

Yongyi Network Technology
Co., Ltd.
南宁用易网络科技有限公司



Simple Application of CRS

Bonding and transparent vlan

MUM Guangzhou, May 2014

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MTCNA,UCT



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About Us

www.routeros.com.cn

关于公司

- 公司成立于2006年3月
- 中国最早Mikrotik 授权代理之一



南宁用易网络科技有限公司

MUM交流群:273742555

MikroTik

2005年9月推出首款RouterOS整机



2006年8月首款自带LCD屏幕RouterOS整机



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时空网



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Great Wall Broadband Network

长城宽带



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莫泰



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广西视光中心

为国内
外超过
10000
个客户
提供产
品和技
术支持

与国内一流的工控厂家合作



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先进的冲压成型和折弯设备及各种先进的检测仪器，专业精密的五金加工工艺技术，拥有3名高级工程师及一批高素质熟练的专业操作团队。

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热销产品：QNS-9898L+



Intel P4 3.2G, 3RJ45+1SFP千兆网口, 带16*2 LCD,
超高性价比, 专为大中型企业、网吧、小区设计

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热销产品：MK-4800+、MK-6800+



Intel ATOM D525 (凌动) 双核1.8G, 4/6*Intel
千兆网口, 支持CF和SATA硬盘, 支持USB扩展

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热销产品：MK-4800+、MK-6800+



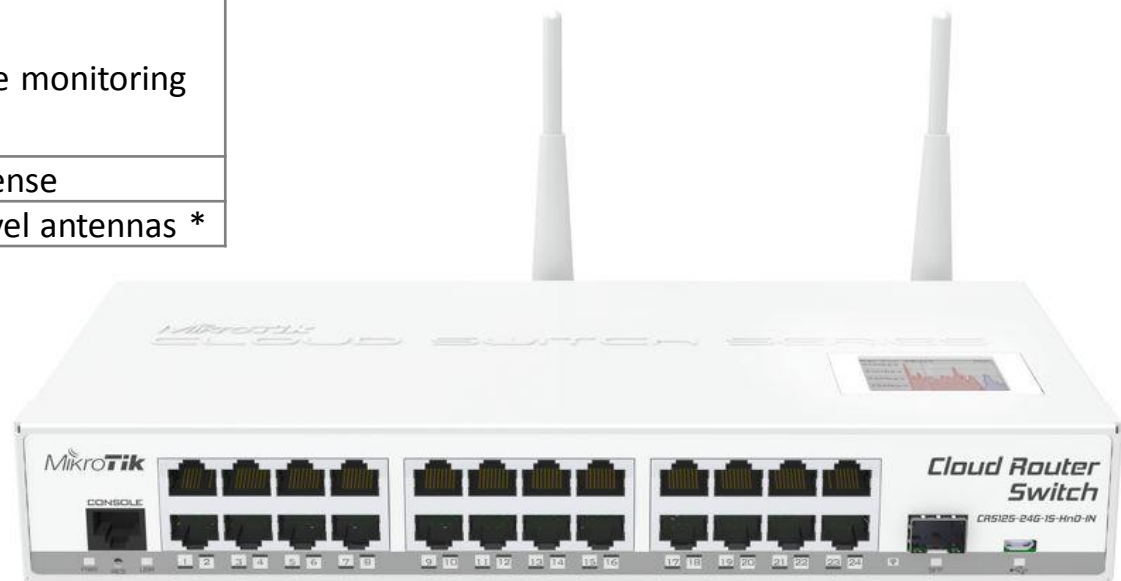
Intel ATOM D525 (凌动) 双核1.8G, 4/6*Intel
千兆网口, 支持CF和SATA硬盘, 支持USB扩展



CRS Features

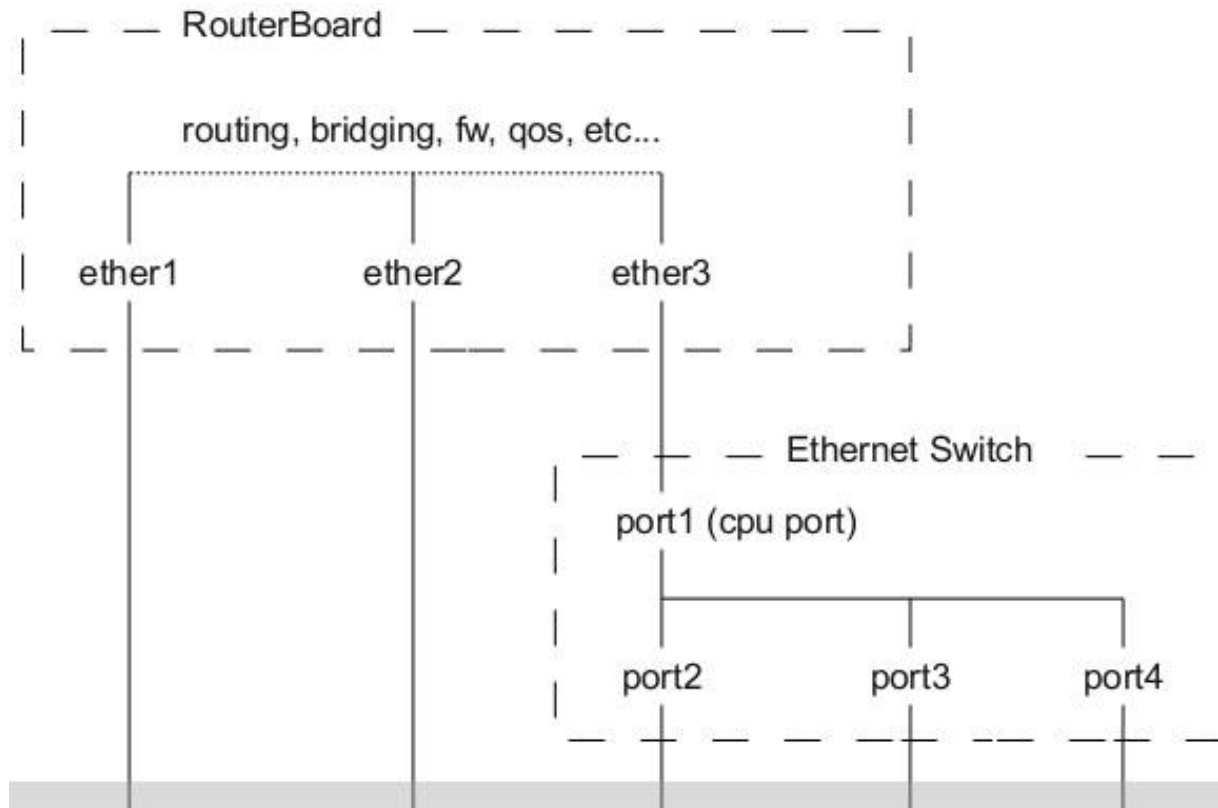
CPU	Atheros 600MHz
Memory	128MB
Ethernet	24 Gigabit
SFP	1x 1.25G Ethernet SFP cage
Expansion	1 microUSB
Storage	128MB Onboard NAND
Serial Port	1x RJ45 Serial port
Extras	Reset switch beeper voltage and temperature monitoring touchscreen LCD
OS	RouterOS v6, Level 5 license
Wireless	2.4GHz 1W, 2x 4dBi swivel antennas *

* Only on CRS125-24G-1S-2HnD-IN

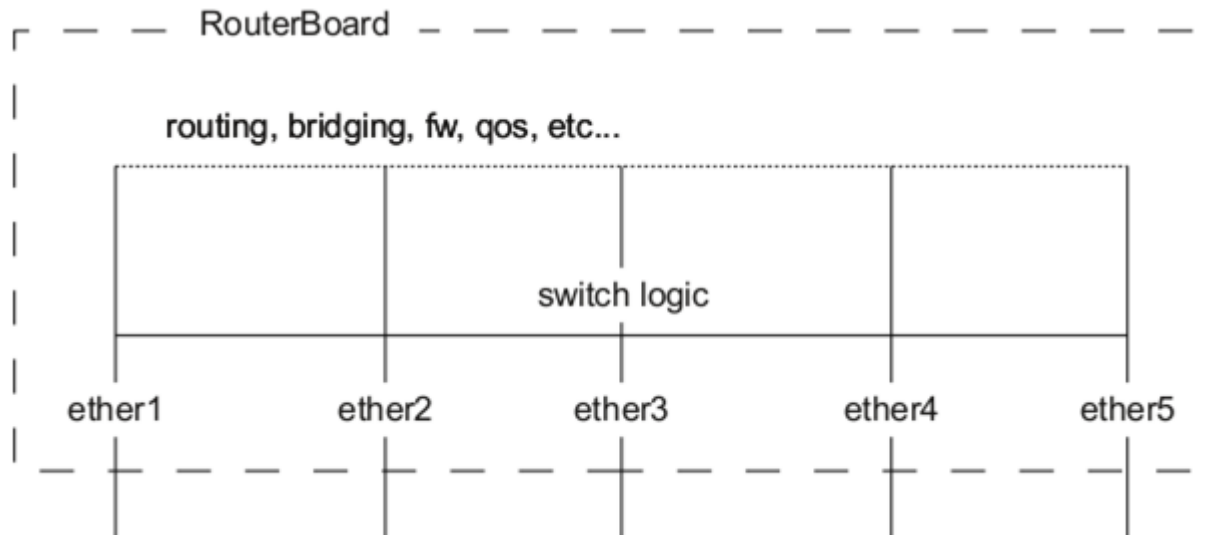


CRS125-24G-1S-2HnD-IN

CRS Features



CRS Features



While the packet does not have to go to cpu port it is handled entirely by switch logic and does not require any cpu cycles and happen at wire speed for any frame size.

CRS Features

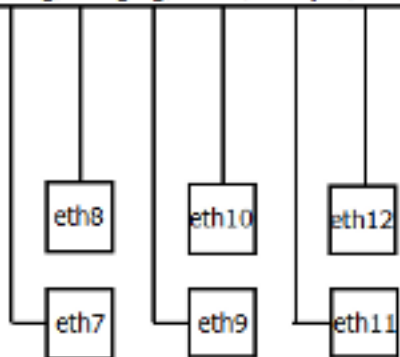
ex.

3 groupe: e2~e6, e13~e20, e21~e24+sfp1:

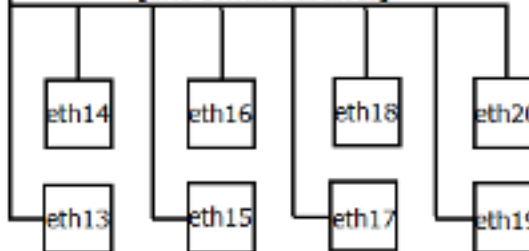
Cloud Router Switch

[Routing, Bridging, DHCP, Hotspot, Firewall, Queues, etc...]

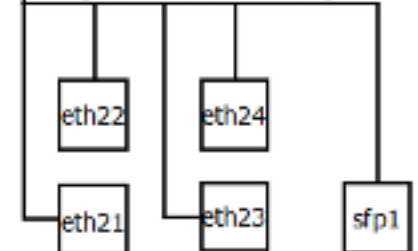
[Wire-speed switching]
[CRS Switch features]



[Wire-speed switching]
[CRS Switch features]



[Wire-speed switching]
[CRS Switch features]



Bonding

Aggregation of multiple ethernet-like into a single virtual link, thus getting higher data rates and providing failover.

Bonding modes:

802.3ad

- ◆ Standard
- ◆ frames be delivered in order
- ◆ all devices need the same speed and duplex mode
- ◆ only MII link monitoring

Bonding

Balance-rr

- ◆ only the mode that permit a single TCP/IP connection to stripe traffic across multiple interfaces
- ◆ Load balancing and fault tolerance

Active-backup

- ◆ Only one active slave to transmit packets
- ◆ only MII link monitoring

Bonding

Balance-xor

- ◆ Similar to LACP
- ◆ Load balancing and fault tolerance
- ◆ Works with layer-3-and-4 hash policy

Broadcast

- ◆ Transmits everything on all slave interfaces
- ◆ Provides fault tolerance

Bonding

Balance-tlb

- ◆ Balances outgoing traffic by peer
- ◆ Incoming traffic is not balanced, use primary link
- ◆ Only MII link monitoring

Balance-alb

- ◆ Basically the same as balance-tlb
- ◆ Incoming traffic is balanced
- ◆ Requires device capability to change MAC address

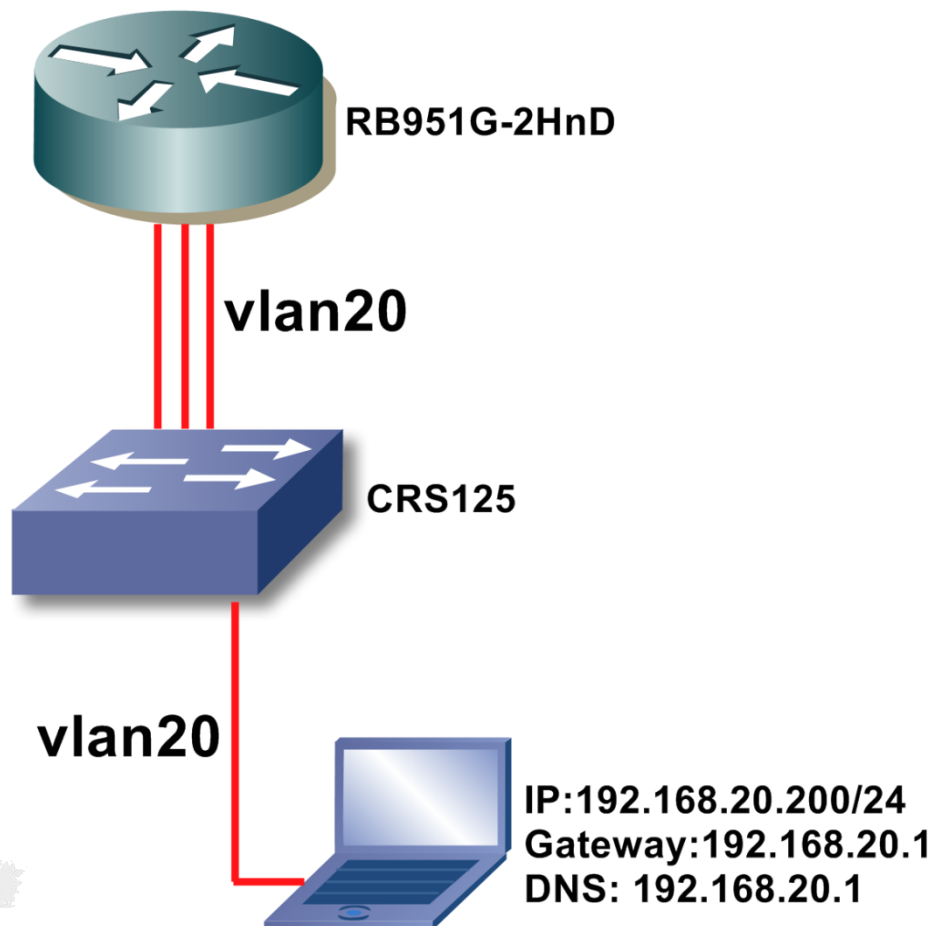


Simple case of CRS

✓ CRS125-24G-1S-2HnD-IN

✓ 951G-2HnD

Note: ROS v6.12+





Simple case of CRS

Configuration of bonding of RB951G (function router)

New Interface

General Bonding Traffic

Slaves: ether2 ether3 ether4

Mode: balance rr

Primary: none

Link Monitoring: mii

Transmit Hash Policy: layer 2 and 3

Down Delay: 0 ms

Up Delay: 0 ms


LACP Rate: 30 s

MII Interval: 100 ms

enabled running slave

OK Cancel Apply Disable Comment Copy Remove Torch

Simple case of CRS



Interface List

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

+ - ✓ ✗ [icon] [icon] Find

	Name	Type	L2 MTU	Tx	Rx	Tx 1
	bonding1	Bonding			0 bps	0 bps
	ether1	Ethernet	1598	0 bps	0 bps	
S	ether2	Ethernet	1598	0 bps	0 bps	
S	ether3	Ethernet	1598	0 bps	0 bps	
S	ether4	Ethernet	1598	0 bps	0 bps	
R	ether5	Ethernet	1598	0 bps	512 bps	
X	wlan1	Wireless (Athero...	2290	0 bps	0 bps	

slave

7 items



Simple case of CRS

Configure the vlan20 based on bonding port :

New Interface

General Traffic

Name: vlan20

Type: VLAN

MTU: 1500

I2 MTU:

MAC Address:

ARP: enabled

VLAN ID: 20

Interface: bonding1

☐ Use Service Tag

OK

Cancel

Apply

Disable

Comment

Copy

Remove

Torch

enabled running slave



Simple case of CRS

Create a DHCP Server based on interface “vlan20” :

DHCP Server

DHCP Networks Leases Options Option Sets Alerts

+ - [icon] [icon]

Address	Gateway	DNS Servers	Domain	WINS Servers	Next S...
192.168.20.0/24	192.168.20.1	192.168.20.1			

DHCP Server <dhcp1>

Name: dhcp1 OK

Interface: vlan20 Cancel

Relay: Apply

Lease Time: 1d 00:00:00 Disable

Bootp Lease Time: forever Copy

Address Pool: dhcp_pool1 Remove

Src. Address:

Delay Threshold:

Authoritative: after 2s delay

Bootp Support: static

Lease Script:

DHCP Network <192.168.20.0/24>

Address: 192.168.20.0/24 OK

Gateway: 192.168.20.1 Cancel

Netmask: Apply

DNS Servers: 192.168.20.1 Comment

Domain: Copy

WINS Servers: Remove

NTP Servers:

CAPS Managers:

Next Server:

Boot File Name:

DHCP Options:

DHCP Option Set:



Simple case of CRS

Create a groupe of switched ports on CRS125 :

Interface List								
Interface Ethernet EoIP Tunnel IP Tunnel GRE Tunnel VLAN VRRP Bonding LTE								
+ - ✓ ✗ [Icon] [Icon] Find								
Name	Type	L2 MTU	Tx	Rx	Tx Packet (p/s)	Rx Packet (p/s)		
ether1	Ethernet	1588	0 bps	0 bps	0	0		
::: master-port								
ether2	Ethernet	1588	0 bps	0 bps	0	0		
ether3	Ethernet	1588	0 bps	0 bps	0	0		
ether4	Ethernet	1588	0 bps	0 bps	0	0		
ether5	Ethernet	1588	0 bps	0 bps	0	0		
ether6	Ethernet	1588	0 bps	0 bps	0	0		
ether7	Ethernet	1588	0 bps	0 bps	0	0		
ether8	Ethernet	1588	0 bps	0 bps	0	0		
ether9	Ethernet	1588	0 bps	0 bps	0	0		
S ether10	Ethernet	1588	0 bps	0 bps	0	0		
S ether11	Ethernet	1588	0 bps	0 bps	0	0		
S ether12	Ethernet	1588	0 bps	0 bps	0	0		
S ether13	Ethernet	1588	0 bps	0 bps	0	0		
S ether14	Ethernet	1588	0 bps	0 bps	0	0		
ether15	Ethernet	1588	0 bps	0 bps	0	0		
ether16	Ethernet	1588	0 bps	0 bps	0	0		
ether17	Ethernet	1588	0 bps	0 bps	0	0		
::: vlan20								
S ether18	Ethernet	1588	0 bps	0 bps	0	0		
ether19	Ethernet	1588	0 bps	0 bps	0	0		
ether20	Ethernet	1588	0 bps	0 bps	0	0		
26 items (1 selected)								



Simple case of CRS

Create an entry in the Trunk table:

Switch Ports

Ports Trunk Port Isolation Port Leakage

+ - T

Name	Member Ports
------	--------------

New Switch Trunk

Name: trunk1

Member Ports: ether10 ether12 ether14

OK Cancel Apply Copy Remove

Switch Ports

Ports Trunk Port Isolation Port Leakage

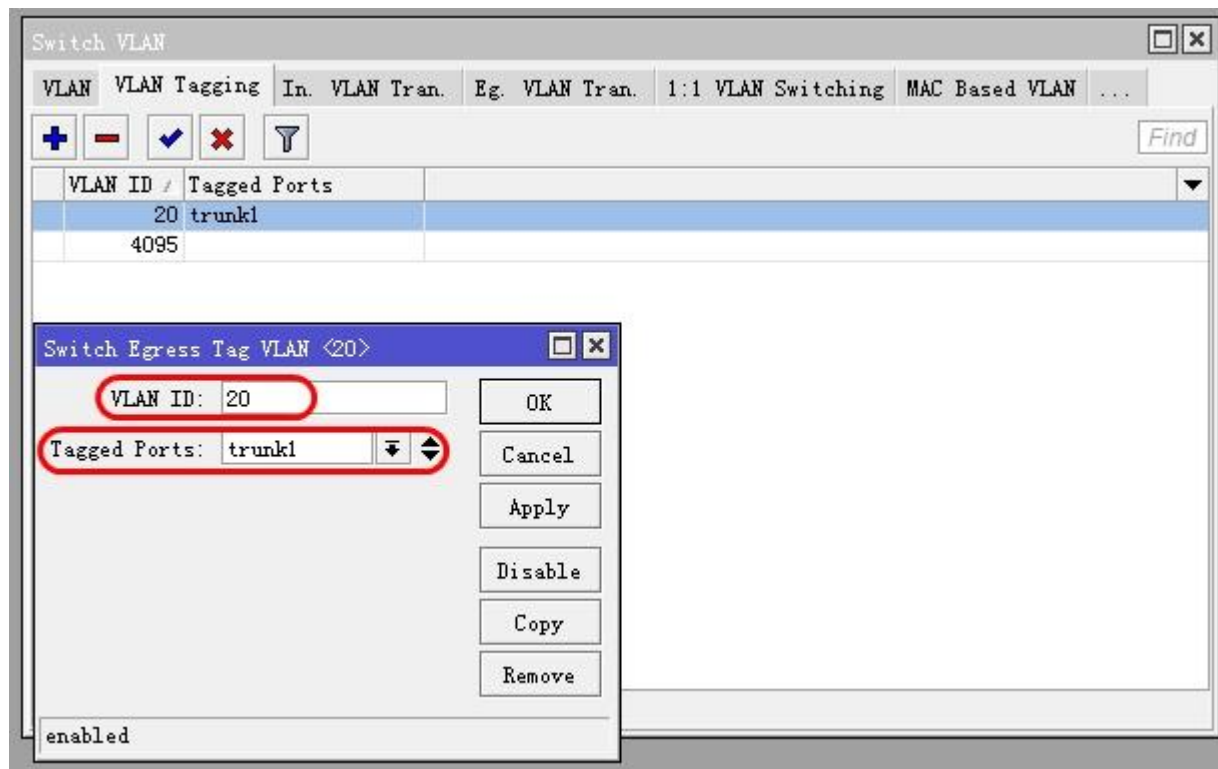
+ - T

Name	Member Ports
trunk1	ether10, ether12, ether14



Simple case of CRS

Set VLAN tagging on TRUNK to make packets tagged before they are routed :





Simple case of CRS

Add ingress VLAN translation rules to ensure correct VLAN id assignment is done on access ports:

Ingress VLAN Translation <ether18>

Ports: ether18

Protocol:

Service VLAN Lookup For: untagged or tagged

Service VID:

Service PCP:

Service DEI:

Customer VLAN Lookup For: untagged or tagged

Customer VID:

Customer PCP:

Customer DEI:

New Service VID:

New Customer VID: 20

☐ PCP Propagation

☒ SA Learning

enabled

OK

Cancel

Apply

Disable

Copy

Remove

Simple case of CRS

test:

(MikroTik) - WinBox v6.12 on RB951G-2HnD (mipsbe)

Hide Passwords

Interface List

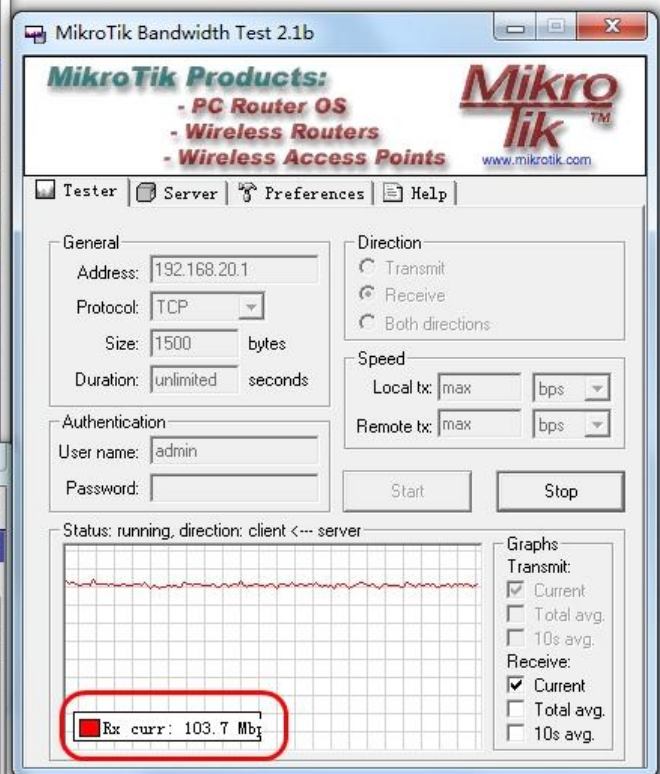
Interface	Ethernet	EoIP Tunnel	IP Tunnel	GRE Tunnel	VLAN	VRRP	Bonding	LTE
Name	Type	L2 MTU	Tx	Rx	Tx Pa			
R bonding1	Bonding		115.4 Mbps	3.3 Mbps				
R vlan20	VLAN		112.9 Mbps	2.2 Mbps				
ether1	Ethernet	1598	0 bps	0 bps				
ether2	Ethernet	1598	39.0 Mbps	2.2 kbps				
ether3	Ethernet	1598	37.6 Mbps	3.3 Mbps				
ether4	Ethernet	1598	38.7 Mbps	2.1 kbps				
ether5	Ethernet	1598	0 bps	0 bps				
wlan1	Wireless (Athero...	2290	0 bps	0 bps				

A:DF:A1 (MikroTik) - WinBox v6.12 on CRS125-24G-1S-2HnD (mipsbe)

Hide Passwords

Interface List

Interface	Ethernet	EoIP Tunnel	IP Tunnel	GRE Tunnel	VLAN	VRRP	Bonding	LTE
Name	Type	L2 MTU	Tx	Rx	Tx Pa			
ether9	Ethernet	1588	0 bps	0 bps				
ether10	Ethernet	1588	3.4 kbps	39.2 Mbps				
ether11	Ethernet	1588	0 bps	0 bps				
ether12	Ethernet	1588	3.2 Mbps	38.1 Mbps				
ether13	Ethernet	1588	0 bps	0 bps				
ether14	Ethernet	1588	2.1 kbps	38.6 Mbps				
ether15	Ethernet	1588	0 bps	0 bps				
ether16	Ethernet	1588	0 bps	0 bps				
ether17	Ethernet	1588	0 bps	0 bps				
vlan20								
ether18	Ethernet	1588	115.6 Mbps	3.1 Mbps				
ether19	Ethernet	1588	0 bps	0 bps				





Thanks for attention

Tang Song

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