Server Client

Simanta Mitra

SERVER

- Program that provides SERVICES (i.e. useful functionality). Typically, keeps running forever. Typically, *the computer* that runs the server program is called a server. Many server programs can be running on a single computer.
- Examples of services:
  - database services
  - runs a web site

DAEMON

- a program that runs in the background (not interactive)
- keeps running (in a loop) waiting for services to be requested and then providing a service
- usually built for a very specific purpose
- Servers are usually run as daemons

CLIENT

- Program that connects to a SERVER computer - and then to a program that provides services and USES those services. Typically, the computer that runs the client program is called a client!
- Multiple clients can typically connect to a server
- Examples:
  - Web browsers on a computer connect to web servers on other computers and is provided with web pages.

MACID, IP ADDRESS, HOSTNAME

- MACID is a unique id that is HARDCODED on every computer (or internet capable device). Already there when you buy the device.
- Example: c8:bc:c8:9b:c4:0f for ethernet card of a computer.
- Used by lower protocols to uniquely identify a device.

- IP ADDRESS is an address assigned to computers connected to the internet. Typically assigned when connecting to the internet.
- Example: 129.186.252.23

- unlike IP address, HOSTNAME is a human-readable address (like www.google.com). Servers typically have hostnames. Ask SSG to create hostnames for your computer.

DNS, localhost

- DNS (Domain Name Server) - is like a phone book.
  - Maps Hostnames to IP addresses.
  - Can map multiple hostnames to the same IP address.
  - When you want to connect to a website by typing in a hostname, your computer will find the IP address by asking the DNS.

- Localhost - each computer uses the hostname *localhost* to refer to itself!

PORT

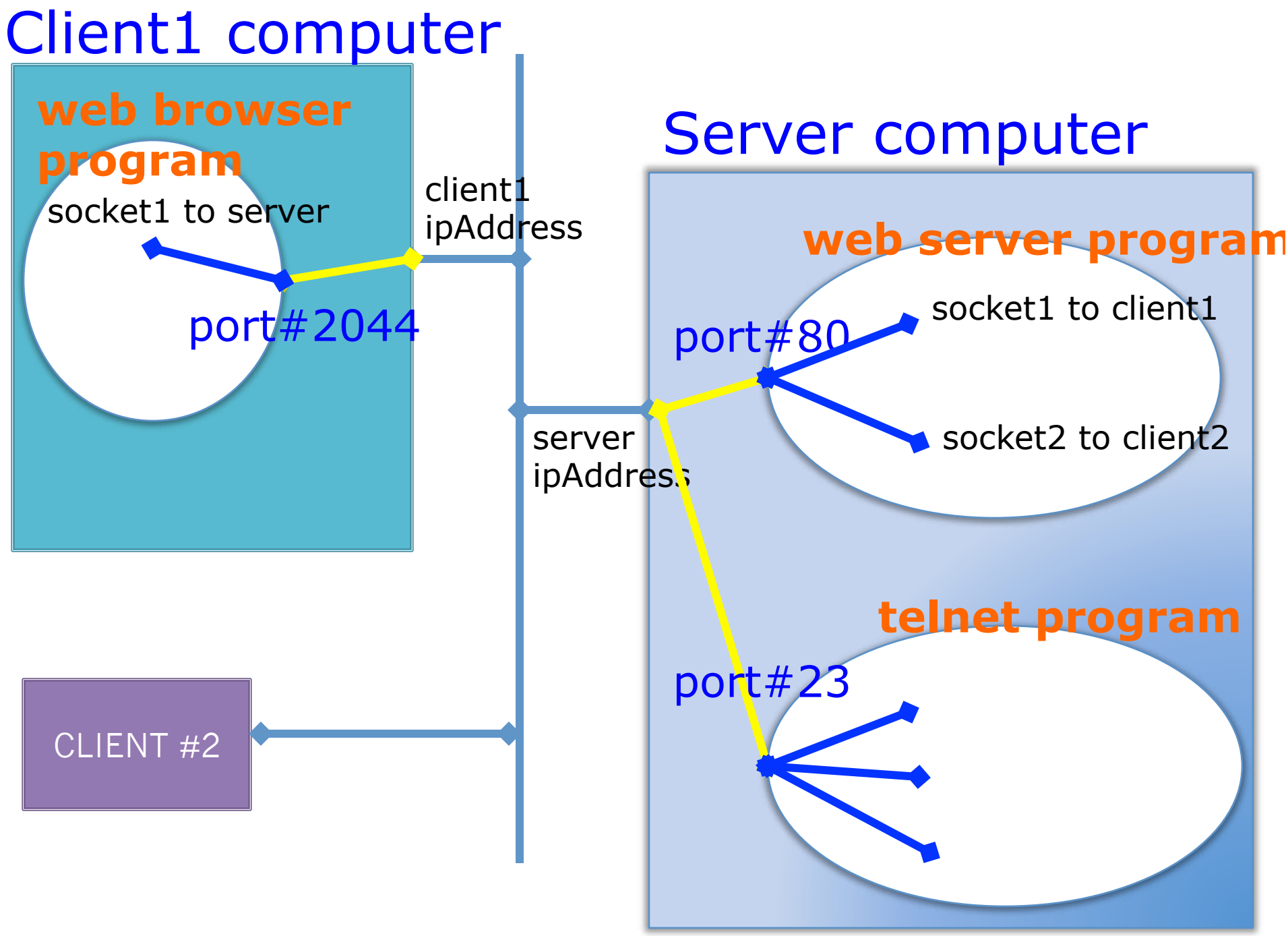
- This is a NUMBER that refers to a specific process running on a computer.

- Many port numbers are reserved.
  - 80: http
  - 23: telnet
  - 110: pop3 (for email delivery)

- You will be able to create ports only from 1024 onwards.
- Once a port is being used by a server, you cannot use that same port for other programs.
- Multiple clients can talk to a server through that port.

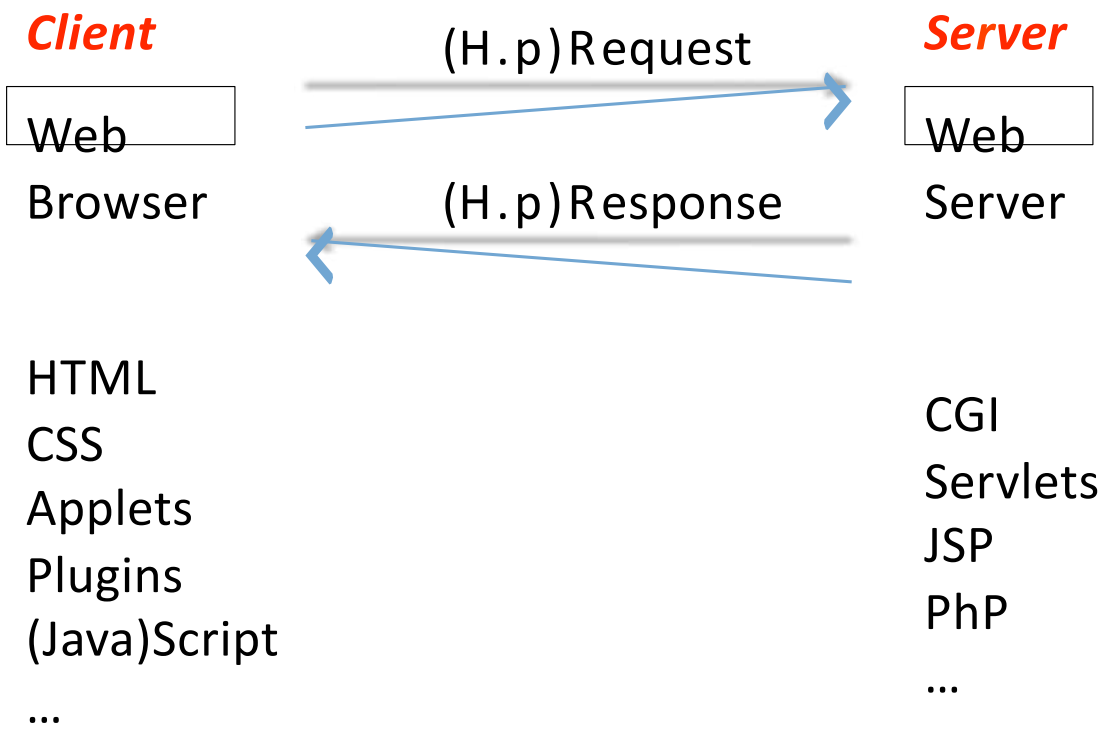
SOCKET

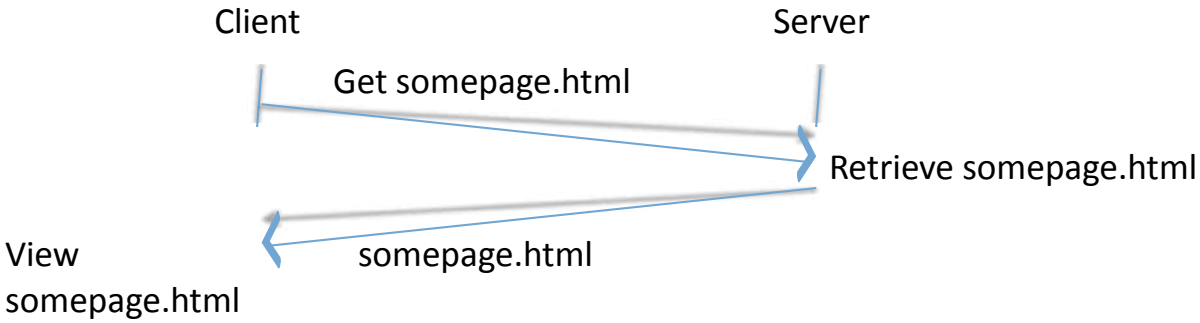
- A socket contains connection information between two computers
  - LOCAL ADDRESS
    - local computer's IP address
    - local program's port#
  - REMOTE ADDRESS
    - remote computer's IP address
    - remote program's port#
  - PROTOCOL
    - this means the "LANGUAGE" or "RULES" that the two computers will use to communicate.
    - typically this is TCP/IP protocol.

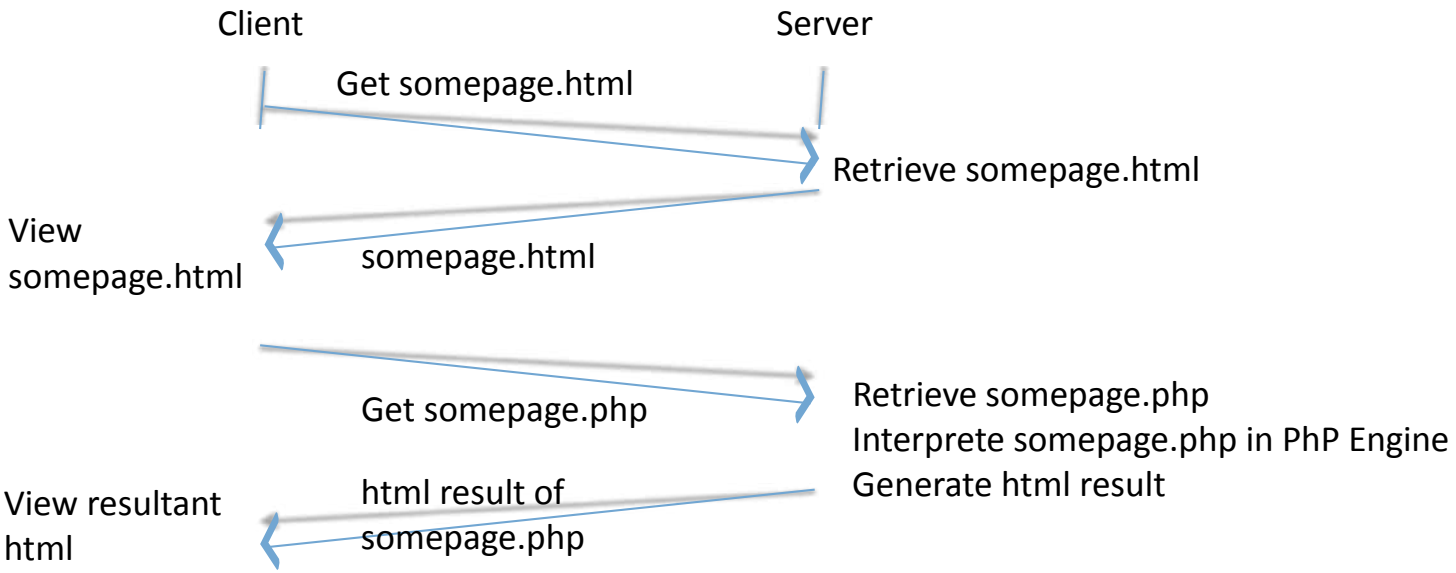

Client1 computer
web browser program
socket1 to server
port#2044
client1 ipAddress
Server computer
web server program
port#80
socket1 to client1
socket2 to client2
server ipAddress
telnet program
port#23
CLIENT #2

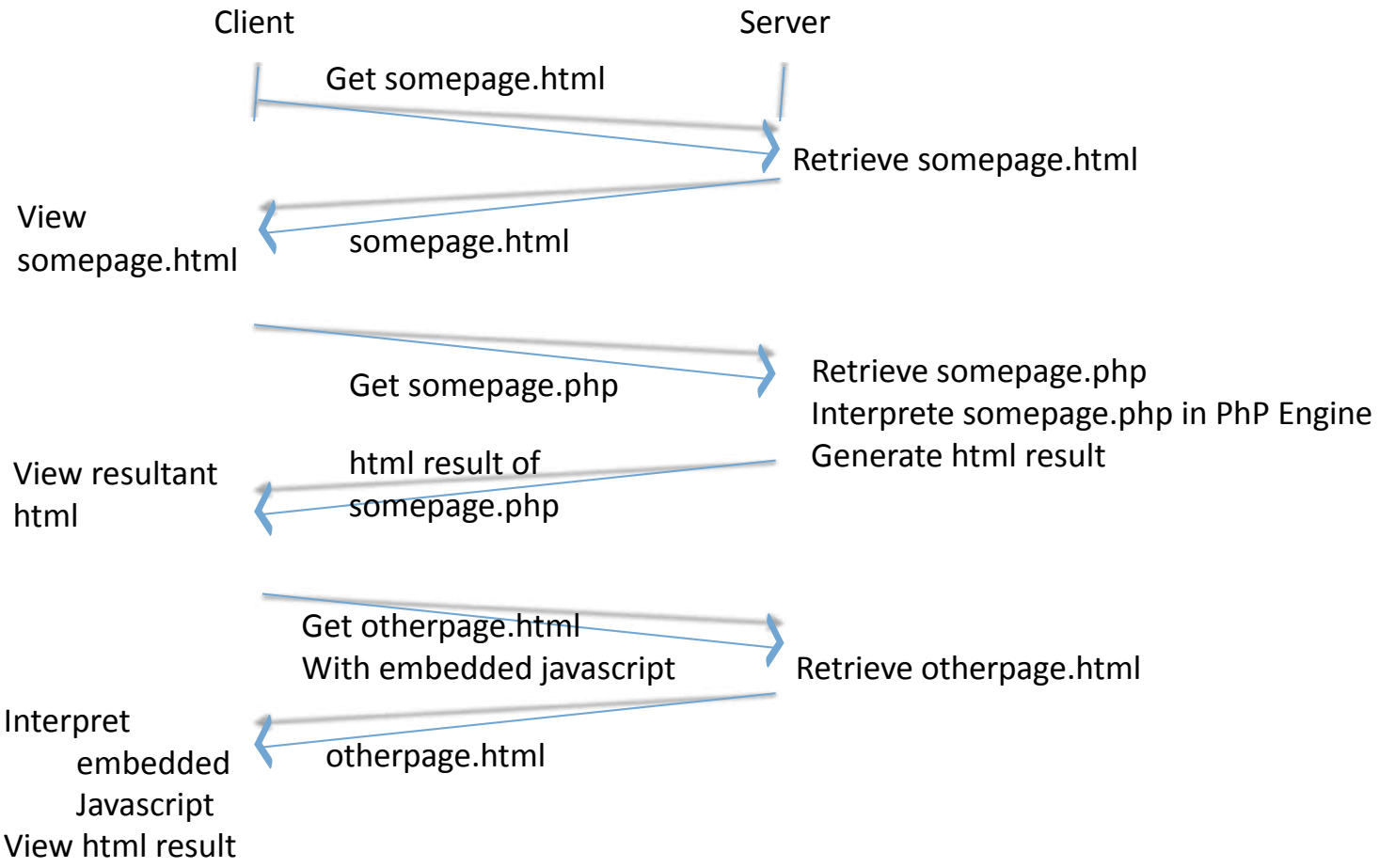
SHOW EXAMPLES

WEB SERVER AND CLIENTS


Client
Web Browser
(H.p)Request
(H.p)Response
Server
Web Server
HTML
CSS
Applets
Plugins
(Java)Script
…
CGI
Servlets
JSP
PhP
…


Client
Server
Get somepage.html
Retrieve somepage.html
somepage.html
View somepage.html


Client
Server
Get somepage.html
Retrieve somepage.html
View somepage.html
somepage.html
Get somepage.php
Retrieve somepage.php
Interprete somepage.php in PhP Engine
Generate html result
View resultant html
html result of somepage.php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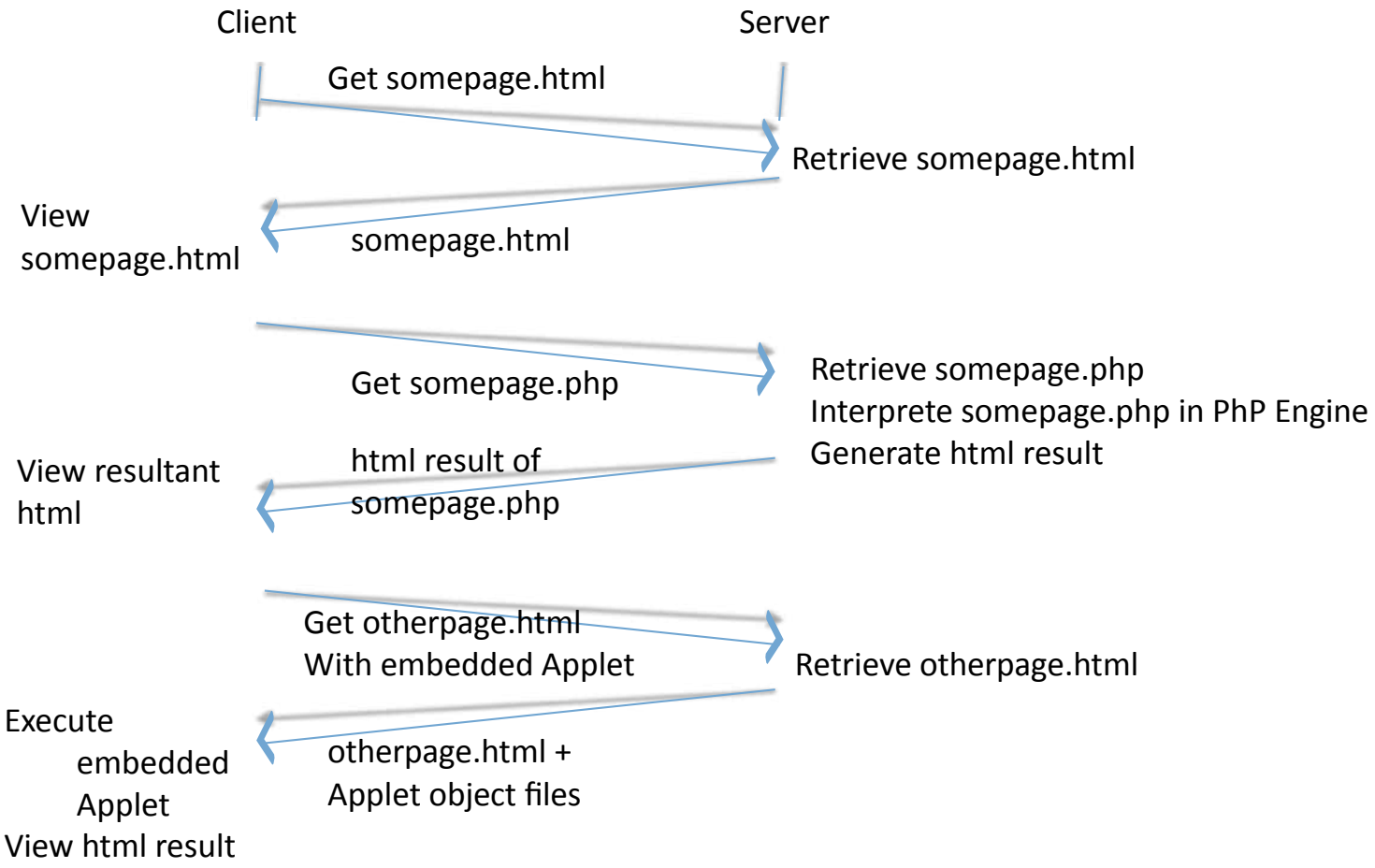
somepage.html
Get somepage.php
Retrieve somepage.php
Interprete somepage.php in PhP Engine
Generate html result
View resultant html
html result of somepage.php
Get otherpage.html
With embedded javascript
Retrieve otherpage.html
Interpret embedded Javascript
View html result
otherpage.html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Generate html result
View resultant html
html result of somepage.php
Get otherpage.html
With embedded Applet
Retrieve otherpage.html
Execute embedded Applet
View html result
otherpage.html +
Applet object files

misc

- HTML
- DOM
- SHOW SAFARI AND HTML AND DOM ETC