Cluster Creation on Websphere Application Server 8.5
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1. Purpose

This document explains steps to create Cluster on Websphere Application Server 8.5 and also setup the proxy.

2. Introduction to Websphere

IBM webservwe application server cluster deployment contains the below key elements

- Cell
- Nodes
  - Deployment Manager Node- “DMGR”
  - Node- “NodeXX”
  - Node Agent- “NAXX”
- Profiles
- Cluster
- Cluster Members
- Data Sources

Profile

- Cell: A cell is a grouping of nodes into a single administrative domain. In a Network Deployment environment, a cell can consist of multiple nodes (and node groups), which are all administered from a single point, the deployment manager.
- Node: A node is an administrative grouping of application servers for configuration and operational management within one operating system instance
- Node Agent: In distributed server configurations, each node has a node agent that works with the deployment manager to manage administration processes. A node agent is created automatically when you add (federate) a stand-alone node to a cell.
• **Cluster**: A cluster is a logical collection of application server processes that provides workload balancing and high availability. Application servers that belong to a cluster are members of that cluster and must all have identical application components deployed on them.

• A **profile** is a Websphere runtime environment formed by collection of User data and Product files. Product Files are shared application binaries for Websphere. User data is set of user customizations for a specific runtime environment.

  Prominent profile types are:
  
  o **Stand-alone Application Server**: An application server environment runs Enterprise Application. Application server is managed from its own administrative console and functions independently from other application server.

  o **Deployment Manager**: A Deployment Manager manages operations for a logical group or cell of other servers. It is the central administration point of a cell that consists of multiple nodes and node groups in a distributed server configuration. The deployment manager uses the node agent to manage the application servers within one node. A deployment manager provides management capability for multiple federated nodes and can manage nodes that span multiple systems and platforms. A node can only be managed by a single deployment manager and must be federated to the cell of that deployment manager.

Note ** Deployment Manager is part of Network Deployment Edition of Websphere.

3. **Pre-requisites:**

   Before proceeding with the cluster setup ensure that the below resources are created

   - JDBC Provider
   - Datasource
   - Queue Connection Factory
   - JMS Queue

   The instructions for resource creation are available in document <installer>\Docs\WEBSPHERE\Resource_Creation_WAS.doc

   - For SSL configuration in Websphere, refer to the document SSL_Configuration_WAS.doc
   - For application deployment, refer to document FCUBS_Application_WAS.doc
   - For deployment of Gateway applications, refer to document GATEWAY_Applications_WAS.doc
4. Steps involved for Clustering

4.1 Create Profile

Go to Profile Management Tool

Navigation: IBM WebSphere > IBM WebSphere Application Server V8.5 > Tools > Profile Management Tool
**Navigation**: Profile *Management Tool > Create*

**Navigation**: *Application Server > Next*
Navigation: Typical profile creation > Next

Navigation: Enable administrative security > Next
Navigation: Create Summary

Profile Creation Summary

Review the information in the summary for correctness. If the information is correct, click Create to start creating a new profile. Click Back to change values on the previous panels.

Application server environment to create: Application server
Location: \opt\IBM\WebSphere\AppServer\profiles\AppSrv06
Disk space required: 200 MB
Profile name: AppSrv06
Make this profile the default: True
Performance tuning setting: Standard
Node name: ofsx220367Node01
Server name: server1
Host name: ofsx220367.in.oracle.com
Deploy the administrative console (recommended): True
Deploy the default application: True
Enable administrative security (recommended): True
Administrative console port: 9060
Administrative console secure port: 9043
HTTP transport port: 9080
HTTPS transport port: 9443
Bootstrap port: 2809
SOAP connector port: 8880
Run application server as a service: False

Navigation: Finish

Profile Creation Complete

The Profile Management Tool created the profile successfully.
The next step is to decide whether to federate the application server into a deployment manager cell.
To federate the application server, use either the addNode command or the administrative console of the deployment manager. Using the administrative console requires the application server to be running.
You can start and stop the application server from the command line or the first steps console. The first steps console also has links to an installation verification test and other information and features that relate to the application server.

Check Launch the first steps console.

To start the Profile Management Tool later, use the PMT command in the app_server_root/bin/ProfileManagement directory or the option in the first steps console.
4.1.1 Create Deployment Manager Profile

**Navigation**: Profile Management Tool > Create

![Profile Management Tool](image1)

**Navigation**: Management > Next

![Management Tool](image2)
Navigation: Deployment Manager > Next

![Deployment Manager screenshot]

Navigation: Typical profile creation > Next

![Profile Creation Options screenshot]
Navigation: *Enable administrative security > Next*

![Image of Enable administrative security panel]

**Enable administrative security**

- **User name:** admin
- **Password:** ********
- **Confirm password:** ********

See the information center for more information about administrative security.

- View the online information center

Navigation: *Create*

![Image of Profile Creation Summary]

**Profile Creation Summary**

Review the information in the summary for correctness. If the information is correct, click **Create** to start creating a new profile. Click **Back** to change values on the previous panels.

- Application server environment to create: Management
- Server type: Deployment manager
- Location: /opt/IBM/WebSphere/AppServer/profiles/Dmgr04
- Disk space required: 30 MB
- Profile name: Dmgr04
- Make this profile the default: False
- Cell name: ofsa220367Cell01
- Node name: ofsa220367CellManager01
- Host name: ofsa220367.in.oracle.com
- Deploy the administrative console (recommended): True
- Enable administrative security (recommended): True
- Administrative console port: 9061
- Administrative console secure port: 9044
- Deployment manager bootstrap port: 9809
- Deployment manager SOAP connector port: 8879
- Run deployment manager as a service: False
Start Deployment Manager & Open Administrative Console

**Navigation**: IBM WebSphere > IBM WebSphere Application Server V8.5 > Profiles > Dmgr[i] > Start the deployment *manager* > *Administrative console*
Log into Deployment Manager Console

**Navigation**: System administration > Nodes > Add Node
4.2 Create Node

**Navigation**: System administration > Nodes > Add Node
Provide the following field information and Click ‘OK’

- **Host**: Host Machine with running Application Server
- **JMX Connector type**: SOAP
- **JMX Connector Port**: SOAP_CONNECTOR_ADDRESS of Application Server
- **Application server user name**: Application server user id
- **Application server password**: Application server password
- **Deployment manager user name**: Deployment manager user id
- **Deployment manager password**: Deployment manager password
Create necessary number of nodes following same instructions above:
4.2.1  Start Node Agents

**Navigation**: *System administration* > *Node agents* > *Restart*
4.3 Create Cluster

**Navigation:** Servers > Clusters > WebSphere application server clusters > New

**Navigation:** Uncheck [Prefer Local] > Next
4.3.1 Add Cluster Members

Add required number of cluster members

Navigation: Add Member > Next
Navigation: Next

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4.3.2 Start Cluster
4.4 Create Proxy Server

**Navigation**: Servers > Server Types > WebSphere proxy servers > New

![WebSphere proxy server creation](image)

**Navigation**: [Select appropriate Node] > Next

![Selecting appropriate Node](image)
4.4.1 Start Proxy Server

![Start Proxy Server Image]

A server that acts as an intermediary for HTTP requests that are serviced by application servers or web servers. The proxy server acts as a surrogate for the application servers in the enterprise and can enhance the overall experience by providing services such as workload management, URL rewrite, and other services that offload the application server.

You can administer the following resources:

- Start
- Stop
- Edit

Select Name  Node  Host Name  Version  Current Security Level  Protocol  Status

Total 1
4.5 Configure Virtual Host

Make a note of “WC_defaulthost”/“WS_defaulthost_secure” port for server MS1 : 9081/9444

Make a note of “WC_defaulthost”/“WS_defaulthost_secure” for MS2 : 9082/9445
4.5.1 Virtual Host Setup

**Navigation**: Environment > Virtual hosts > proxy_host

**Navigation**: Host Aliases
Navigation: Environment > Virtual hosts > proxy_host > Host Aliases > New

Create New Alias for default port in managed server <<9081>>:
Similarly create proxy alias for all cluster related server default ports
5. Create Resources in Cluster Scope

JDBC Provider:

Datasource:
Queue Connection Factory

JMS Queue:
Create Message Listeners for individual Servers in Cluster

**Navigation**: Middleware servers > MS_1 > Message listener service > Listener Ports

**Navigation**: Middleware servers > MS_2 > Message listener service > Listener Ports
6. **Deploy Application to Cluster**

While deploying ensure the application is installed to Cluster

Start FCUBS application
6.1.1 Test the application

Make a note of the ports \texttt{PROXY\_HTTPS\_ADDRESS} / \texttt{PROXY\_HTTP\_ADDRESS} to access the application.

**Navigation**: Servers > Server Types > WebSphere proxy servers > [proxy\_server\_1] > Ports

Launch Application:

URL: \texttt{http://<host>:<PROXY\_HTTP\_ADDRESS>/FCJNeoWeb} or \texttt{https://<host>:<PROXY\_HTTPS\_ADDRESS>/FCJNeoWeb}