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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 websphere 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

**Environment Selection**

Select a specific type of environment to create.

**Environments:**
- WebSphere Application Server
  - Cell (deployment manager and a federated application server)
  - Management
  - Custom profile
  - Secure proxy (configuration-only)

**Description**

An application server environment runs your enterprise applications. WebSphere Application Server is managed from its own administrative console and functions independently from all other application servers.

Navigation: Typical profile creation > Next

**Profile Creation Options**

Choose the profile creation option that meets your needs. Pick the Typical creation to use the Profile Management Toolkit and customize it. Pick the Advanced option to specify your own configuration settings for the profile.

- Typical profile creation:
  - Create an application server profile that uses default configuration settings. The Profile Management Toolkit assigns unique names to the profile, role, and host. Any profile-specific configuration is saved to a file. This file is then used to create the profile.
  - Advanced profile creation:
    - Create an application server with default configuration settings or specify your own values for settings such as the location of the profile and role. You can also assign your own values. You can optionally choose whether to deploy the application server as a server or as a system service depending on the operating system of your machine and the privileges assigned to your user account.
Navigation: Enable administrative security > Next

Navigation: Create Summary

Navigation: Finish
4.1.1 Create Deployment Manager Profile

Navigation: Profile Management Tool > Create
Navigation: Deployment Manager > Next

Navigation: Typical profile creation > Next
Navigation: Enable administrative security > Next
Navigation: Create
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

![Image of System administration node agents]

4.3 Create Cluster

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

![Image of WebSphere application server clusters]

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

Add required number of cluster members

Navigation: Add Member > Next
4.3.2 Start Cluster
4.4 **Create Proxy Server**

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

![Create Proxy Server](image)

**Navigation** : [Select appropriate Node] > Next
4.4.1 Start Proxy Server

4.5 Configure Virtual Host

Make a note of “WC_deaulthost”/“WS_deaulthost_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

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**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 `PROXY_HTTPS_ADDRESS`/`PROXY_HTTP_ADDRESS` to access the application.

**Navigation**: Servers > Server Types > WebSphere proxy servers > [proxy_server_1] > Ports

Launch Application:

URL: `http://<host>:<PROXY_HTTP_ADDRESS>/FCJNeoWeb` or `https://<host>:<PROXY_HTTPS_ADDRESS>/FCJNeoWeb`