
Programming

Web

01 Web Programming

Unit Syllabus : Web Programming

- Static and Dynamic Web
- Client side & Server Side Scripting
- Introduction to other server side languages
- Web server (IIS & Apache)
- HTTP & HTTPS protocol
- FTP
- Web Hosting, Virtual Host, Multi-Homing
- Distributed Web Server Overview,
- Document Root

Unit Syllabus : Web Services

■ JSON

- Introduction to JSON
- Installation & Configuration
- Resource Types
- JsonSerializerizable
- JSON Functions :
 - `json_decode`, `json_encode`

What is a webpage ?

- Web page is a web document which consists of text, graphics and media.
- We can create any webpage using HTML tags or any markup language.
- The word web page is used when talking about scripting language. They have different extensions like, .HTML, .HTM, etc.

What is Website ?

- A set of related web pages is known website.
- A Web site is a collection of Web pages under the control of a particular person or group.
- The web pages which are created and accessed using a Uniform Resource Locator (URL) is known as web address.
 - Like,
 - www.sdIm.org.in

What is Website ?

- Websites can be categorized as per the requirements.
 - Such categories include
 - Educational,
 - Social Networking,
 - Informational,
 - Organization,
 - Search engine, etc.
- Example of web site : [**www.sd1m.org.in**](http://www.sd1m.org.in)

Web...

- We can categories the web as
 - Static Web
 - Dynamic Web

Static Web

- Static web are the html document which works only with client.
- Updates or changes in website cannot be done using static web.
- Static webs are also known as flat page or stationary page.
- Static web pages are created when there fare no frequent changes in website.

Static Web

- Static web page consists of only HTML, CSS and JavaScript.
- There is only interaction with client and web browser.

Static Website



Server



Client/Browser

Advantages of Static Web

- Fewer pages are created so cheaper to implement on small scale.
- No need for any management system.
- Not restricted to any template layout therefore more flexible.
- Only information is to be given.

Disadvantages of Static Web

- When many changes have to be made to web pages individually it is more complicated to maintain.
- Client can not make any changes. If person with web skills is not available the site can no longer be maintained effectively.
- There is no user interaction with web server as it is only informational.

Dynamic Web

- A dynamic web-page contains three things:
- Client
 - Which is useful and the necessary part to send the request to get the required information.
- Server
 - Whose work is to process the request sent by the client.
- Database
 - Where there is the permanent storage of all the information of the client.

Dynamic Web

- PHP, JSP, ASP, ASP.Net are server language used for creating dynamic web.
- Every dynamic web consists of any server language, HTML, CSS, JavaScript and database if any.

Dynamic Website



Advantages of Dynamic WEB

- Reconstructing is quite easy and ensures longevity (દીર્ઘાયુષ્ય) too.
- Can be developed as per requirement.
- Web pages can be edited using tools.
- User interaction and data storage permanent.

Disadvantages of Dynamic WEB

- For smaller companies it is expensive to invest high amount.
- It takes time for development.
- Training to client is required for managing the whole website.
- If no frequent changes in client it will be useless.

Client Side Scripting

- Client Side scripting is the language which can be understood only by the client.
- Generally the client is used to send the request. We know these requests can be sent by the browser so we can say that the browser acts as a Client and the Client can understand **HTML, CSS** and **JavaScript** only.

Advantages of Client-side Scripting

- There are various advantage of client-side as given.
 - Validations can be provided, so that the page is no need to refreshed.
 - The web-pages developed are static pages, so they cannot store the information into the database.

Disadvantages of Client-side Scripting

- There are some of disadvantage of client-side scripting are as given.
 - ❑ The coding of HTML cannot be made hidden to the user.
 - ❑ One cannot access the files and directories using HTML.
 - ❑ Interaction with database and other user is not possible with client side scripting language.

Server-side Scripting Language

- Server side scripting, is the language that can be understood by the server only.
- The work of the server is to process the request which is sent by the client.
- After the completion of the process servers gives back the response to the client.
- Server can understand both the client side language as well as its own language.

Server-side Scripting Language

- There are many web-servers which can understand the server side codes.
Example of Servers are Apache, IIS, etc.
- These web-server accept the request and after processing gives the response back to the client.
- Examples of Server side scripting languages are PHP, ASP.Net, etc.
- Hence (तेथी), **PHP** is a Server Side Scripting Language.

Advantages of Server-side Scripting Language

- Server side code is executed before the HTML is sent to the browser and the code is hidden when view source of website.
- Through server side scripting the files and directories can be accessed on the local machine.
- Server side code is browser independent. And also the dynamic web-pages are created, so that it can deal with database.

Disadvantages of Server-side Scripting Language

- The server refreshes the page whenever the client sends any request.
- If the validations are given using server side scripting then the whole page is again refreshed.
- Sometimes the heavy code may slow down the web-sites.

Introduction to other server side languages

■ Server :

- ❑ Server can be considered as Hardware (the computer) or Software (the computer application). Main purpose of server is to process the request sent by client and give back the response.
- ❑ There are various kinds of server language which helps to process the client request.
- ❑ Some of them are PHP, ASP, ASP.Net, Cold Fusion, JSP.

Introduction to other server side languages

■ PHP

- ❑ PHP was created by Rasmus Ledorf.
- ❑ PHP stands for Hypertext Preprocessor and earlier started out as “Personal Home Page”.
- ❑ PHP works with similar syntax of C / JavaScript.
- ❑ PHP is open source software.



Introduction to other server side languages

■ ASP



- ❑ ASP stands for Active Server Pages.
- ❑ It is a Microsoft technology and is built into IIS (the Windows NT / 2000 web server)
- ❑ ASP is more a platform than a language; We can write ASP pages in VB Script, JavaScript, Perl or Python.
- ❑ We can get started with ASP by installing **IIS** (Internet Information Services) in Windows or **PWS** (Personal Web Server).



■ ASP.Net

- ❑ ASP.Net is the web part of Microsoft's new .NET framework. It is different enough from ASP to warrant its own mention.
- ❑ ASP.Net page is compiled on first execution rather than interpreted.
- ❑ ASP.Net is provide more security and so websites of bank, ecommerce and made in ASP.Net. It requires IIS server.

■ Cold Fusion

- ❑ Cold Fusion is a tag based language created by Allaire and bought by Macromedia. It runs as a separate server and interacts with the web server.
- ❑ Cold Fusion server runs on most platforms, however licensing is not cheap.



■ JSP

- JSP is recognized as Java Server Pages, is a technology for creating dynamic web pages based on HTML, XML or other types of documents.
- JSP is similar to PHP but it uses coding language as Java Programming.



Web Servers (IIS and Apache)

- A web server can be referred to hardware (the computer) or software (computer application) which helps to deliver website content to user with access of internet.
- The main functionality of web server is to receive the request send by client in HTML format, process the request and give back the response to client.

Web Server IIS

- IIS stands for **Internet Information Services**.



Microsoft
Windows
IIS Internet
Information
Services

The image shows the logo for Microsoft Windows Internet Information Services (IIS). It features the word "Microsoft" in a small, light grey font at the top left. Below it, the word "Windows" is written in a larger, bold, orange font. To the right of "Windows", the letters "IIS" are displayed in a very large, bold, orange font. To the right of "IIS", the words "Internet Information Services" are stacked vertically in a white, sans-serif font.

Web Server IIS

- IIS is a software application. The creator is Microsoft for use with Microsoft Windows.
- IIS server is supported by HTTP, HTTPS, FTP, FTPS, SMTP and NNTP types of web protocols.

Web Server IIS

- Once the service of IIS is on it can be accessed using Microsoft Management Console a component of Windows 2000 or Administrative Tools available in Control Panel of Computer.
- IIS web server is widely used when website is created using "ASP.Net" or "ASP".
- IIS is world's third most popular web-server in use.

Web Server IIS

- There are versions available of it along with the Operating System which supports are given below :
 - IIS 1.0, Windows NT 3.51 available as free add-on
 - IIS 2.0, Windows NT 4.0
 - IIS 3.0, Windows NT 4.0 Service Pack 3
 - IIS 4.0, Windows NT 4.0 Option Pack

Web Server IIS

- ❑ IIS 5.0, Windows 2000
- ❑ IIS 5.1, Windows XP Professional, Windows XP Media Center Edition
- ❑ IIS 6.0 Windows Server 2003 and Windows XP Professional x64 Edition.
- ❑ IIS 7.0 Windows Server 2008 and Windows Vista (Home Premium, Business Etc. Editions)

Web Server IIS

- ❑ IIS 7.5 Windows Server 2008 R2 and Windows 7
- ❑ IIS 8.0 is only available in Windows Server 2012 and Windows 8. IIS 8.0 includes Application Initialization, centralized SSL certificate support.

Web Server Apache :

- As we know that there is web-server requirement for PHP which is Apache.
- The name "Apache" derives from the word "patchy" that is Apache developers used to describe early versions of their software.
- Apache is the HTTP web-server which is developed and maintained by Apache Software Foundation.

Web Server Apache :

- It is available for various Operating System like UNIX, LINUX, Windows XP, VISTA, etc.
- Apache application are widely used on the Operating System UNIX.
- It is characterized as open-source software like PHP, MYSQL, etc.
- Apache is the application which understands the PHP, JSP (Java Server Page), etc like language and is used to process the code.

Web Server Apache :

- Apache can be configured by using **httpd.conf** file which is present in the Apache folder.
- Performance wise it provides better. It is much more flexible than other web-servers as it includes MYSQL features.
- Apache is the world's second top web server used in IT technology.

Web Server Apache :

- List of versions of Apache...
 - ❑ Apache httpd 2.0.64 : Was released on 19-09-2012. This version of httpd is principally a security and bug-fix release.
 - ❑ Apache httpd 2.2.24 : Was released on 26-02-2013. This version includes Smart Filtering, Improved Caching, Graceful Shutdown support, Large File Support.
 - ❑ Apache httpd 2.4.4 : Released on 25-02-2013

HTTP

■ Introduction

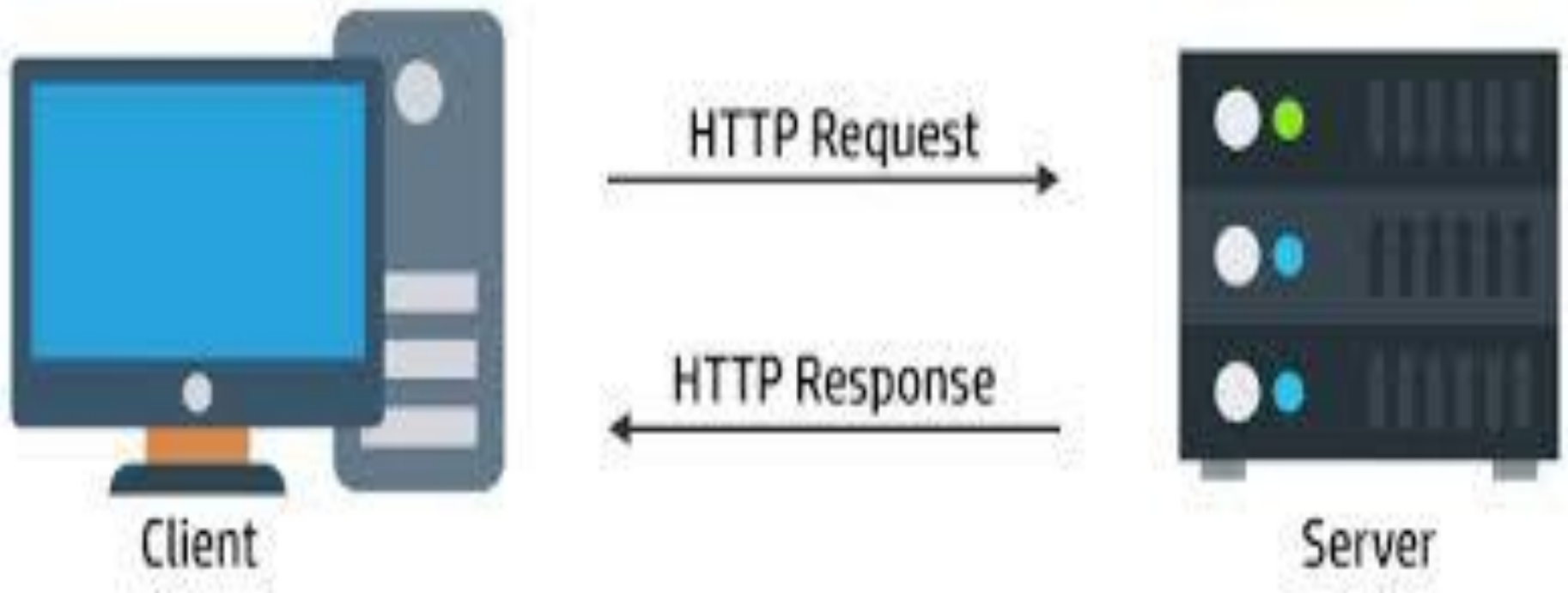
- HTTP means Hyper Text Transfer Protocol which is also known as Request/Response Protocol.
- Generally Protocol is a kind of language for understanding the request.
- Generally HTTP is in use when there is a Client/Server Architecture. It is a language through which the client can send the request and the server can process it.

- Client/Server Architecture
 - The Client are all the different kind of browsers like Internet Explorer, Mozilla Firefox, Google Chrome, Opera, Netscape Navigator, etc.
 - The responsibility of Client is to send the request to server and display the designing part.

- Client/Server Architecture
 - The Server work is to process the request given by the client and give the response back to the client. For each server side scripting there are different web-servers.
 - For PHP it is either APACHE, IIS and NES (Netscape Enterprise Service).

HTTP

- Client/Server Architecture
 - The block diagram of Client/Server architecture using HTTP is given below.



- HTTP : Types of Methods
 - There are basically two types of request methods used by http :
 - GET METHOD
 - POST METHOD

HTTP

- HTTP : Types of Methods
 - GET METHOD
 - Get method is used to pass some information from one page to another page.
 - It is the common and default method which is used when client sends some request.
 - In this method all the values as well the controls can be seen in the URL. The values are joined with “?” symbol.
 - The **disadvantage** of using **GET method** is that it cannot be used when we pass some secure data like password.

- HTTP : Types of Methods
 - POST METHOD
 - POST method is also used to pass some information from one page to another page.
 - It is used when there is some security required for the client when the form is processed.
 - This method hides all the information in the URL.
 - The **disadvantage** of this method is that the user thinks that a new webpage is opened.

- HTTP : Error Numbers
 - Depending on different error numbers the error can be identified for the HTTP.
 - **100 to 199** : Then these are informational codes which are used to identify that the request is processing.
 - **200 to 299** : Then it denotes success that the server received and carried out the request successfully.

- HTTP : Error Numbers
 - **300 to 399** : Then it tells that the page is moved temporary or permanently.
 - **400 to 499** : Then it is a client error which means the requested URL is not correct URL.
 - **500 to 599** : Then it is a server error which is either logical mistake or syntax error.

HTTPS :

- HTTPS is used when there is secure connection required. Its syntax is similar to that the **http://**.
- This system was designed by Netscape Communications Corporation to provide World Wide Web with security.
- Generally https are used in websites for payment transactions. It uses the method of encryption and authentication.

URL Types :

- The Uniform Resource Locator are having two different types.
 - Absolute Path
 - The full path is known as the absolute path.
 - For Example,
 - <http://www.sdilm.org.in>
 - This kind of full path is known as absolute path.

URL Types :

□ Relative Path

- An implied path is known as relative path. It uses the reference of the current directory.
- For Example,
 - Suppose the image file and code file are there in the same folder, and then full path of image is not required only image name should be given as it references the home directory.

FTP :

- What is protocol ?
 - When a computer communicates with each other, there are set of rules and instruction that each computer has follows. Such set of rules and instruction for communication is known as **protocol**.
 - There are various kinds of protocol available like **TCP/IP, FTP, SMTP**, etc.

■ What is FTP ?

- FTP stands for File Transfer Protocol.
- It is a network protocol to transfer file from one host to another host over network like internet.
- FTP is based on client server architecture where client and server both use individual control and data connection.

FTP :

- How to connect to FTP?
 - The connection establish using **username** and **password** or as anonymously(અનામી). If the server has given permission to connect anonymously there is no requirement for username and password.
 - For **security reasons** every server has provided **username** and **password** for FTP connections.

FTP :

- FTP Support software
 - There are different application software used to connect to FTP.
 - Most of widely used software are,
 - Filezilla, CuteFTP, SmartFTP, etc.

FTP :

- FTP is an unusual service and it utilizes two ports,
 - A **“data”** port
 - The port 20 used for data port.
 - A **“command”** port (also called as the control port)
 - The port 21 used for command port.
- Depending on port the connection as described in two types : **Active & Passive**

FTP :

■ Active FTP :

- ❑ In active mode FTP, the client connects from a random unprivileged (अनियंत्रित) port greater than 1023 say N . to the FTP server's command port, port 21.
- ❑ Then, the client starts listening to port $N+1$ and sends the FTP command `PORT N+1` to the FTP server. The server will then connect back to the client's specified data port from its local data port, which is port 20.

FTP :

■ Passive FTP :

- ❑ In passive mode FTP, the client initiate both connections to the server, solving the problems of firewalls entering the incoming data port connection to the client from the server. When opening the FTP connection, the client opens two random unprivileged ports locally ($N > 1023$ and $N + 1$).

FTP :

■ Passive FTP :

- Instead of issuing a PORT command and allowing the server to connect back to its data port, the client will issue the PASV command. The result of this is that the server then opens a random unprivileged port ($P > 1023$) and sends back to the client in response to the PASV command.

FTP :

- Advantages of using **FTP** :
 - FTP is the fast and efficient way of transferring bulks of data across the internet.
 - It has an automatic backup. Whenever you edit your files in your local system you can update the same by copying it to the host system in your site.

FTP :

- Advantages of using **FTP** :
 - So in cases where your site has crashed and all the data is lost you have a copy of it in your own local system.
 - FTP gives you control over transfer. That is, you can choose the mode in which the data is transferred over the network.

FTP :

- Advantages of using **FTP** :
 - Using FTP, data can be transferred either in the ASCII mode or in Binary mode.
 - We can work with the directories on the remote systems, delete or rename the remote files while transferring data between 2 hosts.

FTP :

- Disadvantages of using **FTP** :
 - FTP was not designed to be a secure protocol.
 - FTP causes the following attacks during the transfer of data.
 - Bounce Attacks, Spoof Attacks, Brute Force Attacks, Packet Sniffing, User name protection, Port sealing.
 - Encryption of data is not done in FTP.

ISP

- ISP Stands for **Internet Service Provider**, it refers to a company that provides internet services.
- It involves personal and business access to the internet.
- ISPs support one or more forms of Internet access, ranging from traditional modem **dial-up** to **DSL** and **cable modem broadband service** to dedicated **T1/T3 lines**. ISP sometimes is also referred to as an **Internet Access Provider (IAP)**

- There are various kinds of ISP based on services provided as below :
- **Home ISP service overview :**
 - An ISP provides a gateway to the Internet and online activities like gaming by providing a means for your computer to connect to their central servers. Those servers transfer data between your computer and the servers of all the websites you visit.

ISP : Types of ISP service

■ Dial-up

- ❑ Dial-up ISP services, including America Online and NetZero, transfer data between your computer and the clouds using a conventional phone line is known as dial-up.
- ❑ Dial-up is being phased out because of its slow speed, but many still depends on it because of its low cost, universal availability and lack of specialized equipment required.

ISP : Types of ISP service

■ DSL

- ❑ **Digital Subscriber Line (DSL)** ISPs offer upload and download speeds vastly superior to dial-up, with the data still being transferred over conventional phone lines.
- ❑ To use DSL you need a specialized DSL modem that allows the phone line to transfer to high frequency data from your computer's end.

ISP : Types of ISP service

■ Cable

- ❑ Cable ISPs transmit data over the same **fiber-optic lines** used in cable television.
- ❑ Data transfer speeds are typically a bit faster than DSL ISPs, but cable plans are expensive as well.
- ❑ We need a specialized cable modem to activate cable ISP service, but besides that if you have cable television installed you won't need any other equipment.

ISP :

- As internet is used widely there are so many ISP providers of which standard are BSNL, MTNL, Reliance, Tata **which provides Dial-up and DSL type of internet connections.**
- Some of the cable connection type of ISP is provided by Sify Broadband, Zylog System, Bharati Airtel, MTNL, BSNL etc,.

Web Hosting :

- A web hosting service is a kind of Internet hosting service which allows organizations, companies and individuals **to make their website live via the World Wide Web.**
- Web hosting companies provide some space on owned or leased Server to their clients. They also provide data center space for other servers call collocation. It also known as Housing in Latin America or France.

Web Hosting :

- The server for web hosting is referred to as hardware (Computer) with a very large space and configuration.
- Most hosting providers provide Linux-based web hosting which offers a wide range of different software. A typical configuration for a Linux server is the LAMP platform with Linux, Apache, MySQL, and PHP / Perl / Python / ASP.Net or Classic ASP.

Different types of Hosting Server

- There are different types of Hosting server of which mentioned and described below :

1. Free Web Hosting :

- Web hosting service providing space free of charge for their own publicity.
- Usually these companies provides subdomain as **webname.yourname.com** or they may create a directory like **webname.com/yourdirectory/**

Different types of Hosting Server

2. Shared Web Hosting :

- ❑ In this type of server many websites resides on one web server connected to internet.
- ❑ Each of the websites is given separate portion/section to separate them from other websites.
- ❑ Shared Web Hosting is also referred to as derive hosting as well as virtual hosting service.

Different types of Hosting Server

3. Reseller Web Hosting :

- A Web hosting reseller is someone who sells Web hosting. Companies having their own dedicated server or having bought a reseller hosting plan from another Web hosting provider. It is very much economical for companies dealing with many clients.

Different types of Hosting Server

4. Virtual Dedicated Server :

- ❑ A virtual dedicated server (VDS), also called a Virtual Private Server (VPS), is a server that appears to the user as a dedicated server but is actually installed on a computer serving multiple Web sites. A single computer can have several VPSs, each one with its own operating (OS) that runs the hosting software for a particular user.

Different types of Hosting Server

4. Virtual Dedicated Server :

- The hosting software for each VPS can include a Web server program, a File Transfer Protocol (FTP) program, a mail server program and specialized applications for activities such as e-commerce and blogging.

Different types of Hosting Server

5. Dedicated Hosting Service :

- ❑ Dedicated hosting is simply a server located in a data center somewhere in which you have complete control over and hence in “dedicated” only to you.
- ❑ The data center will usually have network operations staff that will be able to assist you with some basic functions, such as resetting the server or upgrading hardware, firmware, operating systems

Virtual Host :

- The term Virtual Host refers to running more than one web site on a single machine.
- Virtual hosts can be “IP-based”, it means that you have multiple names running on each IP address. This fact of running many website into a single physical server is not known to the end user.

Virtual Host :

- Apache was one of the first server to support IP-based virtual host. There are generally two types of Apache virtual host configuration :
 - IP-Based Virtual Host
 - Name-Based Virtual Host

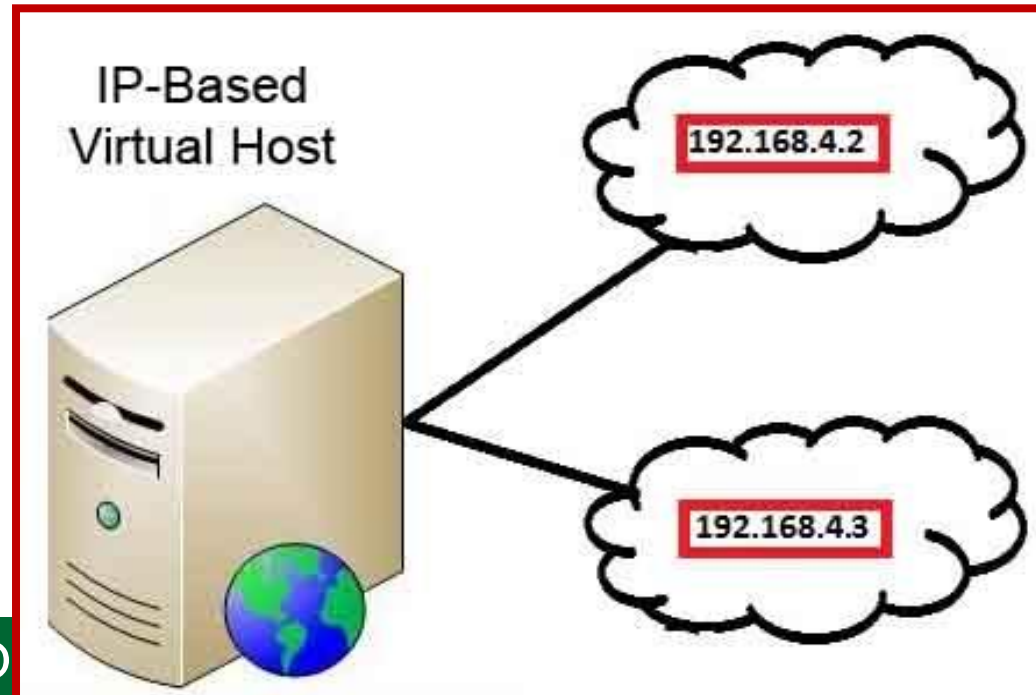
Virtual Host :

□ **IP-Based Virtual Host**

- For this type of configuration where more than one websites referring the server that runs Apache with different IP-Address, the physical server should have respectively different IP-address configuration.

Virtual Host :

- It depicts (દર્શાવે છે) that the server should have different Ethernet cards, each one of them configured to the IP-address of the corresponding website that Apache virtual host will serving.



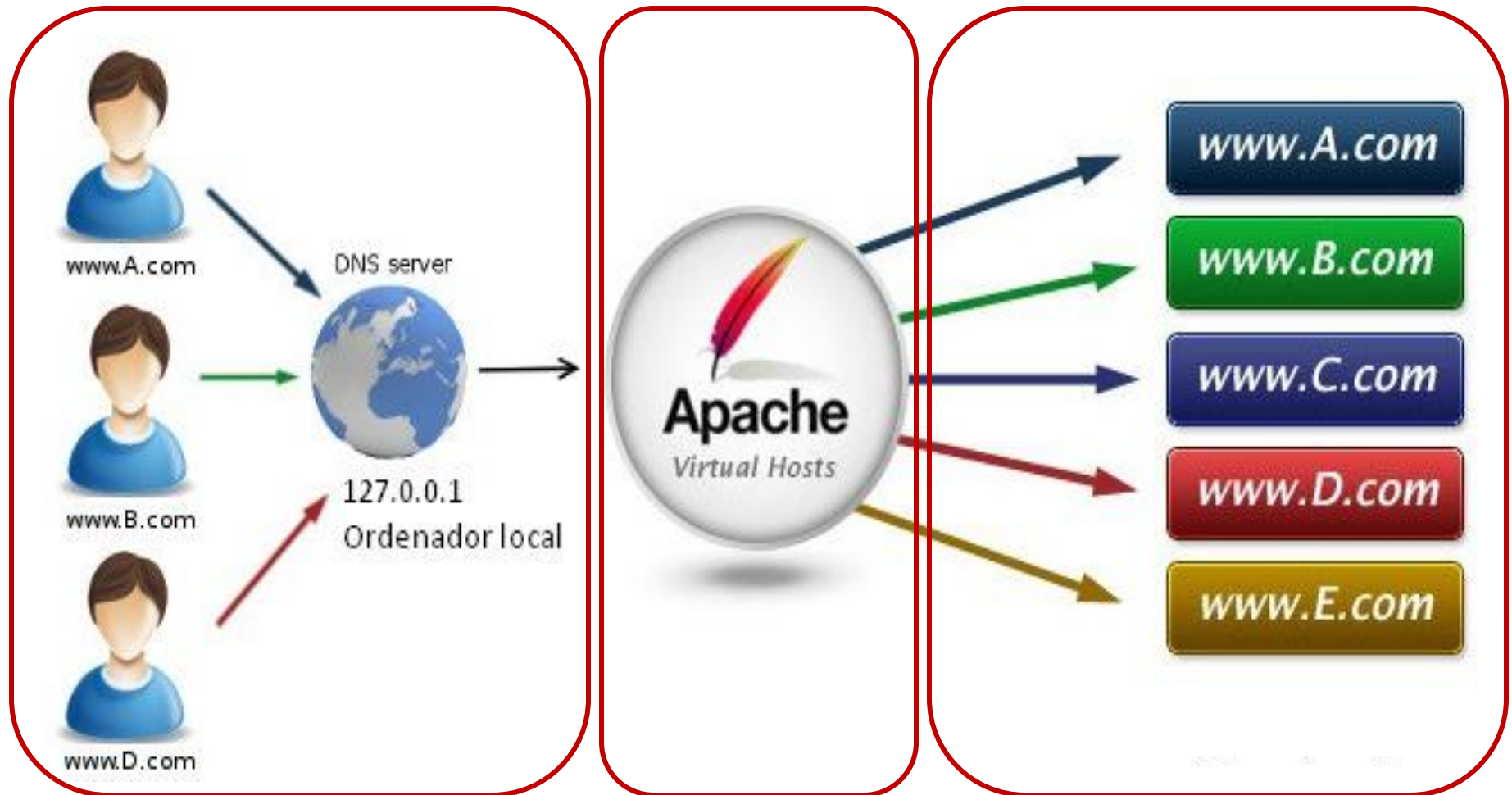
Virtual Host :

□ **Name-based Virtual Host**

- In this configuration, when Apache web server receives a request, it looks for the **hostname** in the HTTP header, and depending on the hostname, it serves different websites. It is easy configuration as there will be only one IP-address on that physical server; also you can update the DNS with multiple website names pointing to the same IP-address.

Virtual Host :

□ Name-based Virtual Host



Multi-Homing :

- Multi-homing describes a computer host that has multiple IP-addresses to connect networks.
- A multi-homed host is physically connected to multiple data links that can be on the same or different networks.
- For example,
 - A computer with a Windows NT 4.0 Server and multiple IP addresses can be referred to as “multi-homed” and may serve as an IP router.

Multi-Homing :

- Using the Stream Control Transmission Protocol (SCTP), multi-homing allows a single SCTP endpoint to support multiple IP addresses, by which connection is more likely to survive a network failure.
- In a single-homed connection, a network failure can isolate the end system or make transport temporarily unavailable.

Multi-Homing :

- Multi-homing means that redundant (निरर्थक) local area networks (LANs) can be used to support local access. Various approaches, such as using addresses with different prefixes to force routing through different carriers, or even using redundant core networks, can be taken to reduce the effects of failures.
- Basically Multihoming is commonly used in Web management for load balancing, redundancy, and disaster recovery.

Advantages of Multi-homing :

- Multi-homing can help to distribute the load balance of data transmissions received and sent by the computer host.
- The redundancy that is inherent to multi-homing means less incidences (घटनाઓ) of downtime due to network failure.
- Multi-homing provides an additional tool to keep network connectivity alive and well in the event of natural disasters or other events that would normally render a host inoperative for an extended period of time.

Distributed Server :

- Large networks have multiple servers.
The servers are often distributed around the network with a server on every subnet.
- This improves booting efficiency.
Implementing distributed servers require a technique for maintaining central control and coordinating configuration information among the servers.

Distributed Server :

- The client-server model is a distributed application structure in computing that partitions tasks or workloads between the providers of a resources or services, called servers, and service requester (विन्ती करणार), called clients.
- Often clients and servers communicate over a computer network on separate hardware, but both client and server may reside in the same system.

Distributed Server :

- A server is a host that is running one or more server programs which share their resources with clients. A client does not share any of its resources, but requests a server's content or service function. Clients therefore initiate (आरंभ करवो) communication sessions with servers which await incoming requests.
- The Distributed server works like Peer-to-Peer (P2P) model.

Document Root :

- The document root informs where all PHP script runs from. Many pages scripted using PHP seem (લાગતું) to assume (ધારી લેવું) that the script is running under Apache. Execution of PHP is possible with IIS on a Windows platform.

Document Root :

- Apache provides an environment variable called `DOCUMENT_ROOT` while IIS does not. This variable tells the code about where the web pages are delivered from and may have a value something like this.
`/usr/local/apache/share/htdocs`
- In Xampp control panel it is like
`/xampp/htdocs`

Introduction To JSON :

- JSON (**J**ava**S**cript **O**bject **N**otation) is a lightweight data-interchange format.
- It is easy for humans to read and write.
- It is easy for machines to parse and generate.
- It is based on a subset of the JavaScript Programming Language.

Introduction To JSON :

- JSON is a text format that is completely language independent but uses conventions that are familiar to programmers of the C-family of languages, including C, C++, C#, Java, JavaScript, Perl, Python, and many others.
- These properties make JSON an ideal data-interchange language.

Installing / Configuration JSON

- This was actually trickier(युक्तिवाणुं) than expected.
- Apparently, a PEAR Services_JSON package was developed, but it has never been accepted into the official repository(संग्रह).
- The trick instead is to use the PECL json package. This was as easy as running `pecl install json` and watching the compiler do its thing.
- When it's done you should have a `json.so` file in your PHP modules directory.

Installing / Configuration JSON

- Add **json.ini** file to /etc/php.d/ - This file is pretty simple.
- Simply add extension=json.so to this file and that will enable the extension.
- **Restart Apache** – Not Much more to add here. Without the Restart the extension wont be loaded.

JSON Serializable :

- Information storage and retrieval is an important job while designing or developing an application.
- We all know how to store data with normal data types in database or file systems.
- Here we are going to discuss about storage and retrieval of data having complex type. Complex type means they are not like normal string or number or boolean values. Complex type means data structure or objects.

JSON Serializable :

- Think of a situation where you are working with some array. Now there may be some situations where you need to store the array and retrieve it back. If you are familiar with OOP concept then objects are another type which you may need to store and retrieve.

JSON Serializable :

- Serialization is the process by which you can convert an object or data structure into a sequence of bits which can be stored and retrieved back. Serialization is also known as deflating or marshalling.

JSON Serializable :

- The opposite process (converting the serialized sequence of bits to object or data structure) is known as Deserialization or inflating or unmarshalling.

JSON Serializable :

- Most of the important languages have their own implementation of these processes.
 - ❑ In Java provides automatic serialization by implementing the `java.io.Serializable` interface.
 - ❑ In perl there are modules like `Storable` or `FreezeThaw`.
 - ❑ Python implements serialization through the standard library module `pickle`.
 - ❑ In PHP there are two built-in functions as `serialize()` and `unserialize()` for this purpose.

JSON Functions :

■ **Json_decode**

Syntax :

```
mixedjson_decode ( string$json  
    [, bool$assoc = false  
        [, int$depth = 512  
            [, int$options = 0 ]]] )
```

Purpose :

Takes a JSON encoded string and converts it into a PHP variable.

JSON Functions : Example

```
<?php
```

```
$json='{ "a":1,"b":2,"c":3,"d":4,"e":5}';
```

```
var_dump(json_decode($json));
```

```
var_dump(json_decode($json, true));
```

```
?>
```

JSON Functions : Example

Output :

```
object(stdClass)# 1 (5)
```

```
{ ["a"] => int(1)  
  ["b"] => int(2)  
  ["c"] => int(3)  
  ["d"] => int(4)  
  ["e"] => int(5) }
```


JSON Functions : Example

Output :

array(5)

```
{ ["a"] => int(1)
  ["b"] => int(2)
  ["c"] => int(3)
  ["d"] => int(4)
  ["e"] => int(5) }
```

JSON Functions :

■ **Json_encode**

Syntax :

```
stringjson_encode ( mixed$value [,  
    int$options = 0 ] )
```

Purpose :

Returns a string containing the JSON representation of *value*.

JSON Functions : Example

```
<?php
```

```
$arr=array('a'=>1, 'b'=>2, 'c'=>3, 'd'=> 4, 'e'=>5);
```

```
echo json_encode($arr);
```

```
?>
```

Output:

```
{"a":1,"b":2,"c":3,"d":4,"e":5}
```

IMP :

- Web page is a web document which consists of text, graphics and media.
- A set of related web pages is known website.
- Website can be categories as
 - Static Web
 - Dynamic Web
- Static web are the html document which works only with client.

- Advantages of Static web
 - Fewer pages are created so cheap in cost
 - No need for any management system.
 - Flexible
 - Only information is to be given.
- Disadvantages of Static web
 - Made to web pages individually it is more complicated to maintain.