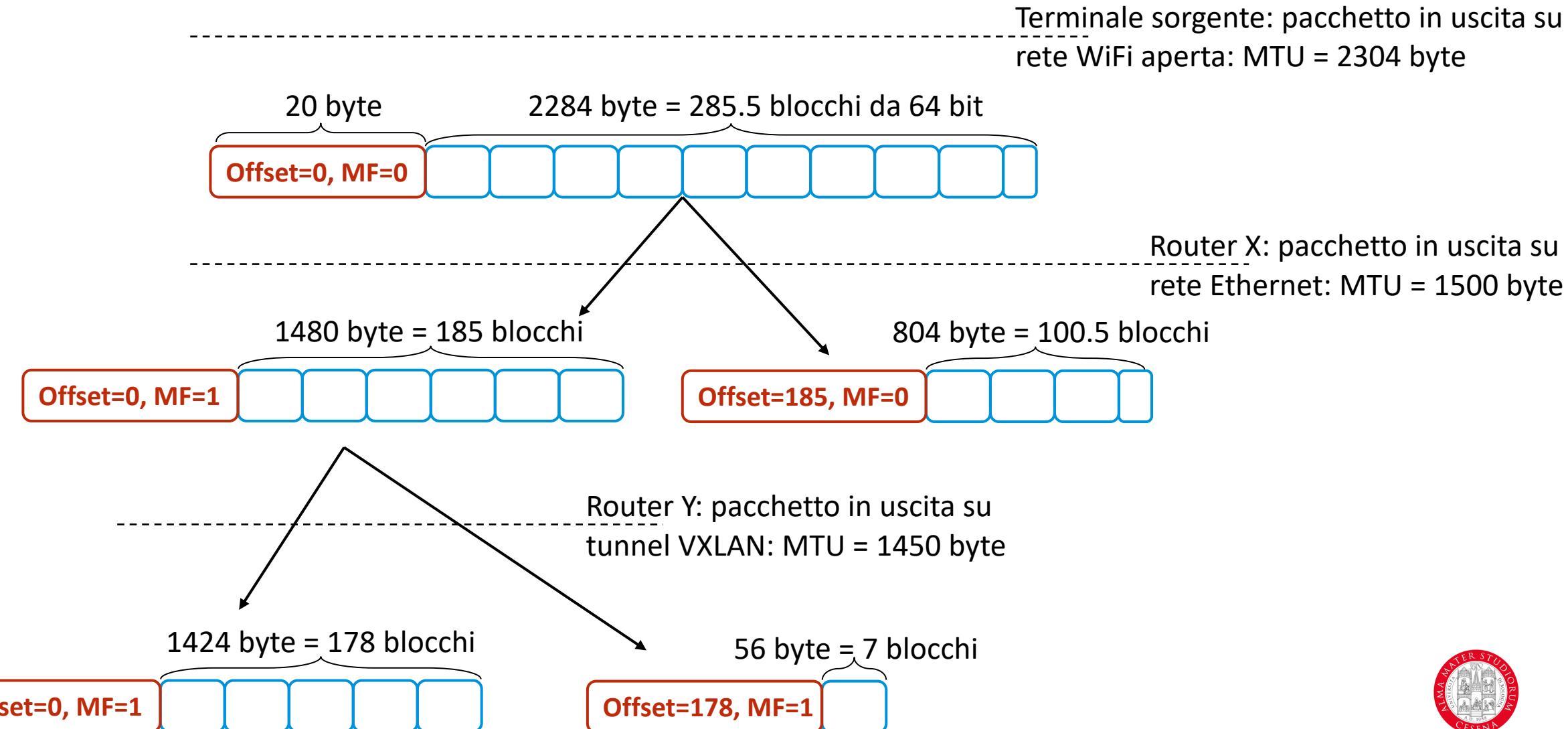
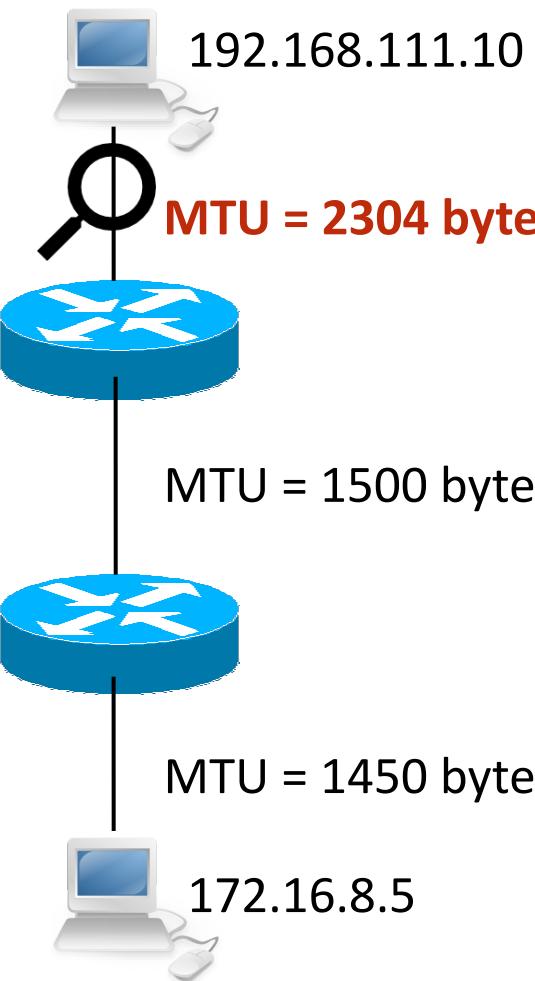


# IPv4: esempio di calcolo del fragment offset



# IPv4: catture di frammenti



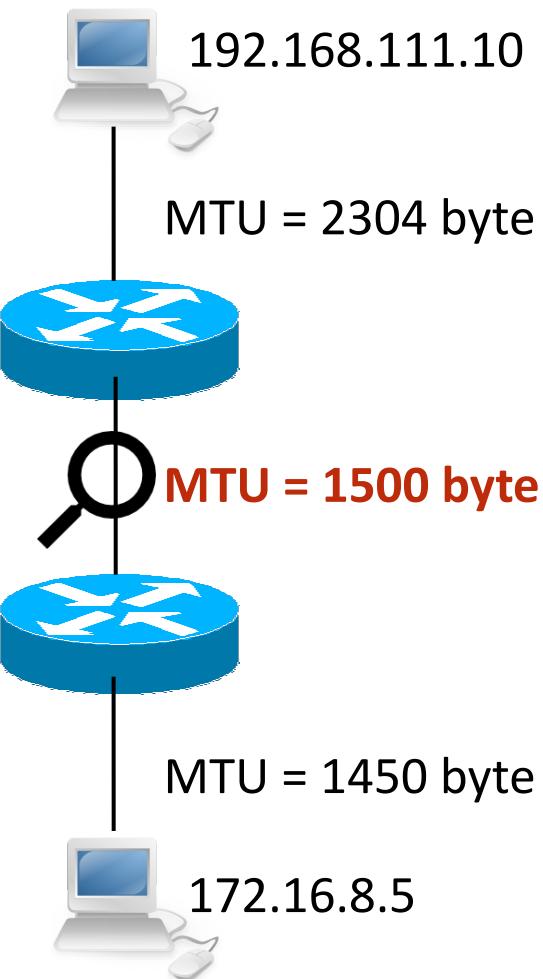
No.	Time	Source	Destination	Protocol	Info
1	0.0000...	192.168.111.10	172.16.8.5	IPv4	ICMP (1)
2	0.0012...	172.16.8.5	192.168.111...	IPv4	ICMP (1)
3	0.0012...	172.16.8.5	192.168.111...	IPv4	Fragmented IP protocol

Frame 1: 2318 bytes on wire (18544 bits), 2318 bytes captured (18544 b...  
Ethernet II, Src: 26:4b:3d:c7:6a:0b (26:4b:3d:c7:6a:0b), Dst: 6e:3e:c2...  
Internet Protocol Version 4, Src: 192.168.111.10, Dst: 172.16.8.5  
    0100 .... = Version: 4  
    .... 0101 = Header Length: 20 bytes (5)  
    Differentiated Services Field: 0x00 (DSCP: CS0, ECN: Not-ECT)  
    Total Length: 2304  
    Identification: 0x2ae7 (10983)  
    000. .... = Flags: 0x0  
        0.... .... = Reserved bit: Not set  
        .0.... .... = Don't fragment: Not set  
        ..0. .... = More fragments: Not set  
        ...0 0000 0000 0000 = Fragment Offset: 0  
    Time to Live: 64  
    Protocol: ICMP (1)  
    Header Checksum: 0x634e [correct]  
    [Header checksum status: Good]  
    [Calculated Checksum: 0x634e]  
    Source Address: 192.168.111.10  
    Destination Address: 172.16.8.5  
    Data (2284 bytes)



# IPv4: catture di frammenti



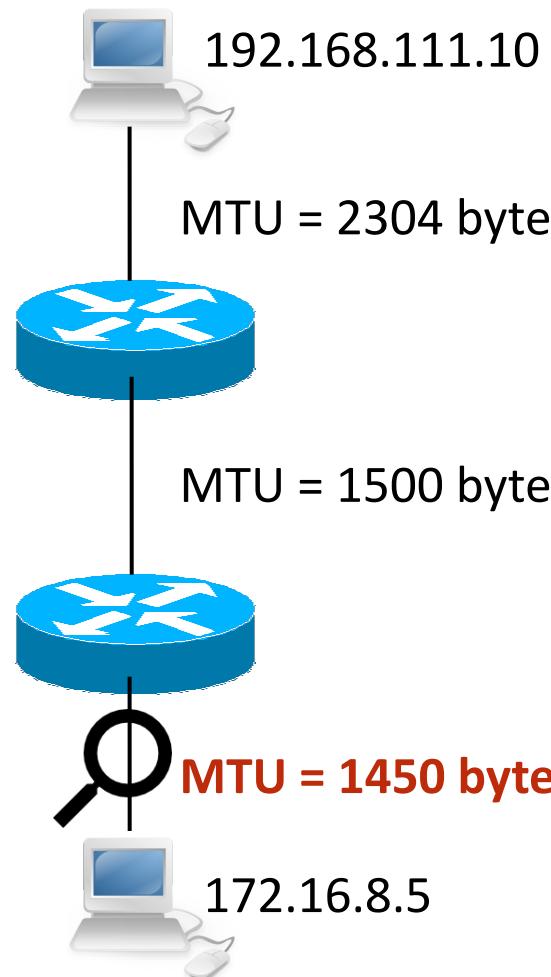
No.	Time	Source	Destination	Protocol
1	0.0000...	192.168.111.10	172.16.8.5	IP
2	0.0000...	192.168.111.10	172.16.8.5	IP
3	0.0011...	172.16.8.5	192.168.111.10	IP
4	0.0012...	172.16.8.5	192.168.111.10	TCP

Frame 1: 1514 bytes on wire (12112 bits), 1514 bytes captured (12112 bits) on interface   
Ethernet II, Src: FujitsuT\_5c:3d:54 (90:1b:0e:5c:3d:54), Dst: Cisco WS-C3750-24P (00:0c:29:00:00:04)  
Internet Protocol Version 4, Src: 192.168.111.10 (192.168.111.10), Dst: 172.16.8.5 (172.16.8.5)  
Version: 4, Header Length: 20 bytes (5), Total Length: 1500  
Identification: 0x43ec (17388)  
Flags: 0x01 (More fragments), Reserved bit: Not set, Don't fragment: Not set, More fragments: Set  
Fragment Offset: 0, Time to Live: 63, Protocol: ICMP (1)  
Header Checksum: 0x2e6d [correct] [Header checksum status: Good] [Calculated Checksum: 0x2e6d]  
Source Address: 192.168.111.10  
Destination Address: 172.16.8.5  
Data (1480 bytes)

No.	Time	Source	Destination	Protocol
1	0.0000...	192.168.111.10	172.16.8.5	IPv4
2	0.0000...	192.168.111.10	172.16.8.5	IPv4
3	0.0011...	172.16.8.5	192.168.111.10	IPv4
4	0.0012...	172.16.8.5	192.168.111.10	TPV4

Frame 2: 838 bytes on wire (6704 bits), 838 bytes captured (6704 bits) on interface   
Ethernet II, Src: FujitsuT\_5c:3d:54 (90:1b:0e:5c:3d:54), Dst: Cisco WS-C3750-24P (00:0c:29:00:00:04)  
Internet Protocol Version 4, Src: 192.168.111.10 (192.168.111.10), Dst: 172.16.8.5 (172.16.8.5)  
Version: 4, Header Length: 20 bytes (5), Total Length: 824  
Identification: 0x43ec (17388)  
Flags: 0x00 (Not fragmntable), Reserved bit: Not set, Don't fragment: Not set, More fragments: Not set  
Fragment Offset: 1480, Time to Live: 63, Protocol: ICMP (1)  
Header Checksum: 0x5058 [correct] [Header checksum status: Good] [Calculated Checksum: 0x5058]  
Source Address: 192.168.111.10  
Destination Address: 172.16.8.5  
Data (804 bytes)

# IPv4: catture di frammenti



No.	Time	Source	Destination	Protocol
1	0.0000...	192.168.111.10	172.16.8.5	IP
2	0.0000...	192.168.111.10	172.16.8.5	IP
3	0.0000...	192.168.111.10	172.16.8.5	IP
4	0.0000...	172.16.8.5	192.168.111.10	TCP

```

▶ Frame 1: 1458 bytes on wire (11664 bits), 1458 bytes captured (11664 bits) on interface en0
▶ Ethernet II, Src: Cisco_3e:fb:71 (00:24:97:3e:fb:71), Dst: Cisco_3e:fb:71 (00:24:97:3e:fb:71)
└ Internet Protocol Version 4, Src: 192.168.111.10, Dst: 172.16.8.5
    0100 .... = Version: 4
    .... 0101 = Header Length: 20 bytes (5)
    Differentiated Services Field: 0x00 (DSCP: 0x00)
    Total Length: 1444
    Identification: 0x73d3 (29651)
    001. .... = Flags: 0x1, More fragments
        0.... .... = Reserved bit: Not set
        .0.... .... = Don't fragment: Not set
        ..1.... .... = More fragments: Set
        ...0 0000 0000 0000 = Fragment Offset: 0
    Time to Live: 62
    Protocol: ICMP (1)
    Header Checksum: 0x2171 [correct]
        [Header checksum status: Good]
        [Calculated Checksum: 0x2171]
    Source Address: 192.168.111.10
    Destination Address: 172.16.8.5
    Data (1424 bytes)

```

No.	Time	Source	Destination	Protocol
1	0.0000...	192.168.111.10	172.16.8.5	IP
2	0.0000...	192.168.111.10	172.16.8.5	IP
3	0.0000...	192.168.111.10	172.16.8.5	IP
4	0.0000...	172.16.8.5	192.168.111.10	TCP

```

▶ Frame 2: 90 bytes on wire (720 bits), 90 bytes captured (720 bits) on interface en0
▶ Ethernet II, Src: Cisco_3e:fb:71 (00:24:97:3e:fb:71), Dst: Cisco_3e:fb:71 (00:24:97:3e:fb:71)
└ Internet Protocol Version 4, Src: 192.168.111.10, Dst: 172.16.8.5
    0100 .... = Version: 4
    .... 0101 = Header Length: 20 bytes (5)
    Differentiated Services Field: 0x00 (DSCP: 0x00)
    Total Length: 76
    Identification: 0x73d3 (29651)
    001. .... = Flags: 0x1, More fragments
        0.... .... = Reserved bit: Not set
        .0.... .... = Don't fragment: Not set
        ..1.... .... = More fragments: Set
        ...0 0000 0000 0000 = Fragment Offset: 1480
    Time to Live: 62
    Protocol: ICMP (1)
    Header Checksum: 0x0464 [correct]
        [Header checksum status: Good]
        [Calculated Checksum: 0x0464]
    Source Address: 192.168.111.10
    Destination Address: 172.16.8.5
    Data (804 bytes)

```

No.	Time	Source	Destination	Protocol
1	0.0000...	192.168.111.10	172.16.8.5	IP
2	0.0000...	192.168.111.10	172.16.8.5	IP
3	0.0000...	192.168.111.10	172.16.8.5	IP
4	0.0000...	172.16.8.5	192.168.111.10	TCP

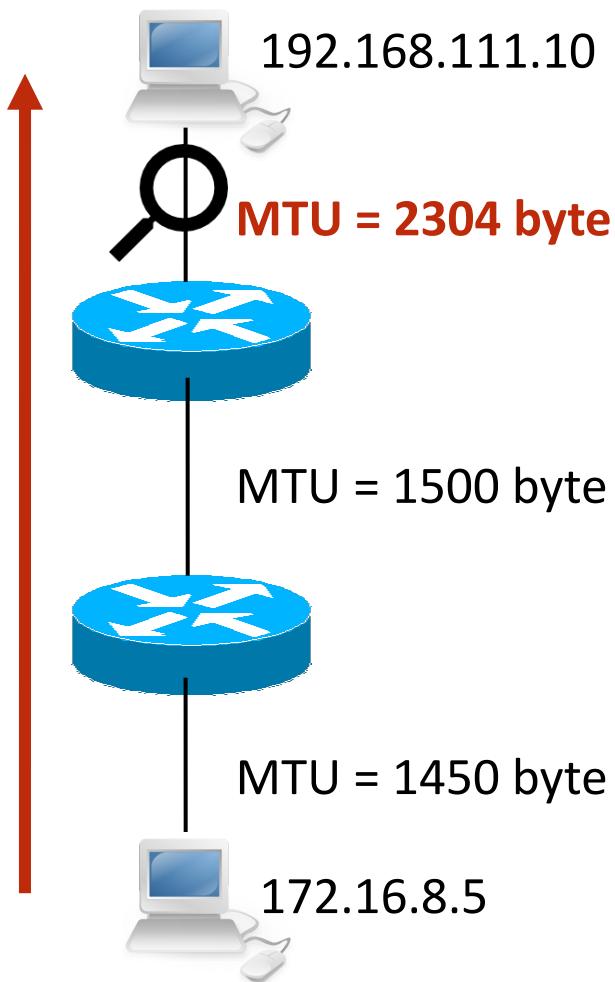
```

▶ Frame 3: 838 bytes on wire (6704 bits), 838 bytes captured (6704 bits) on interface en0
▶ Ethernet II, Src: Cisco_3e:fb:71 (00:24:97:3e:fb:71), Dst: Cisco_3e:fb:71 (00:24:97:3e:fb:71)
└ Internet Protocol Version 4, Src: 192.168.111.10, Dst: 172.16.8.5
    0100 .... = Version: 4
    .... 0101 = Header Length: 20 bytes (5)
    Differentiated Services Field: 0x00 (DSCP: 0x00)
    Total Length: 824
    Identification: 0x73d3 (29651)
    000. .... = Flags: 0x0
        0.... .... = Reserved bit: Not set
        .0.... .... = Don't fragment: Not set
        ..0.... .... = More fragments: Not set
        ...0 0000 1011 1001 = Fragment Offset: 1480
    Time to Live: 62
    Protocol: ICMP (1)
    Header Checksum: 0x2171 [correct]
        [Header checksum status: Good]
        [Calculated Checksum: 0x2171]
    Source Address: 192.168.111.10
    Destination Address: 172.16.8.5
    Data (804 bytes)

```



# IPv4: catture di frammenti



No.	Time	Source	Destination	Protocol
1	0.0000...	192.168.111.10	172.16.8.5	IP
2	0.0012...	172.16.8.5	192.168.111.10	IP
3	0.0012...	172.16.8.5	192.168.111.10	IP

Frame 2: 1458 bytes on wire (11664 bits), 1458 bytes captured (11664 bits) on interface   
Ethernet II, Src: 6e:3e:c2:b9:35:54 (6e:3e:c2:b9:35:54), Dst: 192.168.111.10 (0a:00:27:04:0d:0a)   
Internet Protocol Version 4, Src: 172.16.8.5, Dst: 192.168.111.10  
    0100 .... = Version: 4  
    .... 0101 = Header Length: 20 bytes (5)  
    Differentiated Services Field: 0x00 (DSCP: CS0, ECN: Not ECN-eligible)  
    Total Length: 1444  
    Identification: 0x91fd (37373)  
    001. .... = Flags: 0x1, More fragments  
        0.... .... = Reserved bit: Not set  
        .0... .... = Don't fragment: Not set  
        ..1. .... = More fragments: Set  
    ...0 0000 0000 0000 = Fragment Offset: 0  
    Time to Live: 62  
    Protocol: ICMP (1)  
    Header Checksum: 0xe193 [correct]  
        [Header checksum status: Good]  
        [Calculated Checksum: 0xe193]  
    Source Address: 172.16.8.5  
    Destination Address: 192.168.111.10  
    Data (1424 bytes)

No.	Time	Source	Destination	Protocol
1	0.0000...	192.168.111.10	172.16.8.5	IP
2	0.0012...	172.16.8.5	192.168.111.10	IP
3	0.0012...	172.16.8.5	192.168.111.10	IP

Frame 3: 894 bytes on wire (7152 bits), 894 bytes captured (7152 bits) on interface   
Ethernet II, Src: 6e:3e:c2:b9:35:54 (6e:3e:c2:b9:35:54), Dst: 192.168.111.10 (0a:00:27:04:0d:0a)   
Internet Protocol Version 4, Src: 172.16.8.5, Dst: 192.168.111.10  
    0100 .... = Version: 4  
    .... 0101 = Header Length: 20 bytes (5)  
    Differentiated Services Field: 0x00 (DSCP: CS0, ECN: Not ECN-eligible)  
    Total Length: 880  
    Identification: 0x91fd (37373)  
    000. .... = Flags: 0x0  
        0.... .... = Reserved bit: Not set  
        .0... .... = Don't fragment: Not set  
        ..0. .... = More fragments: Not set  
    ...0 0000 1011 0010 = Fragment Offset: 1424  
    Time to Live: 62  
    Protocol: ICMP (1)  
    Header Checksum: 0x0316 [correct]  
        [Header checksum status: Good]  
        [Calculated Checksum: 0x0316]  
    Source Address: 172.16.8.5  
    Destination Address: 192.168.111.10  
    Data (860 bytes)