STUDY OF WEB SERVERS

1 Problem Statement

Study Assignment
- Installation and configuration of Apache Tomcat server on Linux
- Installation and configuration of JBoss server on Linux
- Installation and configuration of GlassFish server on Linux
- Installation and configuration of WebSphere server on Linux

2 Learning Objectives

In this assignment, students will have :
1. To understand commands to install mentioned application servers
2. To understand difference between web server and application server

3 Learning Outcomes

After completion of this assignment, students will be able to :
1. Understand commands to install mentioned application servers
2. Understand difference between web server and application server

4 Requirements

Hardware : 64-bit 2.8 GHz processor, 4 GB RAM

Software : 64-bit OS, Web Browser

5 Theory

5.1 Web Server vs. Application Server

WEB SERVER	APPLICATION SERVER
Encompasses web container only.	Encompasses Web container and EJB container.
Useful or fitted for static content.	Fitted for dynamic content.
Consumes or utilizes less resources.	Utilize more resources.
Arrange the run environment for web app.	Arrange the run environment for enterprises app.
Multithreading is not supported.	Multithreading is supported.
Capacity is lower than application server.	Capacity is higher than web server.

5.2 Apache Tomcat Server

Apache Tomcat is an open-source implementation of the Java Servlet, JavaServer Pages, Java Expression Language and WebSocket technologies. Tomcat provides a "pure Java" HTTP web server environment in which Java code can run. Tomcat is developed and maintained by an open community of developers under the auspices of the Apache Software Foundation, released under the Apache License 2.0 license.

It has the following components:
1. Catalina: It is Tomcat's Servlet Container which can implement Servlet and JSP pages of Sun MicroSystem.

2. Coyote: It is Tomcat's HTTP Connector component which support HTTP 1.1 protocol for web based application and server.

3. Jasper: It is Tomcat's JSP Engine which parses JSP files to compile into Java Code as servlets in runtime.

4. Cluster: It is a component for load balancing to manage large applications.

5.3 JBoss Server

JBoss Application Server is the open source implementation of the Java EE suite of services. It comprises a set of offerings for enterprise customers who are looking for preconfigured profiles of JBoss Enterprise Middleware components that have been tested and certified together to provide an integrated experience. It's easy-to-use server architecture and high flexibility makes JBoss the ideal choice for users just starting out with J2EE, as well as senior architects looking for a customizable middleware platform.

Because it is Java-based, JBoss Application Server is cross-platform, easy to install and use on any operating system that supports Java. The readily available source code is a powerful

learning tool to debug the server and understand it. It also gives you the flexibility to create customized versions for your personal or business use.

5.4 GlassFish Server

GlassFish is an open-source application server project started by Sun Microsystems for the Java EE platform, then sponsored by Oracle Corporation, and now living at the Eclipse Foundation and supported by Payara, Oracle and Red Hat. The supported version under Oracle was called Oracle GlassFish Server. GlassFish is free software and was initially dual-licensed under two free software licences: the Common Development and Distribution License (CDDL) and the GNU General Public License (GPL) with the classpath exception. After having been transferred to Eclipse, GlassFish remained dual-licensed, but the CCDL license was replaced by the Eclipse Public License (EPL).

GlassFish is the reference implementation of Java EE and as such supports Enterprise JavaBeans, JPA, JavaServer Faces, JMS, RMI, JavaServer Pages, servlets, etc. This allows developers to create enterprise applications that are portable and scalable, and that integrate with legacy technologies. Optional components can also be installed for additional services.

Built on a modular kernel powered by OSGi, GlassFish runs straight on top of the Apache Felix implementation. It also runs with Equinox OSGi or Knopflerfish OSGi runtimes. HK2 abstracts the OSGi module system to provide components, which can also be viewed as services. Such services can be discovered and injected at runtime.

GlassFish is based on source code released by Sun and Oracle Corporation's TopLink persistence system. It uses a derivative of Apache Tomcat as the servlet container for serving Web content, with an added component called Grizzly which uses Java New I/O (NIO) for scalability and speed.

5.5 WebSphere Server

WebSphere Application Server (WAS) is a software product that performs the role of a web application server. More specifically, it is a software framework and middleware that hosts Java-based web applications. It is the flagship product within IBM's WebSphere software suite. It was initially created by Donald F. Ferguson, who later became CTO of Software for Dell. The first version was launched in 1998. This project was an offshoot from IBM HTTP Server team starting with Domino Go (Web Server).

WebSphere Application Server (WAS) is built using open standards such as Java EE, XML, and Web Services. It runs on the following platforms: Windows, AIX, Linux, Solaris, IBM i and z/OS. Beginning with Version 6.1 and now into Version 9.0, the open standard specifications are aligned and common across all the platforms. Platform exploitation, to the extent it takes place, is done below the open standard specification line.

6 Output

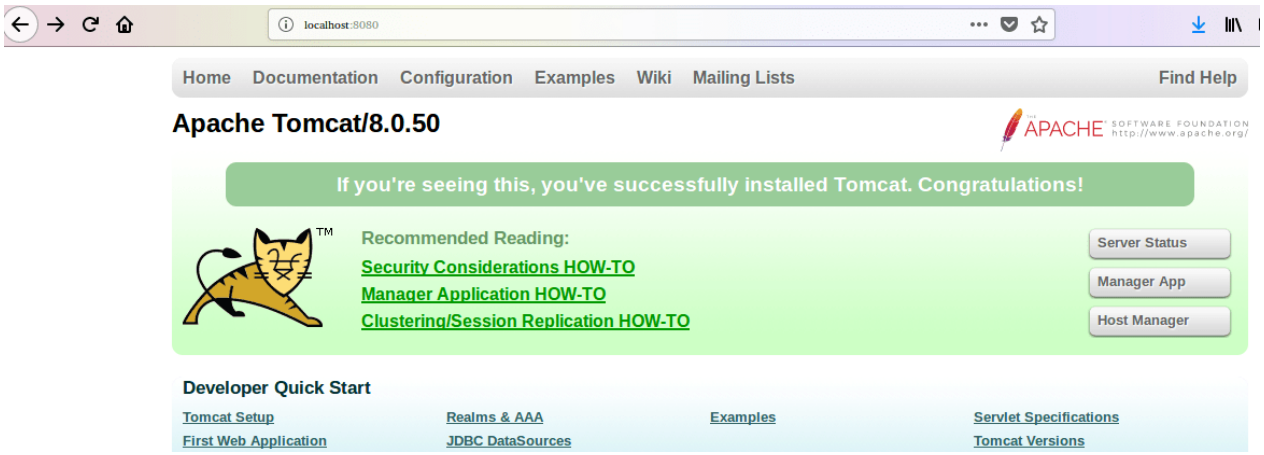

Figure 1: Apache Tomcat running on localhost at port 8080

7 Conclusion

Hence, in this assignment, various web servers were studied and the installation & configuration process for Apache Tomcat was carried out.