Instructor Notes:

Add instructor notes here.

Instructor Notes:

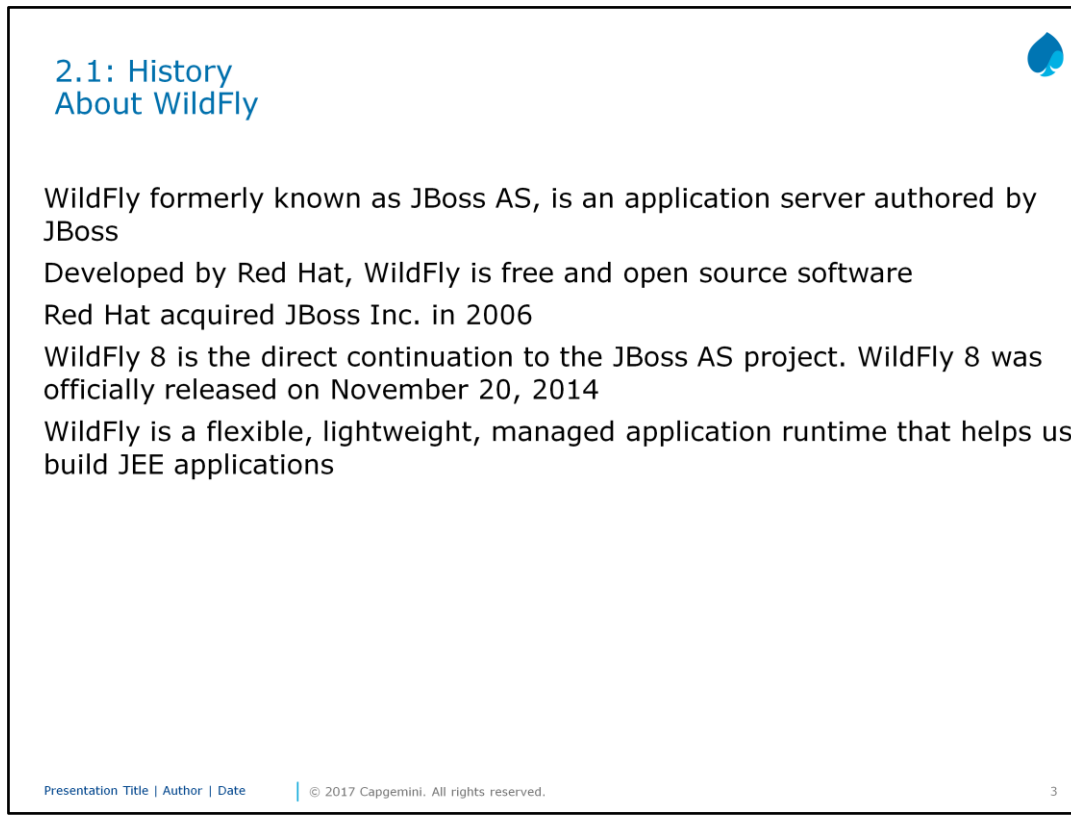
Explain the lesson coverage

Lesson Objectives:
This lesson introduces Web application concepts. The lesson contents are:
Lesson 02: Working with WildFly 8.x

- 2.1: History
- 2.2: Product Support
- 2.3: Features
- 2.4: Installing WildFly
- 2.5: Working with WildFly using Eclipse
- 2.6: Accessing WildFly Homepage

Instructor Notes:

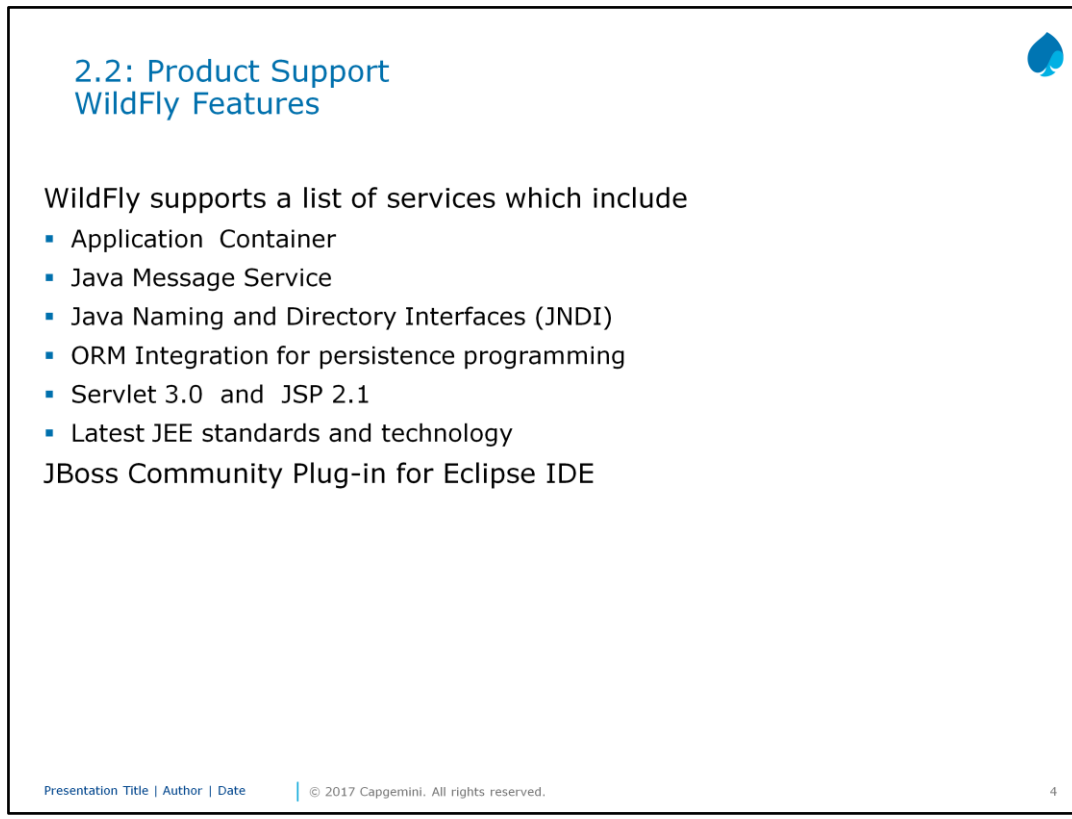
Give a brief about History of WildFly. WildFly extended version after JBoss 7



In 1999, JBoss project was started by March Fleury which launched JBoss Application Server. He started this project with intention of taking forward his research interest in middleware.
It was taken ahead by forming the JBoss group in 2001 which provided expert technical support services. Then in 2004, JBoss Group formed a corporation know as JBoss Inc. The JBoss Inc. was owned by employees and was backed by Matrix Partners, Accel Partners and Intel.
JBoss Inc. provides Middleware technology that offers the lowest cost of ownership by the use of open source software licenses. It is also backed up by expert technical support services.
Further in April 2006, JBoss Inc. was acquired by Red Hat.

Instructor Notes:

Illustrate that WildFly is an application server and can support Web as well as enterprise services

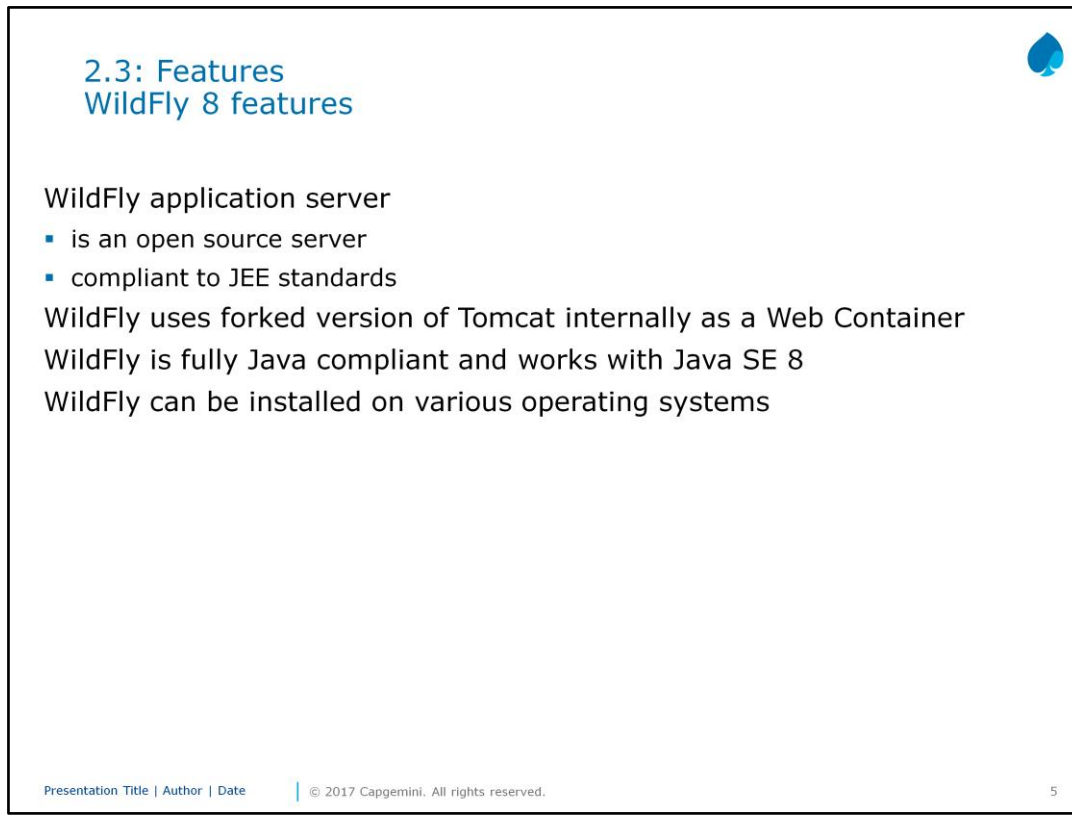


WildFly has become popular and is a safe choice for deploying JEE applications because it provides a set of Java Enterprise products.
The following list of products are supported in WildFly
WildFly Application Server – A server for deploying Enterprise applications
Java Messaging Service – It is the asynchronous message queuing system
Java Naming and Directory Interfaces (JNDI) – is a Java API for a directory service that allows Java clients to discover and look up data and objects via a name
Hibernate-ORM (Hibernate in short) is an object relational mapping library for the Java language, providing a framework for mapping an object oriented domain model to a traditional relational database
WildFly Web Server – Uses Tomcat internally, this web server supports Servlets/JSP, ASP.NET, PHP & CGI also.
Also included are JBoss Community which consists of JBoss Plug-in for Eclipse IDE and JBoss developer studio.

We will be using WildFly as a Web Server. Deploying Web application is covered in further courses

Instructor Notes:

WildFly conforms to JEE specification

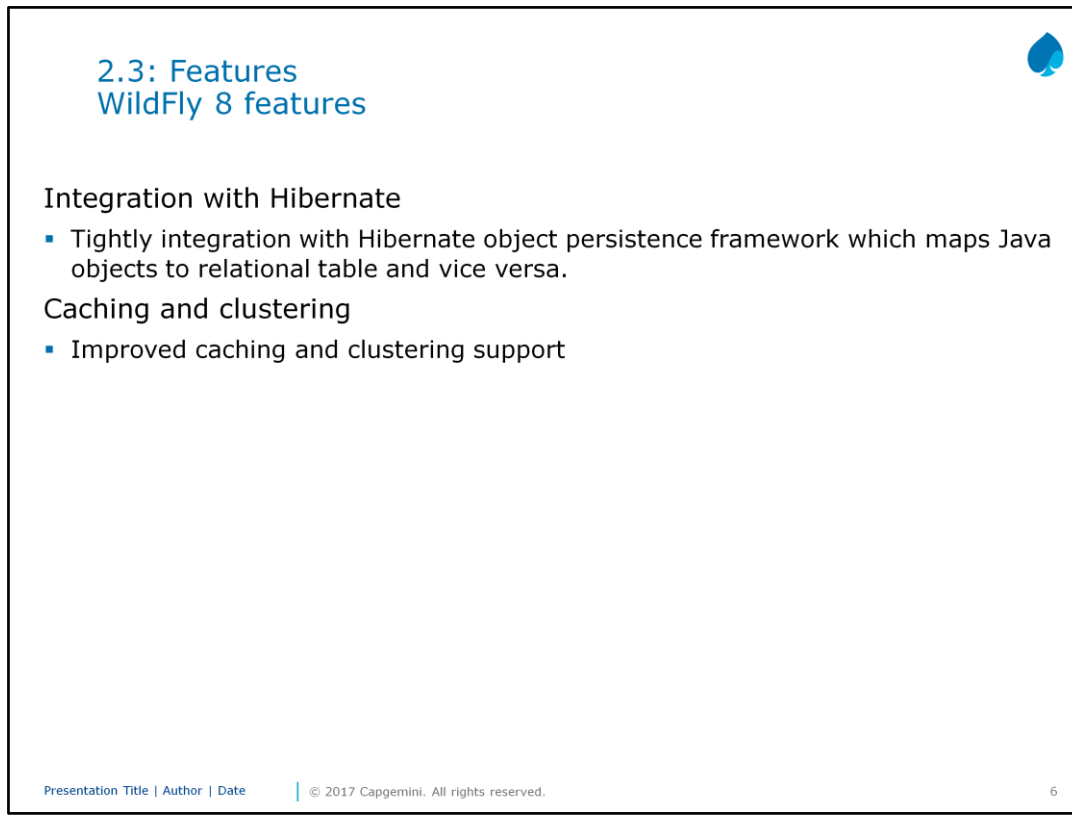


WildFly application server is an open source server and it complies to JEE 7 standards. It is the industry's first officially certified application server.
WildFly has full support for Service Oriented Architecture and JEE Web Services. It also supports asynchronous messaging using Java Messaging Service(JMS). JMS is a standard API for sending & receiving messages.
In addition, WildFly 8.0 supports JSP2.x,Servlet 3.x and EJB 3.x. Java Connector Architecture (JCA) which is a standard architecture for connecting the JEE platform to heterogeneous enterprise information systems.
JBoss 4 uses forked version of Tomcat as a Web Container. It is fully Java compliant and works with JEE 7 as well as Java SE 8. WildFly can be installed on various operating systems like Windows, Linux etc.

Forked version of Tomcat implies that copy of tomcat was used (original source) and independent development was started on that to create a branch(fork) of tomcat.

Instructor Notes:

Suggest that WildFly supports many frameworks as well.

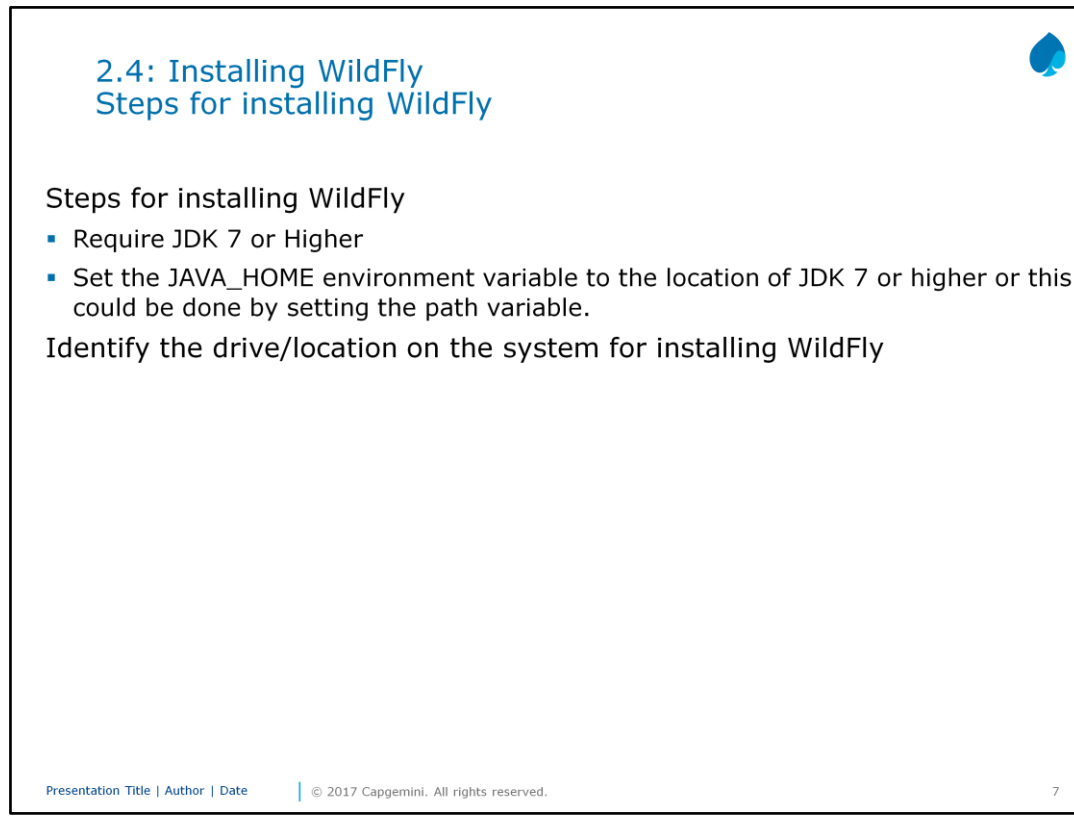


Integration with Hibernate – It is an object persistence framework which maps Java objects to relational tables and vice versa. Hibernate was acquired by WildFly and now it maintains and provides support for Hibernate. Hibernate deployer is available by default to provide hibernate framework libraries support to all applications

Caching and clustering – WildFly 8.0 has improved caching and clustering support. WildFly cache can be replicated. The WildFly cache instances can be distributed across JVM's. To support the caching features WildFly takes support of different cache loaders. SleepyCat Berkeley DB, generic JDBC data source and file system cache loaders are available.
The sessions information and SSO security context is replicated across clustered servers. Therefore if one server fails, the users are automatically moved on to another servers without losing any of their information.

Instructor Notes:

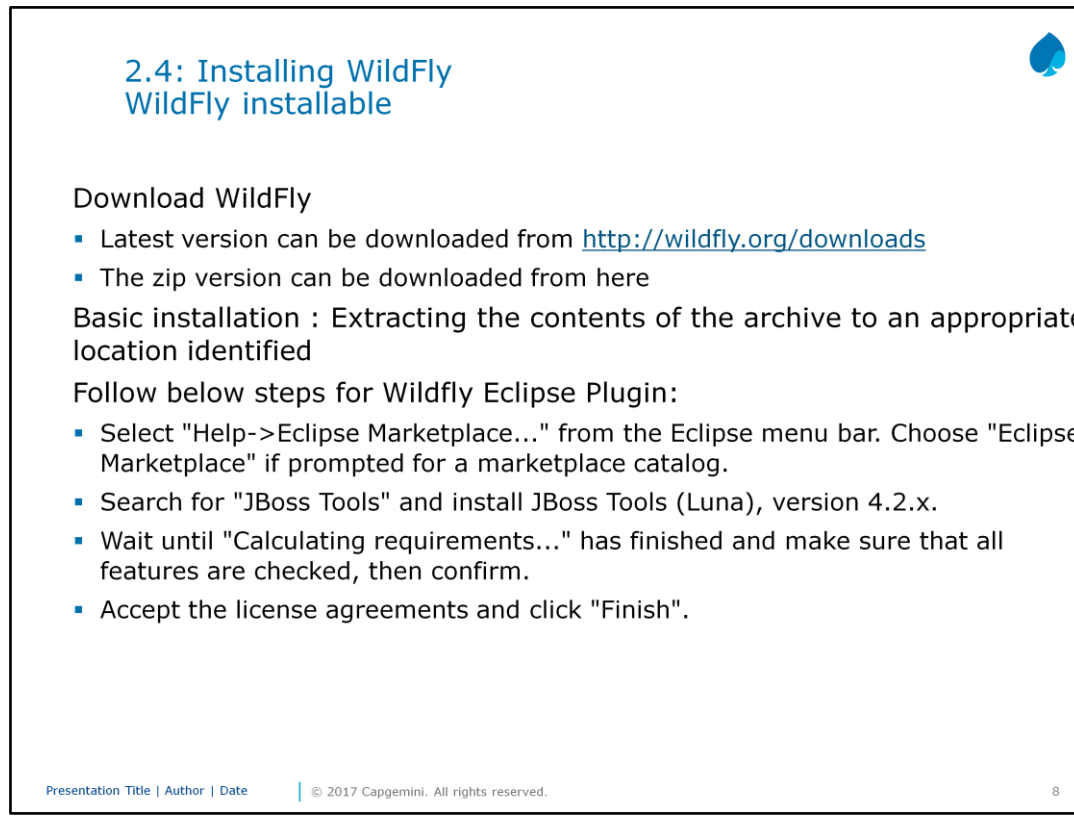
Mention software requirements for installing WildFly



Before installing WildFly ensure that the system satisfies certain pre-requisites.
Check the availability of JDK 8. Check the version of JDK by using
the command
java –version
Set the JAVA_HOME variable to the location of JDK 8 or setting path variable
Identify the drive/location on the system for installing WildFly
(Note : It does not matter where WildFly is installed on the system. However do not install WildFly in a directory that contains spaces, it can cause problems sometimes)

Instructor Notes:

Official site from where WildFly can be downloaded



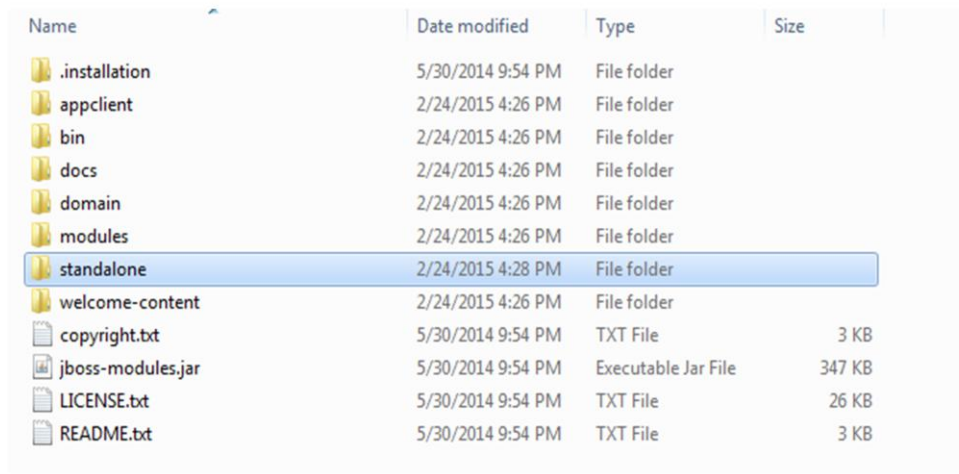
WildFly Server is freely downloadable. An evaluation copy could also be used
WildFly archive(Zip, tar) can be downloaded from http://wildfly.org/downloads
Once the required version is downloaded basic installation can be done. Extract the contents of the archive in the appropriate location identified on the system.

Instructor Notes:

Apart from showing the diagrammatic representation of WildFly directory structure. Also tell the participants to see the structure on their machines and briefly look at even the files contained in the directory

2.4: Installing WildFly
WildFly Directory Structure

WildFly server directory structure

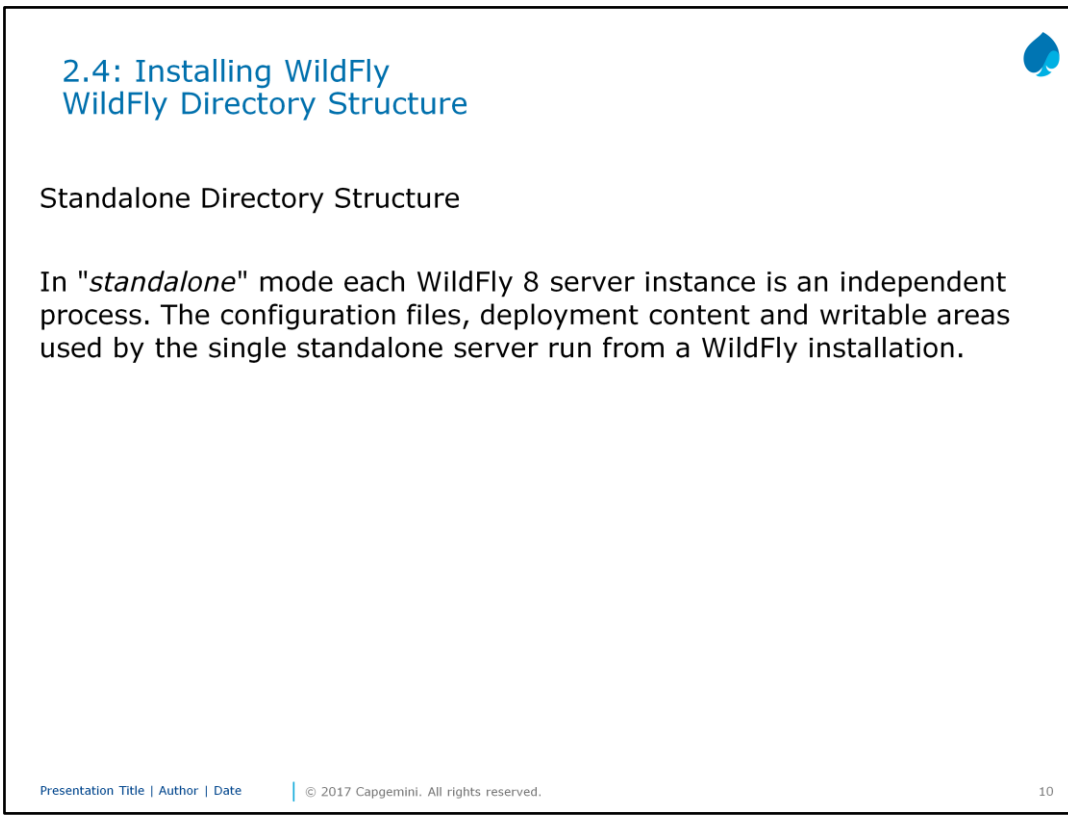


Once WildFly is available on the system, it will create the directory that contains server configurations , JARs and other directories which help in functioning of WildFly.
The figure on the slide shows the WildFly directory structure with below diagram

DIRECTORY	DESCRIPTION
appclient	Configuration files, deployment content
bin	Startup scripts, startup configuration files and various command line utilities like Vault, add-user
docs/schema	XML schema definition files
docs/examples/configs	Example configuration files representing specific use cases
domain	Configuration files, deployment content, and writable areas used by the domain mode processes run from this installation.
modules	WildFly 8 is based on modular class loading architecture. The various modules used in the server are stored here.
Standalone	Configuration files, deployment content, and writable areas used by the single standalone server run from this installation
welcome-content	Default Welcome Page content

Instructor Notes:

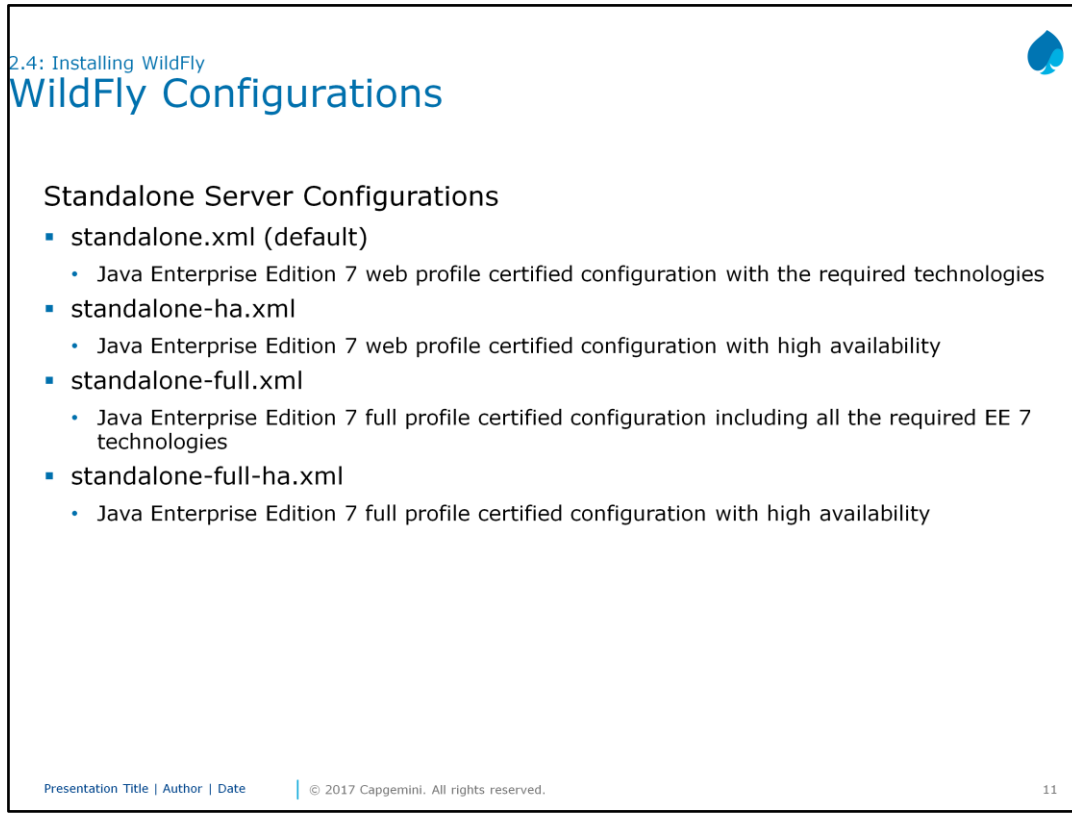
As WildFly is not used in the clustered environment, focus on the standalone directory structure where single instance of WildFly server is started.



The details of the standalone directory is present in below diagram

DIRECTORY	DESCRIPTION
configuration	Configuration files for the standalone server that runs off of this installation. All configuration information for the running server is located here and is the single place for configuration modifications for the standalone server.
data	Persistent information written by the server to survive a restart of the server
deployments	End user deployment content can be placed in this directory for automatic detection and deployment of that content into the server's runtime.
lib/ext	Location for installed library jars referenced by applications using the Extension-List mechanism
log	standalone server log files
tmp	location for temporary files written by the server
tmp/auth	Special location used to exchange authentication tokens with local clients so they can confirm that they are local to the running AS (Application Server)process

Instructor Notes:



We also have the Domain Server Configurations

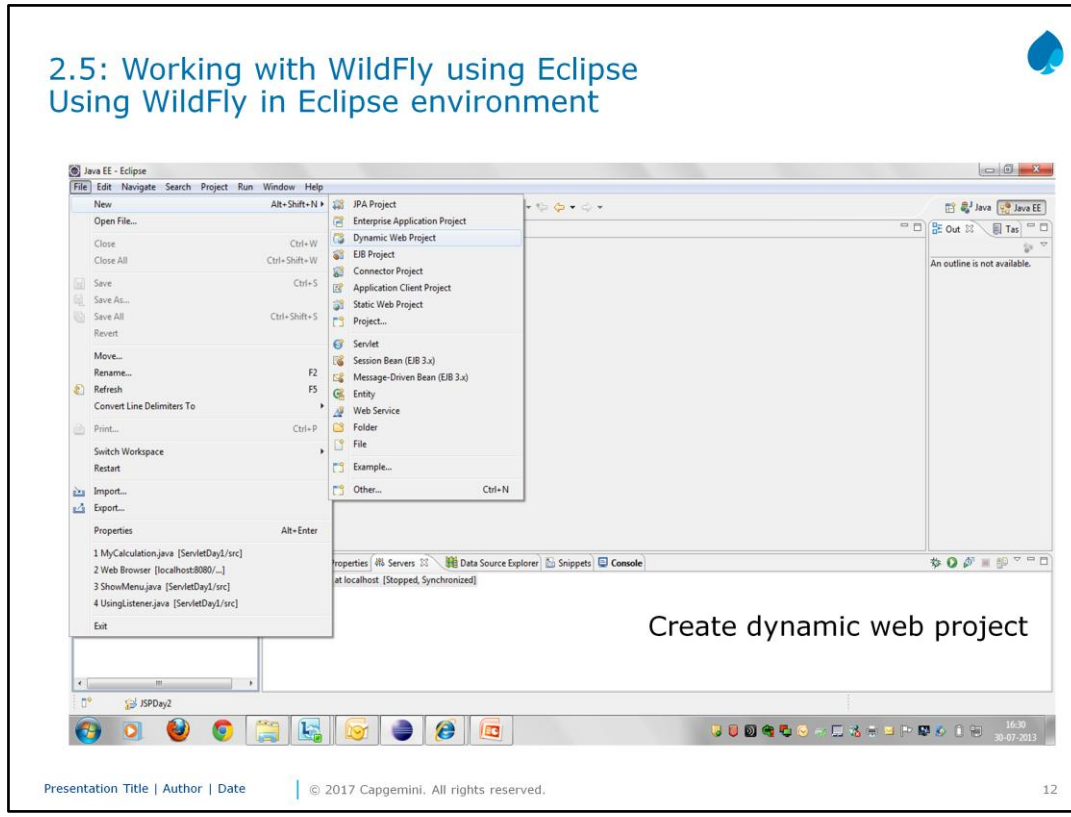
domain.xml

Java Enterprise Edition 7 full and web profiles available with or without high availability

Important to note is that the domain and standalone modes determine how the servers are managed not what capabilities they provide.

Instructor Notes:

Configuring WildFly with Eclipse editor

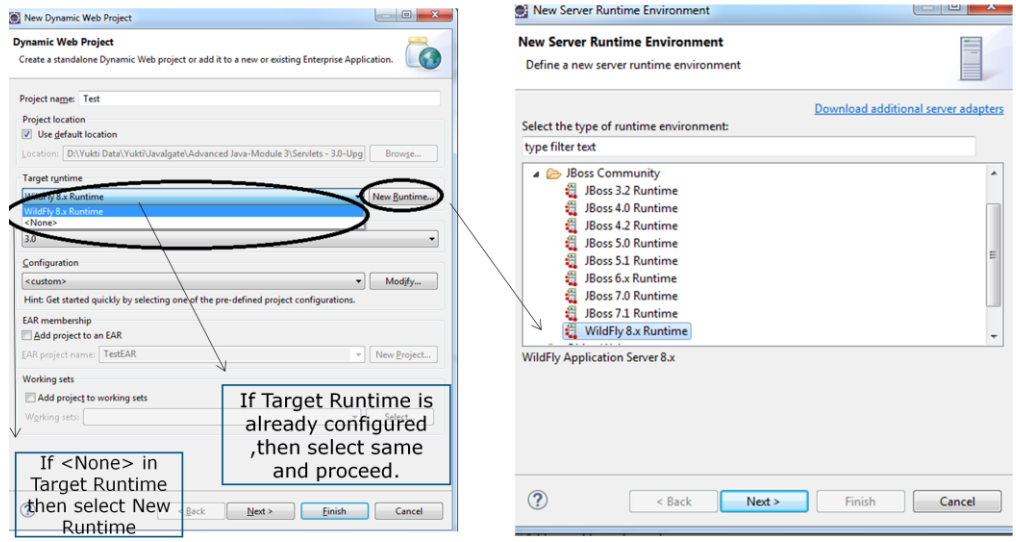


Select Dynamic Web Project

Instructor Notes:

Configuring WildFly with Eclipse editor

2.5: Working with WildFly using Eclipse
Using WildFly in Eclipse environment



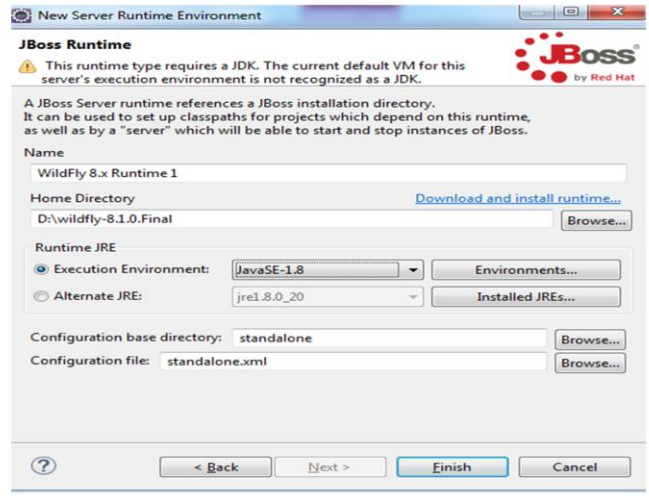
Click New Runtime to add server

Instructor Notes:

Configuring WildFly with Eclipse editor

2.5: Working with WildFly using Eclipse
Using WildFly in Eclipse environment

Select WildFly folder



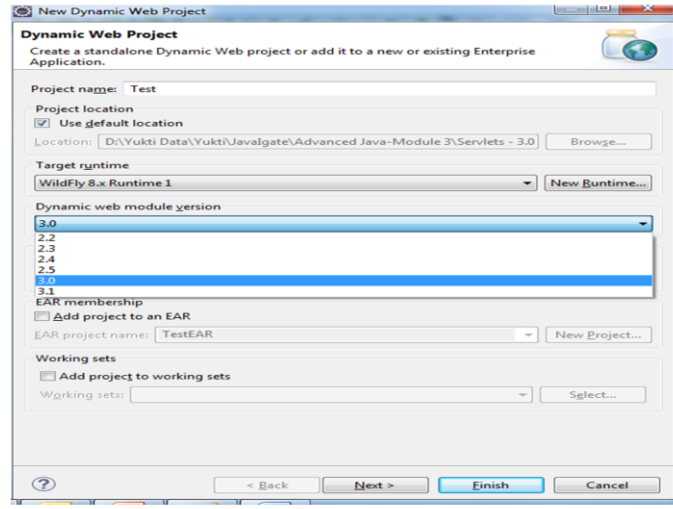
Select WildFly folder

Instructor Notes:

Configuring WildFly with Eclipse editor

2.5: Working with WildFly using Eclipse
Using WildFly in Eclipse environment

Click Next > Next > on this screen



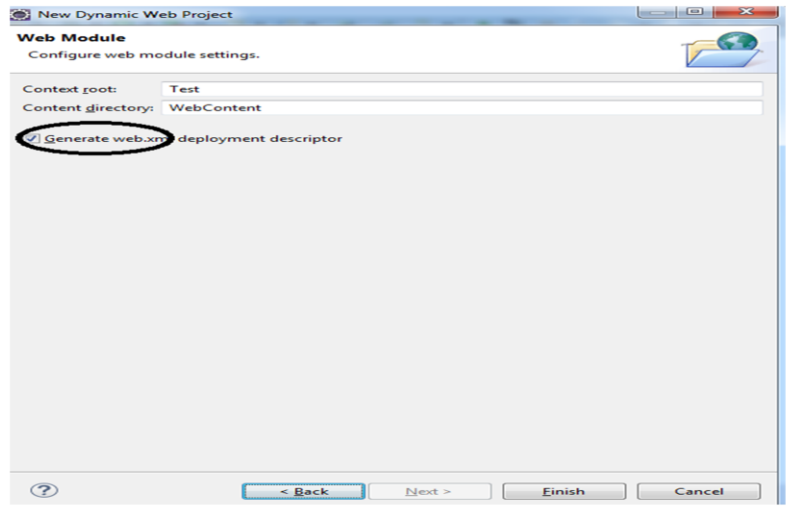
Select Dynamic web module version 3.0

Instructor Notes:

Configuring WildFly with Eclipse editor

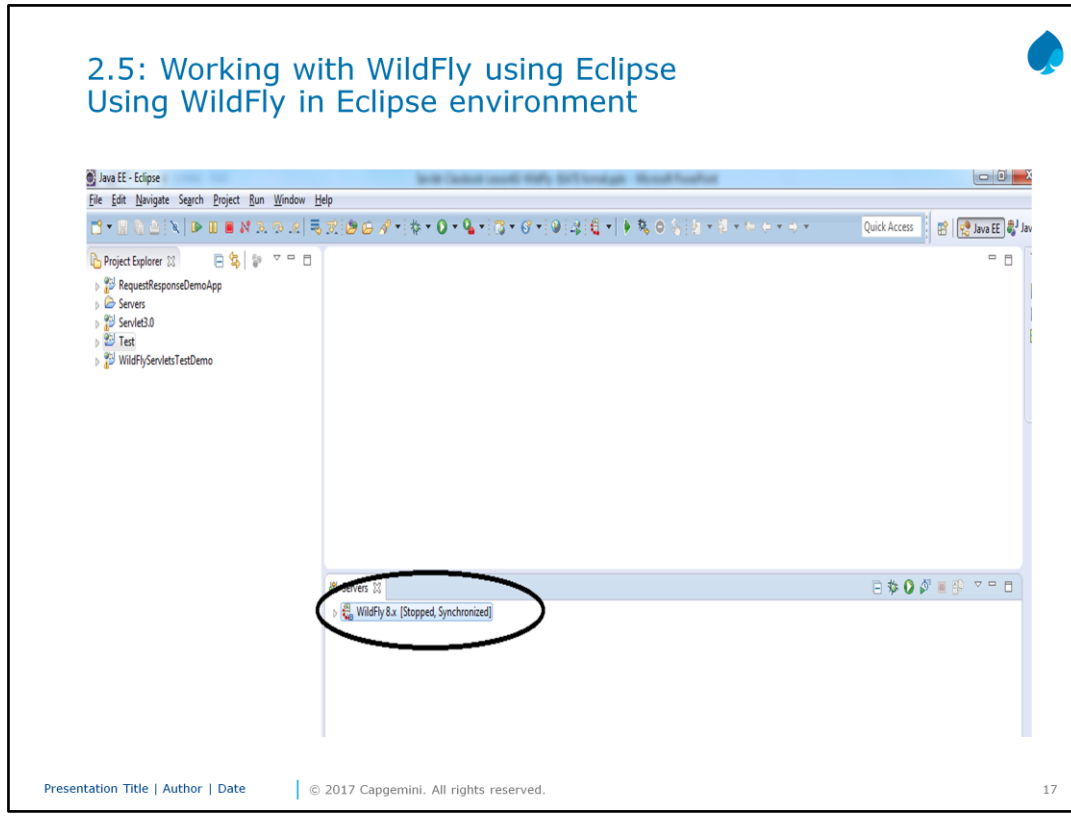
2.5: Working with WildFly using Eclipse
Using WildFly in Eclipse environment

Click on check box for web.xml and then on Finish



Instructor Notes:

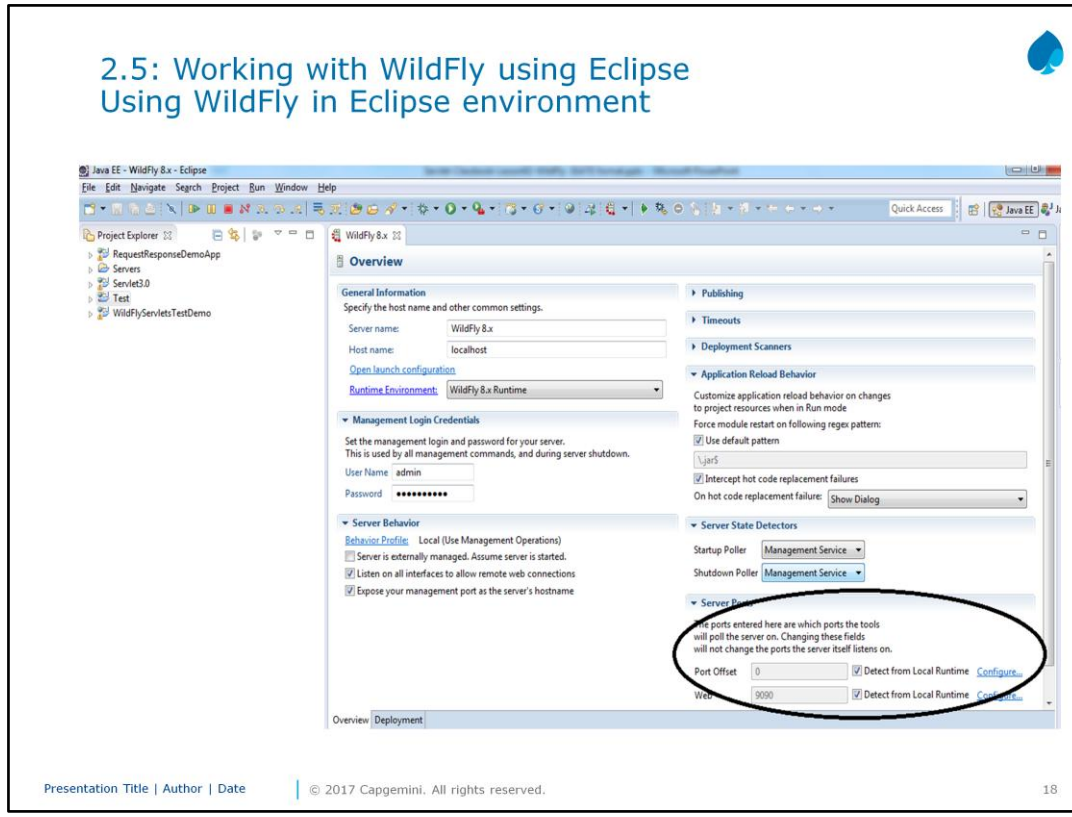
Configuring WildFly with Eclipse editor



Double click highlighted link to start server

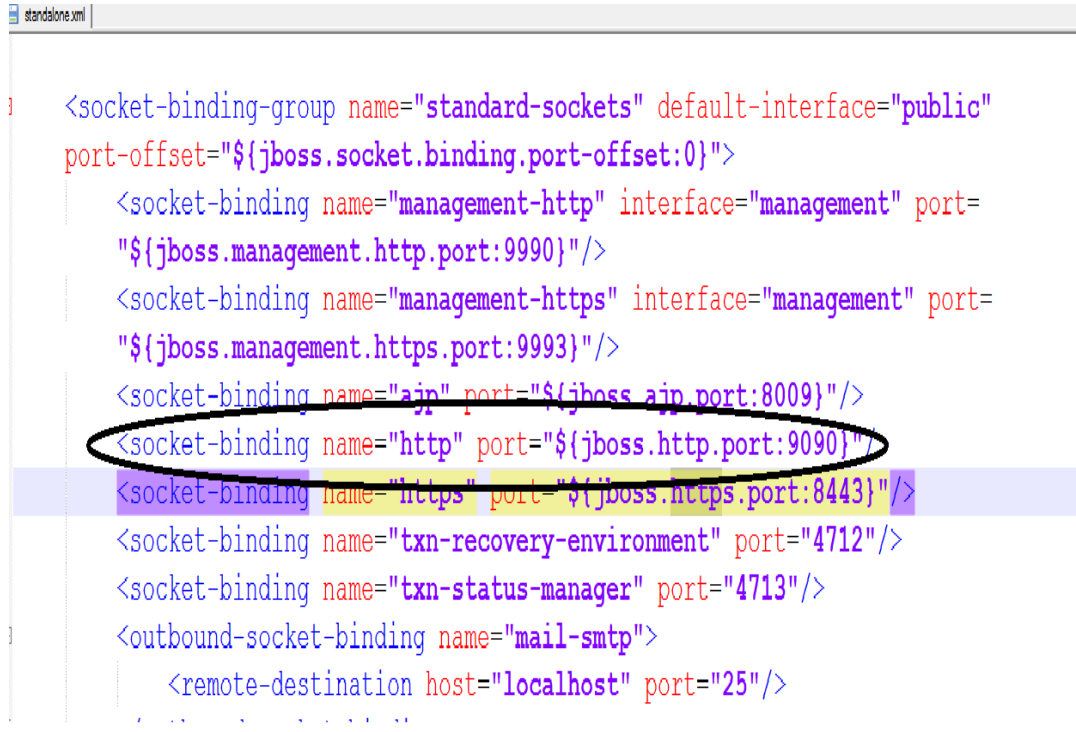
Instructor Notes:

Configuring WildFly with Eclipse editor



Default port number of WildFly is 8080. In the above configuration localhost port number has been set to 9090. (could be also set from standalone.xml file (D:\wildfly-8.1.0.Final\standalone\configuration)).

See below diagram



Instructor Notes:

Apart from showing the diagrammatic representation. Also tell the participants to see the JMX Console on their machines and briefly look at even the files contained in the directory. This is the first page on starting WildFly server.

The default port number is 8080. But port number is changed here to 9090 due to conflict with other services

2.6: Accessing WildFly Homepage
WildFly - Home Page

Start the WildFly server

The home page of WildFly can be accessed by specifying the URL http://localhost:9090.

The home page can be seen

Instructor Notes:

Summarize the points discussed

Add the notes here.

Instructor Notes:

Answers 1: Standalone

Answer 2: configuration

Review Questions

Question 1: If an independent instance of WildFly required then which mode should be selected

- Option 1: Basic
- Option 2: Domain
- Option 3: Standalone
- Option 4: None of the above

Question 2: All configuration information for running the server is located here and it is single place for configuration modifications for the standalone server

- Option 1: data
- Option 2: configuration
- Option 3: log
- Option 4: conf

Add the notes here.