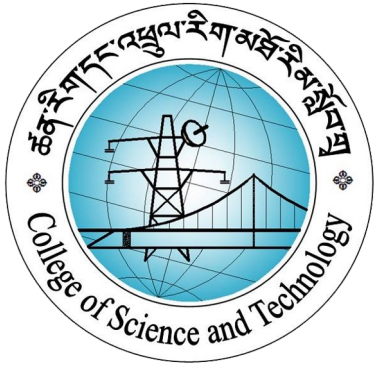


Royal University of Bhutan

LESSON – 20

WEB SERVER -1

LEARNING OUTCOMES

- Web Server Introduction
- The Apache Web Server
- Standard Apache Security

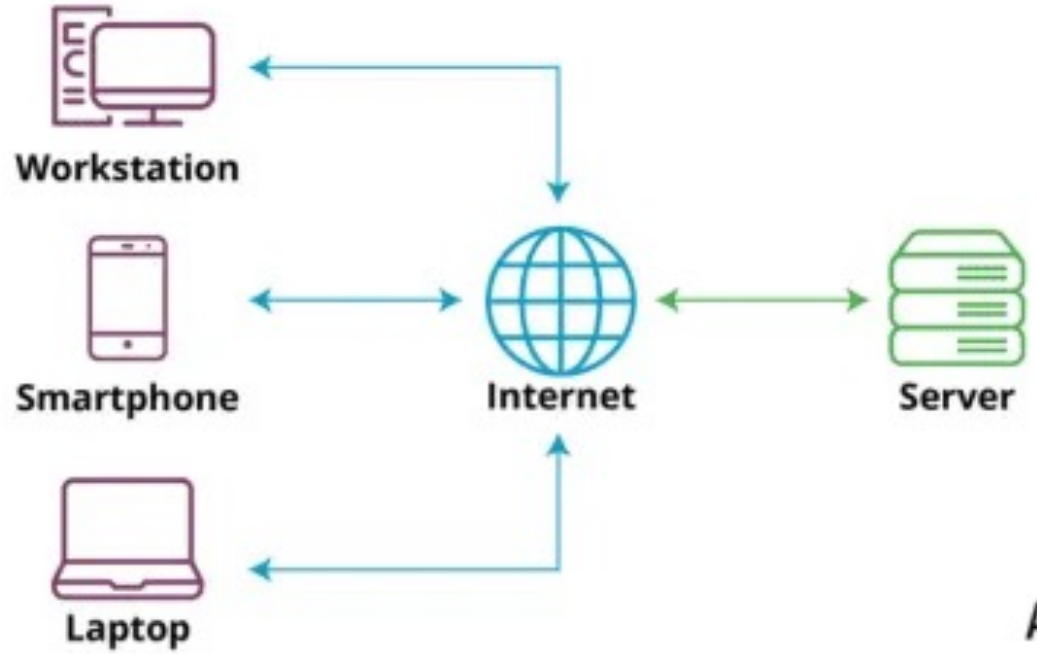
Web Server: Introduction

- What is Web Server?
  - Program that understands the HTTP protocol and generates appropriate responses
    - Clients “connect” to the machine
    - Clients send a “request”
    - Server reads request, generates “response”
    - Client interprets response appropriately
  - A Web server is a software responsible for accepting HTTP requests from clients and serving them HTTP responses along with optional data contents, which usually are Web pages such as HTML documents and linked objects (images, etc.).
  - A web site consists of a collection of web pages associated with a particular hostname.
  - A web server is a program to satisfy client request for a web resources.

Web Server: Introduction

- HTTP: Hypertext Transfer Protocol
  - Communication protocol between clients and servers
  - Application layer protocol for WWW
- Client/Server model:
  - Client: browser that requests, receives, displays object
  - Server: receives requests and responds to them
- Protocol consists of various operations
  - Few for HTTP 1.0 (RFC 1945, 1996)
  - Many more in HTTP 1.1 (RFC 2616, 1999)

Component of Client/Server Architecture



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- Clients
- Servers
- Communication Networks

Web Server: Apache

- The Apache Web Server
  - The default HTTP server is the Apache Web Server
  - Apache is most popular web server and commonly used in Linux systems
  - Based on HTTP daemon , It provides simple and secure access to all types of content
  - Developed by the National Center for Supercomputing Application (NCSA)
  - It is under constant development by Apache Software Foundation (www.apache.org)

Apache Web Server

- The LAMP Stack
  - Apache as a web server can be integrated with other software components.
  - The LAMP stack is a most common version
  - **LAMP**: Linux, Apache, MySQL and one of three scripting Languages (Perl, Python, or PHP)

Apache Web Server

- Installation of Apache
  - **Command**:
    $ sudo apt update
    $ sudo apt install apache2

- Standard method of start Linux services: /etc/init.d directory, however:
  - **Command**:
    $ sudo systemctl start/stop/restart/status apache2
    $ sudo systemctl enable apache2

Apache Web Server

- The Apache configuration Files
  i. **Regular Configuration file**: 000-default.conf
    - **Location**: /etc/apache2/sites-available/

  ii. **Secure Configuration file: ssl.conf**
    - **Location**: /etc/apache2/sites-available/

  iii. Analyze the Default Apache configuration
    - [root@cst ~]#ls /etc/apache2/sites-available/

Apache Web Server

- The Main Apache configuration File
  i. **Global Environment Directives**

ServerTokens, ServerRoot, KeepAlive, Listen,

Include, ServerAdmin, UseCanonicalName,

DocumentRoot, DirectoryIndex

Apache Web Server

- Basic Apache Configuration for a Simple Web Server
  - Apache looks for web pages in the directory specified by **DocumentRoot** directive.
  - In the default 000-default.conf file, DocumentRoot directive points to /var/www/html directory

DIRECTIVE	DESCRIPTION
NameVirtualHost	Specifies an IP address and port number for multiple virtual hosts
ServerAdmin	Assigns an e-mail address for the specified virtual host
DocumentRoot	Sets a root directory for the virtual host
ServerName	Names the URL for the virtual host
ErrorLog	Creates an error log.; the location is based on the DocumentRoot
CustomLog	Creates an custom log.; the location is based on the DocumentRoot

Apache Web Server

- **Basic Apache Configuration for a Simple Web Server (Contd...)**
  - The default DirectoryIndex directive looks for an index.html web page file in the directory.
  - The ServerRoot default value from 000-default.conf is
    ServerRoot "/etc/apache2"

- **Apache Log Files**
  - Log files are configured in the .config, they are actually stored in the /var/log/apache2 directory
  - Standard logging information: access_log, error_log, custom_log
  - Standard secure logging information: ssl_access_log, ssl_error_log, ssl_request_log

Standard Apache Security Configuration

- **Module Management**
  - Many modules
  - **Example:** SSL Secure Web Server will not work if ssl package is not loaded/configured and Special Directory call public_html will work only if mod_userdir module is loaded.
  - Modules are loaded in standard apache configuration files with the LoadModule directive.

SUMMARY

- **You have learnt;**
  - Web Server basics
  - Apache Web server and Apache Security
  - How to install and identifying of important directives
  - What modules are important to load for configuring secure web server.