

深圳捷联讯通科技有限公司——陈树远

# CRS浅析与实施研讨

# 关于CRS

- ◎ 网管型交换机与路由器的结合
- ◎ 支持三层交换
- ◎ 强大的二层处理能力
- ◎ 丰富的数据包处理功能
- ◎ 具备相同CPU架构RouterOS的所有功能，  
且具备独立Switch功能菜单

# 关于CRS

- ◎ CRS 1XX/2XX使用高性能MIPS CPU
- ◎ CRS 3XX使用高性能ARM CPU
- ◎ CRS 2XX基本被CRS 3XX替代
- ◎ CRS 3XX性能均高于前两代CRS产品
- ◎ CPU变动：ARM CPU设备性价比高于MIPS CPU设备，ARM架构或许将于后一代交换机中普及
- ◎ 性能提升，价格降低（CRS226售价1900RMB，CRS326售价1400RMB）

# CRS226与CRS326数据对比

CRS226-24G-2S+RM

QCA8519 Max possible throughput test

| Mode     | Configuration          | 1518 byte |       | 512 byte |       | 64 byte |      |
|----------|------------------------|-----------|-------|----------|-------|---------|------|
|          |                        | kpps      | Mbps  | kpps     | Mbps  | kpps    | Mbps |
| Bridging | none (fast path)       | 26.7      | 324.2 | 28.6     | 117.1 | 24.5    | 12.5 |
| Bridging | 25 bridge filter rules | 21.4      | 259.9 | 22.4     | 91.8  | 22.2    | 11.4 |
| Routing  | none (fast path)       | 23.0      | 279.3 | 23.5     | 96.3  | 24.5    | 12.5 |
| Routing  | 25 simple queues       | 19.6      | 238.0 | 22.4     | 91.8  | 21.0    | 10.8 |
| Routing  | 25 ip filter rules     | 7.9       | 95.9  | 10.4     | 42.6  | 10.8    | 5.5  |

CRS326-24G-2S+RM

98DX3236A1 all port test

| Mode     | Configuration          | 1518 byte |       | 512 byte |       | 64 byte |       |
|----------|------------------------|-----------|-------|----------|-------|---------|-------|
|          |                        | kpps      | Mbps  | kpps     | Mbps  | kpps    | Mbps  |
| Bridging | none (fast path)       | 81.3      | 987.3 | 235      | 962.6 | 296     | 151.6 |
| Bridging | 25 bridge filter rules | 81.3      | 987.3 | 90.7     | 371.5 | 90.9    | 46.5  |
| Routing  | none (fast path)       | 81.3      | 987.3 | 235      | 962.6 | 261.9   | 134.1 |
| Routing  | 25 simple queues       | 81.3      | 987.3 | 112.6    | 461.2 | 111.5   | 57.1  |
| Routing  | 25 ip filter rules     | 59.8      | 726.2 | 61.4     | 251.5 | 59.5    | 30.5  |

# CRS125与CRS326数据对比

CRS125-24G-1S-IN

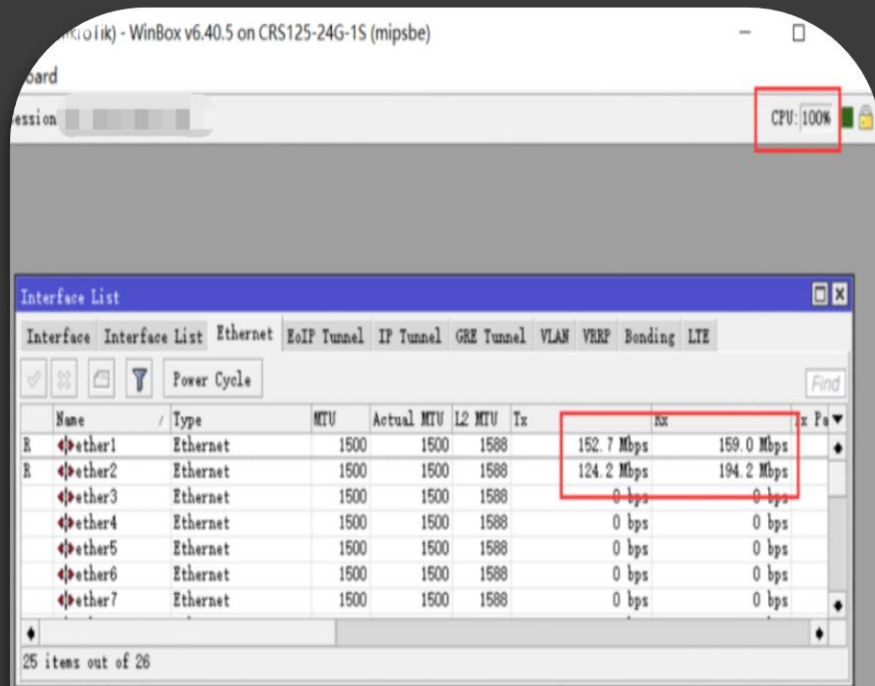
| Mode      | Configuration                   | 64 byte  |          | 512 byte |          | 1518 byte |          |
|-----------|---------------------------------|----------|----------|----------|----------|-----------|----------|
|           |                                 | kpps     | Mbps     | kpps     | Mbps     | kpps      | Mbps     |
| Switching | Non blocking Layer 2 throughput | 37,202.4 | 19,047.6 | 5,874.1  | 24,060.2 | 2,031.9   | 24,674.9 |
| Switching | Non blocking Layer 2 capacity   | 37,202.4 | 38,095.2 | 5,874.1  | 48,120.3 | 2,031.9   | 49,349.8 |
| Switching | Non blocking Layer 1 throughput | 37,202.4 | 25,000.0 | 5,874.1  | 25,000.0 | 2,031.9   | 25,000.0 |
| Switching | Non blocking Layer 1 capacity   | 37,202.4 | 50,000.0 | 5,874.1  | 50,000.0 | 2,031.9   | 50,000.0 |

CSS326-24G-2S+RM

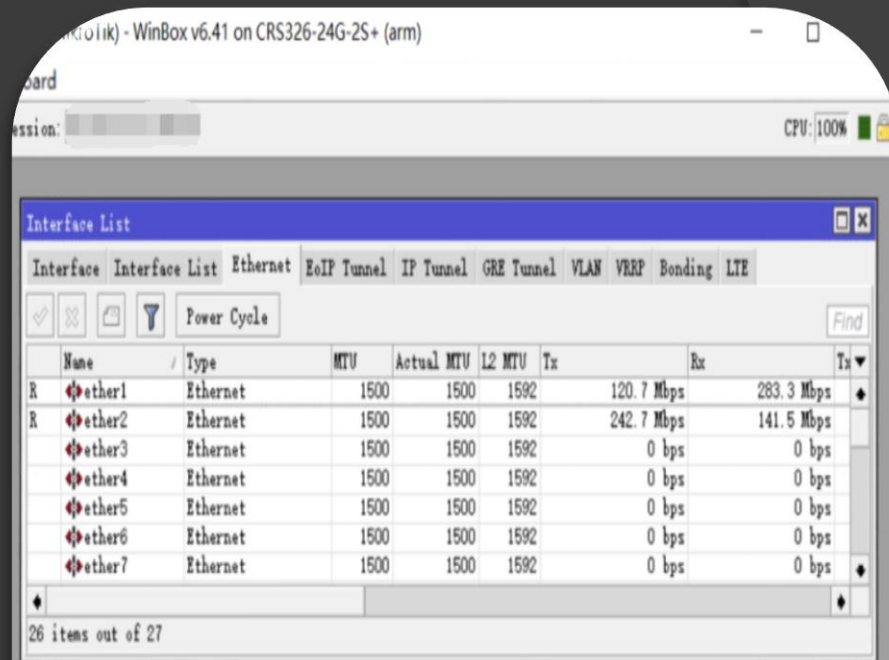
| Mode      | Configuration                   | 64 byte  |          | 512 byte |          | 1518 byte |          |
|-----------|---------------------------------|----------|----------|----------|----------|-----------|----------|
|           |                                 | kpps     | Mbps     | kpps     | Mbps     | kpps      | Mbps     |
| Switching | Non blocking Layer 2 throughput | 65,476.2 | 33,523.8 | 10,338.3 | 42,345.9 | 3,576.1   | 43,427.8 |
| Switching | Non blocking Layer 2 capacity   | 65,476.2 | 67,047.6 | 10,338.3 | 84,691.7 | 3,576.1   | 86,855.7 |
| Switching | Non blocking Layer 1 throughput | 65,476.2 | 44,000.0 | 10,338.3 | 44,000.0 | 3,576.1   | 44,000.0 |
| Switching | Non blocking Layer 1 capacity   | 65,476.2 | 88,000.0 | 10,338.3 | 88,000.0 | 3,576.1   | 88,000.0 |

Switching Non blocking Layer 2 throughput 65,476.2 33,523.8 10,338.3 42,345.9 3,576.1 43,427.8

# CRS125与CRS326 NAT测试对比



CPU满负载吞吐280-310M



CPU满负载吞吐 360-400M

# CRS125与CRS326 非NAT测试对比

WinBox v6.40.5 on CRS125-24G-1S (mipsbe)

CPU: 97%

Interface List

| Interface | Interface List | Ethernet | EoIP Tunnel | IP Tunnel | GRE Tunnel | VLAN       | VRP | Bonding | LTE |
|-----------|----------------|----------|-------------|-----------|------------|------------|-----|---------|-----|
| Name      | Type           | MTU      | Actual MTU  | L2 MTU    | Tx         | Rx         | Tx  | Rx      | Tx  |
| R ether1  | Ethernet       | 1500     | 1500        | 1588      | 39.3 Mbps  | 628.0 Mbps |     |         |     |
| R ether2  | Ethernet       | 1500     | 1500        | 1588      | 621.9 Mbps | 44.3 Mbps  |     |         |     |
| R ether3  | Ethernet       | 1500     | 1500        | 1588      | 0 bps      | 0 bps      |     |         |     |
| R ether4  | Ethernet       | 1500     | 1500        | 1588      | 0 bps      | 0 bps      |     |         |     |
| R ether5  | Ethernet       | 1500     | 1500        | 1588      | 0 bps      | 0 bps      |     |         |     |
| R ether6  | Ethernet       | 1500     | 1500        | 1588      | 0 bps      | 0 bps      |     |         |     |
| R ether7  | Ethernet       | 1500     | 1500        | 1588      | 0 bps      | 0 bps      |     |         |     |

25 items out of 26

CPU满负载吞吐 620-660M

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

CPU: 100%

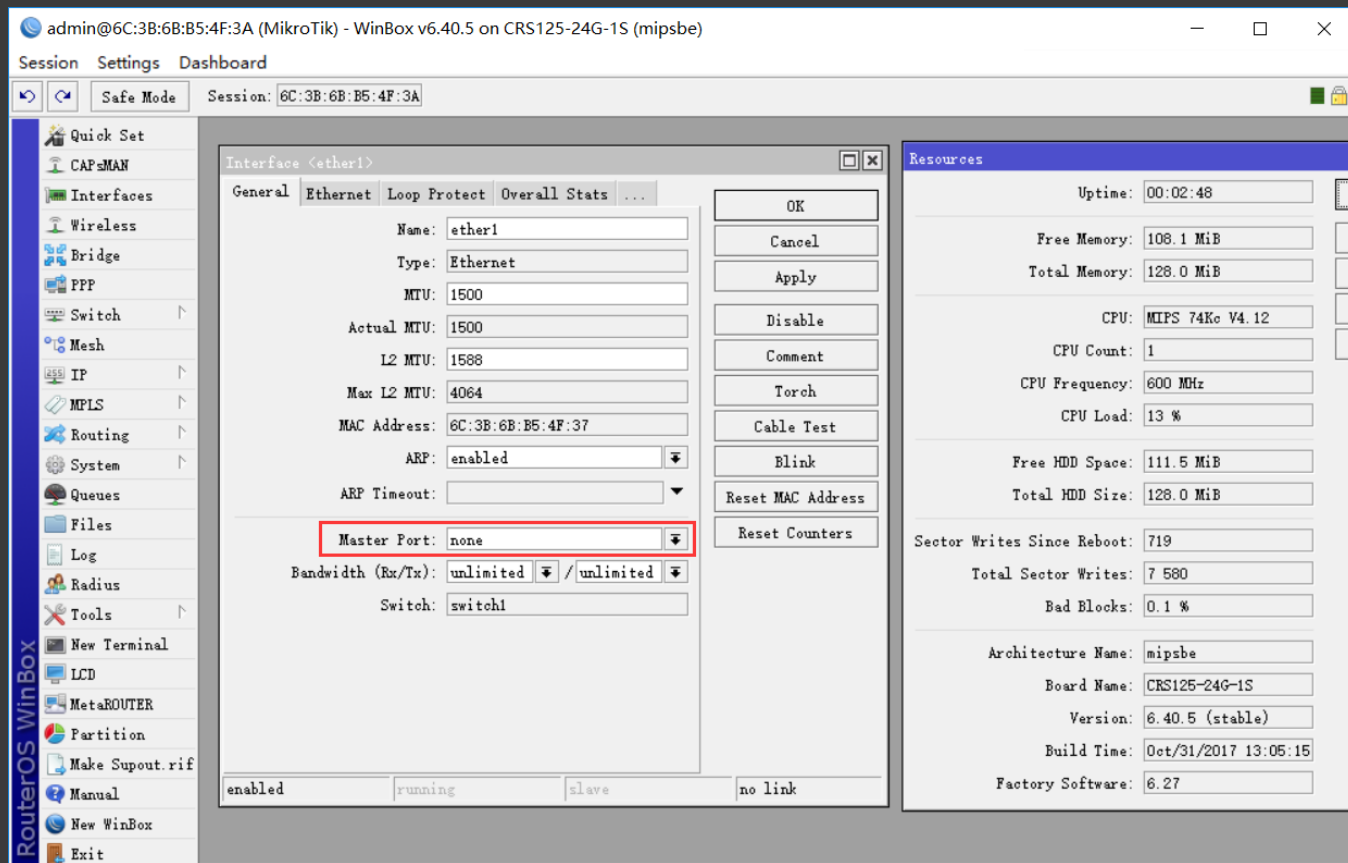
Interface List

| Interface | Interface List | Ethernet | EoIP Tunnel | IP Tunnel | GRE Tunnel | VLAN       | VRP | Bonding    | LTE |
|-----------|----------------|----------|-------------|-----------|------------|------------|-----|------------|-----|
| Name      | Type           | MTU      | Actual MTU  | L2 MTU    | Tx         | Rx         | Tx  | Rx         | Tx  |
| R ether1  | Ethernet       | 1500     | 1500        | 1592      |            | 468.9 Mbps |     | 256.7 Mbps |     |
| R ether2  | Ethernet       | 1500     | 1500        | 1592      |            | 254.9 Mbps |     | 471.0 Mbps |     |
| R ether3  | Ethernet       | 1500     | 1500        | 1592      |            | 0 bps      |     | 0 bps      |     |
| R ether4  | Ethernet       | 1500     | 1500        | 1592      |            | 0 bps      |     | 0 bps      |     |
| R ether5  | Ethernet       | 1500     | 1500        | 1592      |            | 0 bps      |     | 0 bps      |     |
| R ether6  | Ethernet       | 1500     | 1500        | 1592      |            | 0 bps      |     | 0 bps      |     |
| R ether7  | Ethernet       | 1500     | 1500        | 1592      |            | 0 bps      |     | 0 bps      |     |

26 items out of 27

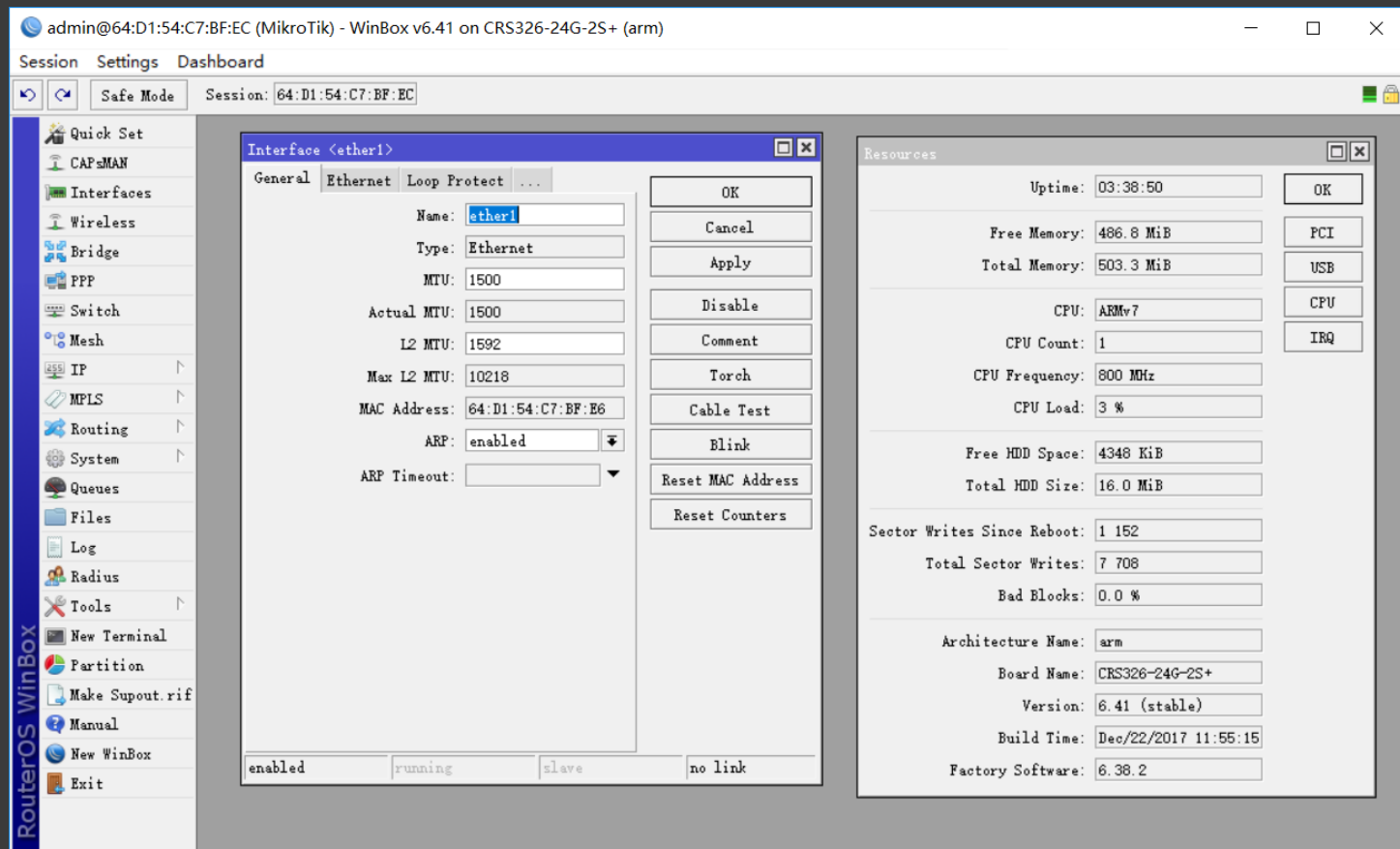
CPU满负载吞吐 650-720M

# ROS 6.41前后交换芯片桥接设置变更





# ROS 6.41前后交换芯片桥接设置变更



# ROS 6.41前后交换芯片桥接设置变更

admin@64:D1:54:C7:BF:E6 (MikroTik) - WinBox v6.41 on CRS326-24G-2S+ (arm)

Session Settings Dashboard

Safe Mode Session: 64:D1:54:C7:BF:E6

RouterOS WinBox

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

Bridge

Bridge Ports VLANs MSTIs Port MST Overrides Filters NAT Hosts MDB

| # | Interface | Bridge  | Hor... | Priority (hex) | Path Cost | Role               | Root Path Cost |
|---|-----------|---------|--------|----------------|-----------|--------------------|----------------|
| 0 | IH ether1 | bridge1 |        |                | 80        | 10 disabled port   |                |
| 1 | I ether2  | bridge1 |        |                | 80        | 10 disabled port   |                |
| 2 | H ether3  | bridge1 |        |                | 80        | 10 designated port |                |

3 items (1 selected)

H: 启用硬件负载

Bridge Port <ether3>

General STP VLAN Status

Interface: ether3

Bridge: bridge1

Horizon:

External FDB: auto

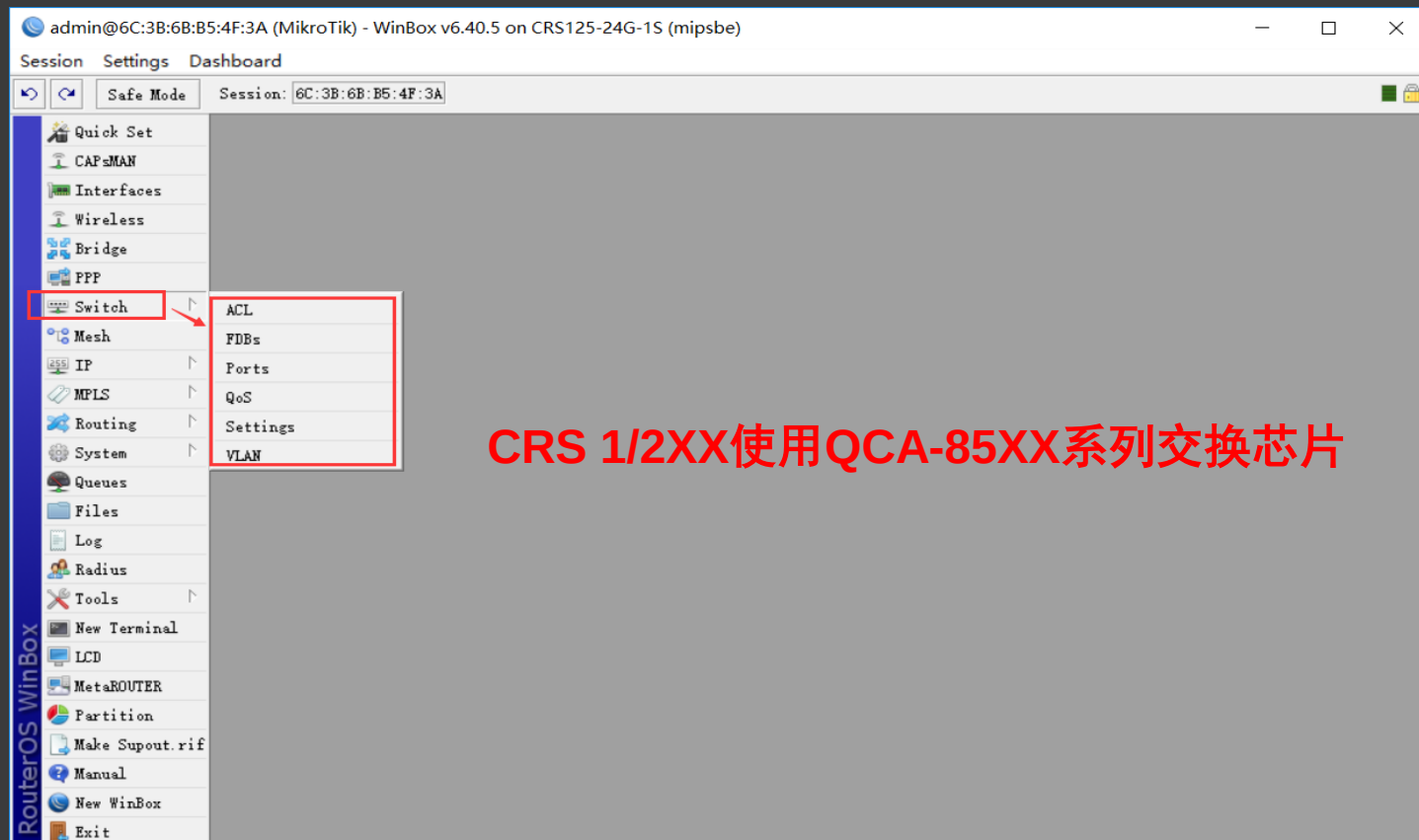
☒ Hardware Offload

OK Cancel Apply Disable Comment Copy Remove

enabled inactive Hw. Offload

Bridge将处理所有二层转发

# CRS1XX/2XX与CRS326 swich菜单区别



**CRS 1/2XX使用QCA-85XX系列交换芯片**

# CRS1XX/2XX与CRS326 swich菜单区别

The screenshot shows the Mikrotik WinBox interface. The left sidebar contains a menu with various configuration options. The 'Switch' option is highlighted with a red box. A red arrow points from this box to a 'Switch' configuration window. The window has tabs for 'Switch', 'Port', 'Host', 'VLAN', and 'Rule'. The 'Switch' tab is active, displaying a table with one item: 'switch1' of type 'Marvell ...'. The status bar at the bottom of the window indicates '1 item'.

admin@64:D1:54:C7:BF:E6 (MikroTik) - WinBox v6.41 on CRS326-24G-2S+ (arm)

Session Settings Dashboard

Safe Mode Session: 64:D1:54:C7:BF:E6

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

RouterOS WinBox

Switch

Switch Port Host VLAN Rule

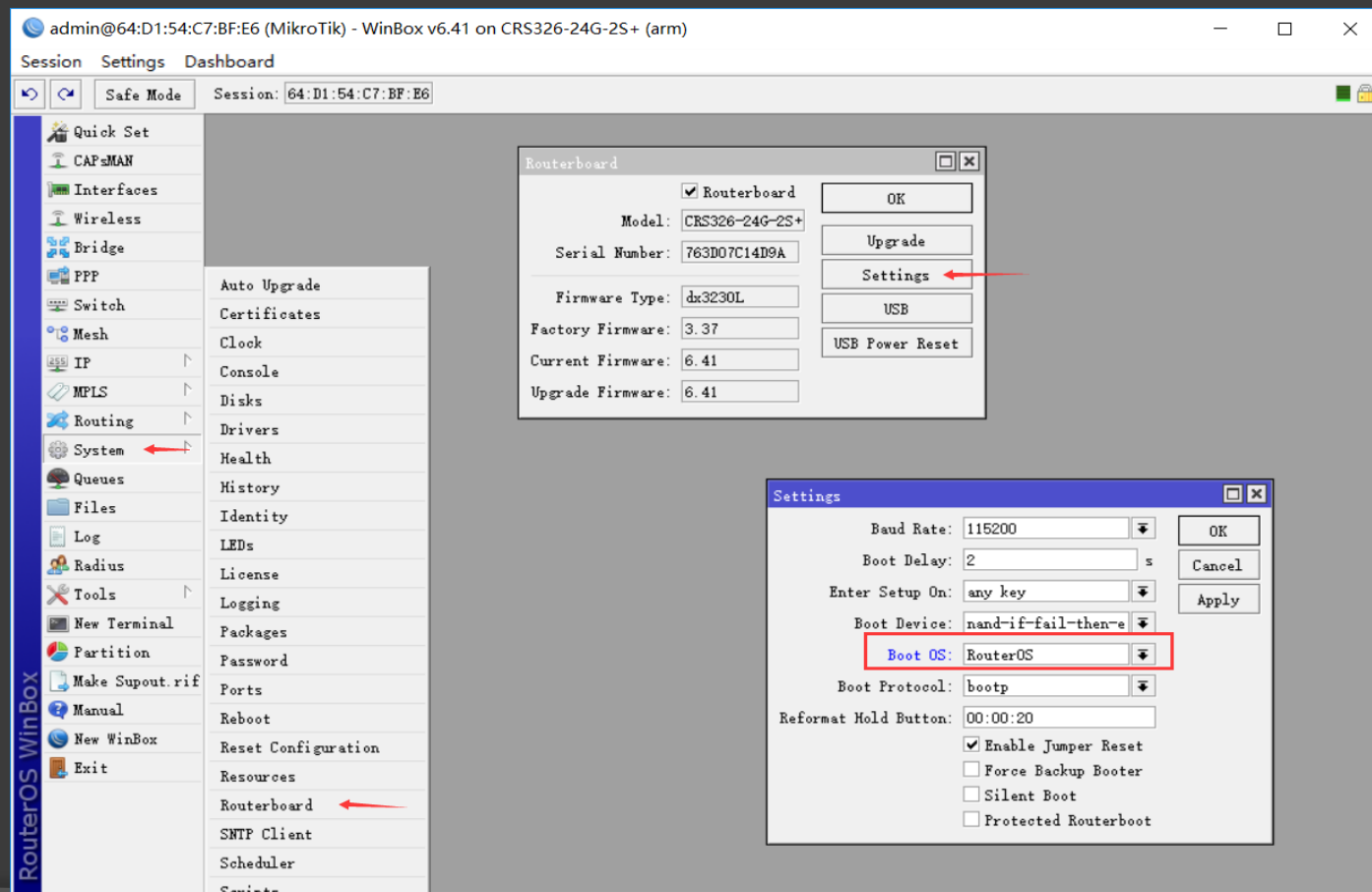
Find

| Name    | Type        | Mirror So... | Mirror Ta... |
|---------|-------------|--------------|--------------|
| switch1 | Marvell ... |              |              |

1 item

**CRS 3XX使用Marvell系列交换芯片类似于RB设备的Atheros等系列芯片**

# CRS326双系统特性: RouterOS



# CRS326双系统特性: SwOS

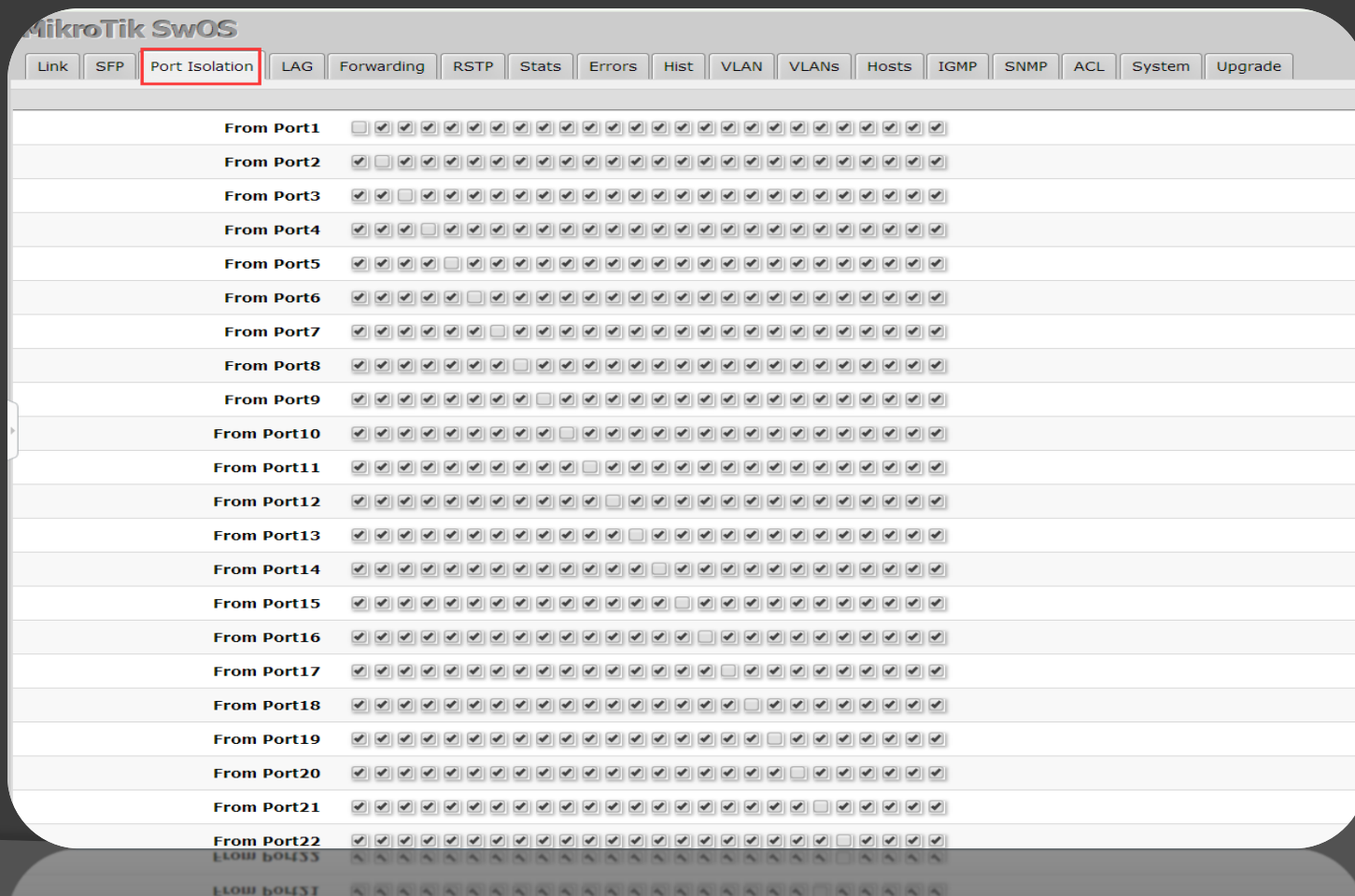
The screenshot displays the 'System' configuration page in MikroTik WinBox. The interface includes a top navigation bar with various icons and a search bar. The main content area is divided into several sections:

- System Information:** Displays 'Board Name' as CRS326-24G-2S+ and 'Uptime' as 00:03:33.
- DHCP & PPPoE Snooping:** Contains 'Trusted Ports' (24 checked) and 'Add Information Option' (checked).
- Health:** Shows 'Temperature' as 53C.
- Password Change:** Includes input fields for 'Old Password', 'New Password', and 'Confirm Password', along with a 'Change Password' button.
- Backup:** Features a 'Backup to Restore' section with a file selection button and a 'Restore Backup' button. At the bottom right, there are buttons for 'Boot RouterOS' (highlighted with a red box and arrow) and 'Reboot'.

# SwOS简介

- Mikrotik二层交换机专用系统
- 基于WEB方式登录，不支持winbox登录
- 支持 MikroTik Neighbor Discovery
- 常用功能：端口隔离，链路聚合，高级转发（端口锁定，端口镜像，带宽限制和广播风暴控制功能）， RSTP，VLAN，SNMP，访问控制列表（ACL）

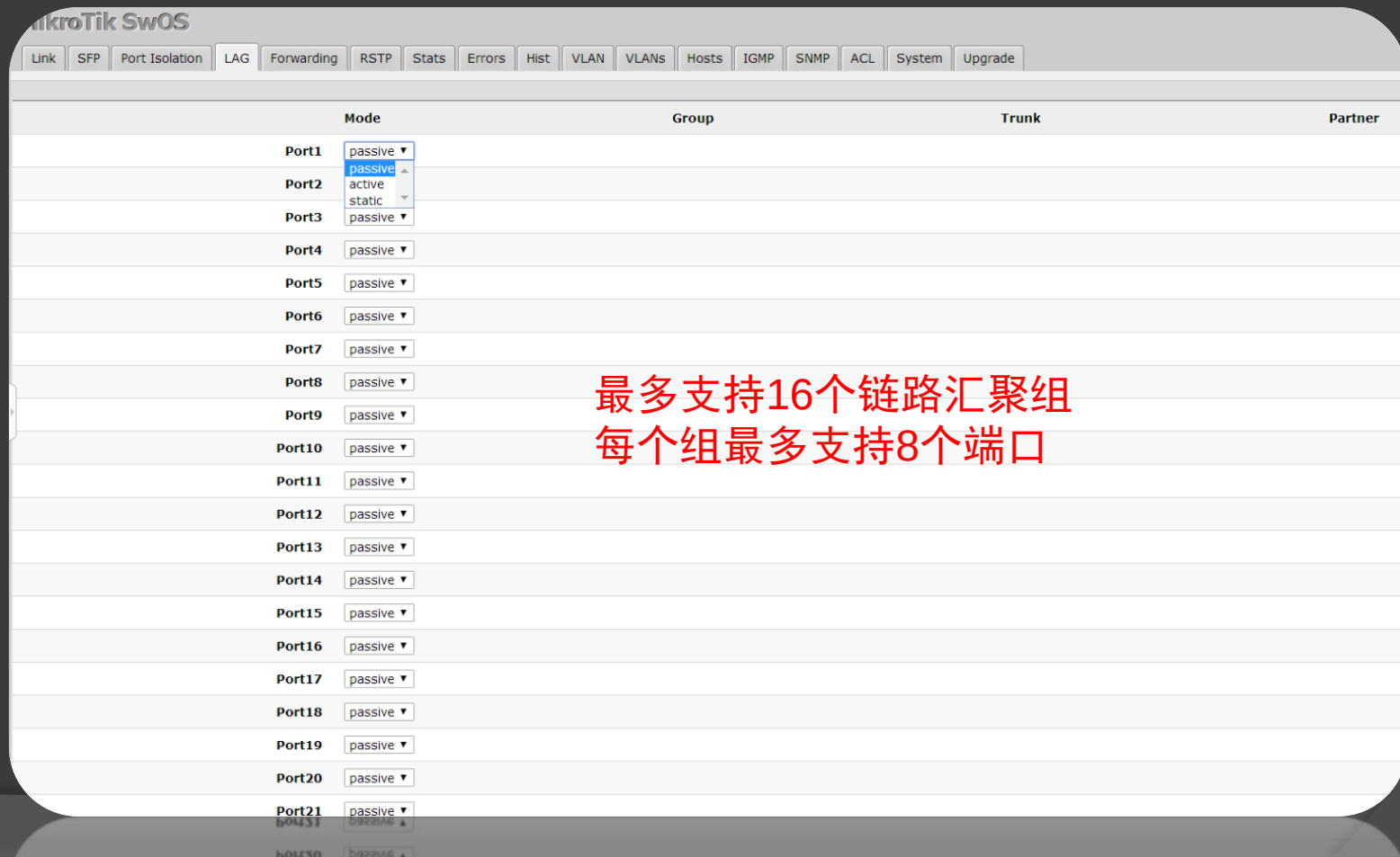
# SwOS——端口隔离





802.3ad (LACP) 兼容链路聚合以及静态链路聚合

# SwOS——链路聚合



# SwOS——转发菜单

MikroTik SwOS

Link SFP Port Isolation LAG Forwarding RSTP Stats Errors Hist VLAN VLANs Hosts IGMP SNMP ACL System Upgrade

端口锁定 端口镜像 广播风暴控制功能 带宽限制

|         | Port Lock                | Lock On First            | Mirror Ingress           | Mirror Egress            | Mirror To             | Storm Rate (%)                   | Limit Unknown Unicast    | Ingress Rate                      |
|---------|--------------------------|--------------------------|--------------------------|--------------------------|-----------------------|----------------------------------|--------------------------|-----------------------------------|
| Port1   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="radio"/> | <input type="text" value="100"/> | <input type="checkbox"/> | <input type="text"/>              |
| Port2   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="radio"/> | <input type="text" value="100"/> | <input type="checkbox"/> | <input type="text" value="10M"/>  |
| Port3   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="radio"/> | <input type="text" value="100"/> | <input type="checkbox"/> | <input type="text" value="512K"/> |
| Port4   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="radio"/> | <input type="text" value="100"/> | <input type="checkbox"/> | <input type="text"/>              |
| Port5   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="radio"/> | <input type="text" value="100"/> | <input type="checkbox"/> | <input type="text"/>              |
| Port6   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="radio"/> | <input type="text" value="100"/> | <input type="checkbox"/> | <input type="text"/>              |
| Port7   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="radio"/> | <input type="text" value="100"/> | <input type="checkbox"/> | <input type="text"/>              |
| Port8   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="radio"/> | <input type="text" value="100"/> | <input type="checkbox"/> | <input type="text"/>              |
| Port9   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="radio"/> | <input type="text" value="100"/> | <input type="checkbox"/> | <input type="text"/>              |
| Port10  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="radio"/> | <input type="text" value="100"/> | <input type="checkbox"/> | <input type="text"/>              |
| Port11  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="radio"/> | <input type="text" value="100"/> | <input type="checkbox"/> | <input type="text"/>              |
| Port12  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="radio"/> | <input type="text" value="100"/> | <input type="checkbox"/> | <input type="text"/>              |
| Port13  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="radio"/> | <input type="text" value="100"/> | <input type="checkbox"/> | <input type="text"/>              |
| Port14  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="radio"/> | <input type="text" value="100"/> | <input type="checkbox"/> | <input type="text"/>              |
| Port15  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="radio"/> | <input type="text" value="100"/> | <input type="checkbox"/> | <input type="text"/>              |
| Port16  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="radio"/> | <input type="text" value="100"/> | <input type="checkbox"/> | <input type="text"/>              |
| Port17  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="radio"/> | <input type="text" value="100"/> | <input type="checkbox"/> | <input type="text"/>              |
| Port18  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="radio"/> | <input type="text" value="100"/> | <input type="checkbox"/> | <input type="text"/>              |
| Port19  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="radio"/> | <input type="text" value="100"/> | <input type="checkbox"/> | <input type="text"/>              |
| Port20  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="radio"/> | <input type="text" value="100"/> | <input type="checkbox"/> | <input type="text"/>              |
| Port21  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="radio"/> | <input type="text" value="100"/> | <input type="checkbox"/> | <input type="text"/>              |
| Port22  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="radio"/> | <input type="text" value="100"/> | <input type="checkbox"/> | <input type="text"/>              |
| Port23  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="radio"/> | <input type="text" value="100"/> | <input type="checkbox"/> | <input type="text"/>              |
| Port24  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="radio"/> | <input type="text" value="100"/> | <input type="checkbox"/> | <input type="text"/>              |
| Port25  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="radio"/> | <input type="text" value="100"/> | <input type="checkbox"/> | <input type="text"/>              |
| Port26  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="radio"/> | <input type="text" value="100"/> | <input type="checkbox"/> | <input type="text"/>              |
| Port27  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="radio"/> | <input type="text" value="100"/> | <input type="checkbox"/> | <input type="text"/>              |
| Port28  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="radio"/> | <input type="text" value="100"/> | <input type="checkbox"/> | <input type="text"/>              |
| Port29  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="radio"/> | <input type="text" value="100"/> | <input type="checkbox"/> | <input type="text"/>              |
| Port30  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="radio"/> | <input type="text" value="100"/> | <input type="checkbox"/> | <input type="text"/>              |
| Port31  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="radio"/> | <input type="text" value="100"/> | <input type="checkbox"/> | <input type="text"/>              |
| Port32  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="radio"/> | <input type="text" value="100"/> | <input type="checkbox"/> | <input type="text"/>              |
| Port33  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="radio"/> | <input type="text" value="100"/> | <input type="checkbox"/> | <input type="text"/>              |
| Port34  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="radio"/> | <input type="text" value="100"/> | <input type="checkbox"/> | <input type="text"/>              |
| Port35  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="radio"/> | <input type="text" value="100"/> | <input type="checkbox"/> | <input type="text"/>              |
| Port36  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="radio"/> | <input type="text" value="100"/> | <input type="checkbox"/> | <input type="text"/>              |
| Port37  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="radio"/> | <input type="text" value="100"/> | <input type="checkbox"/> | <input type="text"/>              |
| Port38  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="radio"/> | <input type="text" value="100"/> | <input type="checkbox"/> | <input type="text"/>              |
| Port39  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="radio"/> | <input type="text" value="100"/> | <input type="checkbox"/> | <input type="text"/>              |
| Port40  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="radio"/> | <input type="text" value="100"/> | <input type="checkbox"/> | <input type="text"/>              |
| Port41  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="radio"/> | <input type="text" value="100"/> | <input type="checkbox"/> | <input type="text"/>              |
| Port42  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="radio"/> | <input type="text" value="100"/> | <input type="checkbox"/> | <input type="text"/>              |
| Port43  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="radio"/> | <input type="text" value="100"/> | <input type="checkbox"/> | <input type="text"/>              |
| Port44  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="radio"/> | <input type="text" value="100"/> | <input type="checkbox"/> | <input type="text"/>              |
| Port45  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="radio"/> | <input type="text" value="100"/> | <input type="checkbox"/> | <input type="text"/>              |
| Port46  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="radio"/> | <input type="text" value="100"/> | <input type="checkbox"/> | <input type="text"/>              |
| Port47  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="radio"/> | <input type="text" value="100"/> | <input type="checkbox"/> | <input type="text"/>              |
| Port48  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="radio"/> | <input type="text" value="100"/> | <input type="checkbox"/> | <input type="text"/>              |
| Port49  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="radio"/> | <input type="text" value="100"/> | <input type="checkbox"/> | <input type="text"/>              |
| Port50  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="radio"/> | <input type="text" value="100"/> | <input type="checkbox"/> | <input type="text"/>              |
| Port51  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="radio"/> | <input type="text" value="100"/> | <input type="checkbox"/> | <input type="text"/>              |
| Port52  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="radio"/> | <input type="text" value="100"/> | <input type="checkbox"/> | <input type="text"/>              |
| Port53  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="radio"/> | <input type="text" value="100"/> | <input type="checkbox"/> | <input type="text"/>              |
| Port54  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="radio"/> | <input type="text" value="100"/> | <input type="checkbox"/> | <input type="text"/>              |
| Port55  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="radio"/> | <input type="text" value="100"/> | <input type="checkbox"/> | <input type="text"/>              |
| Port56  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="radio"/> | <input type="text" value="100"/> | <input type="checkbox"/> | <input type="text"/>              |
| Port57  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="radio"/> | <input type="text" value="100"/> | <input type="checkbox"/> | <input type="text"/>              |
| Port58  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="radio"/> | <input type="text" value="100"/> | <input type="checkbox"/> | <input type="text"/>              |
| Port59  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="radio"/> | <input type="text" value="100"/> | <input type="checkbox"/> | <input type="text"/>              |
| Port60  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="radio"/> | <input type="text" value="100"/> | <input type="checkbox"/> | <input type="text"/>              |
| Port61  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="radio"/> | <input type="text" value="100"/> | <input type="checkbox"/> | <input type="text"/>              |
| Port62  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="radio"/> | <input type="text" value="100"/> | <input type="checkbox"/> | <input type="text"/>              |
| Port63  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="radio"/> | <input type="text" value="100"/> | <input type="checkbox"/> | <input type="text"/>              |
| Port64  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="radio"/> | <input type="text" value="100"/> | <input type="checkbox"/> | <input type="text"/>              |
| Port65  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="radio"/> | <input type="text" value="100"/> | <input type="checkbox"/> | <input type="text"/>              |
| Port66  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="radio"/> | <input type="text" value="100"/> | <input type="checkbox"/> | <input type="text"/>              |
| Port67  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="radio"/> | <input type="text" value="100"/> | <input type="checkbox"/> | <input type="text"/>              |
| Port68  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="radio"/> | <input type="text" value="100"/> | <input type="checkbox"/> | <input type="text"/>              |
| Port69  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="radio"/> | <input type="text" value="100"/> | <input type="checkbox"/> | <input type="text"/>              |
| Port70  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="radio"/> | <input type="text" value="100"/> | <input type="checkbox"/> | <input type="text"/>              |
| Port71  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="radio"/> | <input type="text" value="100"/> | <input type="checkbox"/> | <input type="text"/>              |
| Port72  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="radio"/> | <input type="text" value="100"/> | <input type="checkbox"/> | <input type="text"/>              |
| Port73  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="radio"/> | <input type="text" value="100"/> | <input type="checkbox"/> | <input type="text"/>              |
| Port74  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="radio"/> | <input type="text" value="100"/> | <input type="checkbox"/> | <input type="text"/>              |
| Port75  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="radio"/> | <input type="text" value="100"/> | <input type="checkbox"/> | <input type="text"/>              |
| Port76  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="radio"/> | <input type="text" value="100"/> | <input type="checkbox"/> | <input type="text"/>              |
| Port77  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="radio"/> | <input type="text" value="100"/> | <input type="checkbox"/> | <input type="text"/>              |
| Port78  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="radio"/> | <input type="text" value="100"/> | <input type="checkbox"/> | <input type="text"/>              |
| Port79  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="radio"/> | <input type="text" value="100"/> | <input type="checkbox"/> | <input type="text"/>              |
| Port80  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="radio"/> | <input type="text" value="100"/> | <input type="checkbox"/> | <input type="text"/>              |
| Port81  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="radio"/> | <input type="text" value="100"/> | <input type="checkbox"/> | <input type="text"/>              |
| Port82  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="radio"/> | <input type="text" value="100"/> | <input type="checkbox"/> | <input type="text"/>              |
| Port83  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="radio"/> | <input type="text" value="100"/> | <input type="checkbox"/> | <input type="text"/>              |
| Port84  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="radio"/> | <input type="text" value="100"/> | <input type="checkbox"/> | <input type="text"/>              |
| Port85  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="radio"/> | <input type="text" value="100"/> | <input type="checkbox"/> | <input type="text"/>              |
| Port86  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="radio"/> | <input type="text" value="100"/> | <input type="checkbox"/> | <input type="text"/>              |
| Port87  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="radio"/> | <input type="text" value="100"/> | <input type="checkbox"/> | <input type="text"/>              |
| Port88  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="radio"/> | <input type="text" value="100"/> | <input type="checkbox"/> | <input type="text"/>              |
| Port89  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="radio"/> | <input type="text" value="100"/> | <input type="checkbox"/> | <input type="text"/>              |
| Port90  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="radio"/> | <input type="text" value="100"/> | <input type="checkbox"/> | <input type="text"/>              |
| Port91  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="radio"/> | <input type="text" value="100"/> | <input type="checkbox"/> | <input type="text"/>              |
| Port92  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="radio"/> | <input type="text" value="100"/> | <input type="checkbox"/> | <input type="text"/>              |
| Port93  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="radio"/> | <input type="text" value="100"/> | <input type="checkbox"/> | <input type="text"/>              |
| Port94  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="radio"/> | <input type="text" value="100"/> | <input type="checkbox"/> | <input type="text"/>              |
| Port95  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="radio"/> | <input type="text" value="100"/> | <input type="checkbox"/> | <input type="text"/>              |
| Port96  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="radio"/> | <input type="text" value="100"/> | <input type="checkbox"/> | <input type="text"/>              |
| Port97  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="radio"/> | <input type="text" value="100"/> | <input type="checkbox"/> | <input type="text"/>              |
| Port98  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="radio"/> | <input type="text" value="100"/> | <input type="checkbox"/> | <input type="text"/>              |
| Port99  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="radio"/> | <input type="text" value="100"/> | <input type="checkbox"/> | <input type="text"/>              |
| Port100 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="radio"/> | <input type="text" value="100"/> | <input type="checkbox"/> | <input type="text"/>              |

# SwOS—RSTP

Link

SFP

Port Isolation

LAG

Forwarding

RSTP

Stats

Errors

Hist

VLAN

VLANs

Hosts

IGMP

SNMP

ACL

System

Upgrade

MicroTik SwOS

Log out

General

Bridge Priority (hex)8000

Port Cost Modeshort ▾

Root Bridge8000.64:d1:54:c7:bf:e6

Discard Changes

Apply All

Per Port

|        | RSTP                                | Mode | Role       | Root Path Cost | Type           | State      |
|--------|-------------------------------------|------|------------|----------------|----------------|------------|
| Port1  | <input checked="" type="checkbox"/> | RSTP | designated |                | point-to-point | forwarding |
| Port2  | <input checked="" type="checkbox"/> | RSTP | designated |                | point-to-point | discarding |
| Port3  | <input checked="" type="checkbox"/> | RSTP | designated |                | point-to-point | discarding |
| Port4  | <input checked="" type="checkbox"/> | RSTP | designated |                | point-to-point | discarding |
| Port5  | <input checked="" type="checkbox"/> | RSTP | designated |                | point-to-point | discarding |
| Port6  | <input checked="" type="checkbox"/> | RSTP | designated |                | point-to-point | discarding |
| Port7  | <input checked="" type="checkbox"/> | RSTP | designated |                | point-to-point | discarding |
| Port8  | <input checked="" type="checkbox"/> | RSTP | designated |                | point-to-point | discarding |
| Port9  | <input checked="" type="checkbox"/> | RSTP | designated |                | point-to-point | discarding |
| Port10 | <input checked="" type="checkbox"/> | RSTP | designated |                | point-to-point | discarding |
| Port11 | <input checked="" type="checkbox"/> | RSTP | designated |                | point-to-point | discarding |
| Port12 | <input checked="" type="checkbox"/> | RSTP | designated |                | point-to-point | discarding |
| Port13 | <input checked="" type="checkbox"/> | RSTP | designated |                | point-to-point | discarding |
| Port14 | <input checked="" type="checkbox"/> | RSTP | designated |                | point-to-point | discarding |
| Port15 | <input checked="" type="checkbox"/> | RSTP | designated |                | point-to-point | discarding |
| Port16 | <input checked="" type="checkbox"/> | RSTP | designated |                | point-to-point | discarding |

[illegible]

MikroTik SwOS

Logout

Link

SFP

Port Isolation

LAG

Forwarding

RSTP

Stats

Errors

Hist

VLAN

VLANs

Hosts

IGMP

SNMP

ACL

System

Upgrade

| VLAN Mode |                       | VLAN Receive     | Default VLAN ID | Force VLAN ID                       |
|-----------|-----------------------|------------------|-----------------|-------------------------------------|
| Port1     | <div>optional ▾</div> | <div>any ▾</div> | <div>1</div>    | <div><input type="checkbox"/></div> |
| Port2     | <div>optional ▾</div> | <div>any ▾</div> | <div>1</div>    | <div><input type="checkbox"/></div> |
| Port3     | <div>optional ▾</div> | <div>any ▾</div> | <div>1</div>    | <div><input type="checkbox"/></div> |
| Port4     | <div>optional ▾</div> | <div>any ▾</div> | <div>1</div>    | <div><input type="checkbox"/></div> |
| Port5     | <div>enabled ▾</div>  | <div>any ▾</div> | <div>10</div>   | <div><input type="checkbox"/></div> |
| Port6     | <div>enabled ▾</div>  | <div>any ▾</div> | <div>20</div>   | <div><input type="checkbox"/></div> |
| Port7     | <div>optional ▾</div> | <div>any ▾</div> | <div>1</div>    | <div><input type="checkbox"/></div> |
| Port8     | <div>optional ▾</div> | <div>any ▾</div> | <div>1</div>    | <div><input type="checkbox"/></div> |

# SwOS—VLAN和VLANs

VLAN mode for ingress port:

- **disabled** -忽略vlan表，处理vlan标签数据包，就好像它们不包含vlan标签一样。
- **optional** -处理不在vlan表中的vlan标签数据包，就像没有vlan标签的数据包一样。
- **enabled** -丢弃VLAN表中不存在VLAN标签数据包。没有VLAN标签的数据包被视为带有Default VLAN ID。如果vlan标签数据包在vlan表中存在，但进入端口不匹配vlan表项中的任何端口将丢弃。

# SwOS——主机列表

MikroTik SwOS Logout

Link SFP Port Isolation LAG Forwarding RSTP Stats Errors Hist VLAN VLANs **Hosts** IGMP SNMP ACL System Upgrade

### Static Hosts

| Port    | MAC                                            | VLAN ID                        | Drop                     | Mirror                   |                                                                          |
|---------|------------------------------------------------|--------------------------------|--------------------------|--------------------------|--------------------------------------------------------------------------|
| Port1 ▼ | <input type="text" value="80:fa:5b:39:c7:09"/> | <input type="text" value="1"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="button" value="Cut"/> <input type="button" value="Insert"/> |
| Port3 ▼ | <input type="text" value="80:fa:5b:39:c7:09"/> | <input type="text" value="1"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="button" value="Cut"/> <input type="button" value="Insert"/> |

Pending changes

| Port  | MAC               | VLAN ID |
|-------|-------------------|---------|
| Port5 | d4:ca:6d:3a:d7:3f | 1       |
| Port3 | 80:fa:5b:39:c7:09 | 1       |

最多支持16K条目

# SwOS—ACL菜单

**MikroTik SwOS**

Link SFP Port Isolation LAG Forwarding RSTP Stats Errors Hist VLAN VLANs Hosts IGMP SNMP ACL System Upgrade

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|          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |          |                      |                                      |                                    |                                       |
|----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----------------------|--------------------------------------|------------------------------------|---------------------------------------|
| From:    | <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> | Hits:    | <input type="text"/> | <input type="button" value="Clear"/> | <input type="button" value="Cut"/> | <input type="button" value="Insert"/> |
| MAC Src: | <input type="text"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | MAC Dst: | <input type="text"/> | Ethertype:                           | <input type="text"/>               | hex                                   |
| VLAN:    | <input type="text" value="any"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | VLAN ID: | <input type="text"/> | Priority:                            | <input type="text"/>               |                                       |
| IP Src:  | <input type="text"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | IP Dst:  | <input type="text"/> | Protocol:                            | <input type="text"/>               | DSCP:                                 |

---

☐ Redirect To:  ☐ Mirror ☐ Drop Rate:  Set VLAN ID:  Priority:

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Reset Counters Pending changes Append Discard Changes Apply All

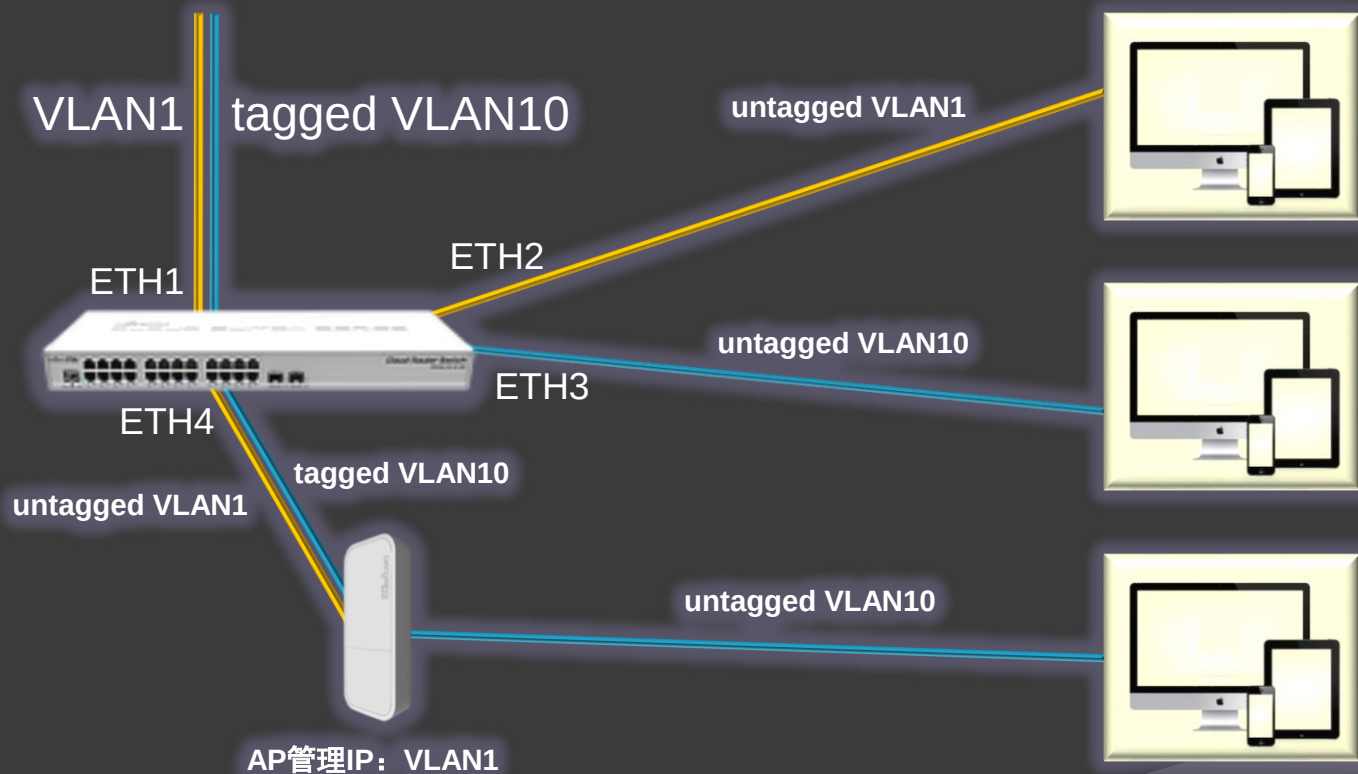
## 基于L2， L3协议报头字段条件的线速包过滤，转发和VLAN标记

# SwOS——系统列表

[illegible]



# VLAN案例



# VLAN案例

MikroTik SwOS

Link SFP Port Isolation LAG Forwarding RSTP Stats Errors Hist VLAN **VLANs** Hosts IGMP SNMP

| VLAN ID | Port Isolation                      | Learning                            | Mirror                   | IGMP Snooping            | Members                                                                                                                                                       |
|---------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1       | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> |
| 10      | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> |

# VLAN案例

MikroTik SwOS

Link SFP Port Isolation LAG Forwarding RSTP Stats Errors Hist **VLAN** VLANs Hosts IGMP SNMP ACL System Upgrade

|       | VLAN Mode  | VLAN Receive | Default VLAN ID |
|-------|------------|--------------|-----------------|
| Port1 | enabled ▼  | any ▼        | 1               |
| Port2 | enabled ▼  | any ▼        | 1               |
| Port3 | enabled ▼  | any ▼        | 10              |
| Port4 | enabled ▼  | any ▼        | 1               |
| Port5 | optional ▼ | any ▼        | 1               |

## MikroTik SwOS

Link

SFP

Port Isolation

LAG

Forwarding

RSTP

S

From Port1

☐ ☒ ☒ ☒ ☒ ☒ ☒ ☒

From Port2

☒ ☐ ☒ ☒ ☒ ☒ ☒ ☒

From Port3

☒ ☒ ☐ ☒ ☒ ☒ ☒ ☒

From Port4

☒ ☒ ☒ ☐ ☒ ☒ ☒ ☒

From Port5

☒ ☒ ☒ ☒ ☐ ☒ ☒ ☒

# VLAN案例

## MikroTik SwOS

Link

SFP

Port Isolation

LAG

Forwarding

RSTP

Stats

From Port1

☐ ☒ ☒ ☒ ☒ ☒ ☒ ☒ ☒ ☒

From Port2

☒ ☐ ☒ ☒ ☒ ☒ ☒ ☒ ☒ ☒

From Port3

☒ ☒ ☐ ☐ ☒ ☒ ☒ ☒ ☒ ☒

From Port4

☒ ☒ ☐ ☐ ☒ ☒ ☒ ☒ ☒ ☒

From Port5

☒ ☒ ☒ ☒ ☐ ☒ ☒ ☒ ☒ ☒

# VLAN案例

MikroTik SwOS

Link SFP Port Isolation LAG Forwarding RSTP Stats Errors Hist VLAN **VLANs** Hosts IGMP SNMP

| VLAN ID | Port Isolation                      | Learning                            | Mirror                   | IGMP Snooping            | Members                                                                                                                                                       |
|---------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1       | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> |
| 10      | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> |

# VLAN案例

### MikroTik SwOS

[Link](#) [SFP](#) [Port Isolation](#) [LAG](#) [Forwarding](#) [RSTP](#) [Stats](#) [Errors](#) [Hist](#) [VLAN](#) [VLANs](#) [Hosts](#) [IGMP](#) [SNMP](#) [ACL](#) [System](#) [Upgrade](#)

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#### General

|                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|-----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Address Acquisition         | DHCP with fallback ▼                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Static IP Address           | 192.168.88.1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Identity                    | MikroTik                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Allow From                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Allow From Ports            | <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> |
| Allow From VLAN             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Watchdog                    | <input checked="" type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Independent VLAN Lookup     | <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| IGMP Snooping               | <input type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Mikrotik Discovery Protocol | <input checked="" type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| MAC Address                 | 64:d1:54:c7:bf:e6                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Serial Number               | 763D07C14D9A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Board Name                  | CRS326-24G-2S+                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Uptime                      | 01:25:30                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |

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#### DHCP & PPPoE Snooping

|                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Trusted Ports          | <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| Add Information Option | <input checked="" type="checkbox"/>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |

---

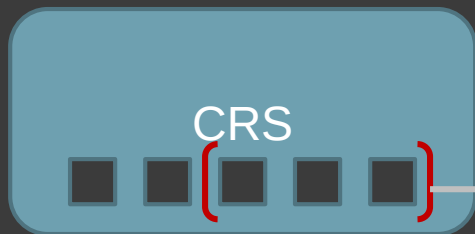
#### Health

|             |     |
|-------------|-----|
| Temperature | 59C |
|-------------|-----|

# RouterOS——主端口

- 通过主端口区分线速转发组
- RouterOS通过主端口与交换芯片组成员端口进行通讯。
- 若交换芯片组端口成员无需与RouterOS通讯，则不需要任何CPU资源
- 主端口被禁用，不影响交换芯片组端口之间的通讯，但无法访问RouterOS

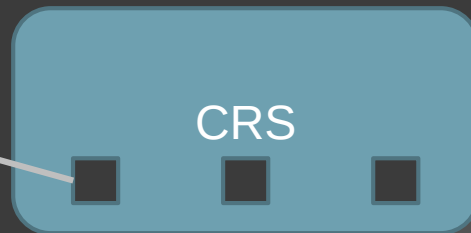
# RouterOS——交换芯片组



ETH3-5为一个switch组  
ETH3为主端口



switch1-cpu



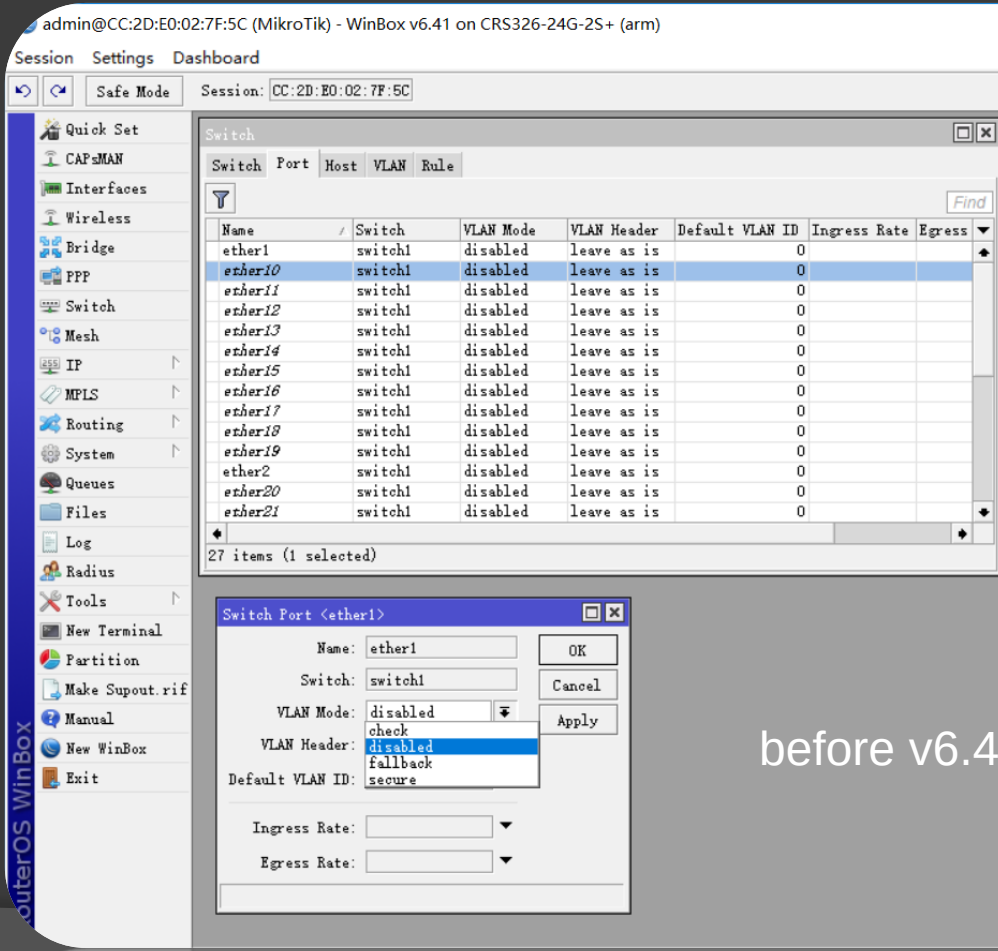
master-port



# RouterOS—CRS功能性对比

|            | CRS 1XX/2XX                                                      | CRS 3XX                     |
|------------|------------------------------------------------------------------|-----------------------------|
| 主端口配置      | 支持多个主端口                                                          | 只支持一个主端口                    |
| 转发         | 转发数据库都支持IVL和SVL等                                                 | 转发数据库基于IVL工作                |
| 镜像         | 基于端口的镜像、基于VLAN的镜像、基于MAC的镜像 等                                     | 基于端口的镜像                     |
| VLAN       | 完全兼容IEEE802.1Q和IEEE802.1ad VLAN、基于端口的VLAN、基于协议的VLAN、基于MAC的VLAN 等 | 完全兼容IEEE802.1Q<br>基于端口的VLAN |
| 访问控制列表     | 入口和出口ACL表                                                        | 入口ACL表                      |
| 端口隔离和泄漏    | 支持                                                               | 不支持                         |
| Qos        | 支持                                                               | 不支持                         |
| Trunking汇聚 | 支持                                                               | 不支持                         |

# RouterOS— VLAN案例



before v6.41

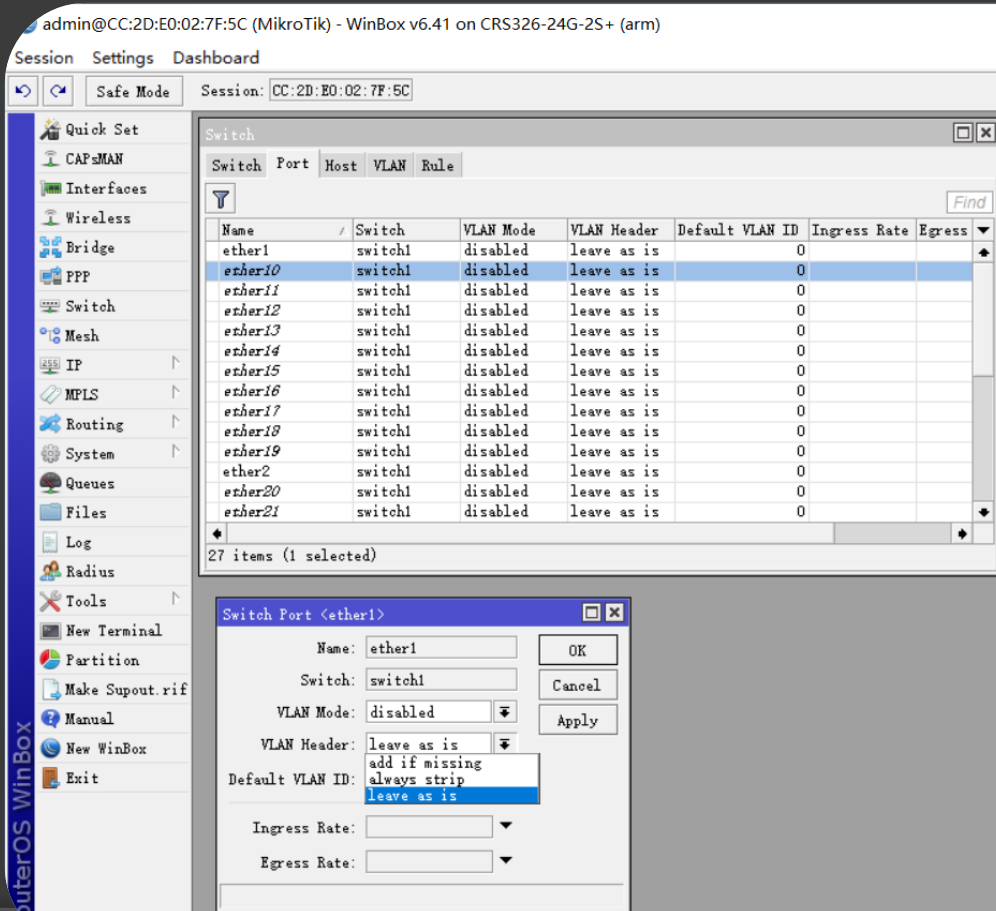
disabled -忽略vlan表，处理vlan标签数据包，就好像它们不包含vlan标签一样

fallback -（默认模式）处理不在vlan表中的vlan标签数据包，就像没有vlan标签的数据包一样。如果vlan标签数据包在vlan表中存在，但进入端口不匹配vlan表项中的任何端口不会丢弃。

check -丢弃vlan表中不存在的vlan标签报文。如果vlan标签数据包在vlan表中存在，但进入端口不匹配vlan表项中的任何端口将不会丢弃。

secure - 丢弃vlan表中不存在的vlan标签的报文。如果vlan标签数据包在vlan表中存在，但进入端口不匹配vlan表项中的任何端口将丢弃。

# RouterOS— VLAN案例

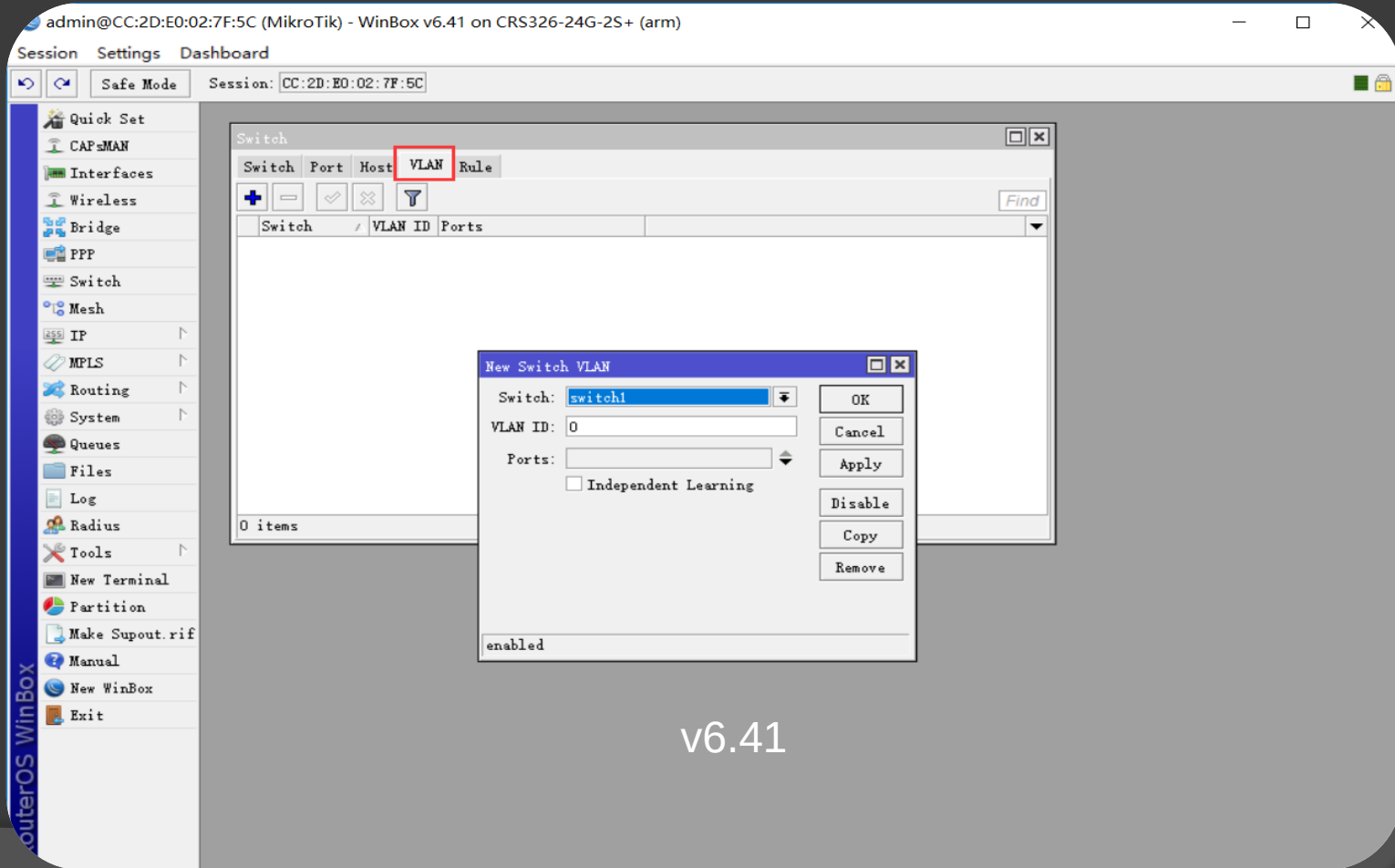


leave-as-is -数据包在出口端口保持不变

always-strip -如果VLAN头存在，它将从数据包中删除

add-if-missing -如果VLAN报头不存在，则将其添加到数据包

# RouterOS— VLAN案例



v6.41

# RouterOS—VLAN案例

admin@CC:2D:E0:02:7F:5C (MikroTik) - WinBox v6.41 on CRS326-24G-2S+ (arm)

Session Settings Dashboard

Safe Mode Session: CC:2D:E0:02:7F:5C

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

Bridge

Bridge Ports VLANs MSTIs Port MST Overrides Filters NAT Hosts MDB

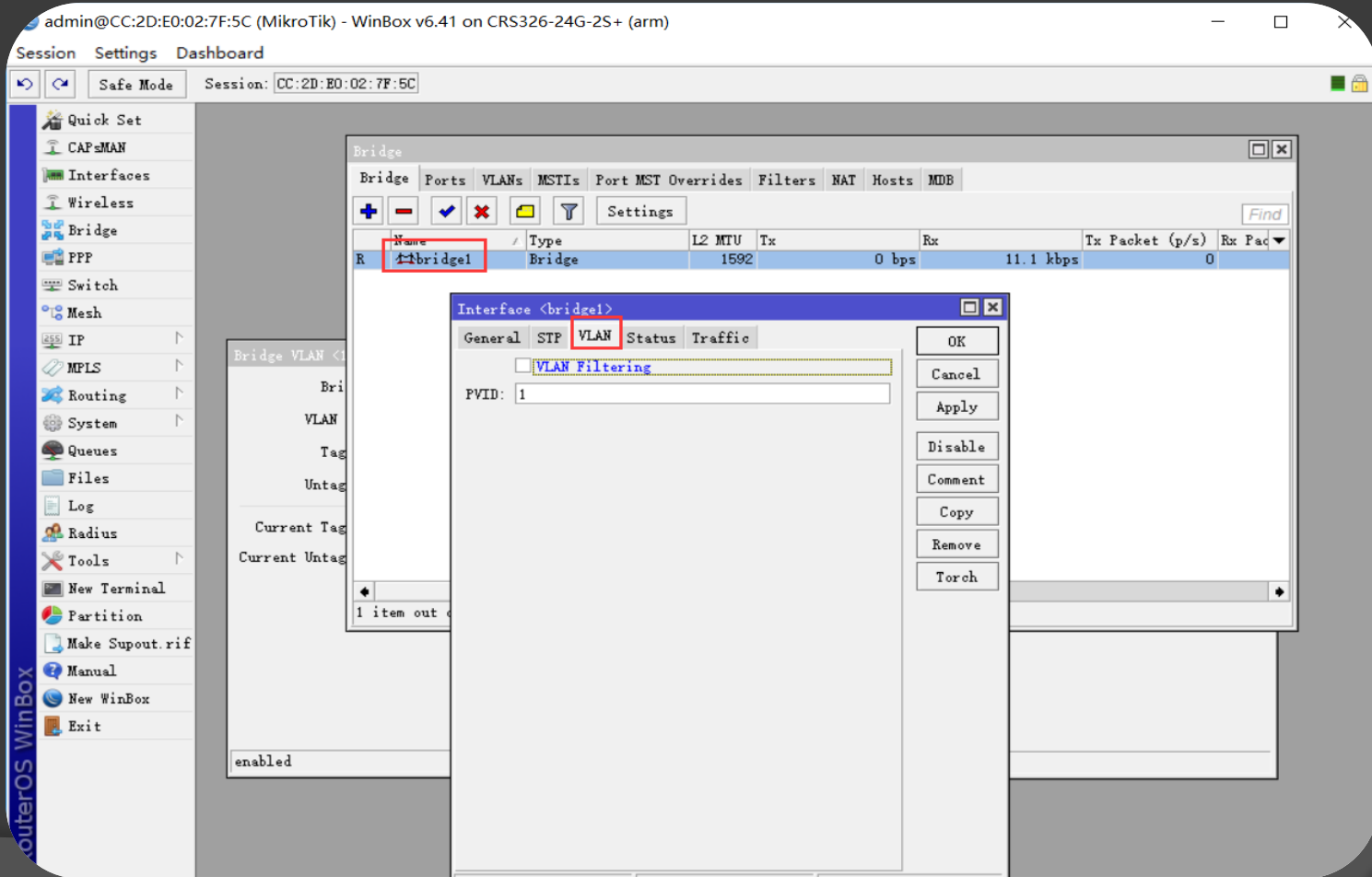
+ - ✓ ✕

Settings Find

|   | Name    | Type   | L2 MTU | Tx    | Rx       | Tx Packet (p/s) | Rx Packet |
|---|---------|--------|--------|-------|----------|-----------------|-----------|
| R | bridge1 | Bridge | 1592   | 0 bps | 9.7 kbps | 0               |           |

1 item out of 27

# RouterOS—VLAN案例



# RouterOS—VLAN案例

admin@CC:2D:E0:02:7F:5C (MikroTik) - WinBox v6.41 on CRS326-24G-2S+ (arm)

Session Settings Dashboard

Safe Mode Session: CC:2D:E0:02:7F:5C

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

Bridge

Bridge Ports

| #    | Interface | Bridge  | Horizon | Priori... | Path Cost | Role            | Root P... |
|------|-----------|---------|---------|-----------|-----------|-----------------|-----------|
| 0 H  | ether1    | bridgel |         | 80        | 10        | root port       | 10        |
| 1 IH | ether2    | bridgel |         | 80        | 10        | disabled port   |           |
| 2 H  | ether3    | bridgel |         | 80        | 10        | designated port |           |

Bridge Port <ether1>

General STP VLAN Status

PVID: 1

Frame Types: admit all

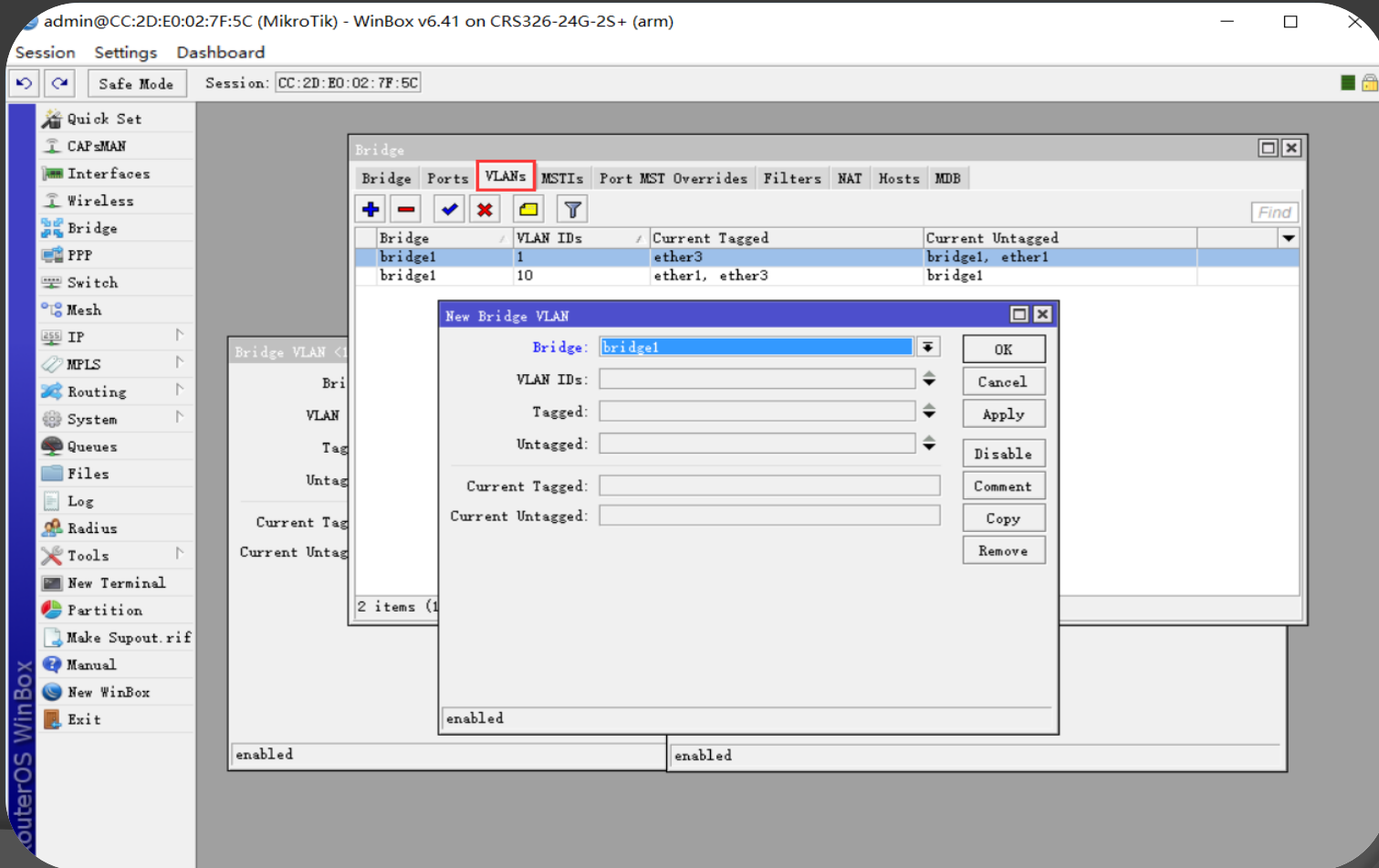
☐ Ingress Filtering

OK  
Cancel  
Apply  
Disable  
Comment  
Copy  
Remove

3 items (1 selected)

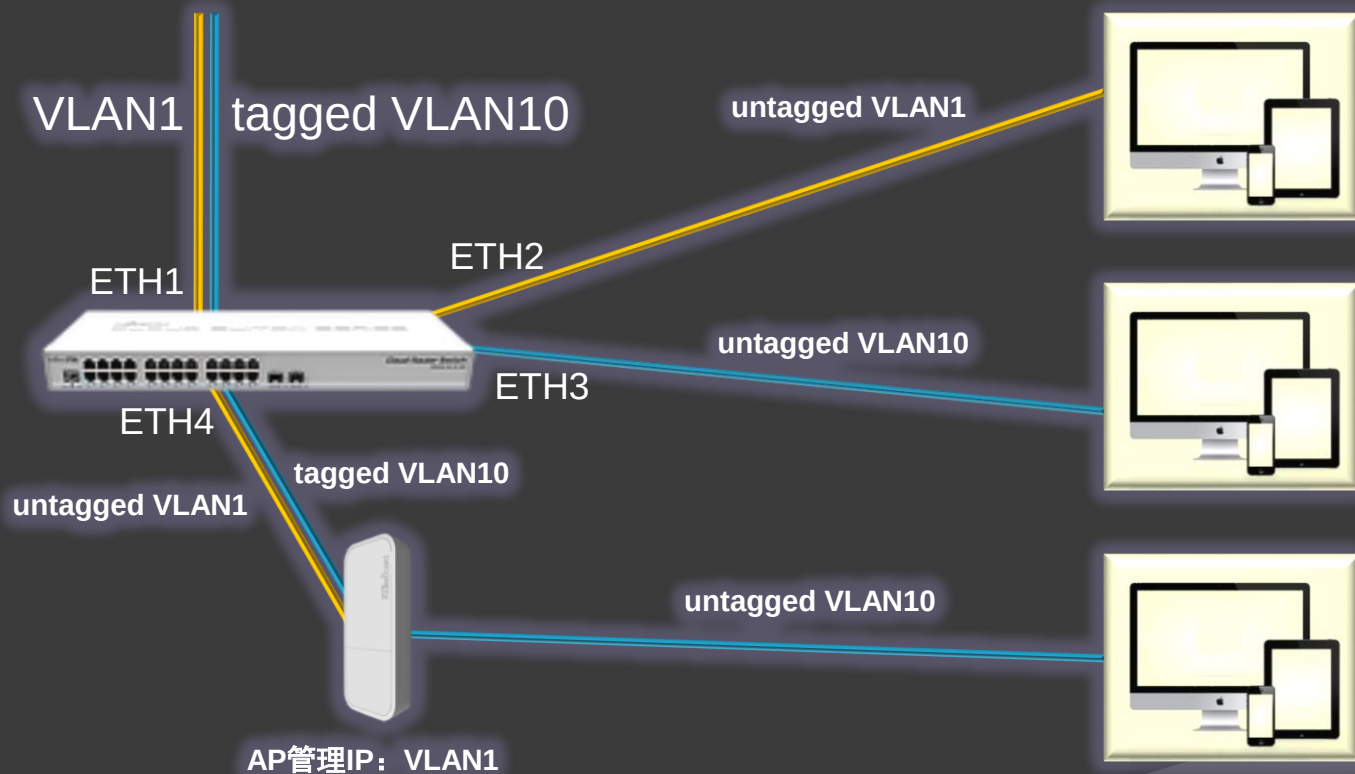
enabled

# RouterOS—VLAN案例

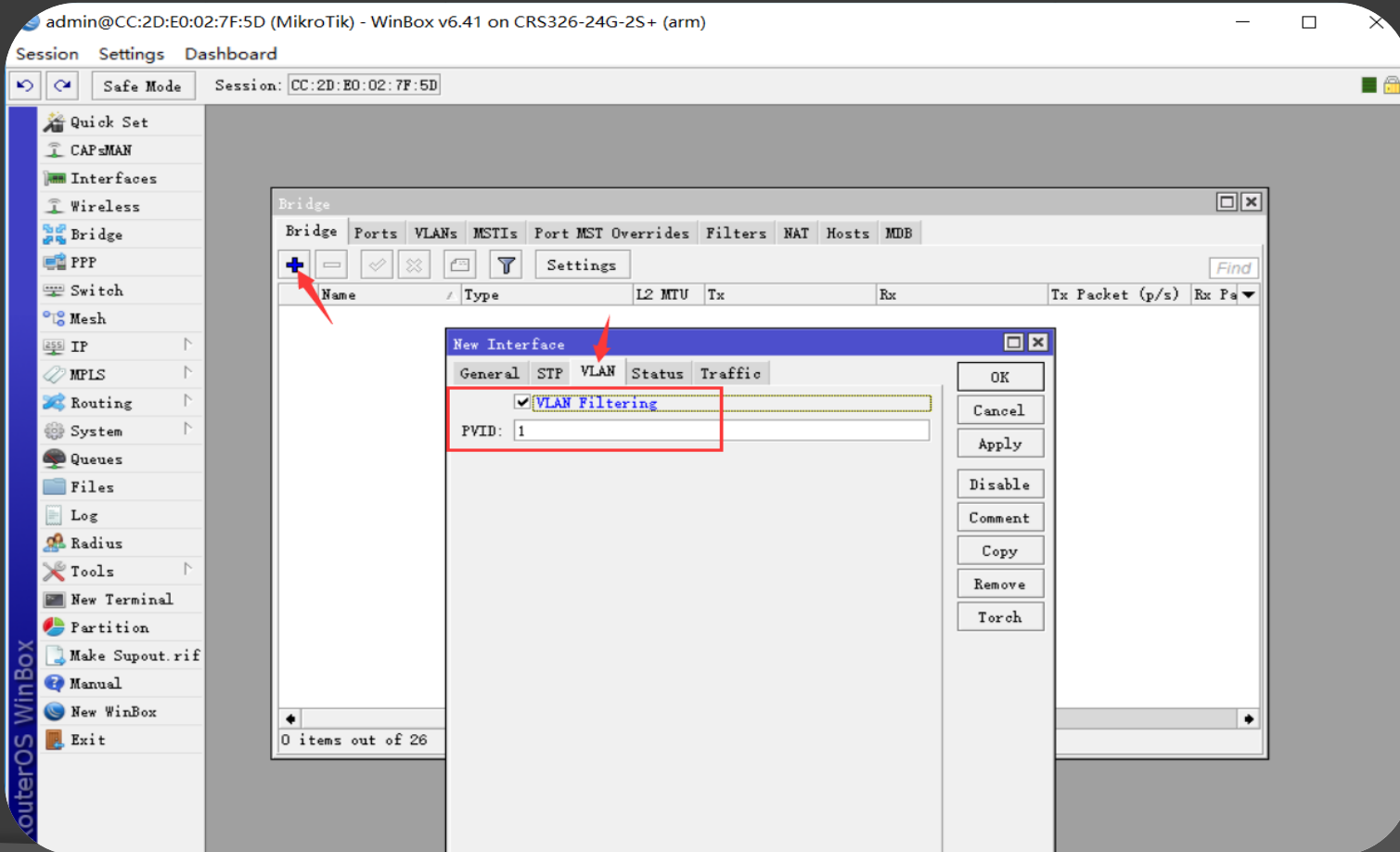




# RouterOS— VLAN案例



# RouterOS—VLAN案例



# RouterOS—VLAN案例

admin@CC:2D:E0:02:7F:5D (MikroTik) - WinBox v6.41 on CRS326-24G-2S+ (arm)

Session Settings Dashboard

Safe Mode Session: CC:2D:E0:02:7F:5D

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

Bridge

Bridge Ports VLANs MSTIs Port MST Overrides Filters NAT Hosts MDB

| #    | Interface | Bridge  | Hor... | Priori... | Path Cost | PVID | Ingress Filte... | Role            |
|------|-----------|---------|--------|-----------|-----------|------|------------------|-----------------|
| 0 H  | ether1    | bridge1 |        | 80        | 10        |      | 1 yes            | root port       |
| 1 H  | ether2    | bridge1 |        | 80        | 10        |      | 1 yes            | designated port |
| 2 IH | ether3    | bridge1 |        | 80        | 10        | 10   | yes              | disabled port   |
| 3 H  | ether4    | bridge1 |        | 80        | 10        |      | 1 yes            | designated port |

Bridge Port <ether3>

General STP **VLAN** Status

PVID: 10

Frame Types: admit all

☒ Ingress Filtering

OK  
Cancel  
Apply  
Disable  
Comment  
Copy  
Remove

4 items (1 selected)

# RouterOS—VLAN案例

admin@CC:2D:E0:02:7F:5D (MikroTik) - WinBox v6.41 on CRS326-24G-2S+ (arm)

Session Settings Dashboard

Safe Mode Session: CC:2D:E0:02:7F:5D

Bridge

Bridge Ports **VLANs** MSTIs Port MST Overrides Filters NAT Hosts MDB

+ - ✓ ✗ 📄 🔍 Find

| Bridge  | VLAN IDs | Current Tagged | Current Untagged                |
|---------|----------|----------------|---------------------------------|
| bridge1 | 1        |                | bridge1, ether1, ether2, ether4 |
| bridge1 | 10       |                | ether3                          |

New Bridge VLAN

Bridge: bridge1 OK Cancel

VLAN IDs: 1 Tagged: Untagged: ether1 ether2 ether4 Disable Comment Copy Remove

Current Tagged: Current Untagged: enabled

2 items

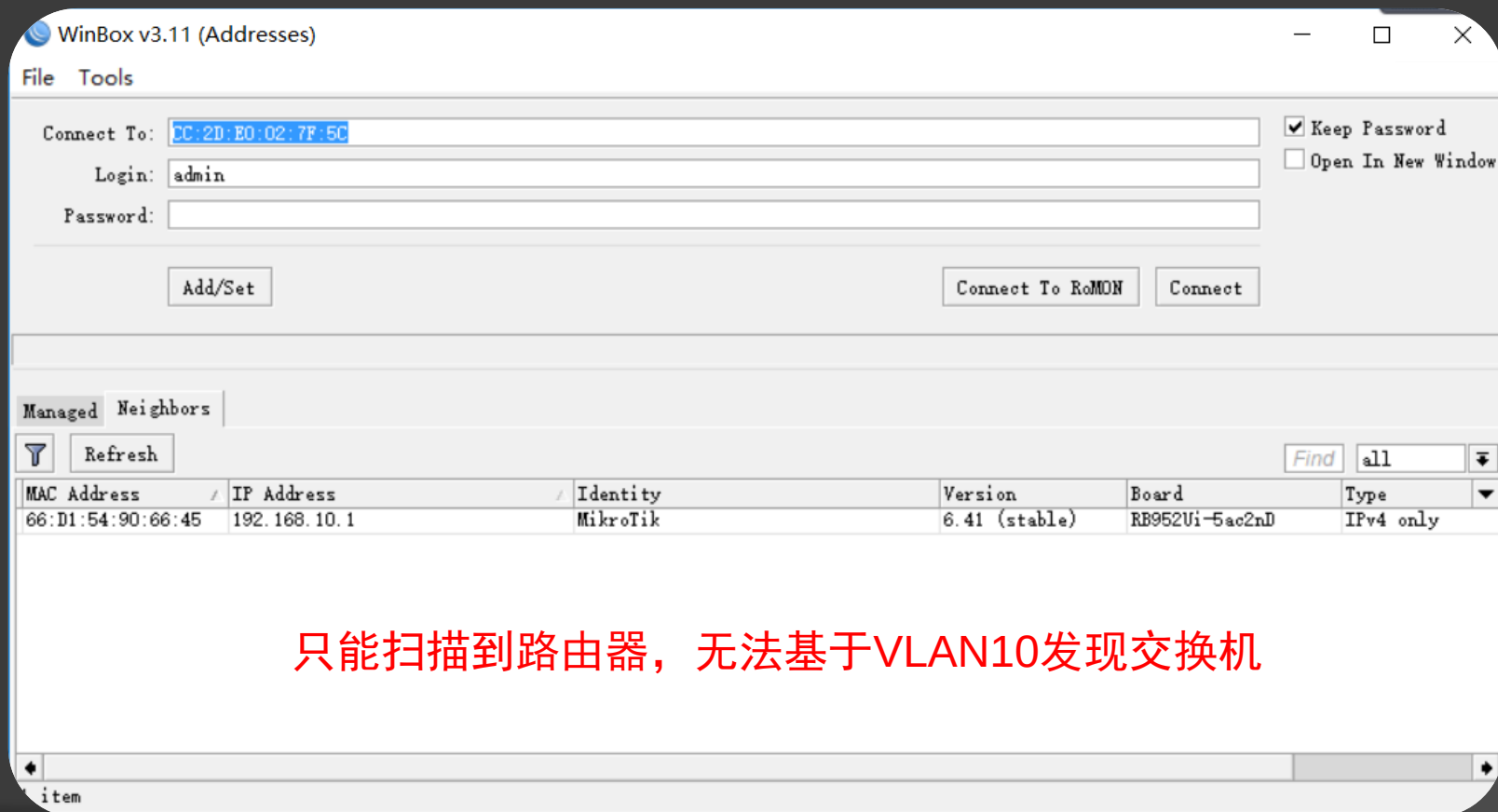
New Bridge VLAN

Bridge: bridge1 OK Cancel

VLAN IDs: 10 Tagged: ether1 ether4 Disable Comment Copy Remove

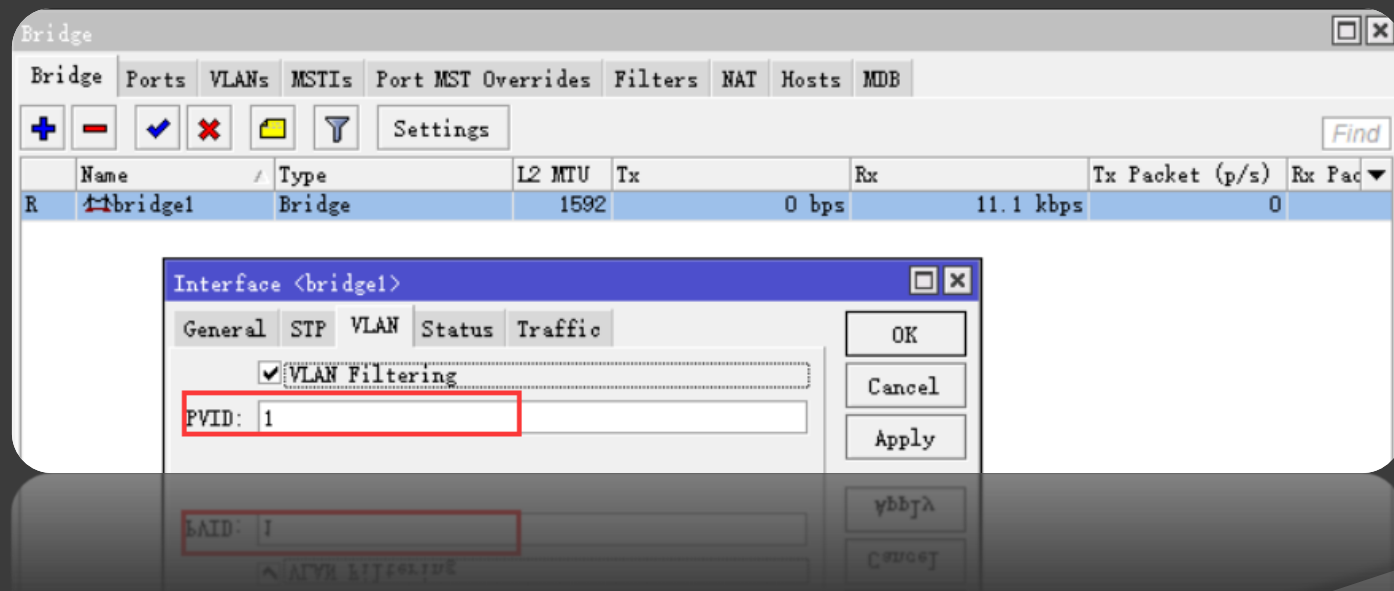
Current Tagged: Current Untagged: enabled

# RouterOS——管理VLAN设置



只能扫描到路由器，无法基于VLAN10发现交换机

# RouterOS——管理VLAN设置



# RouterOS——管理VLAN设置

admin@CC:2D:E0:02:7F:5C (MikroTik) - WinBox v6.41 on CRS326-24G-2S+ (arm)

Session Settings Dashboard

Safe Mode Session: CC:2D:E0:02:7F:5C

Quick Set  
CAPsMAN  
Interfaces  
Wireless  
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MPLS  
Routing  
System  
Queues  
Files  
Log  
Radius  
Tools  
New Terminal  
Partition  
Make Supout.rif  
Manual  
New WinBox  
Exit

Bridge

Bridge Ports VLANs MSTIs Port MST Overrides Filters NAT Hosts MDB

| Bridge  | VLAN IDs | Current Tagged | Current Untagged |
|---------|----------|----------------|------------------|
| bridge1 | 1        | ether3         | bridge1, ether1  |
| bridge1 | 10       | ether1, ether3 | bridge1          |

Bridge VLAN <1>

Bridge: bridge1

VLAN IDs: 1

Tagged: ether3

Untagged:

Current Tagged: ether3

Current Untagged: bridge1, ether1

enabled

Bridge VLAN <10>

Bridge: bridge1

VLAN IDs: 10

Tagged: ether1, ether3

Untagged: bridge1

Current Tagged: ether1, ether3

Current Untagged: bridge1

enabled

OK  
Cancel  
Apply  
Disable  
Comment  
Copy  
Remove

# 谢谢观赏

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- ◎ 传真：0755-28401365
- ◎ QQ号：510239069
- ◎ 邮箱：marketing@edcwifi.com
- ◎ 服务时间：9:00-21:00
- ◎ 技术售后专线：0755-28401265
- ◎ 技术售后专线：0755-28401165

