

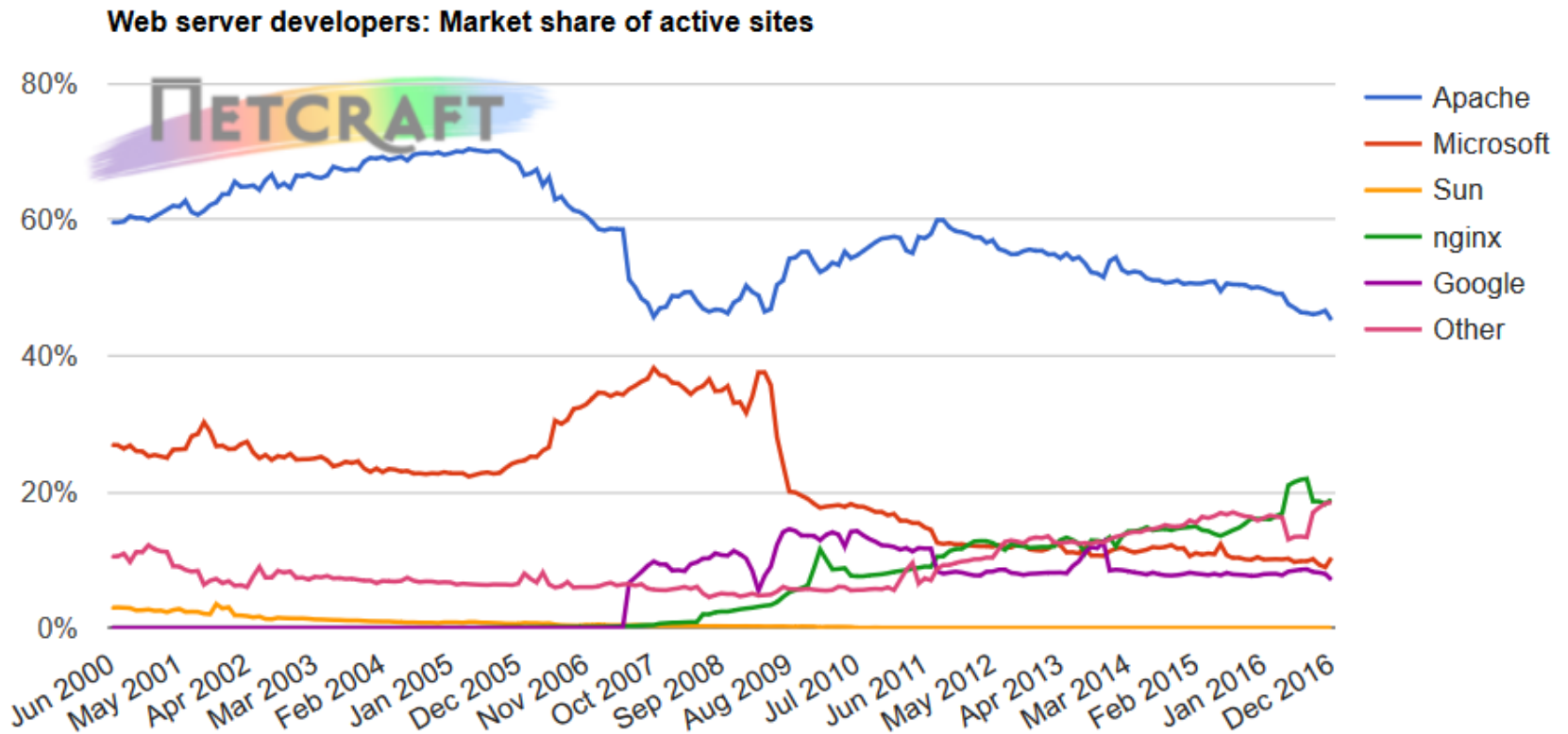
Integrating Web Applications with Apache Web Server

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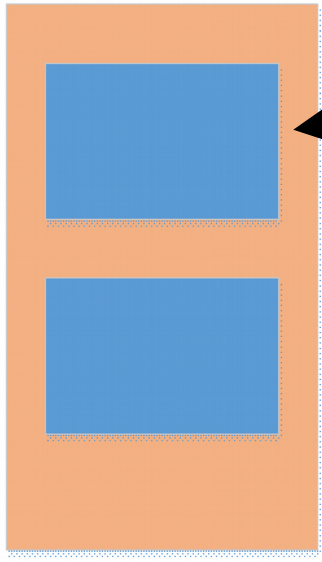
Overview of Apache

- Most Popular HTTP server on the internet
- Highly configurable with modules
- Wide range of language support
(PHP, Python, Ruby, Perl, CGI)
- Runs on all popular operating systems
- Easy to install
- Free and Open Source

Overview of Apache



Understanding HTTP

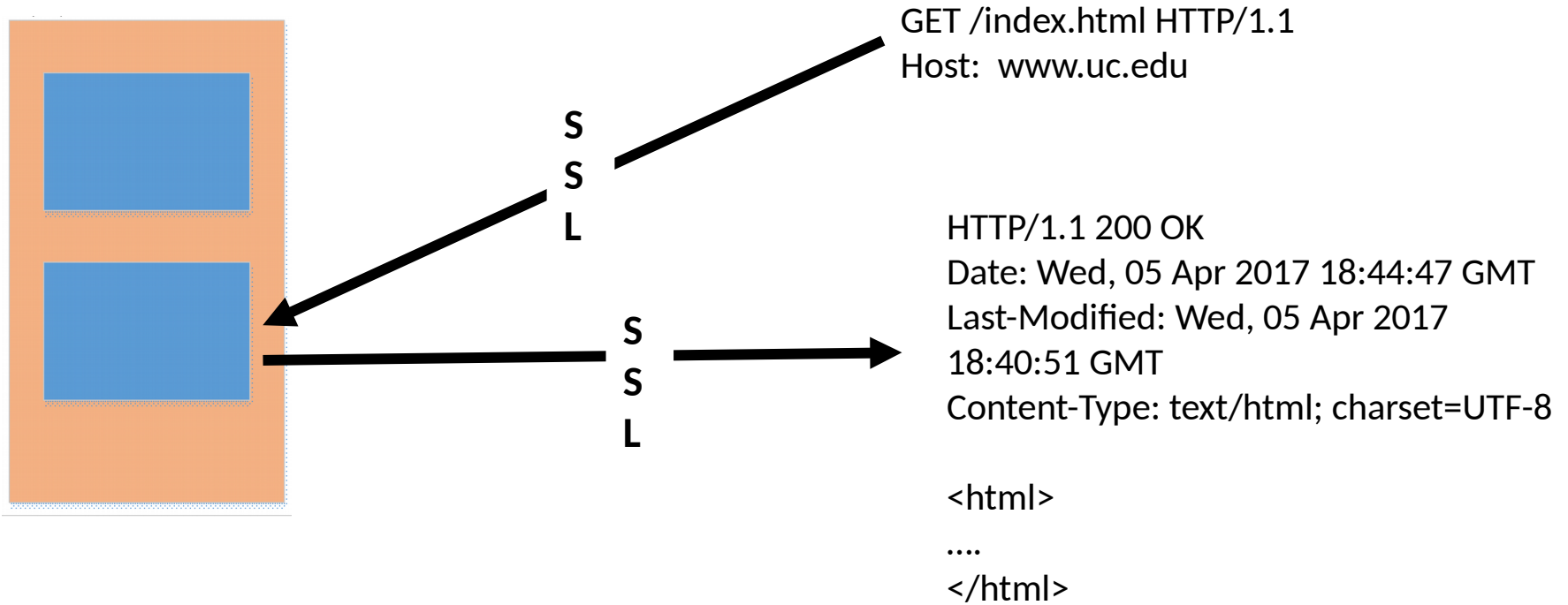


GET /index.html HTTP/1.1
Host: www.uc.edu

HTTP/1.1 200 OK
Date: Wed, 05 Apr 2017 18:44:47 GMT
Last-Modified: Wed, 05 Apr 2017
18:40:51 GMT
Content-Type: text/html; charset=UTF-8

<html>
...
</html>

Understanding HTTP



Apache Modules

- `mod_rewrite`
 - URL Rewriting
- `mod_proxy`
 - Connection Proxying
- `mod_headers`
 - Header Rewriting
- `mod_substitute`
 - Replace Text in HTTP Response
- `mod_macro`
 - Reuse Common Configuration

Using Modules

- Loading Modules
 - Syntax: `LoadModule module_name module_file_path`
- Be aware of Distro-specific configuration
- Building from source? Remember to configure your build with necessary modules.

mod_rewrite

- RewriteEngine
- RewriteBase
- RewriteRule
- RewriteCond

mod_rewrite

- RewriteEngine on | off
 - Turns RewriteEngine on or off
- RewriteBase URL
 - Sets base URL for rewriting

mod_rewrite - RewriteRule

- Syntax: RewriteRule path url flag
- Path
 - Static Text
 - Regular Expression
- URL
 - Relative or absolute URL
 - Regex Variables
- Flag
 - Configures how RewriteRule is executed

mod_rewrite – RewriteRule Example

Example

Perform redirect for requests to /maps and anything underneath it to maps.google.com (preserving URL) and don't perform any matching RewriteRules

Solution

```
RewriteRule /maps(.*)$ http://maps.google.com$1 [L]
```

mod_rewrite - RewriteCond

- Syntax: RewriteCond Haystack Needle [Flag]
- Haystack
 - Variable
- Needle
 - Regular Expression
- Flag
 - Configures how RewriteRule is executed
- Note: followed by other RewriteCond and/or RewriteRule

mod_rewrite - RewriteCond Example

Example

Evaluate the request URL to see if it contains the word “pageid” or “storyid”

Solution

```
RewriteCond %{REQUEST_URI} “^.*pageid.*$” [OR]
```

```
RewriteCond %{REQUEST_URI} “^.*storyid.*$”
```

mod_proxy

- ProxyPass
- ProxyPassReverse
- ProxyPassMatch

mod_proxy – ProxyPass

- Syntax: ProxyPass Path URL
- Path
 - URL path
- URL
 - Protocol, hostname, port, and path of remote server
- Note: This only proxies HTTP Request traffic bound for the remote server

mod_proxy - ProxyPassReverse

- Syntax: ProxyPassReverse Path URL
- Path
 - URL path
- URL
 - Protocol, hostname, port, and path of remote server
- Note: This only proxies HTTP Response traffic coming from the remote server

mod_proxy - Proxy Example 1

Example

Proxy traffic for content under the /home URL to http://userhome.local:8080

Solution

```
ProxyPass /home http://userhome.local:8080/
```

```
ProxyPassReverse /home http://userhome.local:8080/
```

mod_proxy – ProxyPassMatch

- Syntax: ProxyPassMatch PathExpression URL
- PathExpression
 - Regular Expression
- URL
 - Protocol, hostname, port, and path of remote server
- Note: This only proxies HTTP Request traffic bound for the remote server

mod_proxy - Proxy Example 2

Example

Proxy traffic for each users doc folder URL to `http://userdocs.local:8080`. User folders are located under `/home`.

Solution

```
ProxyPassMatch /home/([a-z0-9]*)/docs http://userdocs.local:8080/$1  
ProxyPassReverse /home http://userdocs.local:8080/
```

mod_header – Add Header

- Syntax: Header set Name Value
- Name
 - Name of header field
- Value
 - Value of header field

mod_header - Header Example 1

Example

Add header named RequestComplete with a value of Yes

Solution

Header set RequestComplete Yes

mod_header – Edit Header

- Syntax: Header edit Name SearchExpression ReplaceExpression
- Name
 - Name of header field
- SearchExpression
 - Regular Expression
- ReplaceExpression
 - Regular Expression

mod_header – Header Example 2

Example

Replace Location header field containing `http://web01.local:8080` with `http://public.server` while preserving the path

Solution

Header edit Location “`^http://web01.local:8080(.*)$`” “`http://public.server$1`”

mod_substitute

- SetOutputFilter *
- Substitute

* Not provided by mod_substitute

mod_substitute - SetOutputFilter

- Syntax: `SetOutputFilter Filter;Filter;...`
- Filter
 - Order of filter to apply to content
- Necessary when proxied server compresses data
- Example
 - `SetOutputFilter Inflate;Substitute;Deflate`

mod_substitute - Substitute

- Syntax: Substitute RegexSubstitute
- RegexSubstitute
 - Syntax:
 - s|Search|Replace|Flag
 - Common Flag: i = Case Insensitive
- Replaces Content in HTTP Response

mod_substitute - Substitute Example

Example

Replace links in HTML response that begin with `http://web01.local:8080` with `https://public.server` (assume data from `web01.local` is compressed)

Solution

```
SetOutputFilter INFLATE;SUBSTITUTE;DEFLATE
```

```
Substitute "s|(href=\"http)(://)web01.local:8080|$1s$2public.server|i"
```

mod_macro – Define Macro

- Syntax:

```
<Macro Name $variable1 ...>  
    Directive1  
    ...  
</Macro>
```

- Name

- Name of Macro

- variable1, variableN

- variables passed as parameters to Macro

- Directive1, DirectiveN

- Directives executed when Macro is called

mod_macro – Call Macro

- Syntax: Use MacroName Param1
- MacroName
 - Name of macro being called
- Param1, ParamN
 - Parameters passed to macro

mod_macro - Define Example

Example

Create a macro that will check the value of REQUEST_URI. If it begins with a value redirect to an http URL while preserving the URL path.

Solution

```
<Macro RedirectOnPath $PathBegin $TargetURL>  
    RewriteCond "%{REQUEST_URI}" "^$PathBegin"  
    RewriteRule ^(.*)$ http://$TargetURL$1  
</Macro>
```

mod_macro - Call Example

Example

Call the RedirectOnPath Macro to search for paths beginning with “/audio” and redirect to `http://music.server`.

Solution

Use `RedirectOnPath /audio http://music.server`

Examples ☺
Questions ☺☺