

## بخش اول

۱- می توان با استفاده از دستوری مانند زیر این کار را انجام داد.

```
ip netns exec h1
```

۲- چون به آن ها ip اختصاص داده نشده است.

۳- به مانند شکل زیر می توانیم ip اختصاص دهیم.

```
ip netns exec netns1 ip addr add 172.17.42.99/16 dev eth0
```

۴- یک اینترفیس مجازی برای اتصال است که همیشه به شکل جفت وجود دارد و دادن یک فایل از یک سر آن از سر دیگر آن خارج میشود.

۵- با دستور زیر

```
ip link add veth0 type veth peer name veth1
```

۶- با دستور زیر

```
ip link set veth1 netns blue
```

۷- لیست دیوایس های شبکه و مشخصاتشان چاپ می شود.

## بخش سوم

۱- همه دیوایس ها همدیگر را پینگ میکنند.

CA1.pdf

File Edit View Go Bookmarks Help

Thumbnails

1

2

3

4

5

Mininet چیست؟

Mininet برای هاست‌های h1 و h3 یک ترینال باز کرده و IP هر هاست را با دستور

بخش را در گزارش خود قرار دهید.

پیکربندی بفرمایید. سپس پارامترهای Delay و Bandwidth و همچنین تعداد Switchها

mininet@mininet-vm:~/developer/net1\$

```

*** Adding hosts:
h1 h2 h3 h4
*** Adding switches:
s1 s2
*** Adding links:
(20ms delay) (20ms delay) (h1, s1) (20ms delay) (20ms delay) (h2, s1) (15ms delay) (15ms delay) (h3, s2) (1s delay) (1s delay) (h4, s2) (50ms delay) (50ms delay) (s1, s2)
*** Configuring hosts
h1 h2 h3 h4
*** Starting controller
c0
*** Starting 2 switches
s1 s2 ... (20ms delay) (20ms delay) (50ms delay) (50ms delay) (15ms delay) (1s delay)
*** Starting CLI
mininet: pingall
*** Ping: testing ping reachability
h1 -> h2 h3 h4
h2 -> h1 h3 h4
h3 -> h1 h2 h4
h4 -> h1 h2 h3
*** Results: 0% dropped (12/12 received)
mininet: [ ]

```

۲- با استفاده از دستور

۳- بررسی عوامل تأثیرگذار

۴- پیکربندی

Tuesday February 26, 19:09

۲-

CA1.pdf

File Edit View Go Bookmarks Help

Thumbnails

1

2

3

4

پاسخ سوالات زیر را در گزارش خود بیاورید.

۱- خروجی دستور pingall در ترینال Mininet چیست؟

۲- با استفاده از دستور xterm در ترینال Mininet برای هاست‌های h1 و h3 یک ترینال باز کرده و IP هر هاست را با دستور ifconfig نمایش دهید. تصویر این بخش را در گزارش خود قرار دهید.

Node: h1" (on mininet-vm)

```

root@mininet-vm:~/developer/net1# ifconfig
h1-eth0:
Link encap:Ethernet HWaddr 76:2b:46:f9:a5:35
inet addr:10.0.0.1 Bcast:10.255.255.255 Mask:255.0.0.0
UP BROADCAST RUNNING MULTICAST MTU:1500 Metric:1
RX packets:23 errors:0 dropped:0 overruns:0 frame:0
TX packets:16 errors:0 dropped:0 overruns:0 carrier:0
collisions:0 txqueuelen:1000
RX bytes:1302 (1.3 KB) TX bytes:1008 (1.0 KB)

lo:
Link encap:Local Loopback
inet addr:127.0.0.1 Mask:255.0.0.0
UP LOOPBACK RUNNING MTU:65536 Metric:1
RX packets:1586 errors:0 dropped:0 overruns:0 frame:0
TX packets:1586 errors:0 dropped:0 overruns:0 carrier:0
collisions:0 txqueuelen:0
RX bytes:336456 (336.4 KB) TX bytes:336456 (336.4 KB)

root@mininet-vm:~/developer/net1#

```

Node: h3" (on mininet-vm)

```

root@mininet-vm:~/developer/net1# ifconfig
h3-eth0:
Link encap:Ethernet HWaddr 2a:d2:85:2c:00:d2
inet addr:10.0.0.3 Bcast:10.255.255.255 Mask:255.0.0.0
UP BROADCAST RUNNING MULTICAST MTU:1500 Metric:1
RX packets:23 errors:0 dropped:0 overruns:0 frame:0
TX packets:16 errors:0 dropped:0 overruns:0 carrier:0
collisions:0 txqueuelen:1000
RX bytes:1302 (1.3 KB) TX bytes:1008 (1.0 KB)

lo:
Link encap:Local Loopback
inet addr:127.0.0.1 Mask:255.0.0.0
UP LOOPBACK RUNNING MTU:65536 Metric:1
RX packets:1408 errors:0 dropped:0 overruns:0 frame:0
TX packets:1408 errors:0 dropped:0 overruns:0 carrier:0
collisions:0 txqueuelen:0
RX bytes:232316 (232.3 KB) TX bytes:232316 (232.3 KB)

root@mininet-vm:~/developer/net1#

```

۱- یاد Switchها

۲- منبع [8] مراجعه

۳- استفاده از نرم‌افزار

۴- پیش از

۵- ذکر شده، مورد

Tuesday February 26, 19:11

# بخش سوم

## Delay20

The screenshot shows a Wireshark capture titled "\*h1-eth0 [Wireshark 1.10.6 (v1.10.6 from master-1.10)] (on mininet-vm)". The capture is filtered by "Expression...". The packet list shows 22 packets, all of which are ICMP Echo (ping) requests and replies between 10.0.0.1 and 10.0.0.2. The packet details pane shows the selected packet (No. 22) as an Internet Protocol Version 4 packet from 10.0.0.1 to 10.0.0.2, and an Internet Control Message Protocol Echo (ping) request. The packet bytes pane shows the raw data of the packet.

No.	Time	Source	Destination	Protocol	Length	Info
7	3.004323000	10.0.0.1	10.0.0.2	ICMP	98	Echo (ping) request id=0x3a81, seq=25/6400, ttl=64 (request in 8)
8	3.065561000	10.0.0.2	10.0.0.1	ICMP	98	Echo (ping) reply id=0x3a81, seq=25/6400, ttl=64 (request in 7)
9	4.006441000	10.0.0.1	10.0.0.2	ICMP	98	Echo (ping) request id=0x3a81, seq=26/6656, ttl=64 (request in 10)
10	4.067360000	10.0.0.2	10.0.0.1	ICMP	98	Echo (ping) reply id=0x3a81, seq=26/6656, ttl=64 (request in 9)
11	5.009484000	10.0.0.1	10.0.0.2	ICMP	98	Echo (ping) request id=0x3a81, seq=27/6912, ttl=64 (request in 12)
12	5.070359000	10.0.0.2	10.0.0.1	ICMP	98	Echo (ping) reply id=0x3a81, seq=27/6912, ttl=64 (request in 11)
13	6.010786000	10.0.0.1	10.0.0.2	ICMP	98	Echo (ping) request id=0x3a81, seq=28/7168, ttl=64 (request in 13)
14	6.072131000	10.0.0.2	10.0.0.1	ICMP	98	Echo (ping) reply id=0x3a81, seq=28/7168, ttl=64 (request in 13)
15	7.011783000	10.0.0.1	10.0.0.2	ICMP	98	Echo (ping) request id=0x3a81, seq=29/7424, ttl=64 (request in 15)
16	7.072947000	10.0.0.2	10.0.0.1	ICMP	98	Echo (ping) reply id=0x3a81, seq=29/7424, ttl=64 (request in 15)
17	8.014715000	10.0.0.1	10.0.0.2	ICMP	98	Echo (ping) request id=0x3a81, seq=30/7680, ttl=64 (request in 17)
18	8.076473000	10.0.0.2	10.0.0.1	ICMP	98	Echo (ping) reply id=0x3a81, seq=30/7680, ttl=64 (request in 17)
19	9.015714000	10.0.0.1	10.0.0.2	ICMP	98	Echo (ping) request id=0x3a81, seq=31/7936, ttl=64 (request in 19)
20	9.076963000	10.0.0.2	10.0.0.1	ICMP	98	Echo (ping) reply id=0x3a81, seq=31/7936, ttl=64 (request in 19)
21	10.017482000	10.0.0.1	10.0.0.2	ICMP	98	Echo (ping) request id=0x3a81, seq=32/8192, ttl=64 (request in 21)
22	10.078550000	10.0.0.2	10.0.0.1	ICMP	98	Echo (ping) reply id=0x3a81, seq=32/8192, ttl=64 (request in 21)

## Delay90

The screenshot shows a Wireshark capture titled "Capturing from h1-eth0 [Wireshark 1.10.6 (v1.10.6 from master-1.10)] (on mininet-vm)". The capture is filtered by "Expression...". The packet list shows 36 packets, all of which are ICMP Echo (ping) requests and replies between 10.0.0.1 and 10.0.0.2. The packet details pane shows the selected packet (No. 25) as an Internet Protocol Version 4 packet from 10.0.0.2 to 10.0.0.1, and an Internet Control Message Protocol Echo (ping) request. The packet bytes pane shows the raw data of the packet.

No.	Time	Source	Destination	Protocol	Length	Info
10	3.275595000	10.0.0.2	10.0.0.1	ICMP	98	Echo (ping) reply id=0x3b93, seq=4/1024, ttl=64 (request in 9)
11	4.005251000	10.0.0.1	10.0.0.2	ICMP	98	Echo (ping) request id=0x3b93, seq=5/1280, ttl=64 (request in 11)
12	4.277159000	10.0.0.2	10.0.0.1	ICMP	98	Echo (ping) reply id=0x3b93, seq=5/1280, ttl=64 (request in 11)
13	5.007620000	10.0.0.1	10.0.0.2	ICMP	98	Echo (ping) request id=0x3b93, seq=6/1536, ttl=64 (request in 14)
14	5.278171000	10.0.0.2	10.0.0.1	ICMP	98	Echo (ping) reply id=0x3b93, seq=6/1536, ttl=64 (request in 13)
15	5.648645000	7a:1a:db:d9:50:39	9a:13:17:9c:4b:5b	ARP	42	Who has 10.0.0.1? Tell 10.0.0.2
16	5.739594000	9a:13:17:9c:4b:5b	7a:1a:db:d9:50:39	ARP	42	10.0.0.1 is at 9a:13:17:9c:4b:5b
17	6.008267000	10.0.0.1	10.0.0.2	ICMP	98	Echo (ping) request id=0x3b93, seq=7/1792, ttl=64 (request in 17)
18	6.280046000	10.0.0.2	10.0.0.1	ICMP	98	Echo (ping) reply id=0x3b93, seq=7/1792, ttl=64 (request in 17)
19	7.008993000	10.0.0.1	10.0.0.2	ICMP	98	Echo (ping) request id=0x3b93, seq=8/2048, ttl=64 (request in 19)
20	7.279636000	10.0.0.2	10.0.0.1	ICMP	98	Echo (ping) reply id=0x3b93, seq=8/2048, ttl=64 (request in 19)
21	8.010375000	10.0.0.1	10.0.0.2	ICMP	98	Echo (ping) request id=0x3b93, seq=9/2304, ttl=64 (request in 21)
22	8.281212000	10.0.0.2	10.0.0.1	ICMP	98	Echo (ping) reply id=0x3b93, seq=9/2304, ttl=64 (request in 21)
23	9.012005000	10.0.0.1	10.0.0.2	ICMP	98	Echo (ping) request id=0x3b93, seq=10/2560, ttl=64 (request in 23)
24	9.283149000	10.0.0.2	10.0.0.1	ICMP	98	Echo (ping) reply id=0x3b93, seq=10/2560, ttl=64 (request in 23)
25	10.013247000	10.0.0.1	10.0.0.2	ICMP	98	Echo (ping) request id=0x3b93, seq=11/2816, ttl=64 (request in 26)

# Bandwidth1

No.	Time	Source	Destination	Protocol	Length	Info
7	2.002349000	10.0.0.1	10.0.0.2	ICMP	98	Echo (ping) request id=0x3e48, seq=3/768, ttl=64 (reply in 8)
8	2.002388000	10.0.0.2	10.0.0.1	ICMP	98	Echo (ping) reply id=0x3e48, seq=3/768, ttl=64 (request in 7)
9	3.001429000	10.0.0.1	10.0.0.2	ICMP	98	Echo (ping) request id=0x3e48, seq=4/1024, ttl=64 (reply in 10)
10	3.001464000	10.0.0.2	10.0.0.1	ICMP	98	Echo (ping) reply id=0x3e48, seq=4/1024, ttl=64 (request in 9)
11	4.001757000	10.0.0.1	10.0.0.2	ICMP	98	Echo (ping) request id=0x3e48, seq=5/1280, ttl=64 (reply in 12)
12	4.001791000	10.0.0.2	10.0.0.1	ICMP	98	Echo (ping) reply id=0x3e48, seq=5/1280, ttl=64 (request in 11)
13	5.002325000	10.0.0.1	10.0.0.2	ICMP	98	Echo (ping) request id=0x3e48, seq=6/1536, ttl=64 (reply in 14)
14	5.002368000	10.0.0.2	10.0.0.1	ICMP	98	Echo (ping) reply id=0x3e48, seq=6/1536, ttl=64 (request in 13)
15	5.018019000	f6:01:c7:11:18:40	76:0a:ae:c0:d9:0b	ARP	42	Who has 10.0.0.1? Tell 10.0.0.2
16	5.018034000	76:0a:ae:c0:d9:0b	f6:01:c7:11:18:40	ARP	42	10.0.0.1 is at 76:0a:ae:c0:d9:0b
17	6.001353000	10.0.0.1	10.0.0.2	ICMP	98	Echo (ping) request id=0x3e48, seq=7/1792, ttl=64 (reply in 18)
18	6.001668000	10.0.0.2	10.0.0.1	ICMP	98	Echo (ping) reply id=0x3e48, seq=7/1792, ttl=64 (request in 17)
19	7.001421000	10.0.0.1	10.0.0.2	ICMP	98	Echo (ping) request id=0x3e48, seq=8/2048, ttl=64 (reply in 20)
20	7.001455000	10.0.0.2	10.0.0.1	ICMP	98	Echo (ping) reply id=0x3e48, seq=8/2048, ttl=64 (request in 19)
21	8.003404000	10.0.0.1	10.0.0.2	ICMP	98	Echo (ping) request id=0x3e48, seq=9/2304, ttl=64 (reply in 22)
22	8.003444000	10.0.0.2	10.0.0.1	ICMP	98	Echo (ping) reply id=0x3e48, seq=9/2304, ttl=64 (request in 21)

Internet Protocol Version 4, Src: 10.0.0.2 (10.0.0.2), Dst: 10.0.0.1 (10.0.0.1)  
Internet Control Message Protocol

0000 76 0a ae c0 d9 0b f6 01 c7 11 18 40 08 00 45 00 V.....@...E.  
0010 00 54 93 85 00 00 40 01 d3 21 0a 00 00 02 0a 00 .T...@. ....  
0020 00 01 00 00 0d 20 3e 48 00 04 f9 61 75 5c 00 00 .....>H...au..  
0030 00 00 86 02 01 00 00 00 00 00 10 11 12 13 14 15 .....  
0040 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 .....

h1-eth0: <live capture in progress... Packets: 30 · Displayed: 30 (100.0%) Profile: Default

# Bandwidth15

No.	Time	Source	Destination	Protocol	Length	Info
8	2.000230000	10.0.0.2	10.0.0.1	ICMP	98	Echo (ping) reply id=0x3f5b, seq=3/768, ttl=64 (request in 7)
9	2.999480000	10.0.0.1	10.0.0.2	ICMP	98	Echo (ping) request id=0x3f5b, seq=4/1024, ttl=64 (reply in 10)
10	2.999506000	10.0.0.2	10.0.0.1	ICMP	98	Echo (ping) reply id=0x3f5b, seq=4/1024, ttl=64 (request in 9)
11	3.999425000	10.0.0.1	10.0.0.2	ICMP	98	Echo (ping) request id=0x3f5b, seq=5/1280, ttl=64 (reply in 12)
12	3.999510000	10.0.0.2	10.0.0.1	ICMP	98	Echo (ping) reply id=0x3f5b, seq=5/1280, ttl=64 (request in 11)
13	4.999737000	10.0.0.1	10.0.0.2	ICMP	98	Echo (ping) request id=0x3f5b, seq=6/1536, ttl=64 (reply in 14)
14	4.999766000	10.0.0.2	10.0.0.1	ICMP	98	Echo (ping) reply id=0x3f5b, seq=6/1536, ttl=64 (request in 13)
15	5.017048000	1a:57:0f:5b:78:4e	a6:3a:93:82:6e:01	ARP	42	Who has 10.0.0.1? Tell 10.0.0.2
16	5.017059000	a6:3a:93:82:6e:01	1a:57:0f:5b:78:4e	ARP	42	10.0.0.1 is at a6:3a:93:82:6e:01
17	5.999690000	10.0.0.1	10.0.0.2	ICMP	98	Echo (ping) request id=0x3f5b, seq=7/1792, ttl=64 (reply in 18)
18	6.0000363000	10.0.0.2	10.0.0.1	ICMP	98	Echo (ping) reply id=0x3f5b, seq=7/1792, ttl=64 (request in 17)
19	6.999786000	10.0.0.1	10.0.0.2	ICMP	98	Echo (ping) request id=0x3f5b, seq=8/2048, ttl=64 (reply in 20)
20	6.999820000	10.0.0.2	10.0.0.1	ICMP	98	Echo (ping) reply id=0x3f5b, seq=8/2048, ttl=64 (request in 19)
21	7.999928000	10.0.0.1	10.0.0.2	ICMP	98	Echo (ping) request id=0x3f5b, seq=9/2304, ttl=64 (reply in 22)
22	7.999966000	10.0.0.2	10.0.0.1	ICMP	98	Echo (ping) reply id=0x3f5b, seq=9/2304, ttl=64 (request in 21)
23	8.999881000	10.0.0.1	10.0.0.2	ICMP	98	Echo (ping) request id=0x3f5b, seq=10/2560, ttl=64 (reply in 24)

Internet Protocol Version 4, Src: 10.0.0.1 (10.0.0.1), Dst: 10.0.0.2 (10.0.0.2)  
Internet Control Message Protocol

0000 1a 57 0f 5b 78 4e a6 3a 93 82 6e 01 08 00 45 00 .W.[xN.:...n...E.  
0010 00 54 e9 90 40 00 40 01 3d 16 0a 00 00 01 0a 00 .T..@.@.=.....  
0020 00 02 00 00 7b ff 3f 5b 00 0a 85 62 75 5c 00 00 ....{.?[...bu..  
0030 00 00 83 09 00 00 00 00 00 00 10 11 12 13 14 15 .....  
0040 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 .....

h1-eth0: <live capture in progress... Packets: 26 · Displayed: 26 (100.0%) Profile: Default

# Switch Queue1

Capturing from h1-eth0 [Wireshark 1.10.6 (v1.10.6 from master-1.10)] (on mininet-vm)

Filter: Expression... Clear Apply Save

No.	Time	Source	Destination	Protocol	Length	Info
5	1.002008000	10.0.0.1	10.0.0.2	ICMP	98	Echo (ping) request id=0x4090, seq=2/512, ttl=64 (reply in 6)
6	1.003105000	10.0.0.2	10.0.0.1	ICMP	98	Echo (ping) reply id=0x4090, seq=2/512, ttl=64 (request in 5)
7	2.003531000	10.0.0.1	10.0.0.2	ICMP	98	Echo (ping) request id=0x4090, seq=3/768, ttl=64 (reply in 8)
8	2.003559000	10.0.0.2	10.0.0.1	ICMP	98	Echo (ping) reply id=0x4090, seq=3/768, ttl=64 (request in 7)
9	3.003031000	10.0.0.1	10.0.0.2	ICMP	98	Echo (ping) request id=0x4090, seq=4/1024, ttl=64 (reply in 10)
10	3.003059000	10.0.0.2	10.0.0.1	ICMP	98	Echo (ping) reply id=0x4090, seq=4/1024, ttl=64 (request in 9)
11	4.002930000	10.0.0.1	10.0.0.2	ICMP	98	Echo (ping) request id=0x4090, seq=5/1280, ttl=64 (reply in 12)
12	4.002961000	10.0.0.2	10.0.0.1	ICMP	98	Echo (ping) reply id=0x4090, seq=5/1280, ttl=64 (request in 11)
13	5.002997000	10.0.0.1	10.0.0.2	ICMP	98	Echo (ping) request id=0x4090, seq=6/1536, ttl=64 (reply in 14)
14	5.003023000	10.0.0.2	10.0.0.1	ICMP	98	Echo (ping) reply id=0x4090, seq=6/1536, ttl=64 (request in 13)
15	5.015562000	aa:e5:1c:d1:de:26	c2:24:2c:58:a8:7b	ARP	42	Who has 10.0.0.1? Tell 10.0.0.2
16	5.015571000	c2:24:2c:58:a8:7b	aa:e5:1c:d1:de:26	ARP	42	10.0.0.1 is at c2:24:2c:58:a8:7b
17	6.003197000	10.0.0.1	10.0.0.2	ICMP	98	Echo (ping) request id=0x4090, seq=7/1792, ttl=64 (reply in 18)
18	6.003571000	10.0.0.2	10.0.0.1	ICMP	98	Echo (ping) reply id=0x4090, seq=7/1792, ttl=64 (request in 17)
19	7.003201000	10.0.0.1	10.0.0.2	ICMP	98	Echo (ping) request id=0x4090, seq=8/2048, ttl=64 (reply in 20)
20	7.003230000	10.0.0.2	10.0.0.1	ICMP	98	Echo (ping) reply id=0x4090, seq=8/2048, ttl=64 (request in 19)

Internet Protocol Version 4, Src: 10.0.0.1 (10.0.0.1), Dst: 10.0.0.2 (10.0.0.2)

Internet Control Message Protocol

0000 aa e5 1c d1 de 26 c2 24 2c 58 a8 7b 08 00 45 00 .....&\$.X.(.E.  
0010 00 54 4a e1 40 00 40 01 db c5 0a 00 00 01 0a 00 .TJ.@.@.....  
0020 00 02 08 00 2c 64 40 90 00 08 46 63 75 5c 00 00 .....d@..FcU..  
0030 00 00 0f 71 01 00 00 00 00 00 10 11 12 13 14 15 ...q.....

h1-eth0: <live capture in progress... Packets: 24 · Displayed: 24 (100.0%) Profile: Default

Tuesday February 26, 19:33

# Switch Queue15

Capturing from h1-eth0 [Wireshark 1.10.6 (v1.10.6 from master-1.10)] (on mininet-vm)

Filter: Expression... Clear Apply Save

No.	Time	Source	Destination	Protocol	Length	Info
5	1.001417000	10.0.0.1	10.0.0.2	ICMP	98	Echo (ping) request id=0x43d0, seq=2/512, ttl=64 (reply in 6)
6	1.002152000	10.0.0.2	10.0.0.1	ICMP	98	Echo (ping) reply id=0x43d0, seq=2/512, ttl=64 (request in 5)
7	2.002788000	10.0.0.1	10.0.0.2	ICMP	98	Echo (ping) request id=0x43d0, seq=3/768, ttl=64 (reply in 8)
8	2.002824000	10.0.0.2	10.0.0.1	ICMP	98	Echo (ping) reply id=0x43d0, seq=3/768, ttl=64 (request in 7)
9	3.001790000	10.0.0.1	10.0.0.2	ICMP	98	Echo (ping) request id=0x43d0, seq=4/1024, ttl=64 (reply in 10)
10	3.001829000	10.0.0.2	10.0.0.1	ICMP	98	Echo (ping) reply id=0x43d0, seq=4/1024, ttl=64 (request in 9)
11	4.000931000	10.0.0.1	10.0.0.2	ICMP	98	Echo (ping) request id=0x43d0, seq=5/1280, ttl=64 (reply in 12)
12	4.000954000	10.0.0.2	10.0.0.1	ICMP	98	Echo (ping) reply id=0x43d0, seq=5/1280, ttl=64 (request in 11)
13	5.000932000	10.0.0.1	10.0.0.2	ICMP	98	Echo (ping) request id=0x43d0, seq=6/1536, ttl=64 (reply in 14)
14	5.000967000	10.0.0.2	10.0.0.1	ICMP	98	Echo (ping) reply id=0x43d0, seq=6/1536, ttl=64 (request in 13)
15	5.009995000	0e:dd:06:94:dd:89	22:2e:84:16:7a:6b	ARP	42	Who has 10.0.0.1? Tell 10.0.0.2
16	5.010007000	22:2e:84:16:7a:6b	0e:dd:06:94:dd:89	ARP	42	10.0.0.1 is at 22:2e:84:16:7a:6b
17	6.000882000	10.0.0.1	10.0.0.2	ICMP	98	Echo (ping) request id=0x43d0, seq=7/1792, ttl=64 (reply in 18)
18	6.001790000	10.0.0.2	10.0.0.1	ICMP	98	Echo (ping) reply id=0x43d0, seq=7/1792, ttl=64 (request in 17)
19	7.002728000	10.0.0.1	10.0.0.2	ICMP	98	Echo (ping) request id=0x43d0, seq=8/2048, ttl=64 (reply in 20)
20	7.002766000	10.0.0.2	10.0.0.1	ICMP	98	Echo (ping) reply id=0x43d0, seq=8/2048, ttl=64 (request in 19)

Internet Protocol Version 4, Src: 10.0.0.1 (10.0.0.1), Dst: 10.0.0.2 (10.0.0.2)

Internet Control Message Protocol

0000 0e dd 06 94 dd 89 22 2e 84 16 7a 6b 08 00 45 00 .....".zk..E.  
0010 00 54 eb 7f 40 00 40 01 3b 27 0a 00 00 01 0a 00 .T.@.@.....  
0020 00 02 08 00 14 74 43 d0 00 05 59 64 75 5c 00 00 .....tC..Ydu..  
0030 00 00 0c 23 06 00 00 00 00 00 10 11 12 13 14 15 ...#.....

h1-eth0: <live capture in progress... Packets: 20 · Displayed: 20 (100.0%) Profile: Default

Tuesday February 26, 19:38

## Switch count2

Wireshark 1.10.6 (v1.10.6 from master-1.10) on mininet-vm. Capturing from h1-eth0. The packet list shows 22 packets, all ICMP Echo (ping) requests and replies between 10.0.0.1 and 10.0.0.2. The packet details pane shows the selected packet (No. 14) as an ARP request from 10.0.0.1 to 10.0.0.2. The packet bytes pane shows the raw data of the selected packet.

No.	Time	Source	Destination	Protocol	Length	Info
7	2.007618000	10.0.0.1	10.0.0.2	ICMP	98	Echo (ping) request id=0x46bc, seq=3/768, ttl=64 (reply in 8)
8	2.007653000	10.0.0.2	10.0.0.1	ICMP	98	Echo (ping) reply id=0x46bc, seq=3/768, ttl=64 (request in 7)
9	3.007045000	10.0.0.1	10.0.0.2	ICMP	98	Echo (ping) request id=0x46bc, seq=4/1024, ttl=64 (reply in 10)
10	3.007143000	10.0.0.1	10.0.0.1	ICMP	98	Echo (ping) reply id=0x46bc, seq=4/1024, ttl=64 (request in 9)
11	4.008641000	10.0.0.1	10.0.0.2	ICMP	98	Echo (ping) request id=0x46bc, seq=5/1280, ttl=64 (reply in 12)
12	4.008673000	10.0.0.2	10.0.0.1	ICMP	98	Echo (ping) reply id=0x46bc, seq=5/1280, ttl=64 (request in 11)
13	5.009422000	d6:03:ca:cb:d1:a5	9e:5b:78:2f:60:1c	ARP	42	Who has 10.0.0.1? Tell 10.0.0.2
14	5.009432000	9e:5b:78:2f:60:1c	d6:03:ca:cb:d1:a5	ARP	42	10.0.0.1 is at 9e:5b:78:2f:60:1c
15	5.011289000	10.0.0.1	10.0.0.2	ICMP	98	Echo (ping) request id=0x46bc, seq=6/1536, ttl=64 (reply in 16)
16	5.011634000	10.0.0.2	10.0.0.1	ICMP	98	Echo (ping) reply id=0x46bc, seq=6/1536, ttl=64 (request in 15)
17	6.010957000	10.0.0.1	10.0.0.2	ICMP	98	Echo (ping) request id=0x46bc, seq=7/1792, ttl=64 (reply in 18)
18	6.010991000	10.0.0.2	10.0.0.1	ICMP	98	Echo (ping) reply id=0x46bc, seq=7/1792, ttl=64 (request in 17)
19	7.011330000	10.0.0.1	10.0.0.2	ICMP	98	Echo (ping) request id=0x46bc, seq=8/2048, ttl=64 (reply in 20)
20	7.011370000	10.0.0.2	10.0.0.1	ICMP	98	Echo (ping) reply id=0x46bc, seq=8/2048, ttl=64 (request in 19)
21	8.011220000	10.0.0.1	10.0.0.2	ICMP	98	Echo (ping) request id=0x46bc, seq=9/2304, ttl=64 (reply in 22)
22	8.011590000	10.0.0.2	10.0.0.1	ICMP	98	Echo (ping) reply id=0x46bc, seq=9/2304, ttl=64 (request in 21)

## Switch count7

Wireshark 1.10.6 (v1.10.6 from master-1.10) on mininet-vm. Capturing from h1-eth0. The packet list shows 22 packets, all ICMP Echo (ping) requests and replies between 10.0.0.1 and 10.0.0.2. The packet details pane shows the selected packet (No. 14) as an ARP request from 10.0.0.1 to 10.0.0.2. The packet bytes pane shows the raw data of the selected packet.

No.	Time	Source	Destination	Protocol	Length	Info
7	2.998069000	10.0.0.1	10.0.0.2	ICMP	98	Echo (ping) request id=0x4a0b, seq=4/1024, ttl=64 (reply in 8)
8	2.998920000	10.0.0.2	10.0.0.1	ICMP	98	Echo (ping) reply id=0x4a0b, seq=4/1024, ttl=64 (request in 7)
9	3.997999000	10.0.0.1	10.0.0.2	ICMP	98	Echo (ping) request id=0x4a0b, seq=5/1280, ttl=64 (reply in 10)
10	3.998509000	10.0.0.2	10.0.0.1	ICMP	98	Echo (ping) reply id=0x4a0b, seq=5/1280, ttl=64 (request in 9)
11	5.000068000	10.0.0.1	10.0.0.2	ICMP	98	Echo (ping) request id=0x4a0b, seq=6/1536, ttl=64 (reply in 12)
12	5.000122000	10.0.0.2	10.0.0.1	ICMP	98	Echo (ping) reply id=0x4a0b, seq=6/1536, ttl=64 (request in 11)
13	5.010714000	66:d7:24:ac:cf:20	0e:e2:a5:65:24:4d	ARP	42	Who has 10.0.0.1? Tell 10.0.0.2
14	5.010725000	0e:e2:a5:65:24:4d	66:d7:24:ac:cf:20	ARP	42	10.0.0.1 is at 0e:e2:a5:65:24:4d
15	5.999061000	10.0.0.1	10.0.0.2	ICMP	98	Echo (ping) request id=0x4a0b, seq=7/1792, ttl=64 (reply in 16)
16	5.999509000	10.0.0.2	10.0.0.1	ICMP	98	Echo (ping) reply id=0x4a0b, seq=7/1792, ttl=64 (request in 15)
17	6.999851000	10.0.0.1	10.0.0.2	ICMP	98	Echo (ping) request id=0x4a0b, seq=8/2048, ttl=64 (reply in 18)
18	6.999906000	10.0.0.2	10.0.0.1	ICMP	98	Echo (ping) reply id=0x4a0b, seq=8/2048, ttl=64 (request in 17)
19	7.998847000	10.0.0.1	10.0.0.2	ICMP	98	Echo (ping) request id=0x4a0b, seq=9/2304, ttl=64 (reply in 20)
20	7.998899000	10.0.0.2	10.0.0.1	ICMP	98	Echo (ping) reply id=0x4a0b, seq=9/2304, ttl=64 (request in 19)
21	8.998076000	10.0.0.1	10.0.0.2	ICMP	98	Echo (ping) request id=0x4a0b, seq=10/2560, ttl=64 (reply in 22)
22	8.998126000	10.0.0.2	10.0.0.1	ICMP	98	Echo (ping) reply id=0x4a0b, seq=10/2560, ttl=64 (request in 21)