Introduction to Web Programming

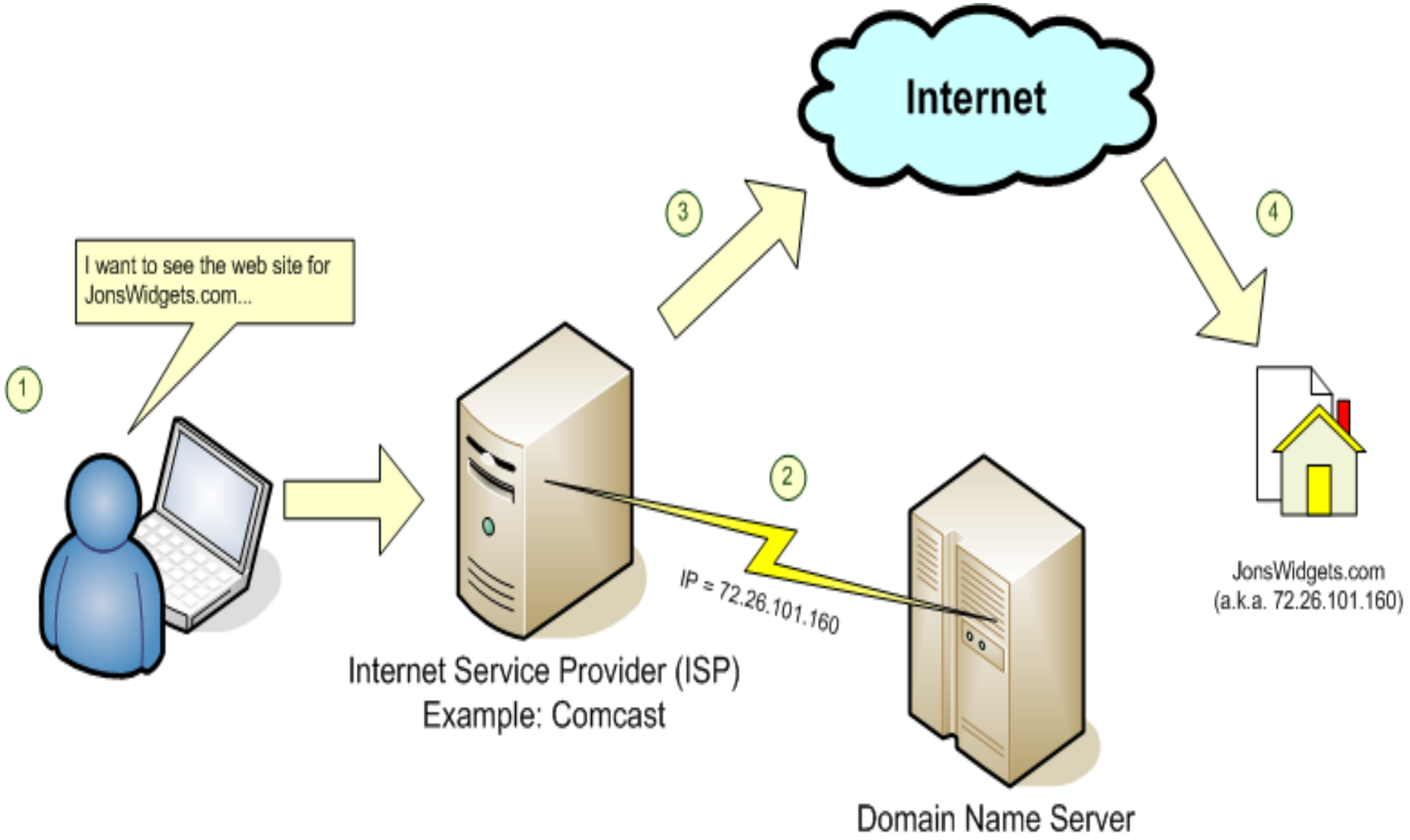
Objective

- What is Internet ?
- How the Internet Works?
- Internet Protocol
- What is Server?
- Web Architecture

What is Internet?

- It is a global collection of networks, both big and small.
- These networks connect together in many different ways to form the single entity that we know as the **Internet**

How the Internet Works?



Internet Protocol

- The Internet Protocol (IP) is the method or protocol by which data is sent from one computer to another on the Internet. Each computer **(known as a host)** on the Internet has at least one IP address that uniquely identifies it from all other computers on the Internet.
- The **Internet Protocol** (**IP**) is the principal communications **protocol** in the **Internet protocol** suite for relaying **datagrams** across network boundaries. Its routing function enables internetworking, and essentially establishes the **Internet**.
- Example:

  TCP/IP, HTTP, HTTPS, SMTP, DNS, FTP, MAC, UDP etc

HTTP Protocol

- HTTP (HyperText Transfer Protocol) is the underlying protocol of the **World Wide Web** Developed by **Tim Berners-Lee** and his team between 1989-1991.
- It allows fetching of resources such as HTML documents on the Web in client-server manner.
- HTTP has evolved from an early protocol to exchange of files in a semi-trusted laboratory environment, to the modern **maze of the Internet**, now carrying images, videos in high resolution and 3D.
- Different http versions are http/1, http/1.1, http/2

Invention of WWW

- In 1989 **Tim Berners-Lee** wrote a proposal to build a **hypertext system** over the Internet. Initially calling it the ***Mesh***, *it was later renamed to* ***World Wide Web*** during its implementation in 1990.
- It was consisted of 4 building blocks:
  - ✓ A textual format to represent hypertext documents, the ***HyperText Markup Language (HTML).***
  - ✓ A simple protocol to exchange these documents, the ***HypertText Transfer Protocol (HTTP).***
  - ✓ A client to display (and accidentally edit) these documents, the first Web browser called ***WorldWideWeb.***
  - ✓ A **server** to give access to the document, an early version of ***httpd.***

What is Server ?

- Any computerized process, which shares a resource with one or more client processes is called as a server.
- Examples
  - Database Server
  - Mail Server
  - FTP Server
  - File Server
  - Web Server
  - Application Server
  - DNS Server…..**etc**

Web servers

- CERN httpd
- IIS
- Apache
- Nginx

Application Servers

- IBM Websphere
- Apache Tomcat
- WebLogic…. etc

DNS Server

- The **Domain Name System (DNS)** is a standard technology for managing public names of Web sites and other Internet domains.
- DNS technology allows you to type names into your Web browser like ***google.com*** and your computer to automatically find that address on the Internet. A key element of the DNS is a **worldwide collection of *DNS servers.***
- A **DNS server** is any computer registered to join the Domain Name System. A DNS server runs special-purpose networking software, features a public **IP address**, and contains **a database of network names** and addresses for other Internet hosts.
- DNS servers communicate with each other using private network protocols.
- DNS networking is based on the client / server architecture. Your Web browser functions as a DNS client (also called *DNS resolver*) and issues requests to your Internet provider's DNS servers when navigating between Websites.

The Tier Architecture Concept

The Tier Architecture Concept

- **Layered architecture:** These are essentially the objects, which work in an Object oriented environment. Modern web technologies supports layered architecture.

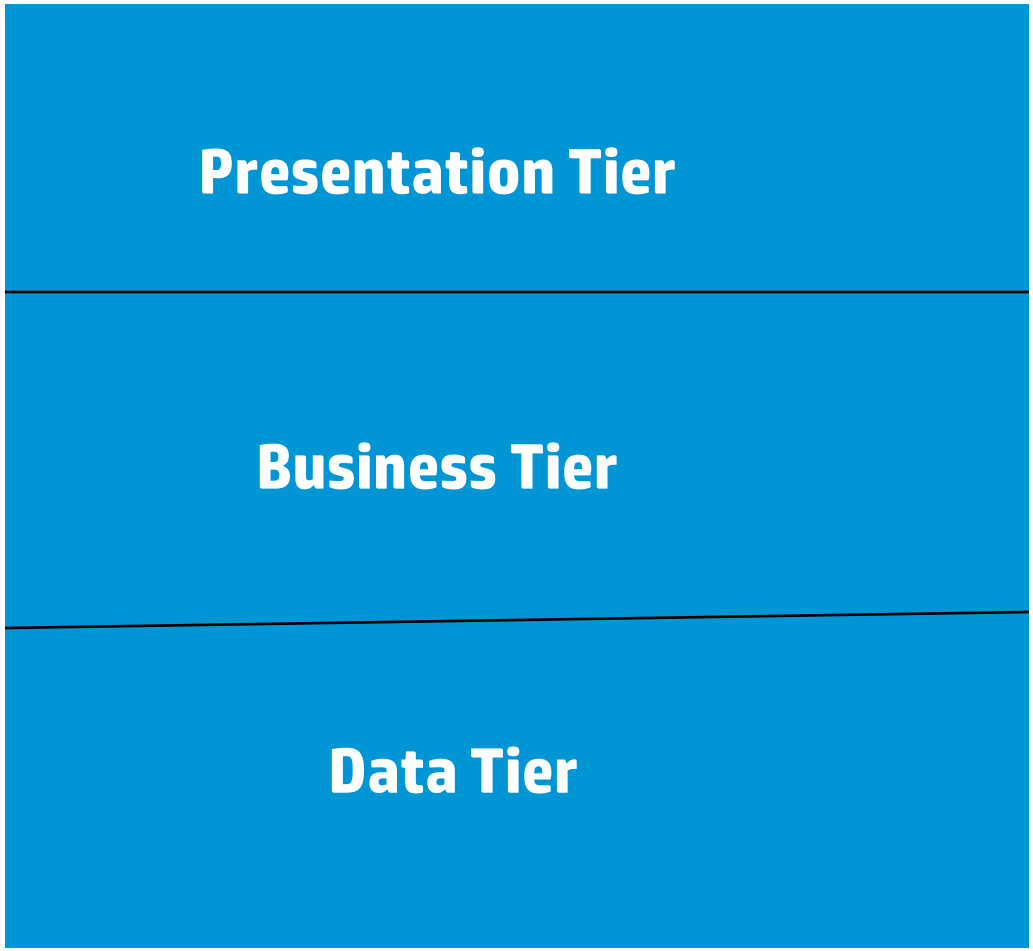
- **Client-server architecture:** This is considered as a 2 – Tier architecture because the business layer and the presentation layer are not distinguished by the client.

- **Multi-layered architecture:** It is sometimes termed as n-tier architecture. In this architecture – all the layers, that is - the presentation layer, the application layer, and the data management layer are all separate processes. **The most commonly used multi-tier architecture refers to the 3-tier architecture.**

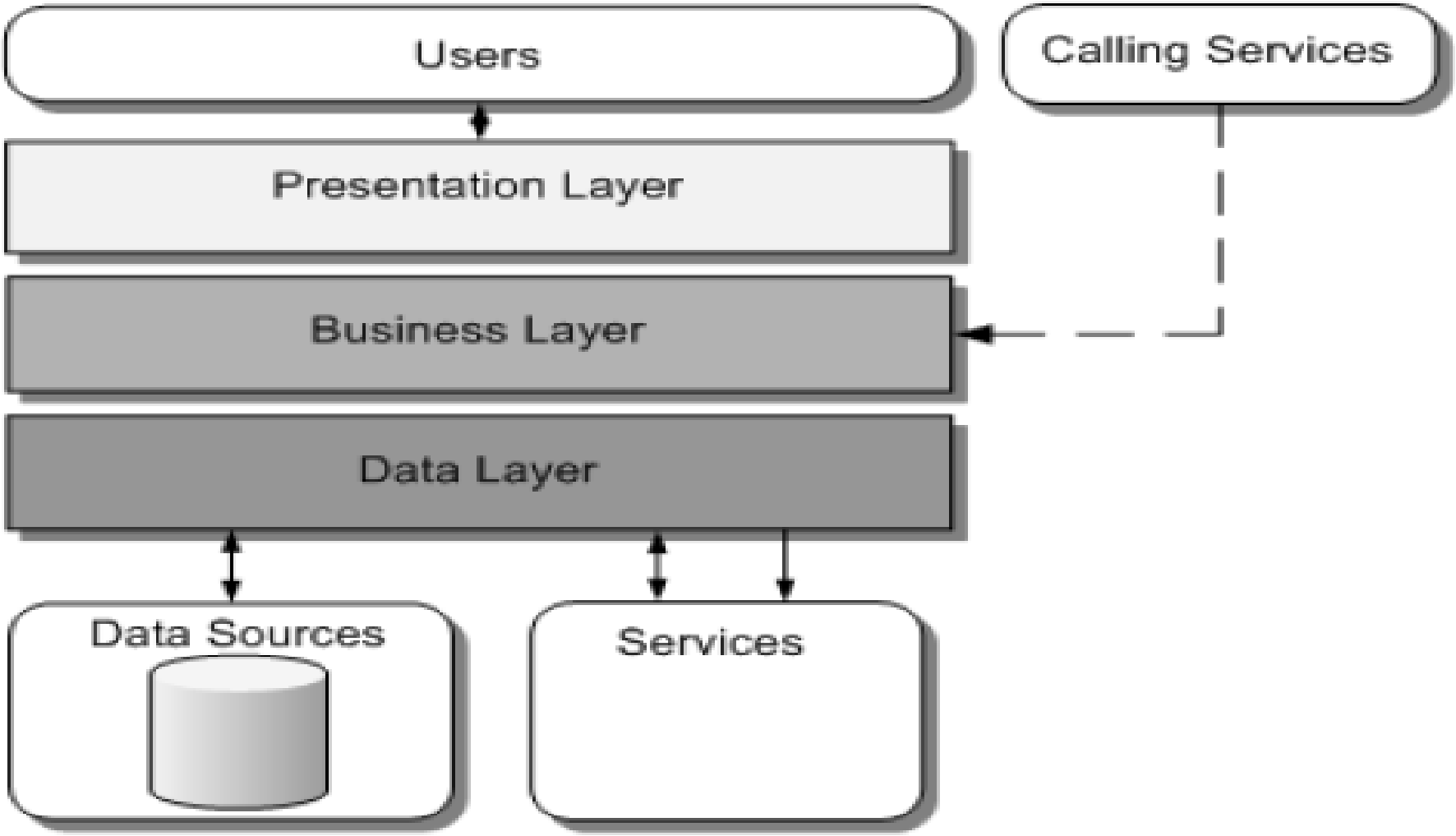
Three-tier Architecture

The three tier architecture can be easily classified into the following three-tier :

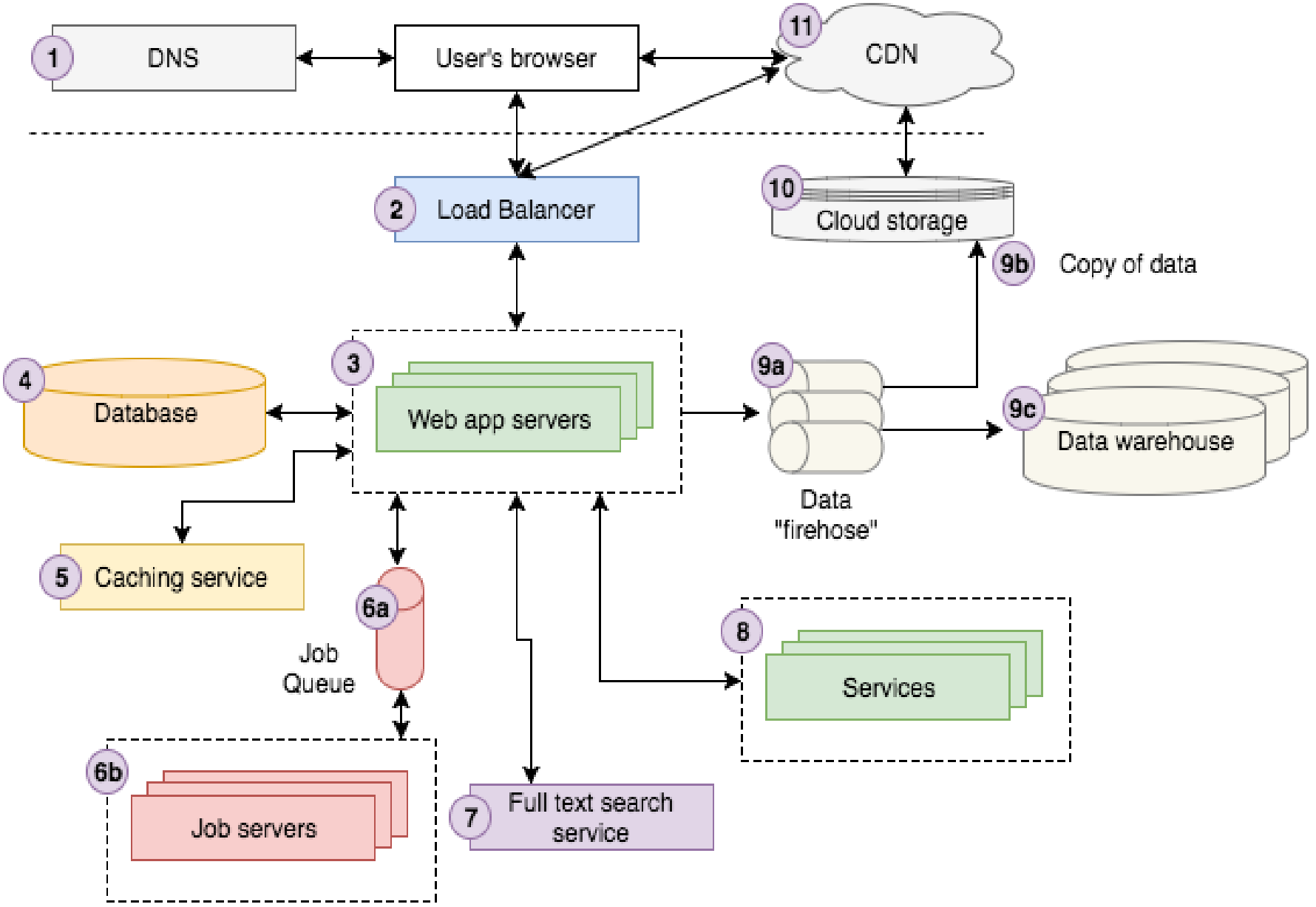
- Presentation tier
- Business tier
- Data tier



Application Architecture



Modern Web Application Architecture



What is a Web Page ?

The basic unit of information displayed over the internet is a Web Page.

What is a Web site/Web Application ?

A web site is a collection of such web pages ,which are interlinked and which are recognized by URL.

Thank You!