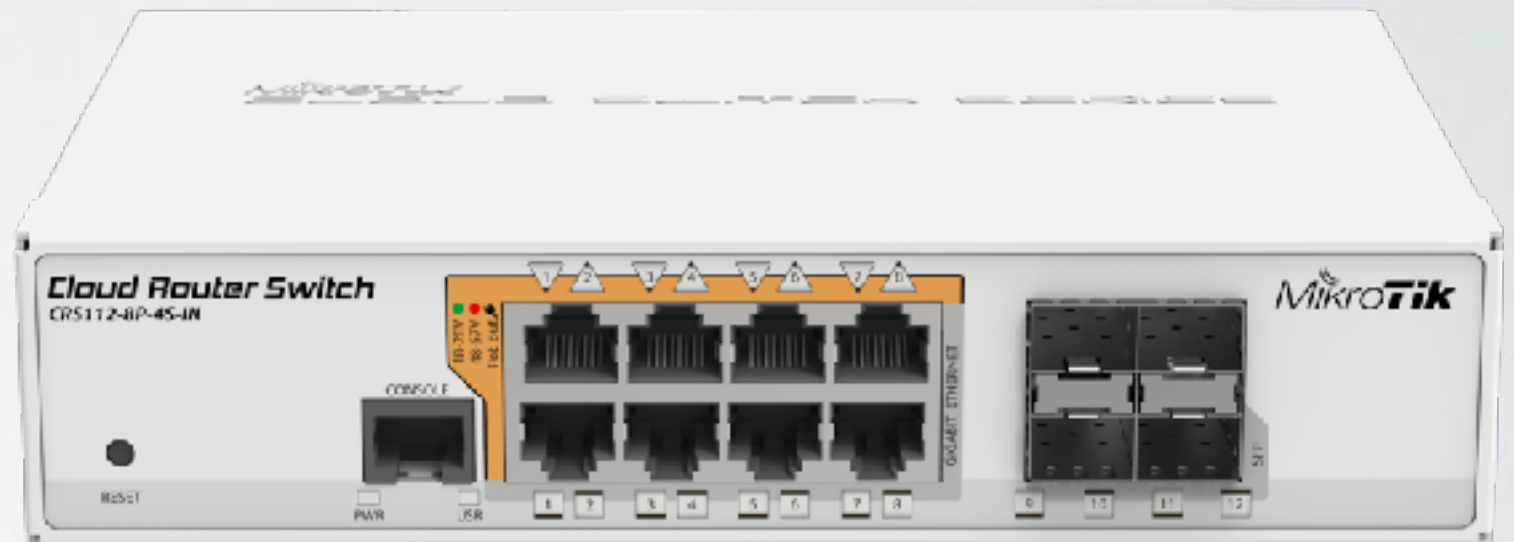


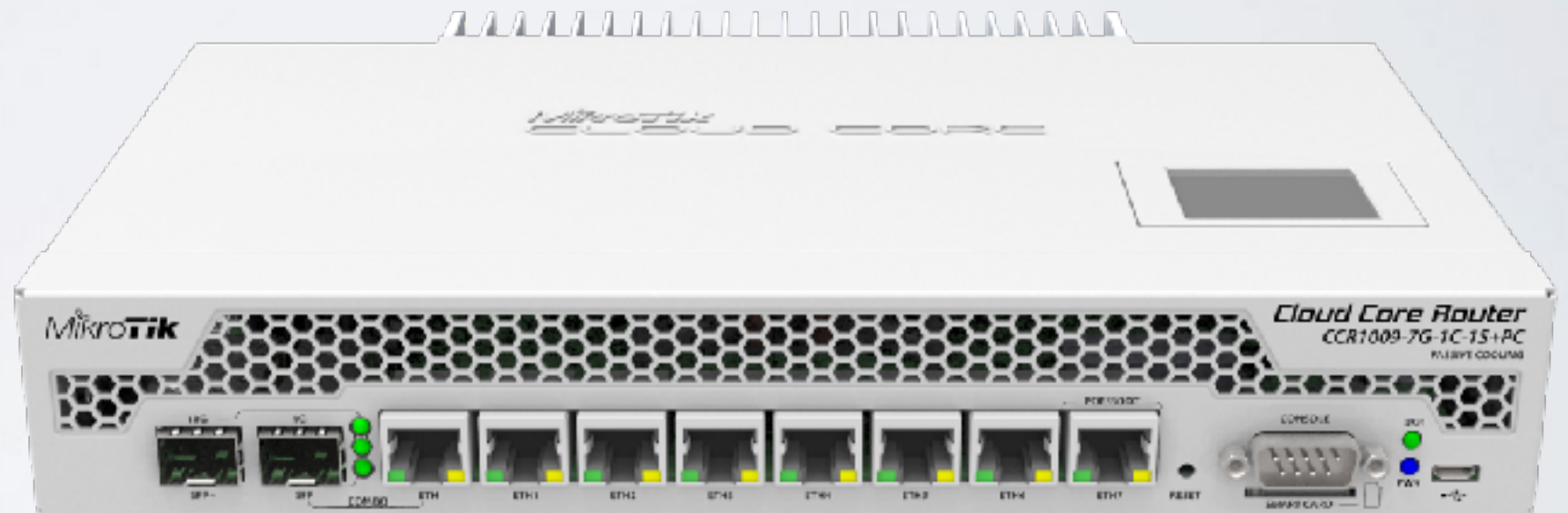
Switch?

- Many ports
- L2/Ethernet traffic
- VLAN
- Wire-speed on MikroTik switches



Router?

- L3/IP Traffic
- Firewall
- Tunnels
- BGP/OSPF etc.



MikroTik switch advantages

- + Price!
- + Number of ports
- + wire speed
- - RouterOS advanced features decreases speed

MikroTik Switches



MikroTik switches

- SwOS
- SwOS/RouterOS
- RouterOS

Switch configuration

Before MikroTik RouterOS 6.41

- Configuration was difficult
- Non scalable
- We put big effort to make it easier

MikroTik RouterOS 6.41

- Main configuration is done at /interface bridge
- /interface bridge ports controls switch configuration
- VLAN configuration is done at bridge settings

hw=yes or hw=no

- hw=yes, wire speed is available, switch chip is used;
- hw=no, CPU is used to process packets, no wirespeed

hw=yes and wire speed

<u>RouterBoard/[Switch Chip] Model</u>	Features in Switch menu	Bridge STP/RSTP	Bridge MSTP	Bridge IGMP Snooping	Bridge VLAN Filtering	Bonding
CRS3xx series	+	+	+	+	+	+
CRS1xx/CRS2xx series	+	+	-	+	-	-
[QCA8337]	+	+	-	-	-	-
[AR8327]	+	+	-	-	-	-
[AR8227]	+	+	-	-	-	-
[AR8316]	+	+	-	-	-	-
[AR7240]	+	+	-	-	-	-
RB750Gr3 [MT7621]	+	-	-	-	-	-
RB1100AHx4 [RTL8367]	+	-	-	-	-	-
[ICPlus175D]	+	-	-	-	-	-

- hw=no on every other device with bridge

hw=yes or hw=no

- hw=yes, wire speed is available, switch chip is used;
- hw=no, CPU is used to process packets, no wire speed

Wire speed

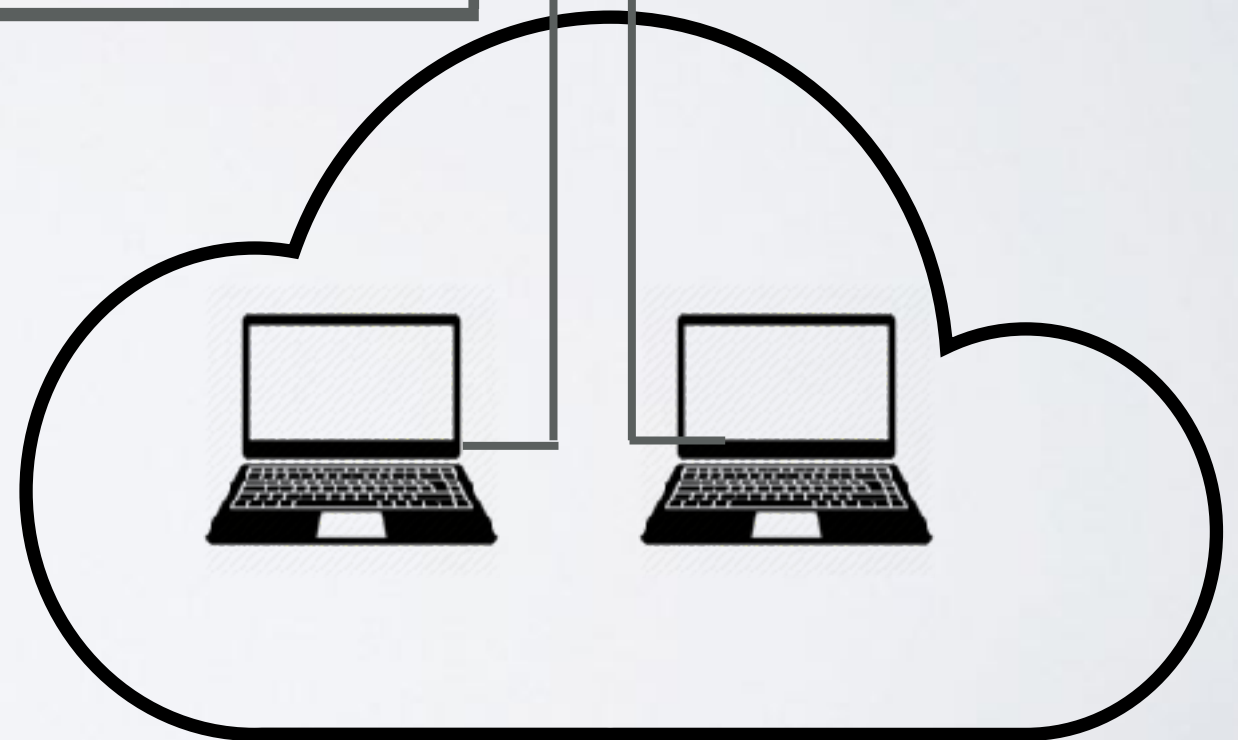
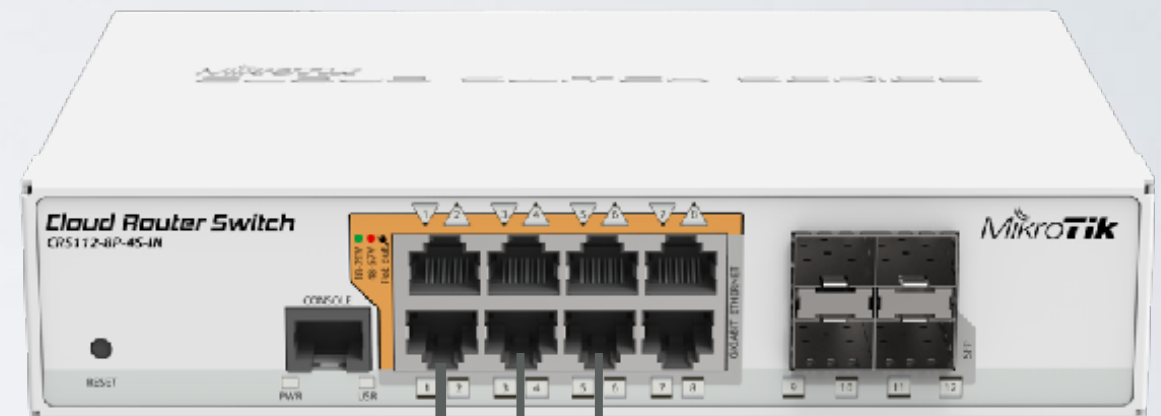
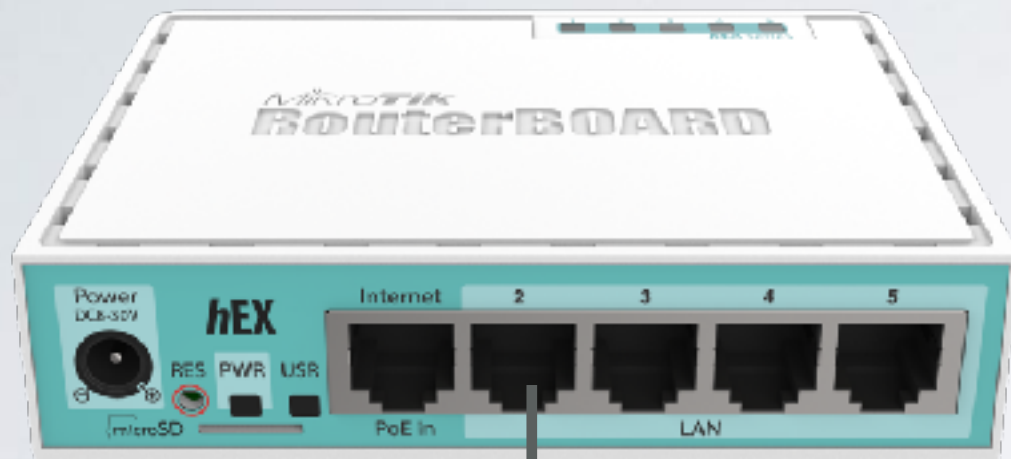
- RSTP and MSTP
- VLAN
- IGMP Snooping
- Bonding
- CRS326, CRS328, CRS317

Wire speed

- RSTP
- IGMP Snooping
- Bonding
- CRS 1xx and CRS 2xx series

Configuration examples

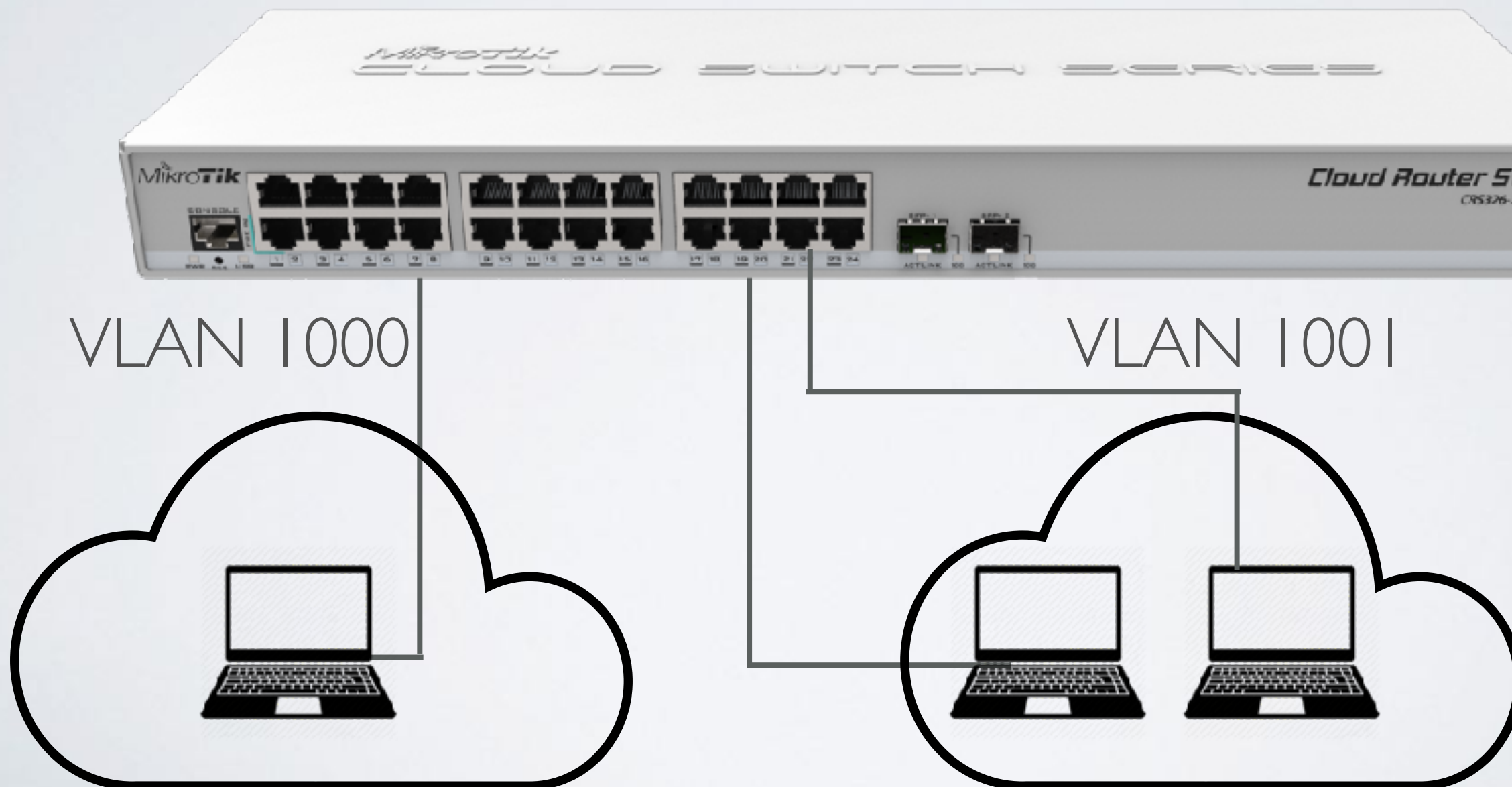
Simple switch



Simple switch [or bridge]

- `/interface bridge add`
- `/interface bridge port add bridge=bridge1
interface=ether3`
- `/interface bridge port add bridge=bridge1
interface=ether5`

Trunk and access ports CRS3xx



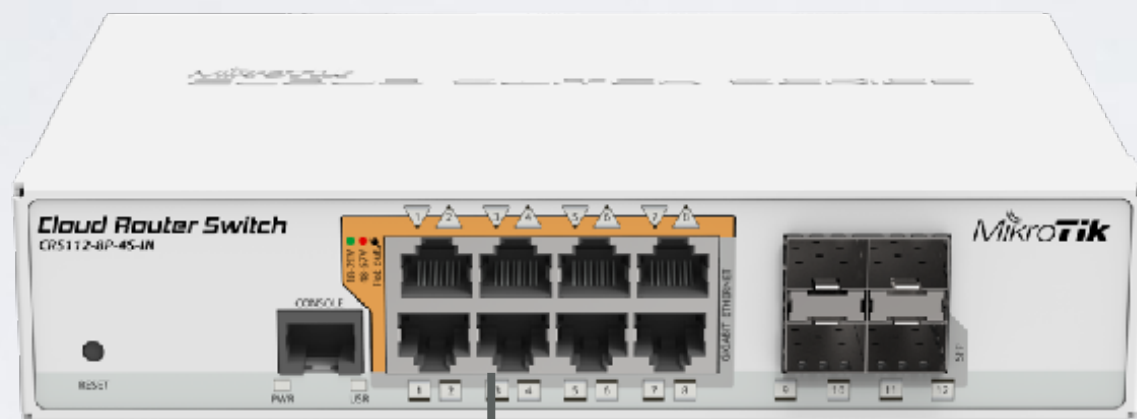
Trunk and access ports CRS3xx

- `/interface bridge add`
- `/interface bridge port add bridge=bridge1
interface=ether7`
- `/interface bridge port add bridge=bridge1
interface=ether19`
- `/interface bridge port add bridge=bridge1
interface=ether21`

Trunk and access ports CRS3xx

- Configure VLAN
- `/interface bridge port set ether7 pvid=1000`
- `/interface bridge vlan add bridge=bridge1 tagged=bridge1,ether1
untagged=ether7 vlan-ids=1000`
- `/interface bridge port set ether19,ether21 pvid=1001`
- `/interface bridge vlan add bridge=bridge1 tagged=bridge1,ether1
untagged=ether7 vlan-ids=1001`
- Enable VLAN filtering `/interface bridge add name=bridge1 vlan-filtering=yes`

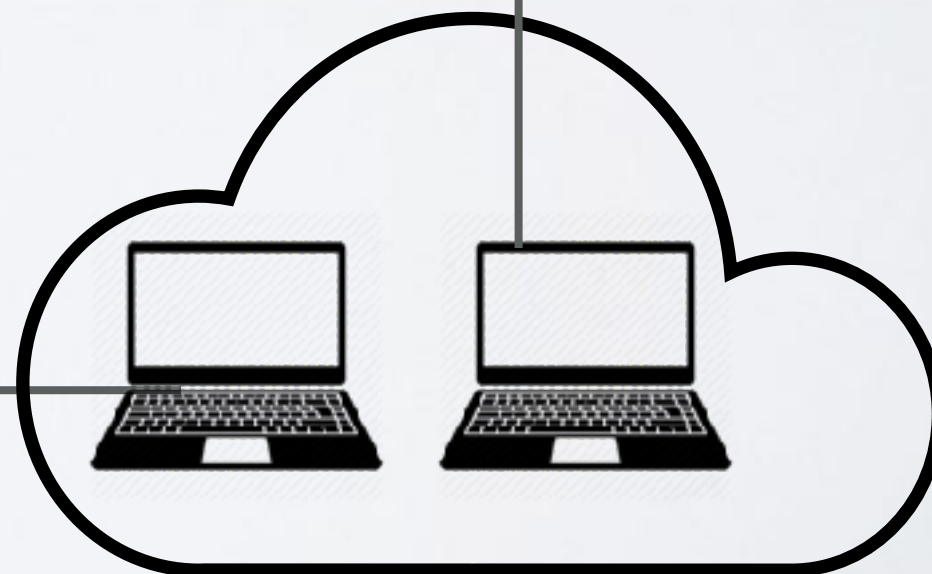
CRS1xx/CRS2xx



VLAN 1000



VLAN 1001



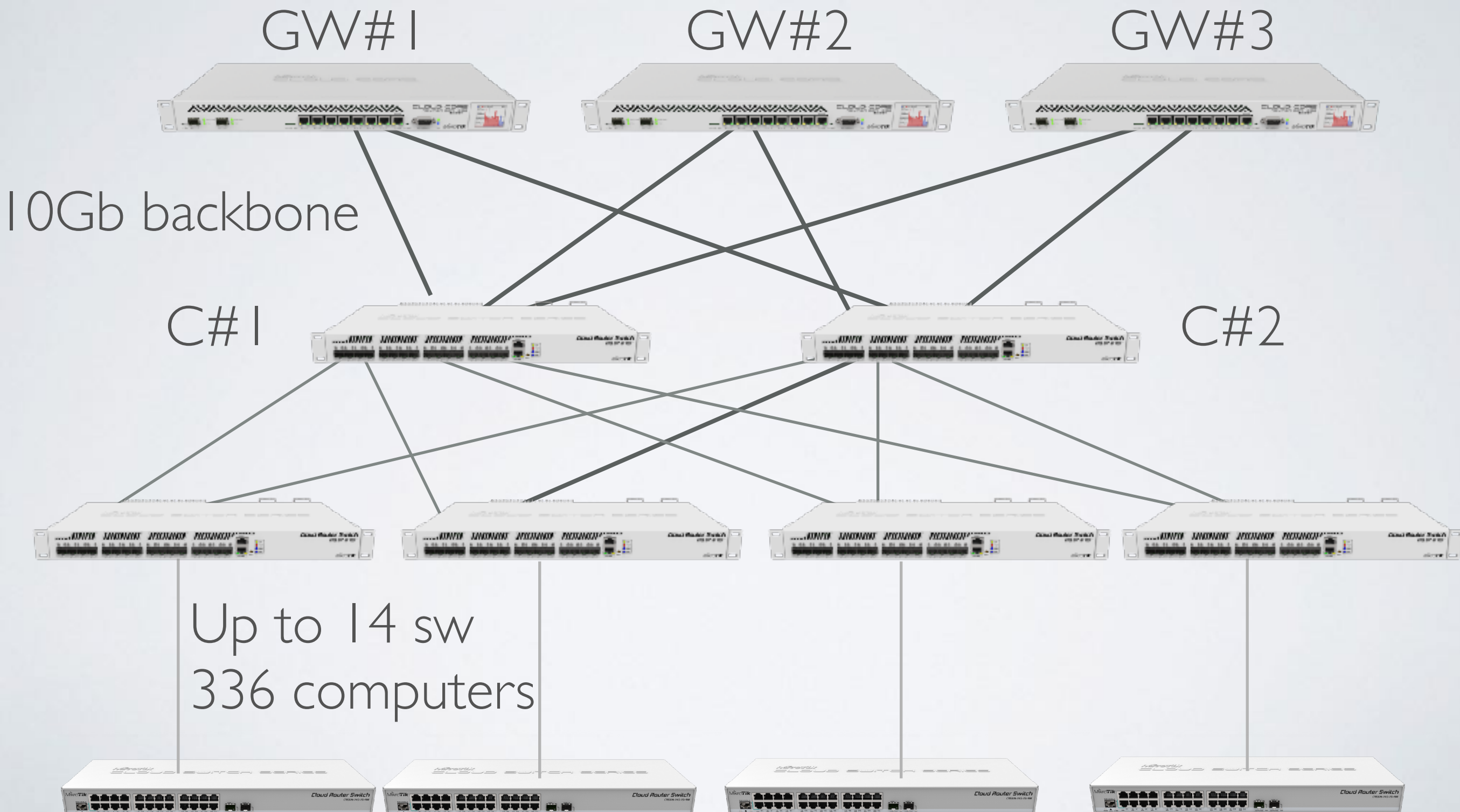
CRS1xx/CRS2xx

- /interface bridge add
- /interface bridge port add bridge=bridge1
interface=ether3
- /interface bridge port add bridge=bridge1
interface=ether5
- /interface bridge port add bridge=bridge1
interface=ether7

CRS1xx/CRS2xx

- /interface ethernet switch vlan
- add ports=ether1,ether3 switch=switch1 vlan-id=1000
- add ports=ether1,ether5,ether7 switch=switch1 vlan-id=1001

Large scalable network example



Large network example

- Each CRS317+CRS326 up to 336 1Ggbps wired clients
- CRS317+CRS317 up to 224 10Gbps wired clients

Switch configuration #1

GW#1

GW#2

GW#3

C#1

C#2



Large network example

- DHCP-server configured on GW#X VLAN interface
- VLAN 1000, 1001, 1002, 1003, 100x are distributed to end clients

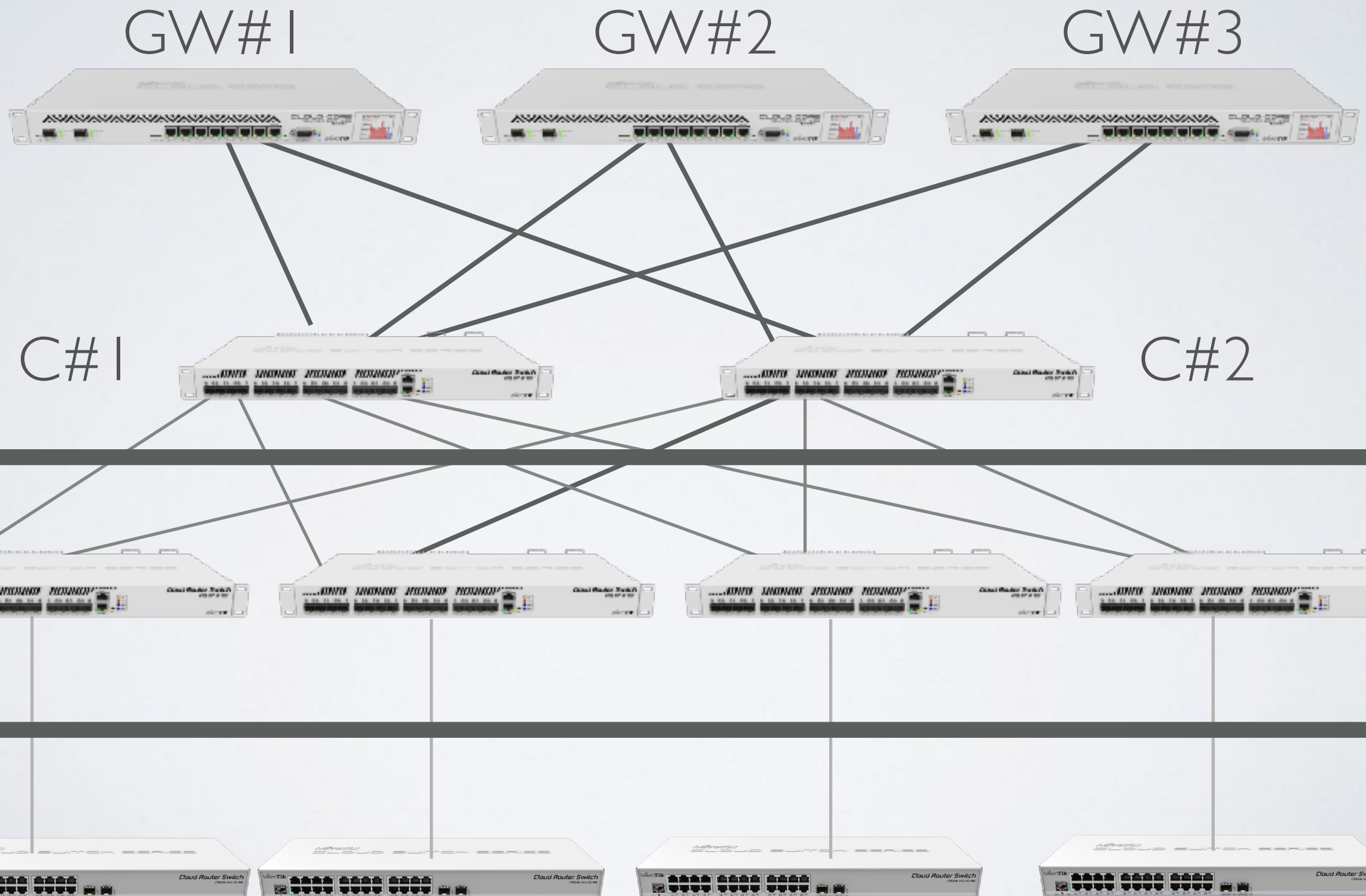
Switch configuration #1

- `/interface bridge add fast-forward=no
name=bridge1 priority=0x100 vlan-filtering=yes`
- `/interface bridge port add bridge=bridge1 frame-
types=admit-only-vlan-tagged interface=sfp-
sfpplusX`

Switch configuration #1

- `/interface bridge vlan`
- `add bridge=bridge1 tagged="bridge1,sfp-sfpplus1,sfp-sfpplus2,sfp-sfpplusX" vlan-ids="1000,1001,1002,100X"`

Switch configuration #2



Switch configuration #2

- `/interface bridge add fast-forward=no
name=bridge1 priority=0x1000 vlan-filtering=yes`
- `/interface bridge port add bridge=bridge1 frame-
types=admit-only-vlan-tagged interface=sfp-
sfpplus1, sfpplusX`

Switch configuration #2

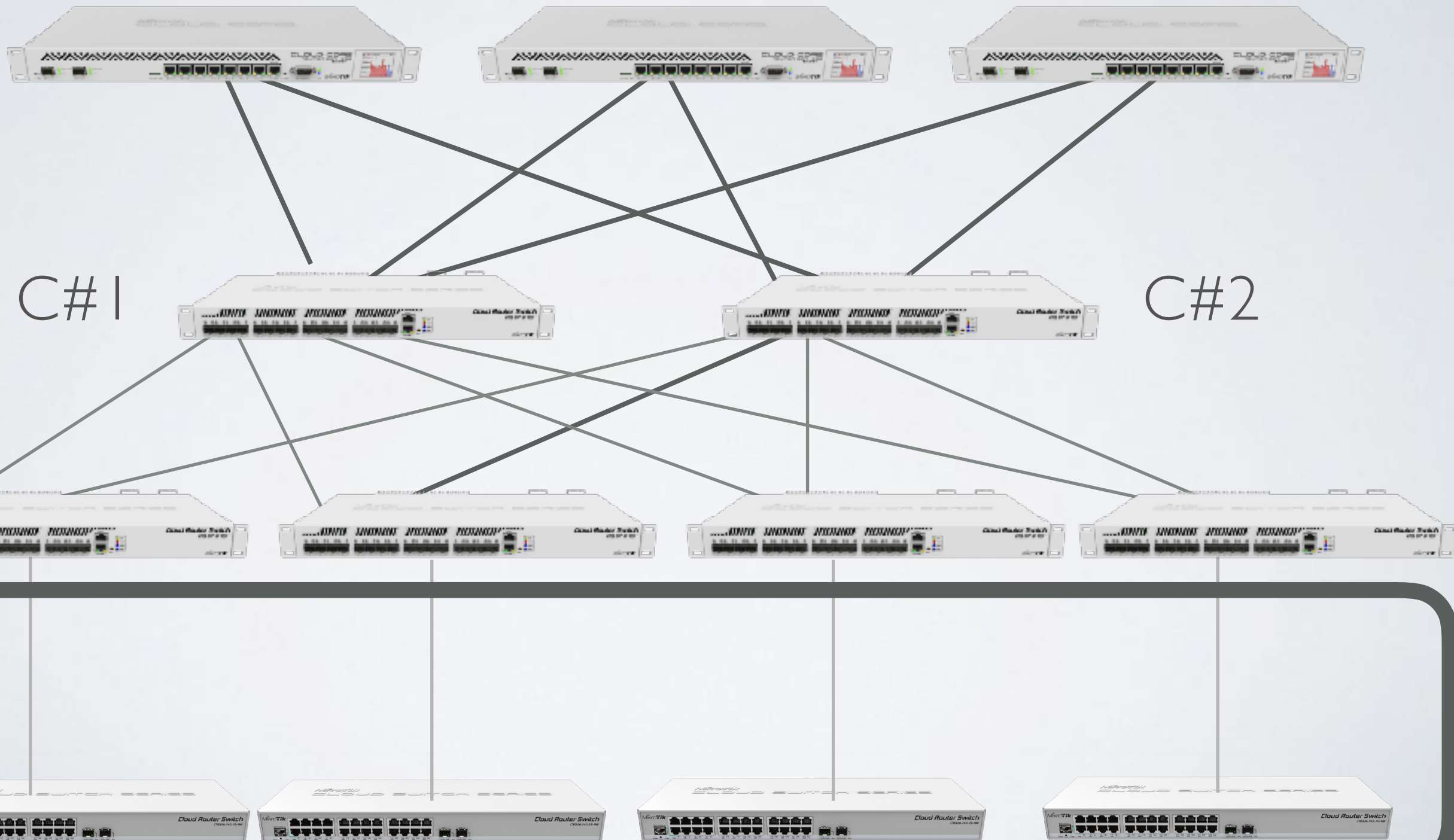
- `/interface bridge vlan`
- `add bridge=bridge1 tagged="bridge1,sfp-sfpplus1,sfp-sfpplus2,sfp-sfpplusx vlan-ids="1000,1001,1002,200x"`

Switch configuration #3

GW#1

GW#2

GW#3



Switch configuration #2

- `/interface bridge add fast-forward=no name=bridge1 vlan-filtering=yes`
- `/interface bridge port`
- `add bridge=bridge1 interface=ether2 pvid=1000`
- `add bridge=bridge1 interface=ether3 pvid=1001`
- `add bridge=bridge1 interface=ether4 pvid=1002`
- `add bridge=bridge1 interface=ether5 pvid=100x`
- `add bridge=bridge1 interface=sfp-sfpplus1`
- `add bridge=bridge1 interface=sfp-sfpplus2`

Switch configuration #2

- `/interface bridge port`
- `add bridge=bridge1 interface=ether2 pvid=1000`
- `add bridge=bridge1 interface=ether3 pvid=1001`
- `add bridge=bridge1 interface=ether4 pvid=1002`
- `add bridge=bridge1 interface=ether5 pvid=100x`
- `add bridge=bridge1 interface=sfp-sfpplus1,sfp-sfpplus2`
- `/interface bridge vlan`
- `add bridge=bridge1 tagged=bridge1,sfp-sfpplus1 untagged=ether2 vlan-ids=1000`
- `add bridge=bridge1 tagged=bridge1,sfp-sfpplus1 untagged=ether3 vlan-ids=1001`
- `add bridge=bridge1 tagged=bridge1,sfp-sfpplus1 untagged=ether4 vlan-ids=1002`
- `add bridge=bridge1 tagged=bridge1,sfp-sfpplus1 untagged=ether5 vlan-ids=100x`

Switch configuration misc

- Bridge priority configuration
- Highest on GW, then on C#1 and C#2



MikroTik

The image shows the MikroTik logo in a dark gray, 3D-style font. The word "Mikro" is in a standard sans-serif typeface, while "Tik" is in a bold, italicized sans-serif typeface. Above the letter 'i' in "Mikro", there are three curved lines that suggest motion or signal waves. The entire logo is positioned on a light gray surface that reflects the logo, creating a subtle mirror effect.