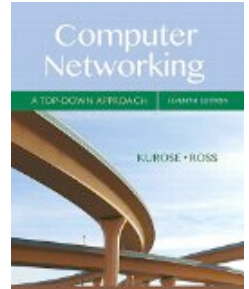


COMP 375: Lecture 04



- **News & Notes:**

- Congrats to “Team Fluff,” winners of Puppy Bowl XIV!!!
- Lab today @ 2:30PM
- Quiz #1 in class Wednesday
- Project #1 due in one week

- **Reading (Due: Wed, Feb. 7)**

- Section 2.2.{4-5} (HTTP)

Beginning-of-class Discussion

*How would you explain the **relationship** between the **Internet** and the **Web**?*

Section 2.1

NETWORK APPLICATIONS

In a distributed system you have multiple copies of each component.



What happens if one of our components/computers fails?

If a process sends a message, can it tell the difference between a slow link and a delivery failure?

A.	Yes
<input checked="" type="radio"/> B.	No

What should we do if we experience a **partial failure**?

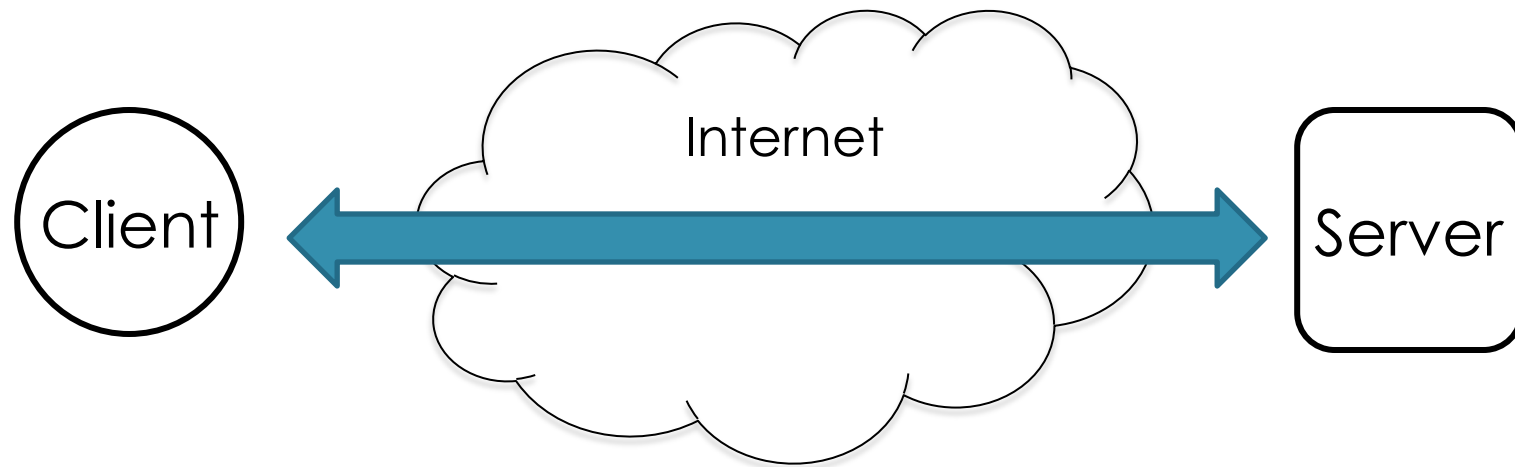
Under what circumstances, or what types of distributed applications?

- | | |
|-----------|--|
| A. | If one process fails or becomes unreachable, switch to a spare. |
| B. | Pause or shut down the application until all connectivity and processes are available. |
| C. | Allow the application to keep running, even if not all processes can communicate. |
| D. | Handle the failure in some other way. |

Expected failure leads to the need for easily replaceable components.



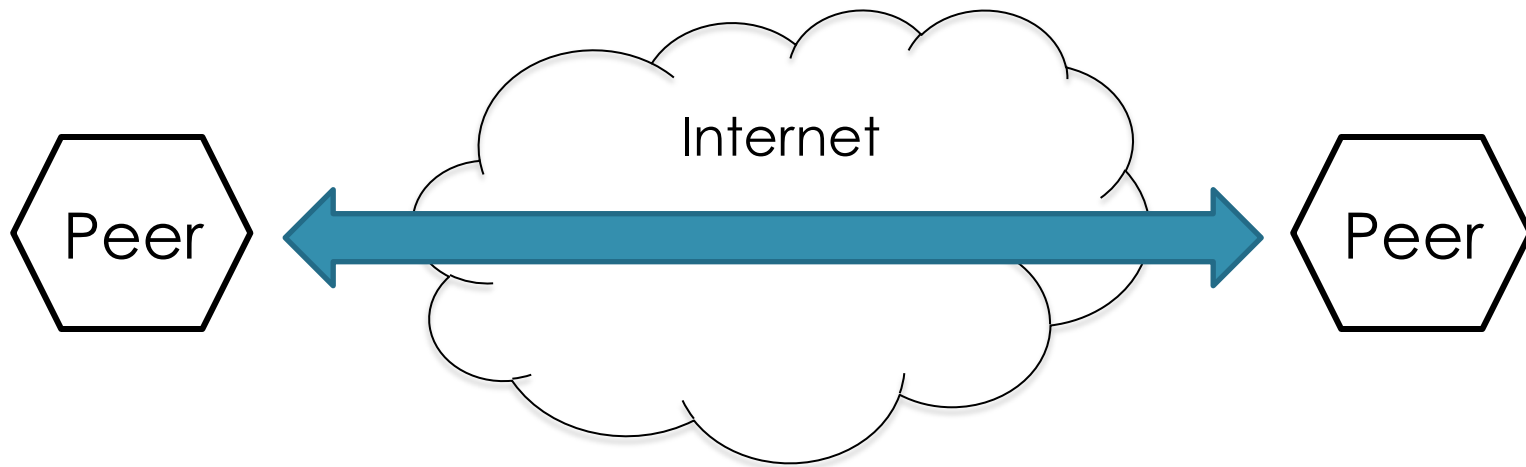
Applications with an entity that handles requests modeled as client/server.



A client's properties are the inverse of a server's properties.

- **Connectivity:** Constant vs. intermittent
- **IP Address:** Static vs. dynamic
- **Ports:** Well known vs. ignored
- **Peer communication:** Yes vs. no

Apps that have no central authority are modeled as peer-to-peer (P2P).



In a peer-to-peer architecture, are there clients and servers?

A.

Yes

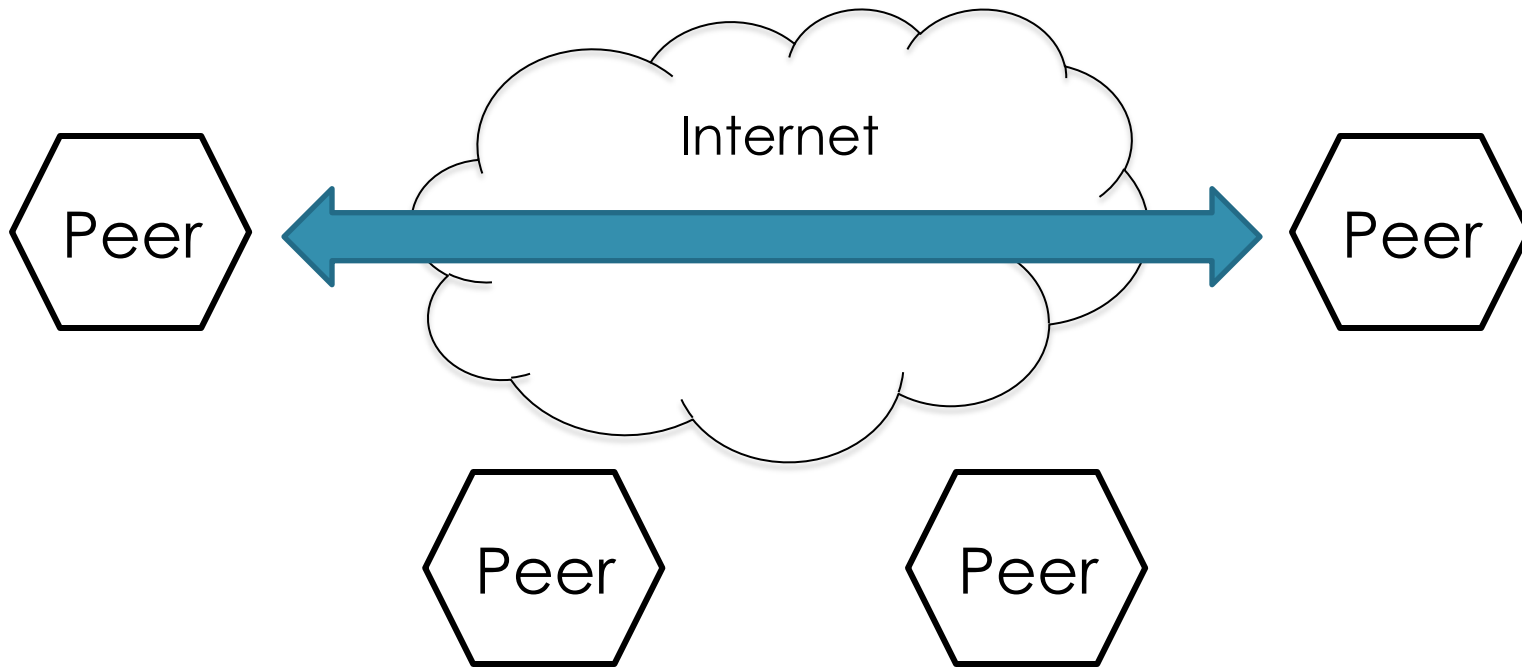
B.

No

Which is more scalable?

A.	Client/Server
<input checked="" type="radio"/> B.	Peer-to-Peer
C.	They are equal

P2P trades complexity for scalability.



*What is good about adding new peers?
What is bad?*



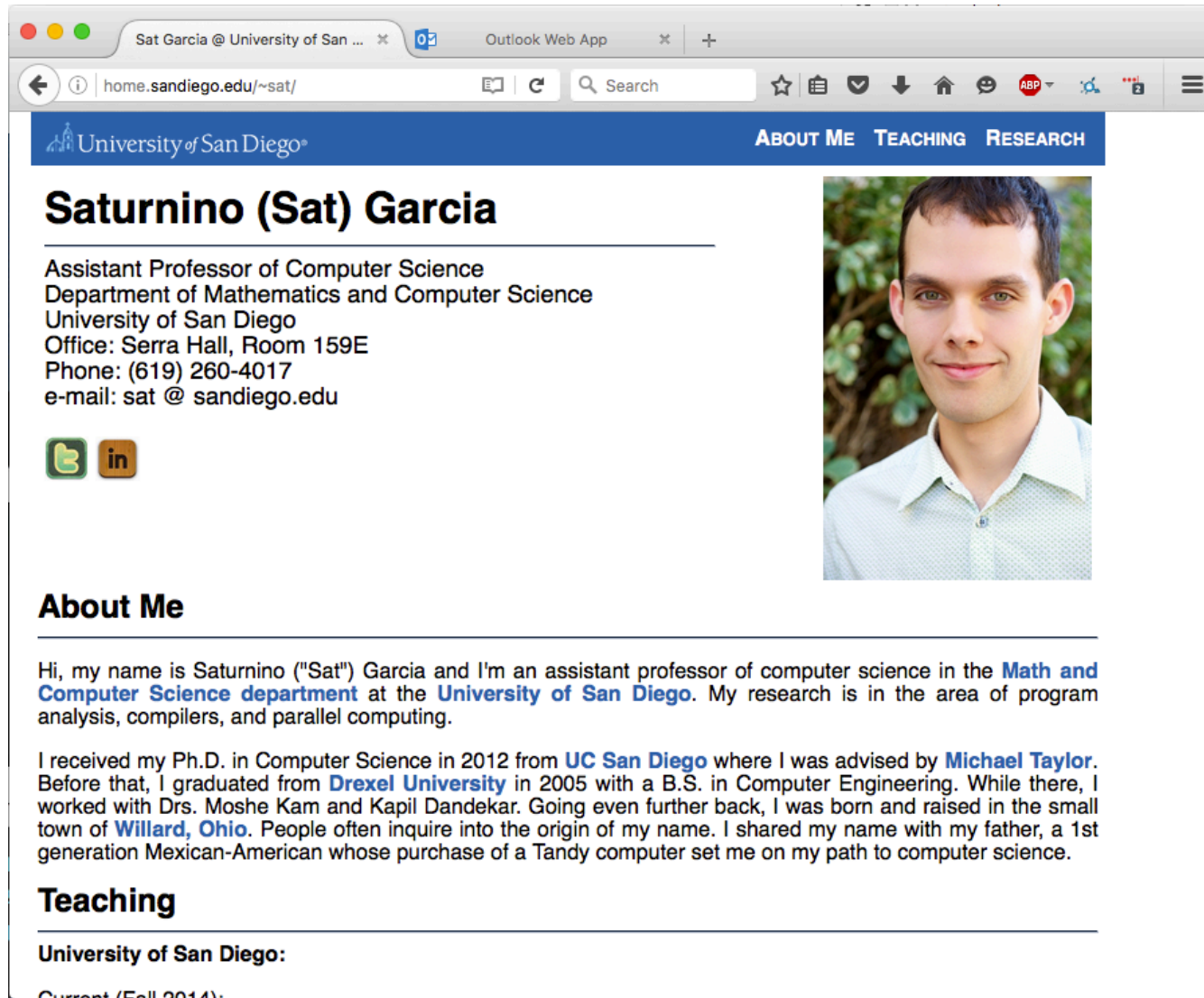
Which application is **LEAST** suited to a P2P architecture?

A.	A service that provides videos
B.	A service that provides news and discussion
C.	A service that provides hostname resolution
D.	A service that implements stock market trades

Section 2.2

THE WEB & HTTP

A Web Browser is many things, including an HTTP client.



The screenshot shows a web browser window with two tabs: "Sat Garcia @ University of San ..." and "Outlook Web App". The address bar shows "home.sandiego.edu/~sat/". The page features a blue header with the University of San Diego logo and navigation links for "ABOUT ME", "TEACHING", and "RESEARCH". The main content area is titled "Saturnino (Sat) Garcia" and includes his title as Assistant Professor of Computer Science, department information, office location (Serra Hall, Room 159E), phone number (619) 260-4017, and email address (sat @ sandiego.edu). Social media icons for Twitter and LinkedIn are present. A portrait photo of Saturnino Garcia is shown on the right. Below the photo is an "About Me" section with a bio: "Hi, my name is Saturnino ('Sat') Garcia and I'm an assistant professor of computer science in the Math and Computer Science department at the University of San Diego. My research is in the area of program analysis, compilers, and parallel computing." It also mentions his education: "I received my Ph.D. in Computer Science in 2012 from UC San Diego where I was advised by Michael Taylor. Before that, I graduated from Drexel University in 2005 with a B.S. in Computer Engineering. While there, I worked with Drs. Moshe Kam and Kapil Dandekar. Going even further back, I was born and raised in the small town of Willard, Ohio. People often inquire into the origin of my name. I shared my name with my father, a 1st generation Mexican-American whose purchase of a Tandy computer set me on my path to computer science." The "Teaching" section is partially visible at the bottom, listing "University of San Diego:" and "Current (Fall 2014):".


Sat Garcia @ University of San ... Outlook Web App


home.sandiego.edu/~sat/ Search

University of San Diego[®] ABOUT ME TEACHING RESEARCH

Saturnino (Sat) Garcia

Assistant Professor of Computer Science
Department of Mathematics and Computer Science
University of San Diego
Office: Serra Hall, Room 159E
Phone: (619) 260-4017
e-mail: sat @ sandiego.edu



About Me

Hi, my name is Saturnino ("Sat") Garcia and I'm an assistant professor of computer science in the [Math and Computer Science department](#) at the [University of San Diego](#). My research is in the area of program analysis, compilers, and parallel computing.

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Teaching

University of San Diego:

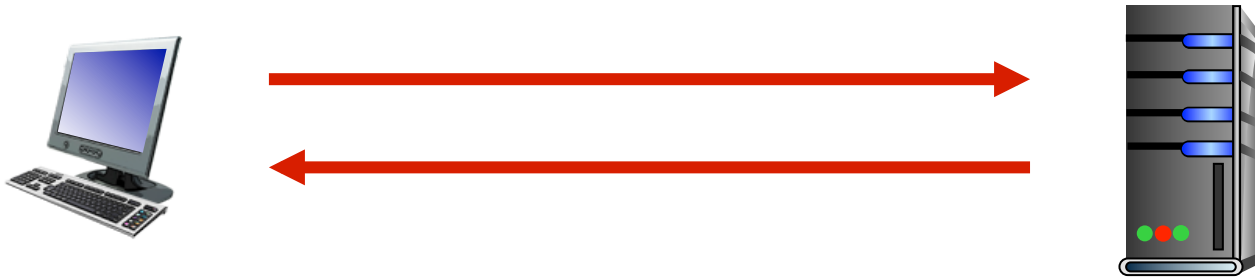
Current (Fall 2014):

First, the user specifies a URL.



`http://some.host.name.tld/directory/name/file.ext`

Second, the browser initiates a TCP connection with the server.



- Looks up “some.host.name.tld”
- Calls connect()

Third, the browser sends an HTTP request message for the data.



```
GET /~sat/index.html HTTP/1.0
Host: home.sandiego.edu
[other optional fields, for example...]
Mozilla/5.0 (Macintosh; Intel Mac OS X 10.11;
    rv:47.0) Gecko/20100101 Firefox/47.0
Accept-language: en-US,en;q=0.5
```

Fourth, the server sends an HTTP response message.



```
HTTP/1.0 200 OK
Content-Type: text/html
Content-Length: 10477
Date: Fri, 02 Sep 2016 21:26:38 GMT
[Blank line]
(Data data data data...)
```

Finally, the browser renders the data, possibly requesting additional objects.


Sat Garcia @ University of San ... Outlook Web App

home.sandiego.edu/~sat/ Search

University of San Diego[®] ABOUT ME TEACHING RESEARCH

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