

PEN-3299 Lab Addendum

This is the addendum to the PEN-3299 lab, Building Your Own On-prem Cloud with Node.js and Java. This addendum extends the lab by adding an additional exercise to demonstrate administrative scaling for Node.js applications.

In this exercise you will perform the following tasks:

1. Initial setup
2. Administrative scale-out
3. Administrative scale-in

Setup

Setup is simple. Just one command sets up the exercise. Just issue the following commands:

1. `cd ~/PEN-3299`
2. `./setup.sh`

This command does the following for you:

1. Updates your WebSphere Liberty with some updates that didn't make it onto the original lab image in time. Yes, there are deadlines ☺
2. Updates the Collective Controller to mark the cluster named strongLoopCluster as enabled scaling. In the finished product this will be automatic. For the purposes of this exercise using the February 2016 Liberty Beta, we have to simulate it.
3. Creates a scaling policy for strongLoopCluster and adds it to controller1's configuration.
4. Enables the Config Tool for controller1 by enabling remote access for controller1.

Important: ensure member1 and member2 are not running by issuing commands:

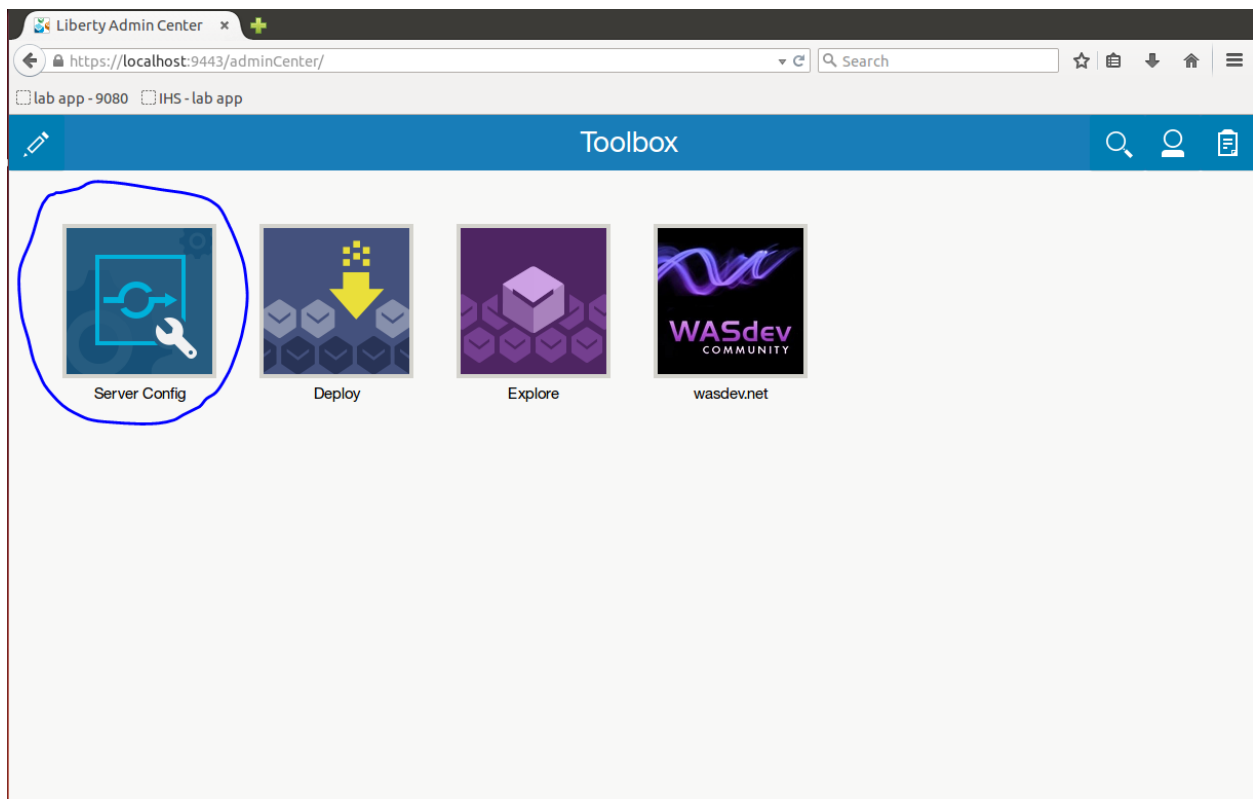
1. `wlpn-server stop member1`
2. `wlpn-server stop member2`

Administrative Scale-out

For this task, you will update the scaling policy for strongLoopCluster to designate 2 instances are required. Do this by setting min and max both to 2 – e.g.

Do this in the Admin Center Config Tool. Open a new tab in your browser and start a new Admin Center session – e.g. <http://localhost:9080/adminCenter>

Select the Server Config tool:



Select controller1:

Liberty Admin Center

https://localhost:9443/adminCenter/#serverConfig

Search

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Server Config

Select Server

5 Servers

Search

Server Name	Cluster	Host	User Directory Path
autoScaled1	elastic	localhost	/home/was/IBM/wlp/usr
autoScaled2	elastic	localhost	/home/was/IBM/wlp/usr
controller1		localhost	/home/was/IBM/wlp/usr
member1	strongLoopCluster	localhost	/home/was/wlpn
member2	strongLoopCluster	localhost	/home/was/wlpn

Select strongLoopCluster.scalingPolicy.xml:

The screenshot shows the Liberty Admin Center interface. The browser address bar indicates the URL is `https://localhost:9443/adminCenter/#serverConfig/localhost,/home/was/IBM/wlp/usr,controller1`. The page title is "Server Config" and the server name is "controller1". A "Change Server" button is visible in the top right. The page is divided into sections: "Primary" and "Overrides". Under "Primary", there is a link to `server.xml` with the path `$(server.config.dir)`. Under "Overrides", there are two entries: `strongLoopCluster.scalingPolicy.xml` with the path `$(server.config.dir)/configDropins/overrides`, and `controller.fileAccess.xml` with the path `$(server.config.dir)/configDropins/overrides`. The first entry in the Overrides section is circled in blue.

Use navigation bar on left to expand policy definition:

The screenshot shows the Liberty Admin Center web interface. The browser address bar displays `https://localhost:9443/adminCenter/#serverConfig/localhost:/home/was/IBM/wlp/usr,controller1/$s`. The page title is "Server Config". Below the title bar, the file path `strongLoopCluster.scalingPolicy.xml` is shown, with "Save" and "Close" buttons. The interface is divided into two main sections: "Design" and "Source". The "Design" section on the left contains a tree view with "Server" expanded, showing "Scaling Definitions" and "Scaling Policy". The "Scaling Policy" is further expanded, showing a list of policies with "strongLoopCluster" selected. The "Source" section on the right displays the configuration for the "strongLoopCluster" scaling policy. It includes a description: "Defines criteria for starting or stopping Liberty servers based on demand for resources". Below this are buttons for "Add child" and "Remove". The configuration fields are: "ID" (strongLoopCluster), "Enabled" (true), "Min" (0), "Max" (0), and "Scaling preference" (horizontal (default)). Each field has a "Select" button next to it.

Liberty Admin Center

https://localhost:9443/adminCenter/#serverConfig/localhost:/home/was/IBM/wlp/usr,controller1/\$s

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Server Config

strongLoopCluster.scalingPolicy.xml

Save Close

Design Source

Server

Scaling Definitions

Scaling Policy strongLoopCluster

Scaling Policy
Defines criteria for starting or stopping Liberty servers based on demand for resources

Add child Remove

ID
strongLoopCluster
A unique configuration ID.

Enabled
true
Indicates whether the scaling policy is enabled

Min
0
Minimum number of cluster members to start

Max
0
Maximum number of cluster members that can be running at the same time

Scaling preference
horizontal (default)

Note in Admin Center Explorer tool that strongLoopCluster members are not running.

The screenshot displays the Liberty Admin Center Explorer interface. The browser address bar shows the URL `https://localhost:9443/adminCenter/#explore/clusters/strongLoopCluster/apps/express-example-ap`. The page title is "Explore". The breadcrumb navigation shows "strongLoopCluster" > "express-example-app".

The main content area shows the "express-example-app" on the "strongLoopCluster". The app status is "Stopped" (indicated by a red circle with a white dot) and it has an "Auto scaling policy" (indicated by a plus icon). Below this, a bar chart displays the instance counts: 0 Running (green dot) and 2 Stopped (black dot). The total number of instances is 2.

Two instance details are shown below the bar chart:

- member1**: Stopped, /home/was/wlpn, localhost
- member2**: Stopped, /home/was/wlpn, localhost

Go back to Admin Center Config Tool, set min and max to 2 and save:

The screenshot shows the Liberty Admin Center interface for configuring the `strongLoopCluster.scalingPolicy.xml` file. The page is titled "Server Config" and has tabs for "Design" and "Source". The left sidebar shows a tree view with "Server" expanded, containing "Scaling Definitions" and "Scaling Policy". The "Scaling Policy" section is selected, showing a list of policies with "strongLoopCluster" highlighted. The main content area displays the configuration for "strongLoopCluster" under the "Scaling Policy" section. The configuration includes fields for "ID" (strongLoopCluster), "Enabled" (true), "Min" (2), "Max" (2), and "Scaling preference" (horizontal (default)). The "Min" and "Max" fields are circled in blue, and the "Save" button in the top right corner is also circled in blue.

Liberty Admin Center x Liberty Admin Center x

https://localhost:9443/adminCenter/#serverConfig/localhost,/home/was/IBM/wlp/usr,controller1/\$s Search

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Server Config

strongLoopCluster.scalingPolicy.xml

Save Close

Design Source

Server

Scaling Definitions

Scaling Policy strongLoopCluster

Scaling Policy
Defines criteria for starting or stopping Liberty servers based on demand for resources

Add child Remove

ID
strongLoopCluster
A unique configuration ID.

Enabled
true
Indicates whether the scaling policy is enabled

Min
2
Minimum number of cluster members to start

Max
2
Maximum number of cluster members that can be running at the same time

Scaling preference
horizontal (default)

Go back to Admin Center Explorer Tool and note that strongLoopCluster members have now started.

The screenshot displays the Liberty Admin Center Explorer Tool interface. The browser address bar shows the URL `https://localhost:9443/adminCenter/#explore/clusters/strongLoopCluster/apps/express-example-ap`. The page title is "Explore". The breadcrumb navigation shows "strongLoopCluster" and "express-example-app".

The main content area shows the "express-example-app" on the "strongLoopCluster". It is in a "Running" state, indicated by a green play button icon. An "Auto scaling policy" is also shown. Below this, a summary bar indicates "2" instances are running and "0" are stopped. A progress bar shows 100% completion for the running instances.

Two instance cards are displayed below the summary bar:

- member1**: Running, /home/was/wlpn, localhost
- member2**: Running, /home/was/wlpn, localhost

The left sidebar contains a navigation menu with "Overview" (selected) and "Instances".

Administrative Scale-In

For this task, you will update the scaling policy for strongLoopCluster to designate 1 instances is required instead of 2. Do this by setting min and max both to 1 – e.g.

Go back to Admin Center Config Tool, set policy min and max back to one, and save.

The screenshot shows the Liberty Admin Center interface. The browser address bar displays `https://localhost:9443/adminCenter/#serverConfig/localhost,/home/was/IBM/wlp/usr,controller1/$[s`. The page title is "Server Config". Below the title bar, there are tabs for "Design" and "Source", with "Design" selected. The left sidebar shows a tree view with "Server" expanded, containing "Scaling Definitions" and "Scaling Policy". The "Scaling Policy" for "strongLoopCluster" is selected. The main content area shows the "Scaling Policy" configuration for "strongLoopCluster". The "ID" field is set to "strongLoopCluster". The "Enabled" checkbox is checked. The "Min" field is set to "1" and the "Max" field is set to "1". The "Scaling preference" is set to "horizontal (default)".

strongLoopCluster.scalingPolicy.xml [Save] [Close]

Design **Source** [Settings]

Server

- Scaling Definitions
 - Scaling Policy **strongLoopCluster**

Scaling Policy
Defines criteria for starting or stopping Liberty servers based on demand for resources

[Add child] [Remove]

ID
strongLoopCluster
A unique configuration ID.

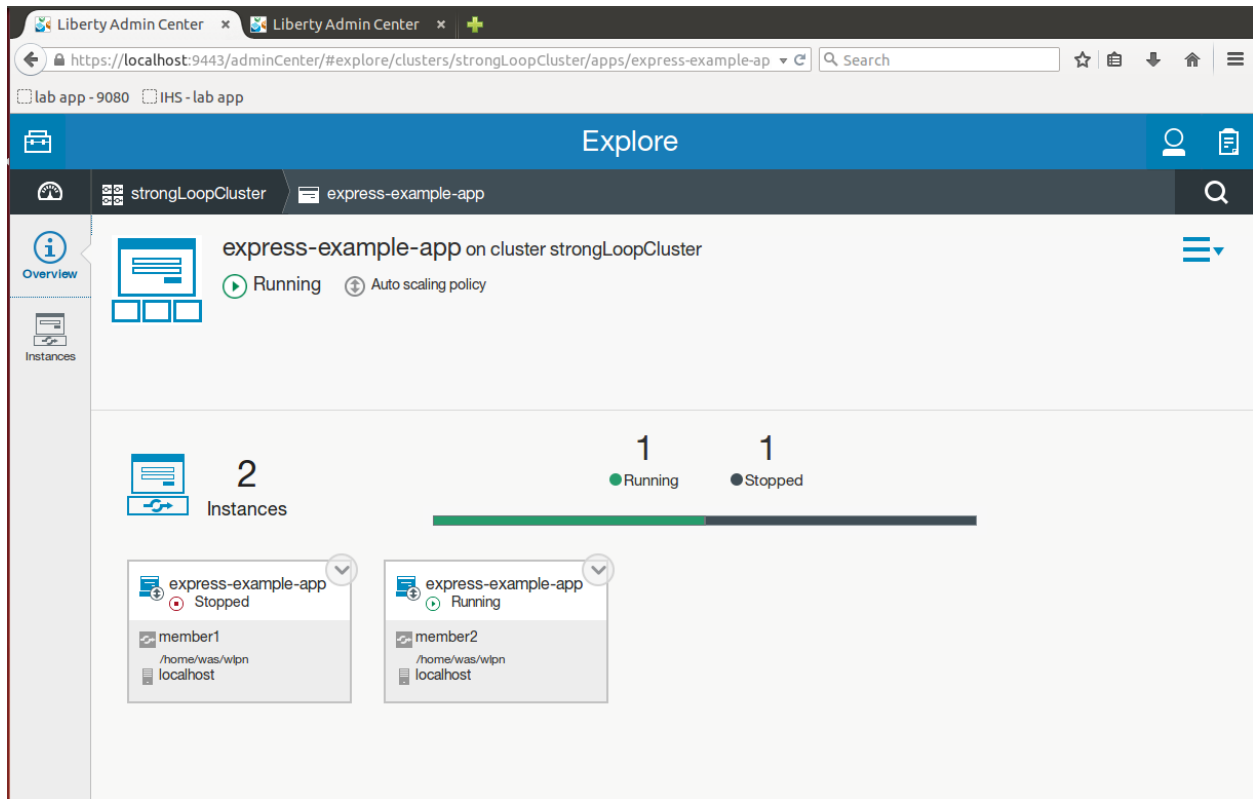
Enabled
true [Select]
Indicates whether the scaling policy is enabled

Min
1
Minimum number of cluster members to start

Max
1
Maximum number of cluster members that can be running at the same time

Scaling preference
horizontal (default) [Select]

Go back to Admin Center Explorer Tool and note that only one strongLoopCluster member is now running



Note: if member does not appear STOPPED immediately, it will take approximately 90 seconds to timeout and be marked STOPPED. This is a known issue with the beta.

End.