```

Once these changes have been made, it is necessary to save the config and reload the switch to enable Jumbo Frames:

```
wr mem
reload
```

Dante Specific Support

Dante traffic is optimised using DSCP-QoS and uses PTP to synchronise audio streams. By default, on ICX switches, DSCP-QoS is not honoured unless configured.

Dante uses DSCP 56 (CS7) for clock traffic and DSCP 46 (EF) for audio traffic. By default, ICX switches have 8 DSCP Queues as follows:

PCP Priority	DCSP Value	QoS Queue	PCP Priority	DCSP Value	QoS Queue
0	0 – 7	qosp0 (lowest priority queue)	4	32 – 39	qosp4
1	8 – 15	qosp1	5	40 – 47	qosp5
2	16 – 23	qosp2	6	48 – 55	qosp6
3	24 – 31	qosp3	7	56 – 63	qosp7 (highest priority queue)

This means that it is unnecessary to remap DSCP priority, it just needs enabling for the appropriate ports on the ICX switch. In the following example it is assumed that all ports on Bank 1 are connected to Dante devices:

```
# Set ports 1/1/1 to 1/1/24 to trust DSCP
interface ethernet 1/1/1 to 1/1/24
trust dscp
```

PTP (Precision Time Protocol) Support

During the process of Dante Audio routing, devices elect a PTP master clock device. If multiple devices are shown as Master Clock devices then it is more likely that the IGMP configuration is incorrect (usually no multicast querier has been set).

In most applications, it is unnecessary to configure PTP within the ICX switch. However, it may be desirable to enable PTP transparent mode. When enabled, the switch will add its own 'packet delay' to the PTP messages. This is described is the following Ruckus document:

https://docs.commscope.com/bundle/fastiron-08095-managementguide/page/GUID-21F8832F-18F1-4627-93C1-EFFEC4F4DF7A.html

```
# Enable Transparent Clock Mode for PTP

ptp-clock transparent pkt-type ethernet option e2e step-
type onestep

Response:

PTP Feature Enabled on port 1/1/1
PTP Feature Enabled on port 1/1/2
PTP Feature Enabled on port 1/1/3
…etc…
```

Save and reload the configuration

When you are satisfied that the necessary configuration changes have been made, don't forget to save and reload the switch configuration:

```
wr mem
exit
reload
```