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Fig. 1: Layered design

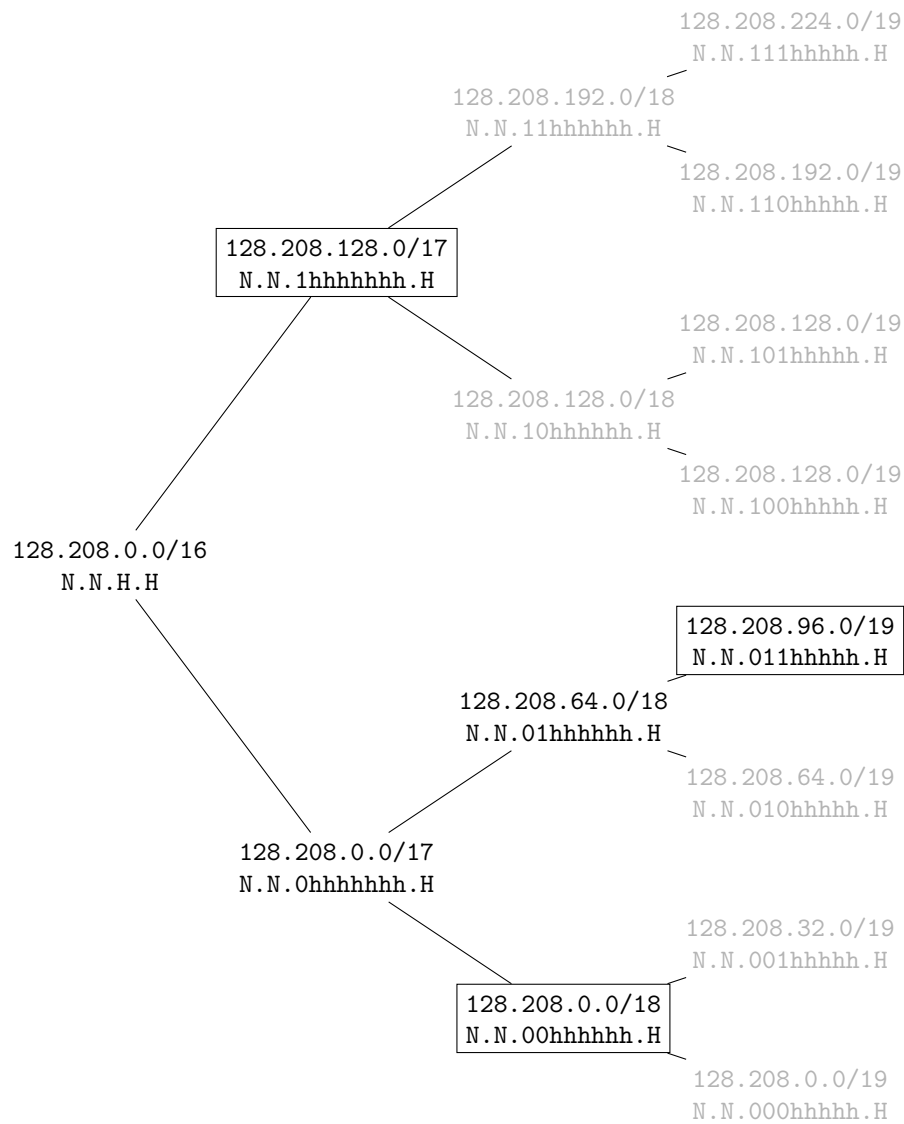


Fig. 2: Subnet hierarchy

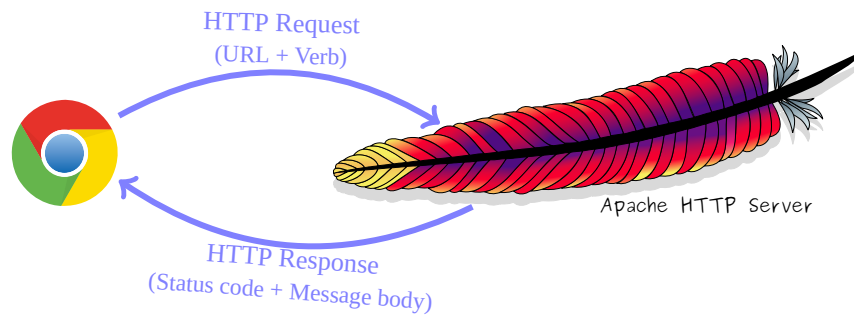


Fig. 5: HTTP client/server interaction

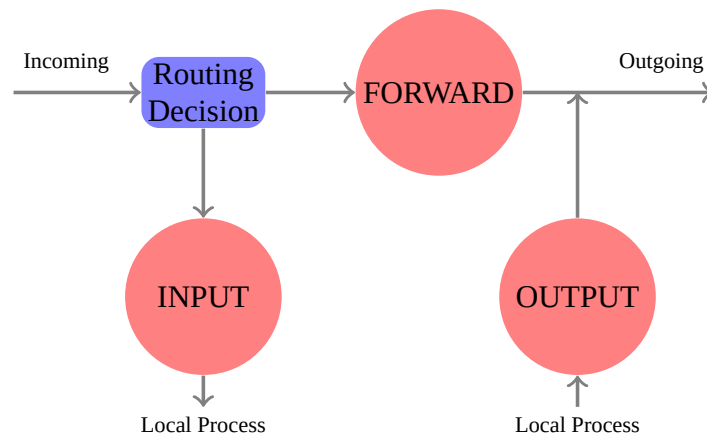


Fig. 6: iptables chains

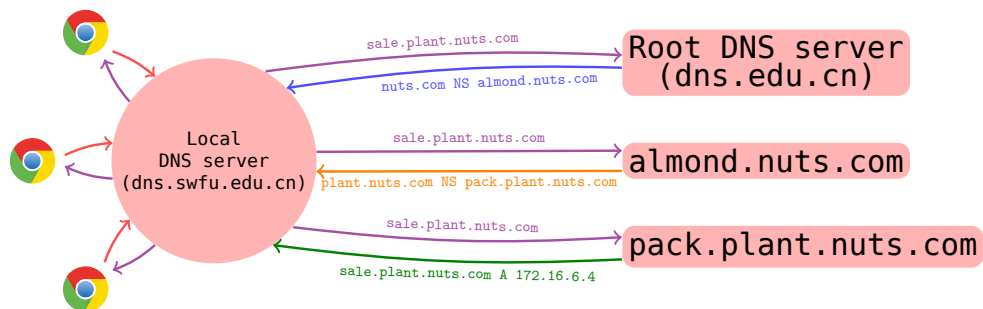


Fig. 7: DNS non-recursive transaction

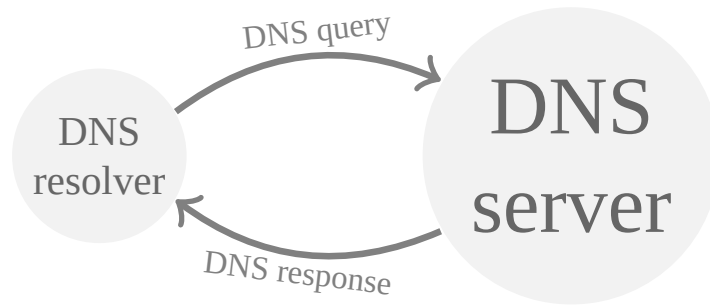


Fig. 8: DNS overview

```

~$ curl -v cs2.swfu.edu.cn/index.html
* Connected to cs2.swfu.edu.cn (202.203.132.242) port 80
> GET /index.html HTTP/1.1
> User-Agent: curl/7.38.0
> Host: cs2.swfu.edu.cn
> Accept: */*
>
  
```

Annotations in the original image:

- A red arrow points from the text "Request line" to the line `GET /index.html HTTP/1.1`.
- A red bracket groups the lines `User-Agent: curl/7.38.0`, `Host: cs2.swfu.edu.cn`, and `Accept: */*`, with a red arrow pointing to the text "Header lines".
- A red arrow points from the text "Empty line" to the empty line after the last header.

Fig. 9: HTTP request

```

< HTTP/1.1 200 OK
< 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"
< Accept-Ranges: bytes
< Content-Length: 509
< Vary: Accept-Encoding
< Content-Type: text/html
<
<html>
<head>
<title>Hello, world!</title>
</head>
<body>
<h1>Hello, world!</h1>
</body>
</html>
* Connection #0 to host cs2.swfu.edu.cn left intact
  
```

Annotations in the original image:

- A red arrow points from the text "Status line" to the line `< HTTP/1.1 200 OK`.
- A red bracket groups the lines `< 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"`, `< Accept-Ranges: bytes`, `< Content-Length: 509`, `< Vary: Accept-Encoding`, and `< Content-Type: text/html`, with a red arrow pointing to the text "Header lines".
- A red arrow points from the text "Empty line" to the empty line after the last header.
- A red bracket groups the lines `<html>`, `<head>`, `<title>Hello, world!</title>`, `</head>`, `<body>`, `<h1>Hello, world!</h1>`, `</body>`, and `</html>`, with a red arrow pointing to the text "Data".

Fig. 10: HTTP Response

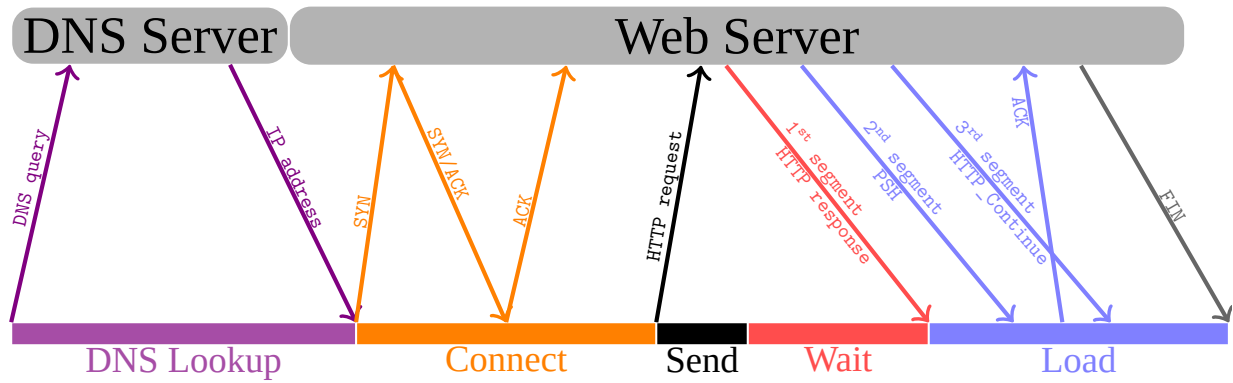


Fig. 11: HTTP transaction

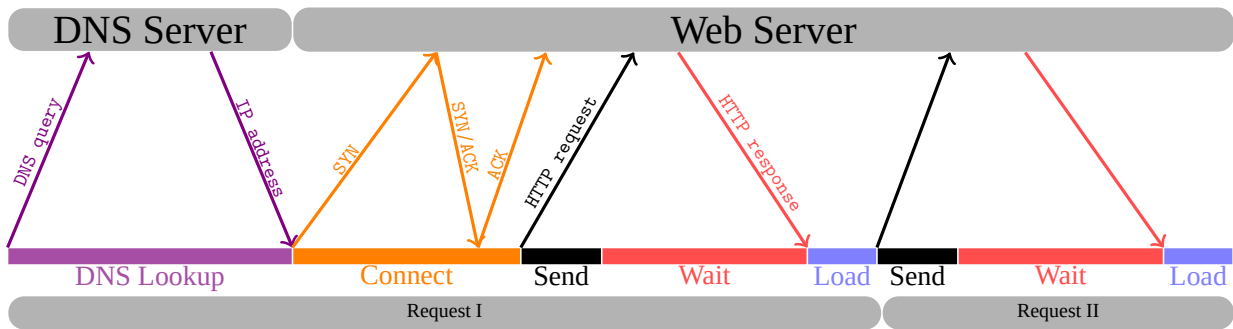


Fig. 12: HTTP persistent transaction

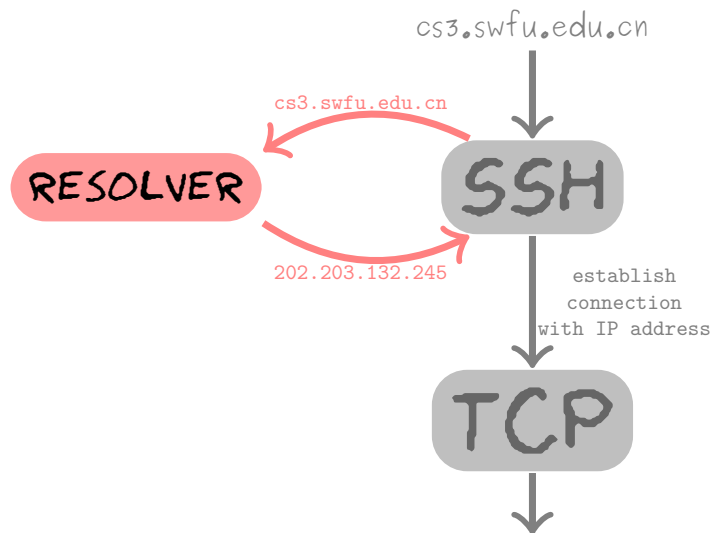


Fig. 13: DNS resolver

```
wx672@cs3:~$ netstat -at | grep http | grep ESTAB
```

tcp	0	0	cs3.swfu.edu.cn:http	220.163.96.3:47179	ESTABLISHED
			address	port	
			socket	socket	

a pair of sockets form a TCP connection

Fig. 14: TCP socket pair

http://en.wikipedia.org/w/index.php?title=Hello&oldid=636846770

protocol host resource path query

Fig. 15: URL

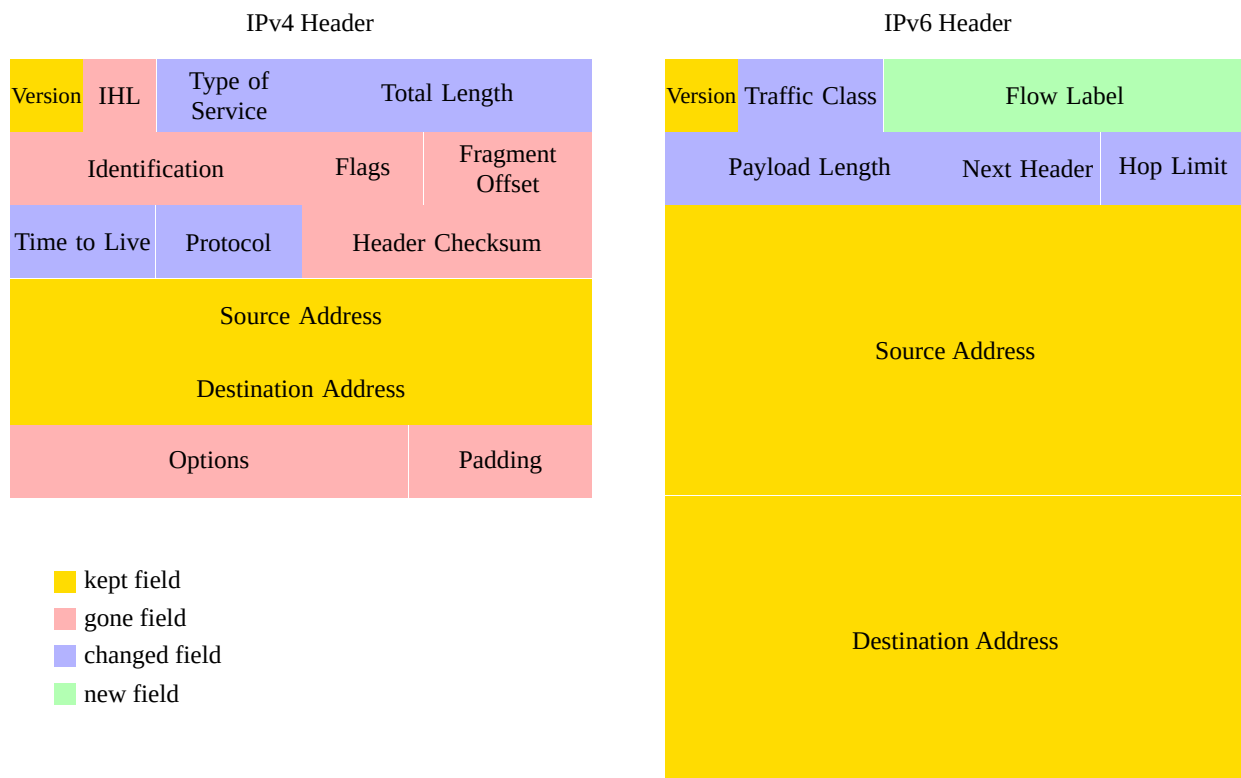


Fig. 16: IPv4 header vs. IPv6 header