Choosing A Proxy Server
ApacheCon 2014

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ATS Committer / Yahoo

About Me

- Yahoo! Employee
  - WebRing, GeoCities, Personals, Tiger Team, Platform Architect, Edge Team, Research, ATS and HTTP (HTTP/2 and TLS at IETF)
- Working on Traffic Server for 7 years
  - Since 2007
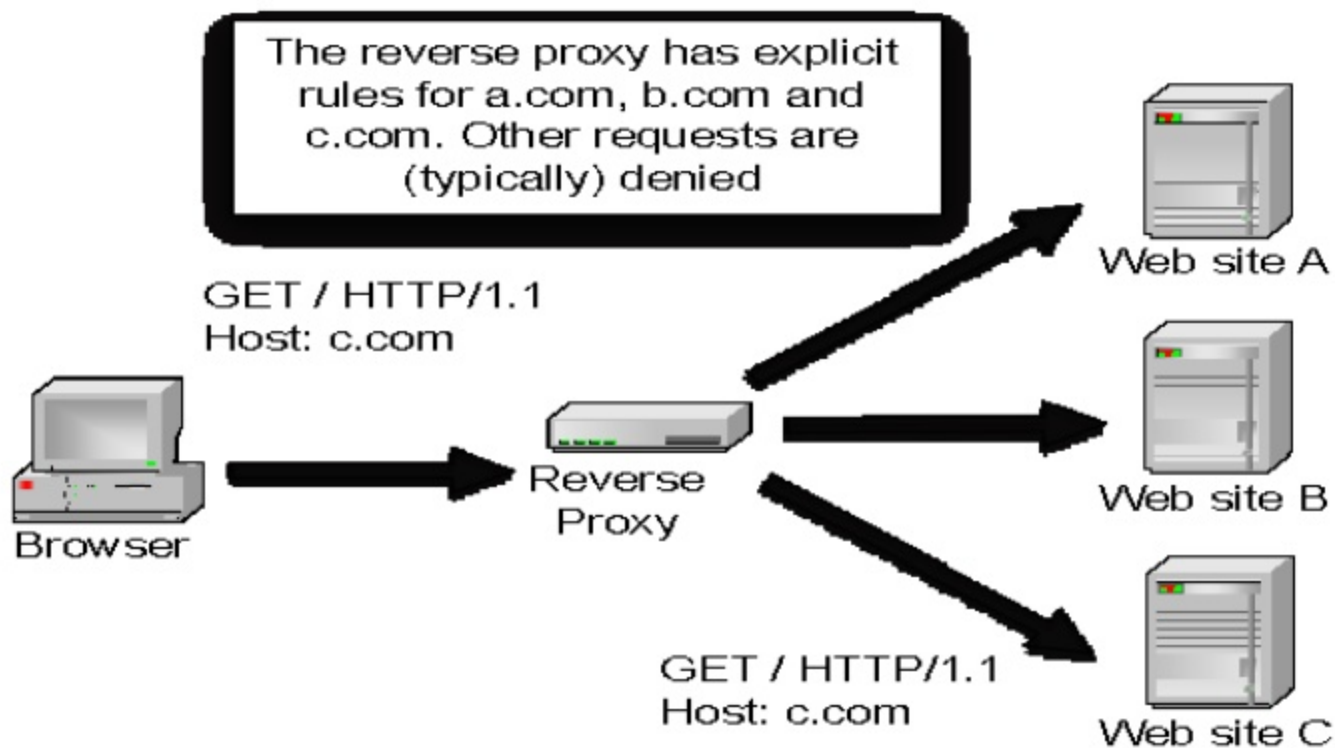- Part of the team that open sourced it in 2009
- ATS Committer

Overview

- Types of Proxies
- Features
- Architecture
- Cache Architecture
- Performance
- Pros and Cons

How are you going to use a proxy server?

Reverse Proxy

The reverse proxy has explicit rules for a.com, b.com and c.com. Other requests are (typically) denied

GET / HTTP/1.1
Host: c.com

Browser

Reverse Proxy

Web site A

Web site B

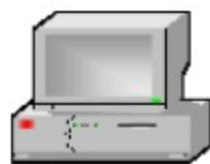GET / HTTP/1.1
Host: c.com

Web site C

Reverse Proxy

- Proxy in front of your own web servers
- Caching?
- Geographic location?
- Connection handling?
- SSL termination?
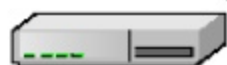- SPDY support?
- Adding business logic?

Forward Proxy

The browser (UA) is explicitly configured to use the FP server as a proxy

GET http://c.com/ HTTP/1.1
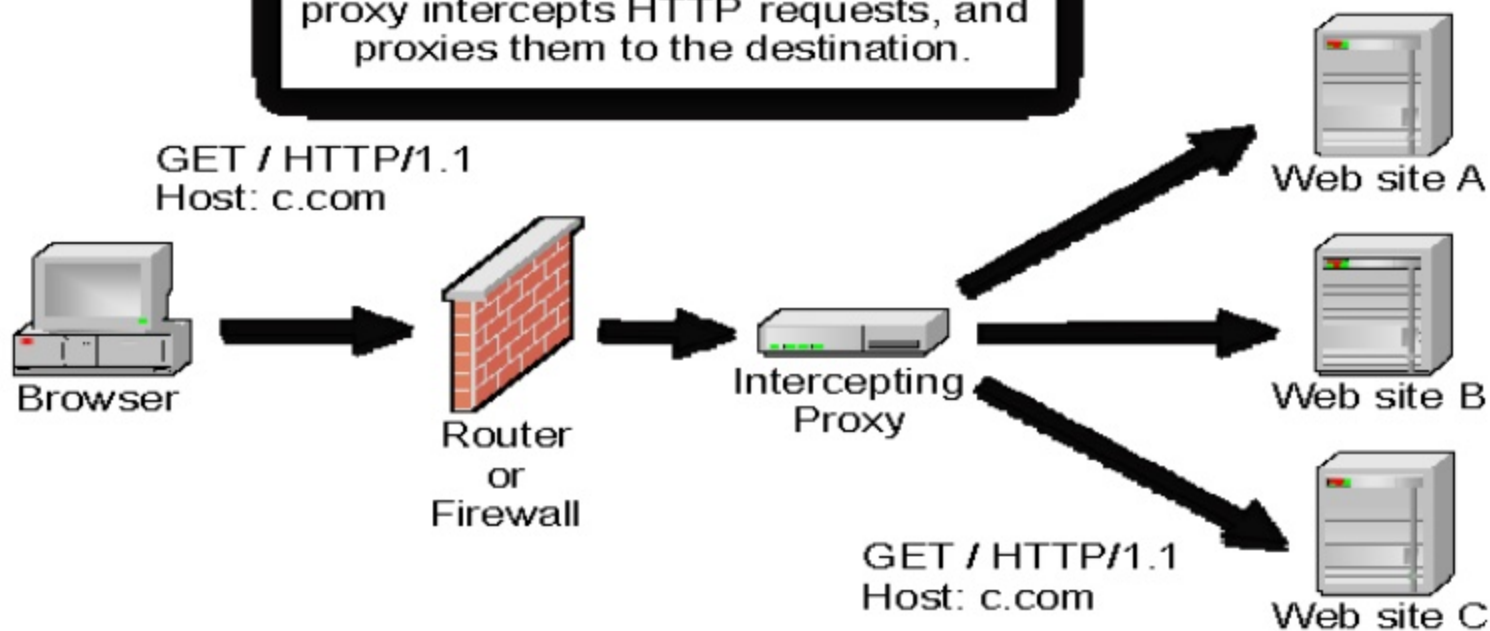
Browser

Forward Proxy

Web site A

Web site B

GET / HTTP/1.1
Host: c.com

Web site C

Intercepting Proxy

There are no explicit configurations in browser of proxy. The transparent proxy intercepts HTTP requests, and proxies them to the destination.

GET / HTTP/1.1
Host: c.com

Browser

Router
or
Firewall

Intercepting
Proxy

GET / HTTP/1.1
Host: c.com

Web site A

Web site B

Web site C

Forward / Intercepting Proxy

- Proxy in front of the Internet
- Configure clients to use proxy?
- Caching?
- SSL - CONNECT?
- SSL - termination?

Choices

Plenty of Proxy Servers

Plenty of Proxy Servers

Features And Options

Features

	ATS	NGiNX	Squid	Varnish	Apache httpd mod_proxy
Reverse Proxy	Y	Y	Y	Y	Y
Forward Proxy	Y	N	Y	N	Y
Transp. Proxy	Y	N	Y	N	Y
Plugin APIs	Y	Y	partial	Y	Y
Cache	Y	Y	Y	Y	Y
ESI	Y	N	Y	partial	N
ICP	Y	N	Y	N	N
SSL	Y	Y	Y	N	Y
SPDY	Y*	Y	N	N	partial

* 5.0.0 (May 2014)

SSL Features

	Session identifiers	Session tickets	OCSP stapling	Dynamic record sizing	ALPN / NPN	Forward secrecy	SPDY & HTTP/2
Apache	yes	yes	yes	no	no*	yes	mod_spdy
ATS	yes	yes	no	static	yes	yes	spdy/3.1
HAProxy	yes	yes	no	dynamic	yes	yes	no
IIS	yes	yes	yes	no	yes	yes	no
NGINX	yes	yes	yes	static	yes	yes	spdy/3.1

Source: https://istlsfastyet.com/ - Ilya Grigorik

What type of proxy do you need?

- Of our candidates, only three fully supports all proxy modes

HTTP/1.1 Compliance

HTTP/1.1 Compliance

- Accept-Encoding - gzip
- Vary
- Age
- If-None-Match

How things can go wrong: Vary

$ curl -D - -o /dev/null -s **--compress** http://10.118.73.168/

HTTP/1.1 200 OK

Server: nginx/1.3.9

Date: Wed, 12 Dec 2012 18:00:48 GMT

Content-Type: text/html; charset=utf-8

Content-Length: 8051

Connection: keep-alive

Cache-Control: public, max-age=900

Last-Modified: Wed, 12 Dec 2012 17:52:42 +0000

Expires: Sun, 19 Nov 1978 05:00:00 GMT

Vary: Cookie,Accept-Encoding

Content-Encoding: gzip

How things can go wrong: Vary

$ curl -D - -o /dev/null -s http://10.118.73.168/ ← **Note: no gzip request**

HTTP/1.1 200 OK

Server: nginx/1.3.9

Date: Wed, 12 Dec 2012 18:00:57 GMT

Content-Type: text/html; charset=utf-8

Content-Length: 8051

Connection: keep-alive

Cache-Control: public, max-age=900

Last-Modified: Wed, 12 Dec 2012 17:52:42 +0000

Expires: Sun, 19 Nov 1978 05:00:00 GMT

Vary: Cookie,Accept-Encoding

Content-Encoding: gzip ← **EPIC FAIL!**