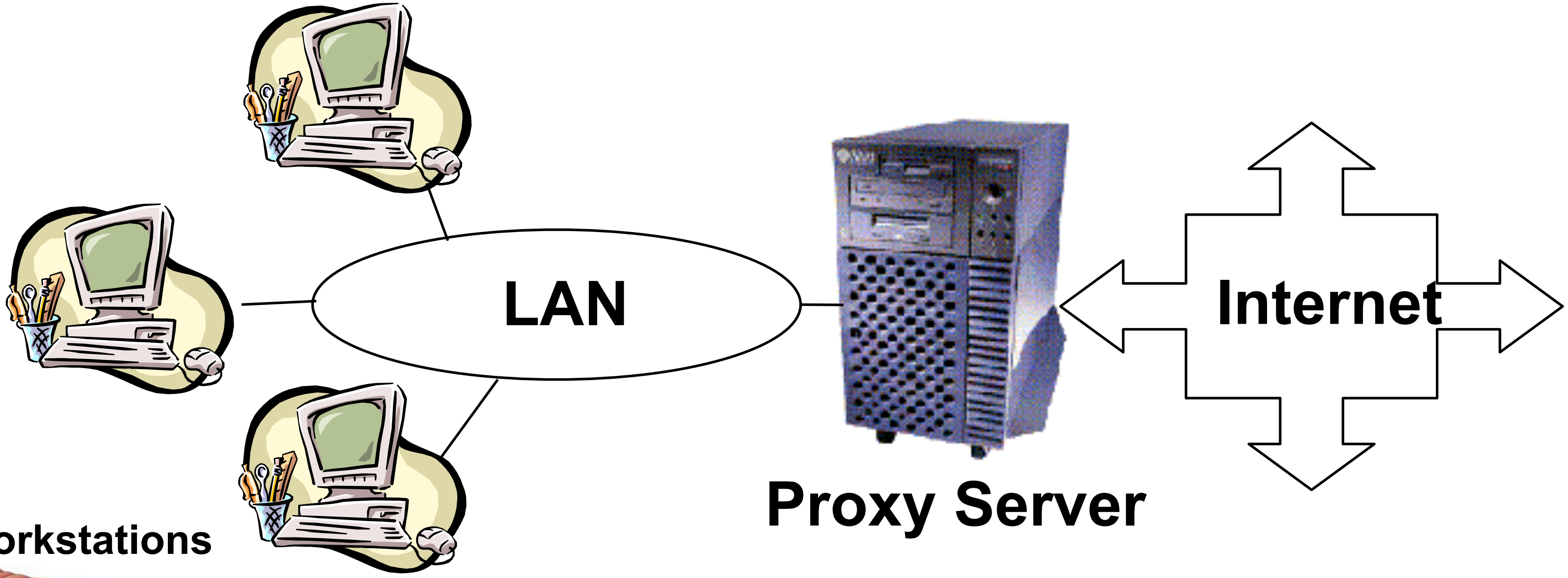
What we will cover

- Client-side proxy (Proxy Server)
- Server-side proxy (Reverse Proxy Server)
- Manipulating HTTP headers

Client-Side Proxy

- Desktop workstations not directly addressable from the outside world.
- Client-Side Proxy Server acts as the interface



Features of Proxy Server

- Performance
- Monitoring
- Filtering
- Caching (with mod_cache)

Enabling Proxy Support in Apache

- LoadModule proxy_module mod_proxy.so
- LoadModule proxy_connect_module mod_proxy_connect.so
- LoadModule proxy_ftp_module mod_proxy_ftp.so
- LoadModule proxy_http_module mod_proxy_http.so

- All above modules should be in there in httpsd.conf by default

Proxy Server Directives:

- Describes what content is handled via the proxy server
- Allows for fine grained control over access, filters, etc…

-
  ```
  <Proxy *>
     Order Deny,Allow
     Deny from all
     Allow from yournetwork.example.com
  </Proxy>
  ```

Proxy Server Directives:

- Describes which ports the CONNECT method is allowed to permit access to.
- By default, HTTPS (443) and SNEWS (563) are enabled
- Example:
  - AllowCONNECT 443 563 8443

Proxy Server Directive:

- Defines remote Proxy Servers for use by local Proxy Server
- Can specify a URL pattern
- Example:
  - – ProxyRemote * http://remote-server:3128
- In conjunction with *ProxyDomain* and *NoProxy*, can be used to setup a network of departmental Proxy Servers cascaded through a corporate intranet, each forwarding external requests higher up the chain

Proxy Server Directives:

- Targets to which the Proxy will connect directly without using a *ProxyRemote*
  - Subnets (e.g. “192.168.1.0/21”)
  - IP addresses (e.g. “192.168.1.1”)
  - Hosts (e.g. “www.foo.com”)
  - Domains (e.g. “.foo.com”)
- Useful for Apache Proxy servers that reside within the intranet
- Example:
  - NoProxy .foo.dom 192.168.1.0/21

Proxy Server Directives:

- Sets a list of URL substrings, host names, and domain names, separated by spaces
- Proxy Server will block HTTP, HTTPS and FTP requests to above targets
- Example:
  - ProxyBlock cybersex *.sex.com

Proxy Server Directives:

- Sets the default domain for requests with incomplete hostnames.
- The specified domain is appended, and a redirect returned to the browser
- Example:
  - ProxyDomain .covalent.net

Proxy Server Directives:

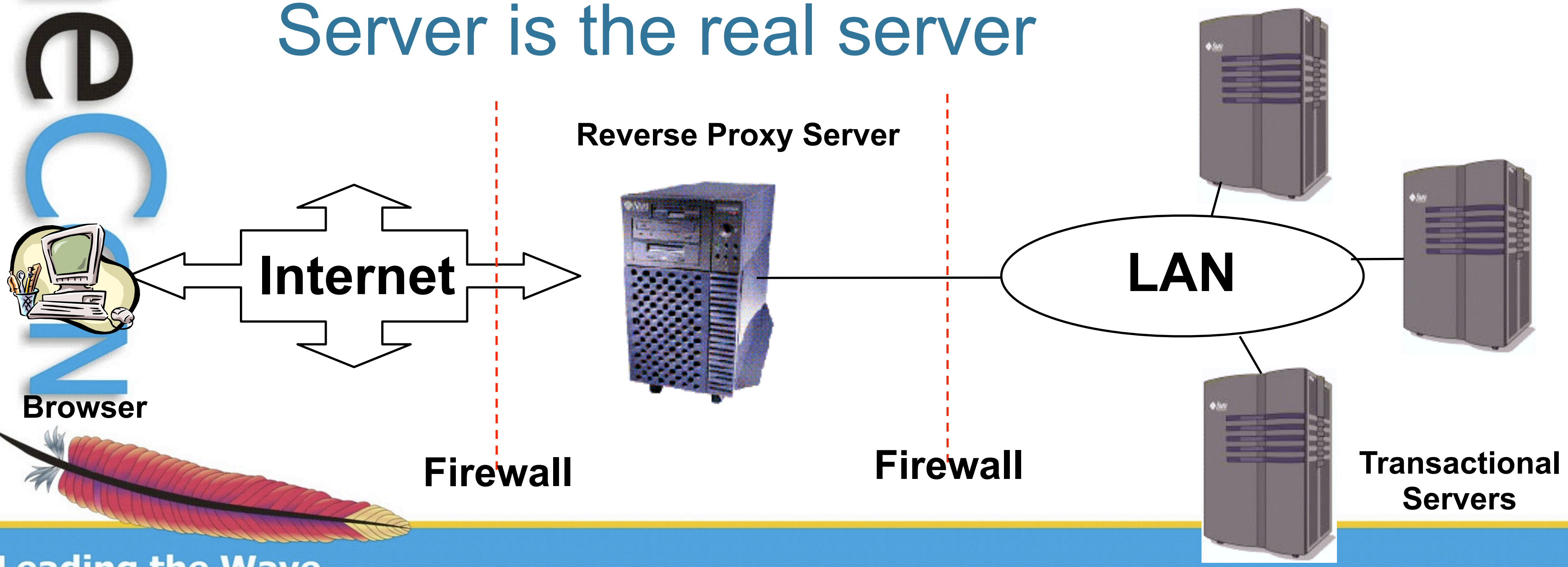
- Enables client-side Proxying
- Default is off
- Example:
  - ProxyRequests on

Proxy Server Directives:

- Controls how the server handles HTTP1.1 “Via:” headers.
- Default: off (“Via” header passes through unchanged)
- On: “Via” header field will be added
- Full: “Via” header field will have Apache server version info
- Block: All “Via” headers removed
- Don’t worry about this setting at all!
- Example:
  - ProxyVia Full

Server-Side Proxy (Reverse Proxy)

- Operated at the server end of the transaction
- Completely transparent to the Web Browser – thinks the Reverse Proxy Server is the real server



Features of Reverse Proxy

- Security
  - Uniform security policy can be administered
  - The real transactional servers are behind the firewall
- Delegation, Specialization, Load Balancing

Configuring Reverse Proxy

- Set ProxyRequests Off
- Apply ProxyPass, ProxyPassReverse and possibly RewriteRule directives

Reverse Proxy Directives:

- Allows remote server to be mapped into the space of the local (Reverse Proxy) server
- Example:
  - – ProxyPass /secure/ http://secureserver/cgi-bin/
  - – Presumably “secureserver” is inaccessible directly from the internet

Reverse Proxy Directives:

- Used to specify that redirects issued by the remote server are to be translated to use the proxy before being returned to the client.
- Syntax is identical to *ProxyPass;* used in conjunction with it
- Example:
  - – ProxyPass /secure/ http://secureserver/cgi-bin/
  - – ProxyPassReverse /secure/ http://secureserver/cgi-bin/

Manipulating HTTP Headers:

- Modify HTTP request and response headers
  - Can be used in Main server, Vhost, Directory, Location, Files sections
- Headers can be merged, replaced or removed
- Pass on client-specific data to the backend server
  - IP Address
  - Request scheme (HTTP, HTTPS)
  - UserAgent
  - SSL connection info
  - etc.
- Shield backend server's info from the clients
  - Strip out Server name
  - Server IP address
  - etc.

mod_headers directives:

- Header set|append|add|unset|echo *header* [value [env=[!]variable]]
  - set: replaces any prev header with this name
  - append: appended to any existing header of same name (name=val1,val2)
  - add: added to existing set of headers, even if same name exists (confusing)
  - unset: header removed
  - echo: Request headers echoed back in response headers
- Can use following specifiers in *value*:
  - %t: Time the request was received
  - %D: Duration of the request
  - %{FOOBAR}e: Contents of the env var FOOBAR

“Header” examples

- Copy all request headers that begin with “TS” to response headers
  - Header echo ^TS
- Say hello to Joe
  - Header add JoeHeader “Hello Joe!”
- Set header conditionally
  - If header “MyRequestHeader: value” is present, response will contain “MyHeader” header:

```
SetEnvIf MyRequestHeader value HAVE_MyRequestHeader
Header add MyHeader “%D %t  mytext” env=HAVE_MyRequestHeader
```

mod_header directives:

- RequestHeader set|append|add|unset *header* [value]
  - set: replaces any prev header with this name
  - append: appended to any existing header of same name (name=val1,val2)
  - add: added to existing set of headers, even if same name exists (confusing)
  - unset: header removed
- Remember, sequence is important! Following will result in “MHeader” to be stipped from the response:
  - RequestHeader append MyHeader “value1”
  - RequestHeader append MyHeader “value2”
  - RequestHeader unset MyHeader

Example:
Integration with App Servers

- Pass additional info about Client Browsers to the App Server:

```
ProxyPass / http://backend.covalent.net
ProxyPassReverse / http://backend.covalent.net
RequestHeader set X-Forwarded-IP %{REMOTE_ADDR}e
RequestHeader set X-Request-Scheme %{REQUEST_SCHEME}e
```

Example: Integration with App Servers

- App Server receives the following HTTP headers:
  - X-Forwarded-IP: 10.0.0.3
  - X-Request-Scheme: https