

# MUM INDIA 2018

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# Bridge Off Load on RouterOS

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BY DEEPAK PATEL



## About Me

- Deepak Patel (WaveFiber)
- 10 years of experience in Communication Industry
- Expertise in Designing & implementation of ISPs & Corporate Networks
- MikroTik Certified trainer & Certified consultant .
- Working with MikroTik solutions since 2007
- MikroTik Certified Engineer in MTCNA,MTCWE MTCTCE & MTCRE
- Cisco Certified Engineer – CCNA & CCNP
- Still acting as student, eager to learn as much as I can..

## Session Goal

- Concepts involving Bridge HW-offload feature.
- Upon completion of the presentation you will have thorough idea about the subject feature and be able to configure, maintain & troubleshoot the same.
- Walk through ...

## Feature Outline

- Starting from version 6.40.xx,
- Interface bridge on RouterOS will forward L2 packets and it will use switch-chip for Hw-offloading, if conditions met
- Master port settings are NOT required on interface
- Be careful while upgrading to the new version,
- Downgrading from New to Older version will NOT retain master port settings
- By default, HW-offloading feature is enabled, if not required, you can manually disable the same.

## Bridge offload feature

- Works on RouterOS
- Also supported on CRS1xx/2xx/3xx series switches

# Bridging vs Switching



## Bridging vs Switching

- Bridge uses the CPU; Switch the dedicated switching chip
- There are instances where you have to use a bridge
- Multiple ports can be bound in groups
- Bridge can connect multiple groups
- A bridge is a Linux Kernel software bridge it can do filtering, packet capture of traffic between ports, etc.
- Lower performance - software accelerated.



## Bridging vs Switching

- RouterOS v6.40rc29 bridges provides VLAN aware Layer2 forwarding
- VLAN tag modifications within the bridge.
- Operates like a traditional ethernet switch
- Allows to overcome STP compatibility issues
- Bridge VLAN Filtering configuration
- Comply with STP & RSTP standards and
- Mandatory to enable MSTP support in RouterOS.

# Walkthrough



admin@180.150.241.99 - WinBox v6.41 on CRS326-24G-2S+ (arm)

Session Settings Dashboard

Safe Mode Session: 180.150.241.99

RouterOS WinBox

Bridge

Bridge Ports VLANs MSTIs Port MST Overrides Filters NAT Hosts MDB

Find

| Bridge  | VLAN IDs | Current Tagged                               | Current Untagged                                               | Comment |
|---------|----------|----------------------------------------------|----------------------------------------------------------------|---------|
| bridge1 | 4        | bridge1, sfp-sfpplus1, ether24, sfp-sfpplus2 |                                                                |         |
| bridge1 | 402      | sfp-sfpplus1, sfp-sfpplus2                   | ether5, ether8, ether7, ether6, ether3, ether2, ether4, ether1 |         |
| bridge1 | 33       | sfp-sfpplus1, sfp-sfpplus2                   | ether20                                                        |         |
| bridge1 | 1        | bridge1                                      | sfp-sfpplus1, sfp-sfpplus2                                     |         |
| bridge1 | 401      | sfp-sfpplus1, sfp-sfpplus2                   | ether24, ether24                                               |         |
| bridge1 | 12       | sfp-sfpplus1, ether24, sfp-sfpplus2          |                                                                |         |
| bridge1 | 14       | sfp-sfpplus1, ether24, sfp-sfpplus2          |                                                                |         |
| bridge1 | 28       | sfp-sfpplus1, sfp-sfpplus2                   | ether23                                                        |         |

New Bridge VLAN

Bridge: bridge1 OK

VLAN IDs: 10 Cancel

Tagged: sfp-sfpplus1 Apply

sfp-sfpplus2 Disable

Untagged: ether10 Comment

Current Tagged: Copy

Current Untagged: Remove

enabled

Windows Taskbar: 1:40 PM

## Adding VLAN

admin@180.150.241.99 - WinBox v6.41 on CRS326-24G-2S+ (arm)

Session Settings Dashboard

Safe Mode Session: 180.150.241.99

RouterOS WinBox

Bridge

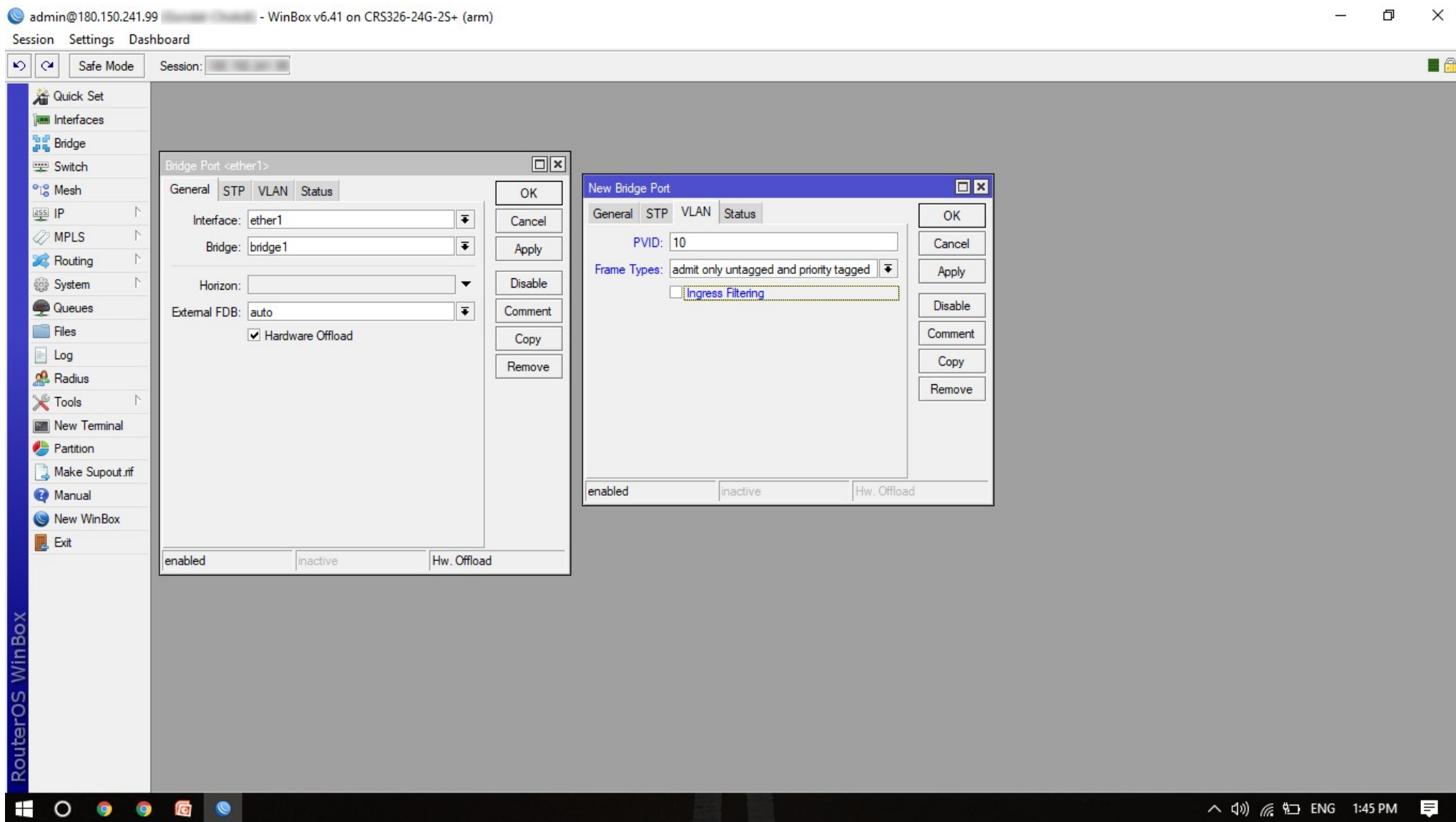
Bridge Ports VLANs MSTIs Port MST Overrides Filters NAT Hosts MDB

| #  | Interface       | Bridge   | Horizon | Priority (h... | Path Cost | Role            | Root Pat... | Comment |
|----|-----------------|----------|---------|----------------|-----------|-----------------|-------------|---------|
| 0  | H ether1        | bridge 1 |         | 80             | 10        | designated port |             |         |
| 1  | H ether2        | bridge 1 |         | 80             | 10        | designated port |             |         |
| 2  | H ether3        | bridge 1 |         | 80             | 10        | root port       | 10          |         |
| 3  | H ether4        | bridge 1 |         | 80             | 10        | designated port |             |         |
| 4  | H ether5        | bridge 1 |         | 80             | 10        | designated port |             |         |
| 5  | H ether6        | bridge 1 |         | 80             | 10        | designated port |             |         |
| 6  | H ether7        | bridge 1 |         | 80             | 10        | designated port |             |         |
| 7  | H ether8        | bridge 1 |         | 80             | 10        | designated port |             |         |
| 8  | XI ether9       | bridge 1 |         | 80             | 10        |                 |             |         |
| 9  | XI ether10      | bridge 1 |         | 80             | 10        |                 |             |         |
| 10 | XI ether11      | bridge 1 |         | 80             | 10        |                 |             |         |
| 11 | XI ether12      | bridge 1 |         | 80             | 10        |                 |             |         |
| 12 | XI ether13      | bridge 1 |         | 80             | 10        |                 |             |         |
| 13 | XI ether14      | bridge 1 |         | 80             | 10        |                 |             |         |
| 14 | XI ether15      | bridge 1 |         | 80             | 10        |                 |             |         |
| 15 | XI ether16      | bridge 1 |         | 80             | 10        |                 |             |         |
| 16 | XI ether17      | bridge 1 |         | 80             | 10        |                 |             |         |
| 17 | XI ether18      | bridge 1 |         | 80             | 10        |                 |             |         |
| 18 | XI ether19      | bridge 1 |         | 80             | 10        |                 |             |         |
| 19 | H ether20       | bridge 1 |         | 80             | 10        | designated port |             |         |
| 20 | XI ether21      | bridge 1 |         | 80             | 10        |                 |             |         |
| 21 | IH ether22      | bridge 1 |         | 80             | 10        | disabled port   |             |         |
| 22 | H ether23       | bridge 1 |         | 80             | 10        | designated port |             |         |
| 23 | H ether24       | bridge 1 |         | 80             | 10        | designated port |             |         |
| 24 | H sfp-sfpplus 1 | bridge 1 |         | 80             | 10        | designated port |             |         |
| 25 | H sfp-sfpplus 2 | bridge 1 |         | 80             | 10        | designated port |             |         |

26 items

Windows Taskbar: 1:42 PM

## Adding Port



# Adding VLAN to Port for Untag

admin@180.150.241.99 - WinBox v6.41 on CRS326-24G-2S+ (arm)

Session Settings Dashboard

Safe Mode Session:

Quick Set

Interfaces

Bridge

Switch

Mesh

IP

MPLS

Routing

System

Queues

Files

Log

Radius

Tools

New Terminal

Partition

Make Supout.tif

Manual

New WinBox

Exit

RouterOS WinBox

Interface List

Interface Interface List Ethernet EoIP Tunnel IP Tunnel GRE Tunnel VLAN VRRP Bonding LTE

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Find

|   | Name | Type | MTU  | Actual MTU | L2 MTU | Tx         | Rx       | Tx Packet (p/s) | Rx Packet (p/s) | FP Tx | FP Rx | FP Tx Packet (p/s) |
|---|------|------|------|------------|--------|------------|----------|-----------------|-----------------|-------|-------|--------------------|
| R | MGMT | VLAN | 1500 | 1500       | 1588   | 280.1 kbps | 1608 bps | 26              | 3               | 0 bps | 0 bps | 0                  |

Interface <MGMT>

General Loop Protect Status Traffic

Name: MGMT

Type: VLAN

MTU: 1500

Actual MTU: 1500

L2 MTU: 1588

MAC Address: 6C:3B:6B:ED:D1:96

ARP: enabled

ARP Timeout:

VLAN ID: 4

Interface: bridge1

☐ Use Service Tag

OK

Cancel

Apply

Disable

Comment

Copy

Remove

Torch

enabled running slave

Windows Taskbar: 1:47 PM

## IP Management for CRS Switch

admin@ (MikroTik) - WinBox v6.41.1 on CRS317-1G-16S+ (arm)

Session Settings Dashboard

Safe Mode Session: Uptime: CPU:3%

Quick Set CAPsMAN Interfaces Wireless Bridge PPP Switch Mesh IP IPv6 MPLS Routing System Queues Files Log Radius Tools New Terminal Partition Make Supout.rtf Manual New WinBox Exit

Interface List

Interface Interface List Ethernet EoIP Tunnel IP Tunnel GRE Tunnel VLAN VRRP Bonding LTE

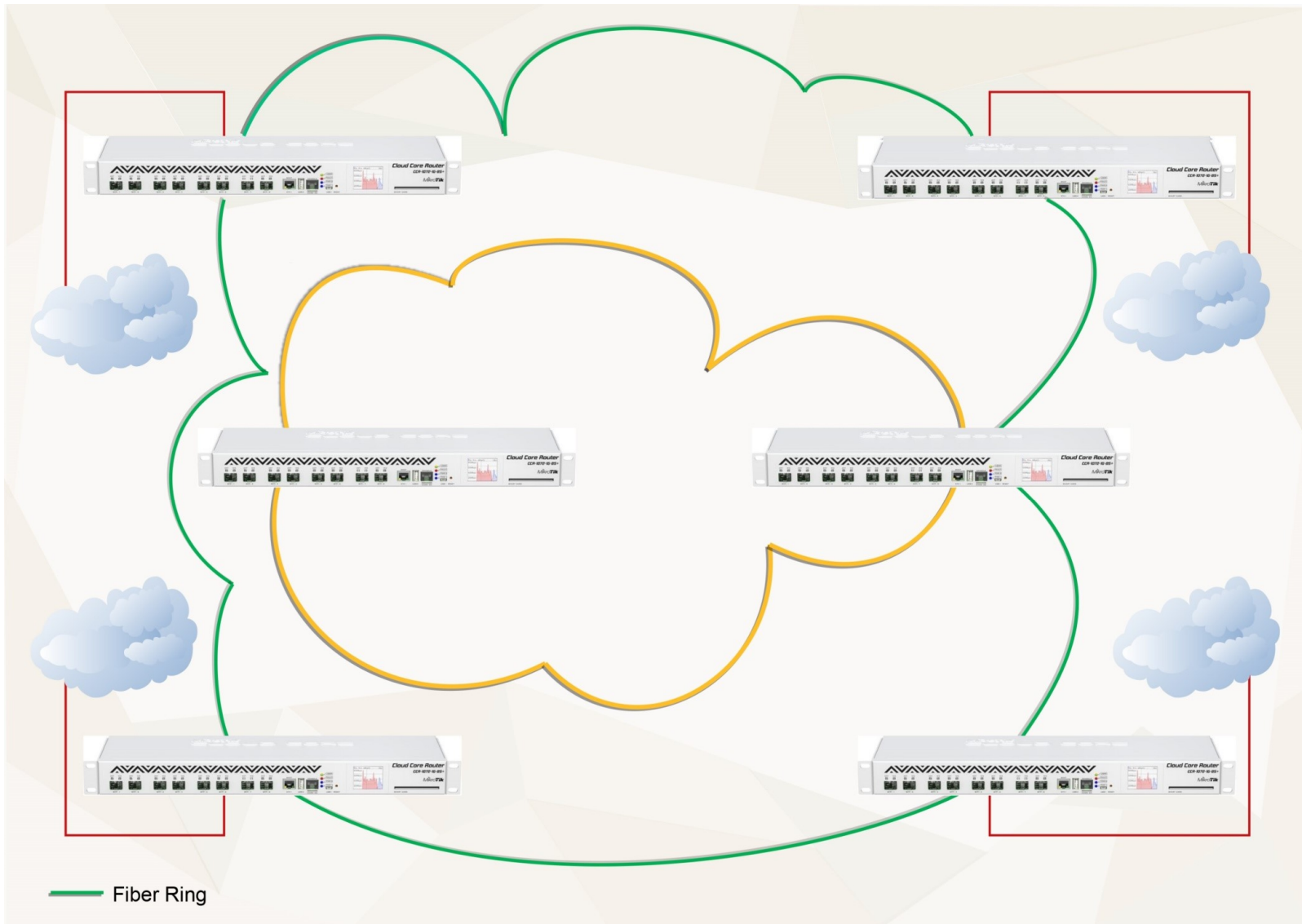
Power Cycle Find

| Name | Type        | MTU      | Actual MTU | L2 MTU | Tx   | Rx         | Tx Packet (p/s) | Rx Packet (p/s) | FP Tx   | FP Rx      | FP Tx Packet (p/s) | FP Rx Packet (p/s) | PoE Out | PoE |
|------|-------------|----------|------------|--------|------|------------|-----------------|-----------------|---------|------------|--------------------|--------------------|---------|-----|
| RS   | ETHER 1     | Ethernet | 1500       | 1500   | 1592 | 12.0 kbps  | 0 bps           | 8               | 0       | 424 bps    | 0 bps              | 1                  | 0       |     |
| RS   | SFP PLUS-1  | Ethernet | 1500       | 1500   | 1592 | 496.9 Mbps | 677.6 Mbps      | 86 717          | 110 897 | 659.5 kbps | 842.1 kbps         | 61                 | 256     |     |
| RS   | SFP PLUS-2  | Ethernet | 1500       | 1500   | 1592 | 0 bps      | 0 bps           | 0               | 0       | 0 bps      | 0 bps              | 0                  | 0       |     |
| RS   | SFP PLUS-3  | Ethernet | 1500       | 1500   | 1592 | 151.2 Mbps | 48.5 Mbps       | 22 393          | 19 079  | 424 bps    | 2.2 kbps           | 1                  | 3       |     |
| RS   | SFP PLUS-4  | Ethernet | 1500       | 1500   | 1592 | 36.1 Mbps  | 13.7 Mbps       | 5 039           | 4 280   | 0 bps      | 34.7 kbps          | 0                  | 36      |     |
| RS   | SFP PLUS-5  | Ethernet | 1500       | 1500   | 1592 | 0 bps      | 0 bps           | 0               | 0       | 0 bps      | 0 bps              | 0                  | 0       |     |
| RS   | SFP PLUS-6  | Ethernet | 1500       | 1500   | 1592 | 62.4 Mbps  | 14.6 Mbps       | 6 409           | 3 895   | 0 bps      | 14.7 kbps          | 0                  | 11      |     |
| RS   | SFP PLUS-7  | Ethernet | 1500       | 1500   | 1592 | 24.6 Mbps  | 4.6 Mbps        | 2 989           | 2 124   | 0 bps      | 9.4 kbps           | 0                  | 5       |     |
| RS   | SFP PLUS-8  | Ethernet | 1500       | 1500   | 1592 | 160.5 Mbps | 19.2 Mbps       | 16 747          | 10 596  | 0 bps      | 9.9 kbps           | 0                  | 13      |     |
| RS   | SFP PLUS-9  | Ethernet | 1500       | 1500   | 1592 | 916.6 Mbps | 119.1 Mbps      | 87 626          | 53 875  | 0 bps      | 512 bps            | 0                  | 1       |     |
| RS   | SFP PLUS-10 | Ethernet | 1500       | 1500   | 1592 | 8.9 Mbps   | 4.9 Mbps        | 1 136           | 1 077   | 0 bps      | 0 bps              | 0                  | 0       |     |
| RS   | SFP PLUS-11 | Ethernet | 1500       | 1500   | 1592 | 12.6 kbps  | 0 bps           | 9               | 0       | 0 bps      | 0 bps              | 0                  | 0       |     |
| RS   | SFP PLUS-12 | Ethernet | 1500       | 1500   | 1592 | 64.0 Mbps  | 11.9 Mbps       | 6 679           | 3 448   | 0 bps      | 0 bps              | 0                  | 0       |     |
| RS   | SFP PLUS-13 | Ethernet | 1500       | 1500   | 1592 | 55.7 Mbps  | 0 bps           | 8 152           | 0       | 424 bps    | 0 bps              | 1                  | 0       |     |
| RS   | SFP PLUS-14 | Ethernet | 1500       | 1500   | 1592 | 9.9 Mbps   | 1060.0 kbps     | 1 226           | 930     | 424 bps    | 312.9 kbps         | 1                  | 123     |     |
| RS   | SFP PLUS-15 | Ethernet | 1500       | 1500   | 1592 | 0 bps      | 0 bps           | 0               | 0       | 0 bps      | 0 bps              | 0                  | 0       |     |
| RS   | SFP PLUS-16 | Ethernet | 1500       | 1500   | 1592 | 220.4 Mbps | 1290.6 Mbps     | 93 896          | 128 354 | 424 bps    | 0 bps              | 1                  | 0       |     |

17 items out of 19

# Live Traffic Preview





## Core Network Topology



Any Suggestions



Thank you

