Web Proxy

Proxy

- Proxy
  - A proxy server is a server which services the requests of its clients by:
    - Making requests to other servers
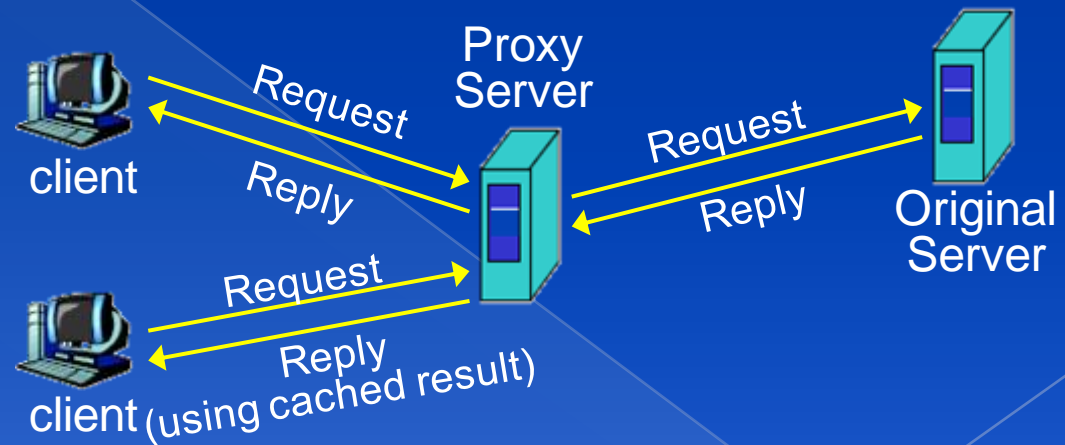   - Caching some results for further same requests
  - Goals:
    - Performance
    - Stability
    - Central Control
    - …etc.
 - Roles:
    - Forward Proxy
    - Reverse Proxy
  - Targets
    - Web Pages/FTP Files
    - TCP/IP Connections
    - …etc.

Proxy Server

client

Request

Reply

Request

Reply

Original Server

client

Request

Reply (using cached result)

Proxy – The Forward Proxy

- Forward Proxy
  - Proxy the outgoing requests, for the reason of
    - Bandwidth saving
    - Performance
    - Central control
  - When objects requested are
    - In cache, return the cached objects
    - Otherwise, proxy server requests object from origin server, then cache it and return to client

client

Request

Reply

Proxy Server

Request

Reply

Original Server

Request

Reply

client (using cached result)
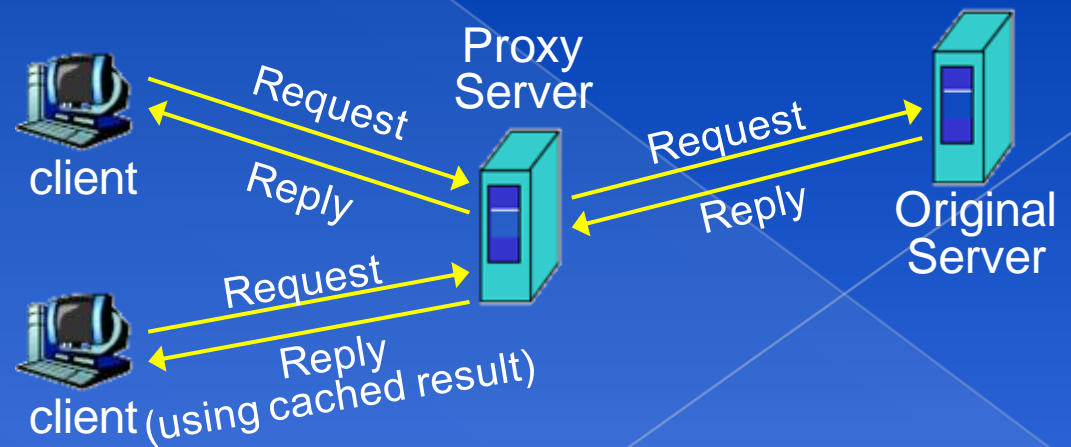
Proxy
– The Reverse Proxy

- ◉ Reverse Proxy
  - › Proxy the incoming requests, for the reason of
    - · Reducing Server Load (by caching)
    - · Load Balance
    - · Fault Tolerant
  - › Reverse proxy acts as the original server, accept incoming requests, reply corresponding result. SEAMLESS for clients!
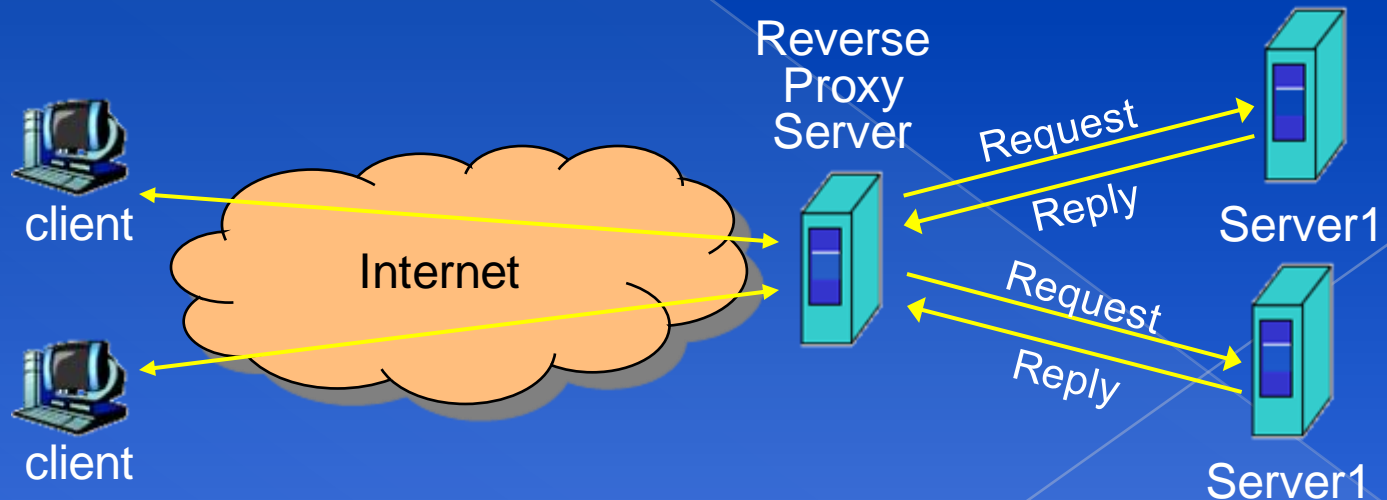
Proxy
– SQUID

- A web proxy server & cache daemon.
  - Supports HTTP, FTP
  - Limited support for TLS, SSL, Gopher, HTTPS
- Port install: /usr/ports/www/squid{,26,30}
- Startup:
  - /etc/rc.conf
    - squid_enable="YES"
    - squid_config="/usr/local/etc/squid/squid.conf"
    - squid_user="squid"
  - /usr/local/etc/rc.d/squid start
- Configuration Sample/Documents:
  - /usr/local/etc/squid/squid.conf.default

Proxy – SQUID Configuration (1)

- Listen Port
  - Service Port
    - http_port 3128
  - Neighbored Communication
    - icp_port 3130
- Logs
  - access_log
    - access_log /var/log/squid/access.log squid
  - cache_log
    - cache_log /var/log/squid/cache.log
  - cache_store_log
    - cache_store_log /var/log/squid/store.log

Proxy – SQUID Configuration (2)

- Access Control
  - acl – define an access control list
    - Format: acl *acl-name acl-type data*
      acl all src 0.0.0.0/0.0.0.0
      acl NCTU srcdomain .nctu.edu.tw
      acl YAHOO dstdomain .yahoo.com
      acl allowhost src "/usr/local/etc/squid.squid.allow"
  - http_access – define the control rule
    - Format: http_access *allow|deny acl-name*
      http_access allow NCTU
      http_access allow allowhost
      http_access deny all

Proxy – SQUID Configuration (3)

- Proxy Relationship
  - Protocol: ICP (Internet Cache Protocol) RFC 2186 2187, using **UDP**
  - Related Configuration
    - cache_peer *hostname type http_port icp_port [options]*
    - cache_peer_domain *cache-host domain [domain …]*
    - cache_peer_access *cache-host allow|deny acl-name*

Proxy – SQUID Configuration (4)

- ◉ Cache Control
  - › cache_mem   256 MB
  - › cache_dir ufs /usr/local/squid/cache 100 16 256
  - › cache_swap_low 93
  - › cache_swap_high 98
  - › maximum_object_size 4096 KB
  - › maximum_object_size_in_memory 8 KB

Proxy
– SQUID Configuration (5)

◉ Sample: Proxy Configuration

```
http_port 3128
icp_port 3130

cache_mem 32 MB
cache_dir ufs /usr/local/squid/cache 100 16 256

access_log /var/log/squid/access.log squid
cache_log /var/log/squid/cache.log
cache_store_log /var/log/squid/store.log
pid_filename /usr/local/squid/logs/squid.pid

visible_hostname tproxy.cs.nctu.edu.tw
acl allowhosts src "/usr/local/etc/squid/squid.allow"
http_access allow allowhosts
http_access deny all
```

Proxy – SQUID Configuration (6)

⊙ Sample: Reverse Proxy Configuration

```
http_port 80 vhost
icp_port 3130

cache_mem 32 MB
cache_dir ufs /usr/local/squid/cache 100 16 256

access_log /var/log/squid/access.log squid
cache_log /var/log/squid/cache.log
cache_store_log /var/log/squid/store.log
pid_filename /usr/local/squid/logs/squid.pid

visible_hostname twww.cs.nctu.edu.tw
url_rewrite_program /usr/local/squid/bin/redirect.sh
acl cswww dstdomain csws1 csws2
http_access allow all cswww
always_direct allow cswww
```

Proxy
– SQUID Configuration (7)

```
$ cat /usr/local/squid/bin/redirect.sh

#!/bin/sh

while read line
do
    TIME=`date "+%S"`
    SERV=`expr $TIME % 2 + 1`
    echo $line | sed -e  \
"s/^http:\/\/www\.cs\.nctu\.edu\.tw\//http:\/\/csws$SERV\.cs\.nctu\.edu\.tw\//"
done
```