List of Figures

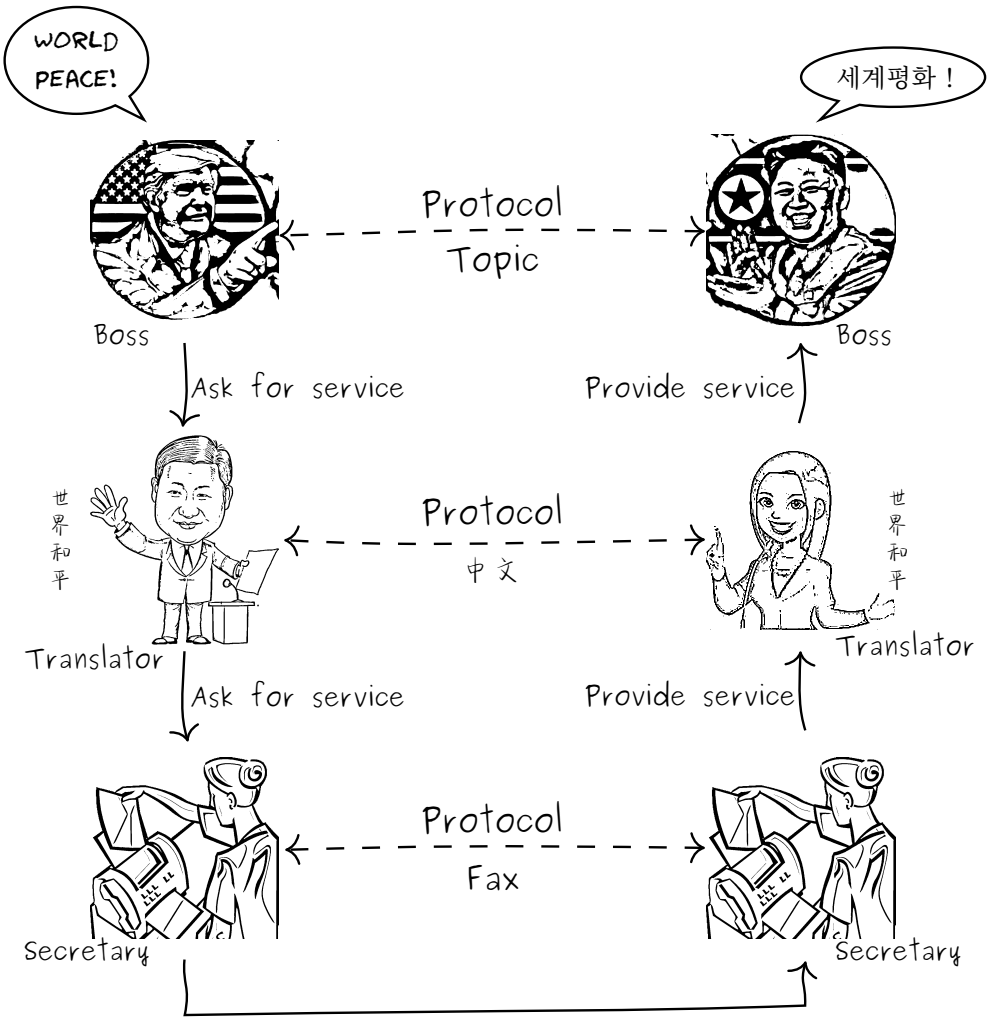

Fig. 1: Layered design

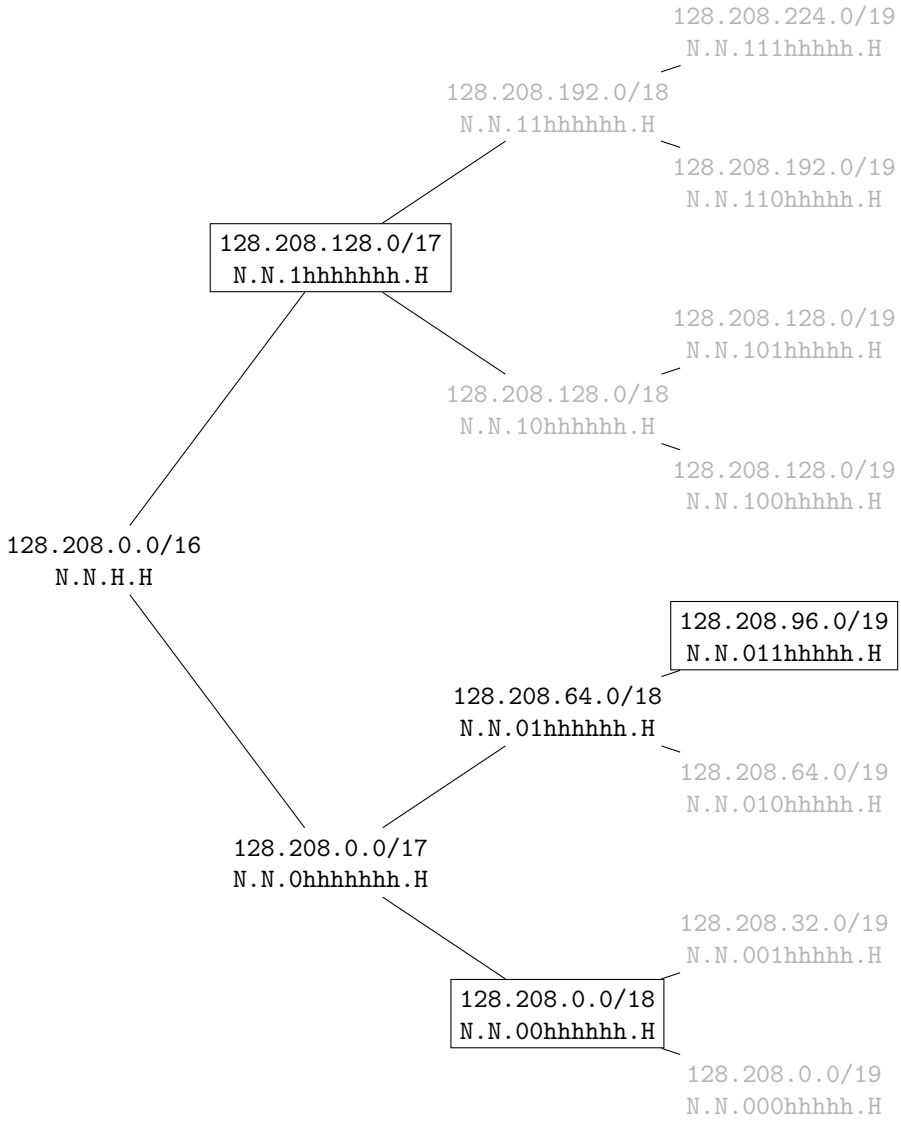

Fig. 2: Subnet hierarchy

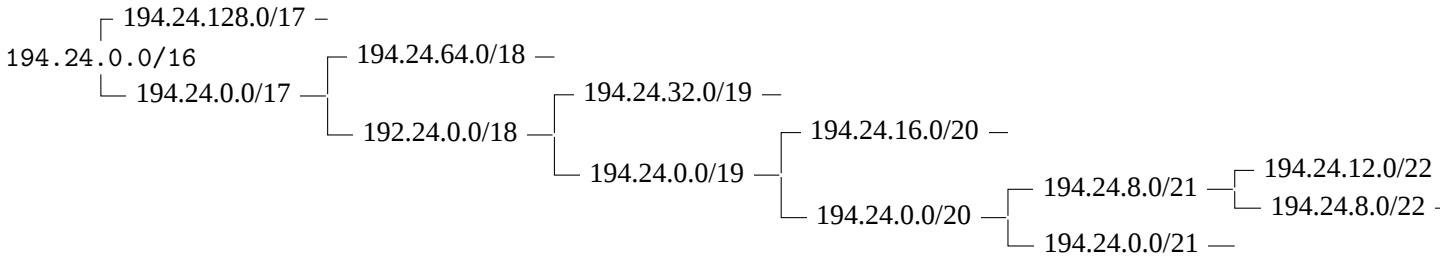

Fig. 3: Subnetting example - 194.24.0.0/16

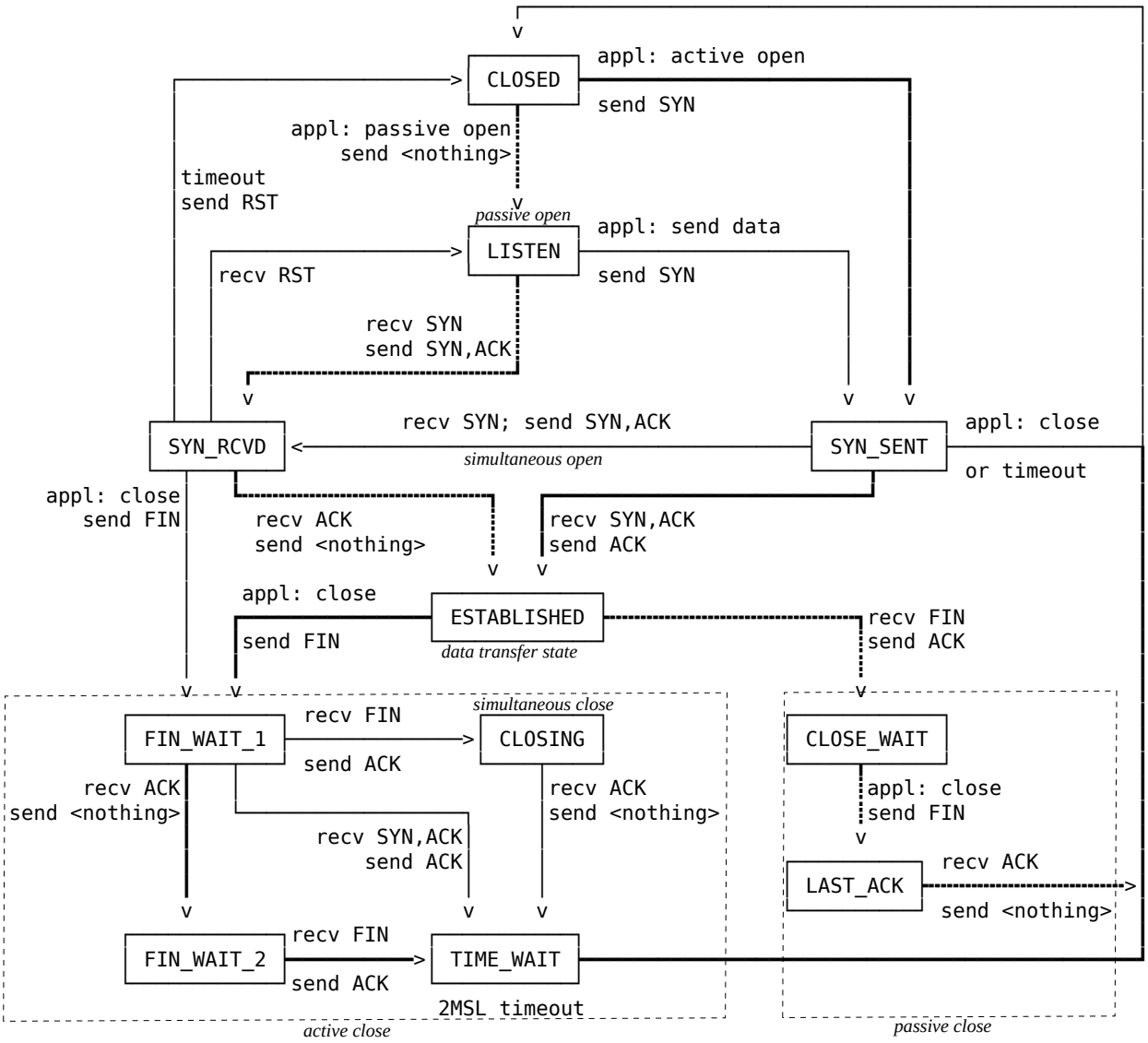

Fig. 4: TCP state transition diagram

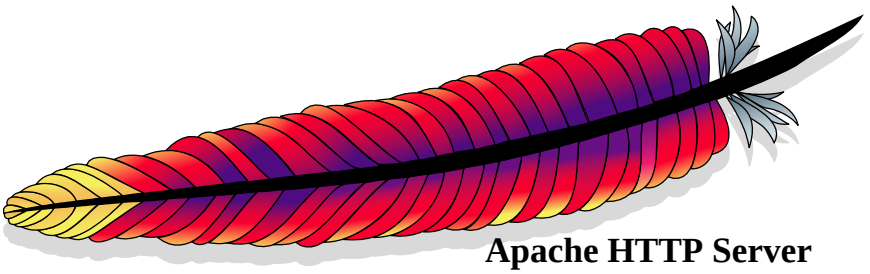

Fig. 5: Apache HTTP Server

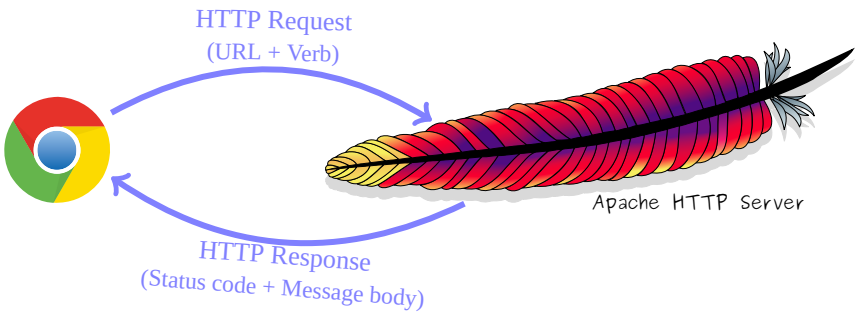

Fig. 6: HTTP client/server interaction

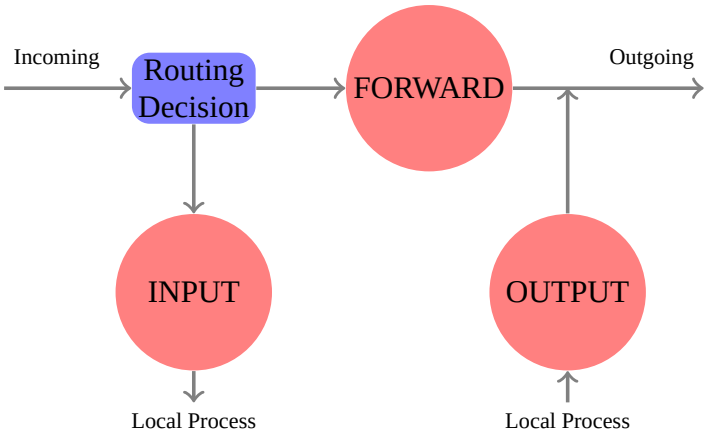

Fig. 7: iptables chains

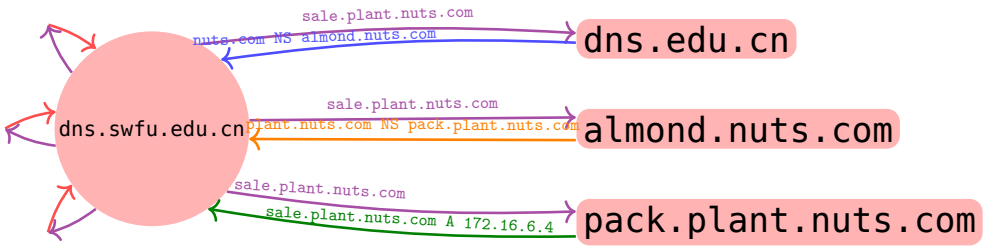

Fig. 8: DNS non-recursive transaction

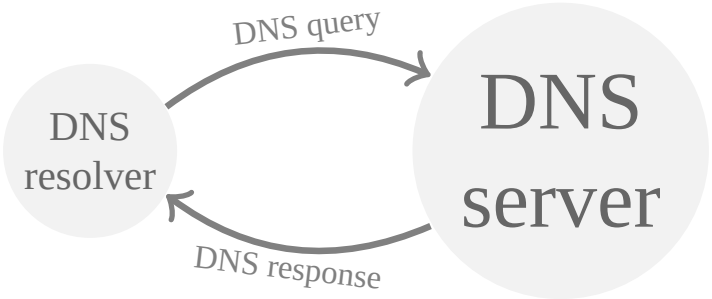

Fig. 9: DNS overview

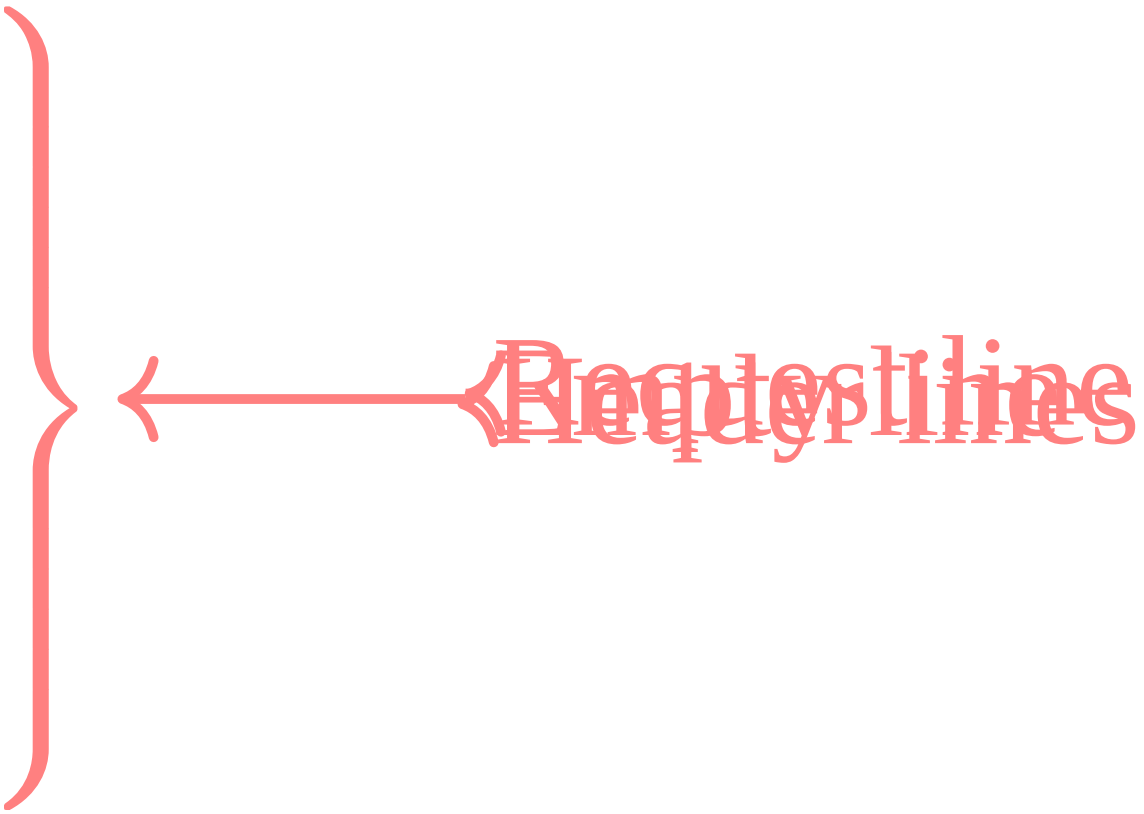

Fig. 10: HTTP request

```
< HTTP/1.1 200 OK                                   ← Status line
< Date: Thu, 15 Jan 2015 08:18:50 GMT               ┐
< Server: Apache/2.4.10 (Debian)                    │
< Last-Modified: Tue, 02 Sep 2014 03:49:24 GMT      │
< ETag: "1fd-5020d015e5e4a"                         │ Header lines
< Accept-Ranges: bytes                              │
< Content-Length: 509                               │
< Vary: Accept-Encoding                             │
< Content-Type: text/html                           ┘
<                                                   ← Empty line
<html>                                              ┐
<head>                                              │
<title>Hello, world!</title>                        │
</head>                                             │ Data
<body>                                              │
<h1>Hello, world!</h1>                              │
</body>                                             │
</html>                                             ┘
* Connection #0 to host cs2.swfu.edu.cn left intact
```

Fig. 11: HTTP Response

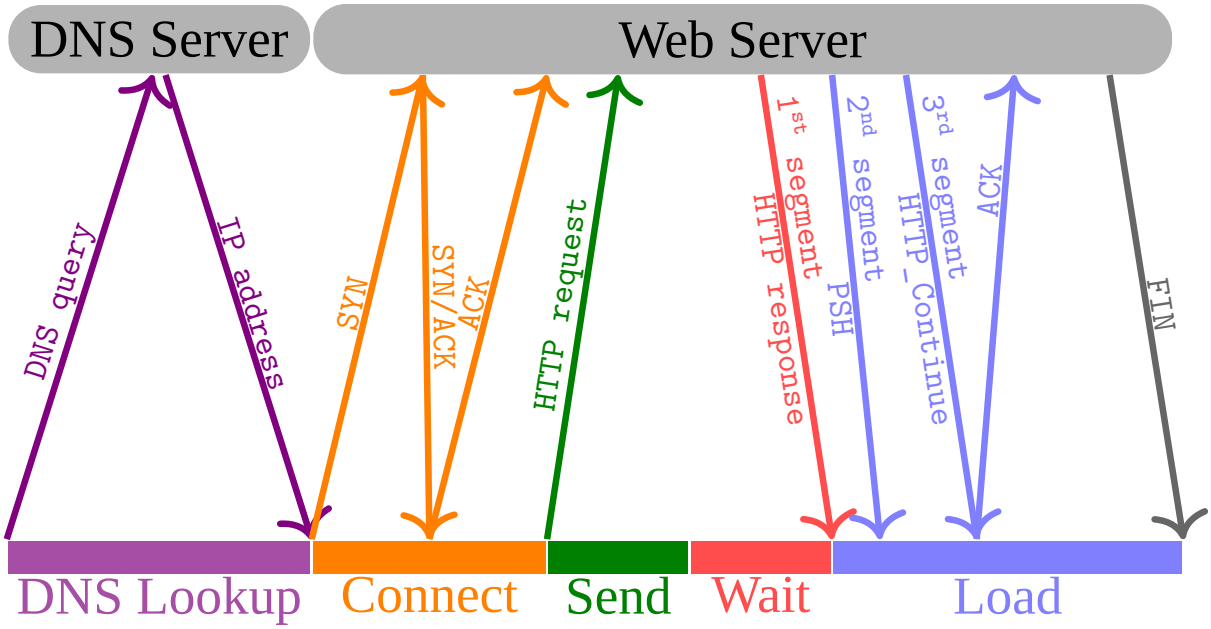

Fig. 12: HTTP transaction

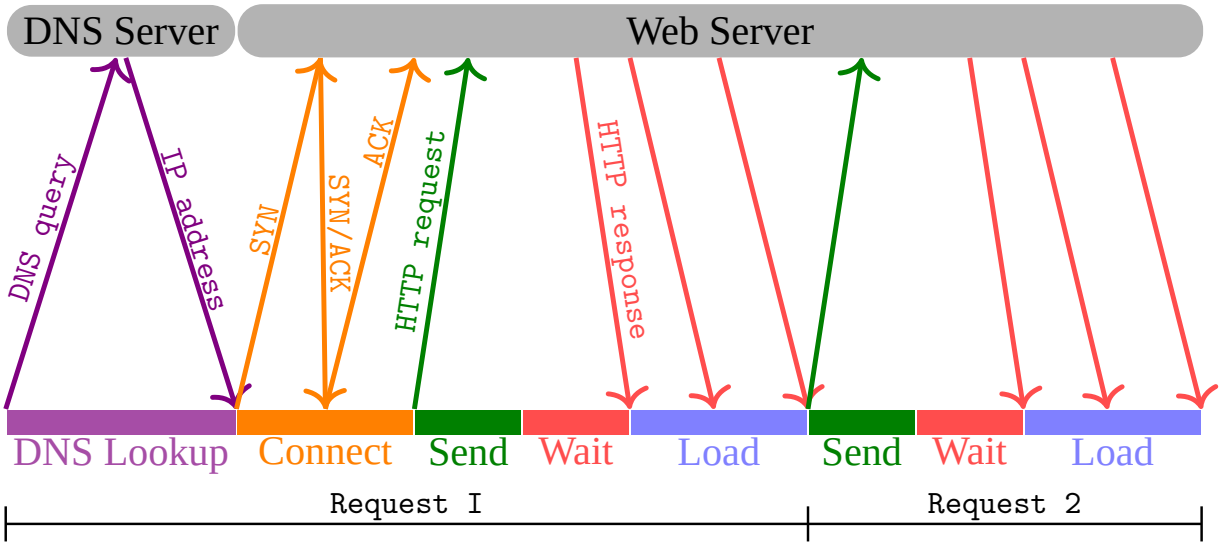

Fig. 13: HTTP persistent transaction

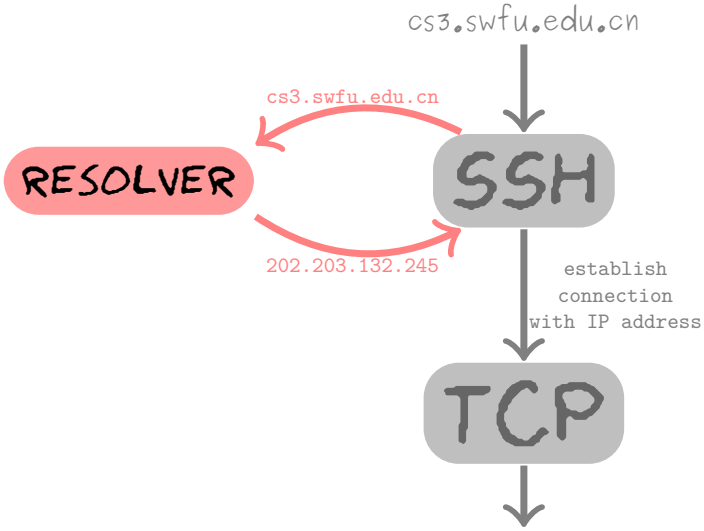

Fig. 14: DNS resolver

```
wx672@cs3:~$ netstat -at | grep http | grep ESTAB
tcp   0   0 cs3.swfu.edu.cn:http    220.163.96.3:47179    ESTABLISHED
```

address port address port

socket socket

a pair of sockets form a TCP connection

Fig. 15: TCP socket pair

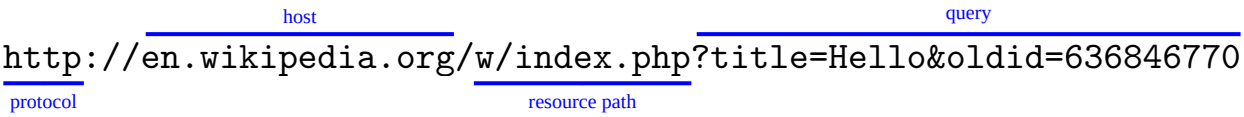

Fig. 16: URL

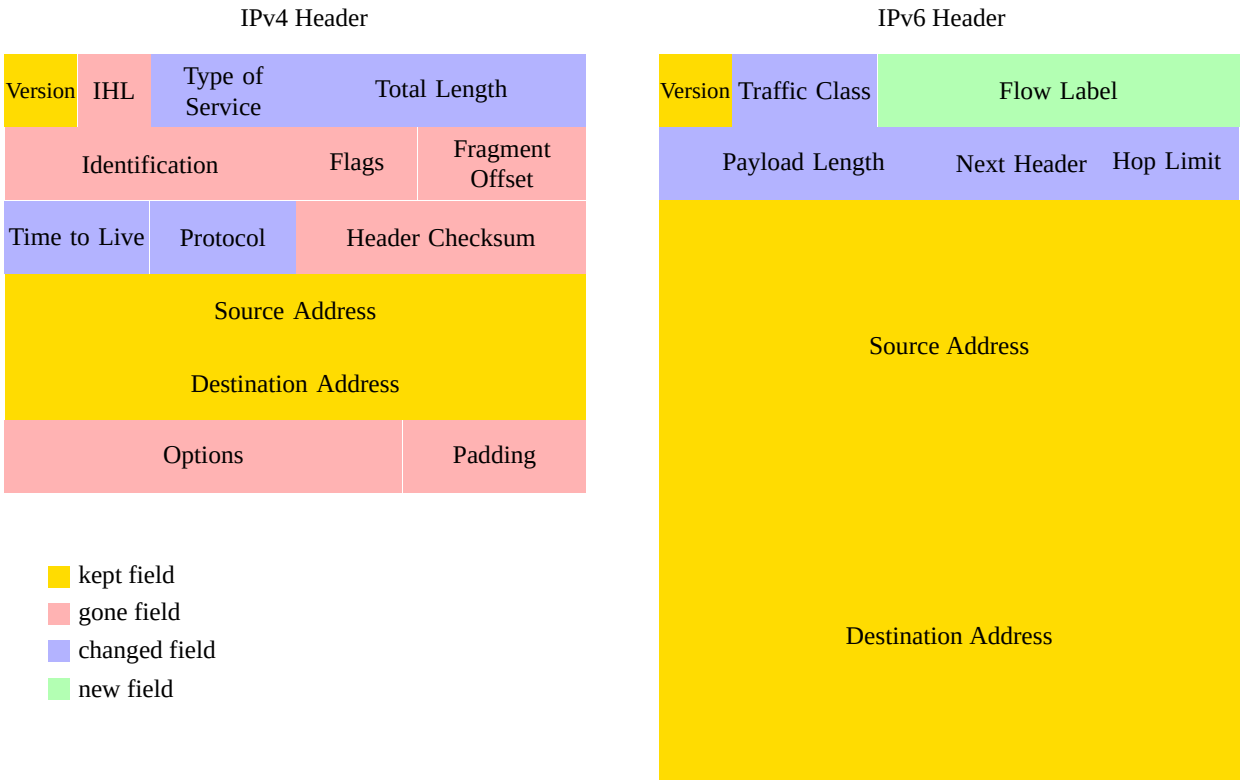

Fig. 17: IPv4 header vs. IPv6 header