IBM[®] WEBSPHERE[®] 6.0.2 BETA – LAB EXERCISE

WebSphere Application Server v6.0.2 Proxy Server Setup

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NOTE: Education materials and other documentation as applicable including programming manuals, operating guides, physical planning manuals and installation manuals related to the IBM Products may be early versions subject to change.

What this exercise is about

The objective of this lab is to provide you with an understanding of how to configure a proxy server on WAS602 Network Deployment.

Lab requirements

This lab assumes that following setup is complete prior to starting the lab.

- WebSphere Application Server 60 GM is installed on your machine.
- WebSphere 602 Refreshpack (WAS602 Refreshpack) has been applied
- Deployment Manager profile has been created (Deployment Manager must be the default profile)
 - Note the Soap port number (8879) and the Deployment Manager (Dmgr) administrator console port number (9060)
- Application Server profile has been created. (Install the samples during the WebSphere Network Deployment installation and use "-includeapps" when you federate this node to the Deployment Manager)
- Custom profile has been created and federated during profile creation

Please follow the instructions provided in under **IBM Education Assistance website** to installing WebSphere Application Server V602 and creating profiles.

http://www-306.ibm.com/software/info/education/assistant/selection.shtml

What you should be able to do

At the end of this lab you should be able to:

- Augment the profiles to provide the capability to create a proxy server
- Create a proxy server in a Custom profile
- Demonstrate proxy server routing using the snoop application
 - The proxy server will route the HTTP traffic to cluster members depending on the weight specified for each cluster member

Introduction

In the WebSphere Network deployment, the WebSphere Proxy implements the inbound and outbound HTTP channel interfaces within the channel framework. The connector channel for the Proxy chains is the TCP channel which is responsible for network I/O channel management. The connection scalability and the basic message dispatch and threading model semantics are defined by the TCP channel. For secure chains, the SSL channel provides the SSL termination and client certificate validation function. The HTTP channel is responsible for the actual marshalling of HTTP messages and providing the HTTP protocol semantics.

Request and Response messages arrive well formed at the proxy, where decisions can be made on how to best service the message.

One of the functions of the WebSphere proxy is workload management. The proxy has the capability to load balance requests among members in a cluster depending on the routing policies in effect for the cluster. This function utilizes the request mapping function of the proxy to determine the cluster that the request is to be sent to and uses the cluster definition to route the request to a member. It takes into account any weights for the various members as well as session affinity and failover. The workload management function is responsible for selecting the cluster member and the virtual connection factory from the Channel Framework that is used by the proxy to obtain a connection to the cluster member.

In summary, The WebSphere Proxy allows proxy function to be completely administered through WebSphere Systems Administration. The Filters implemented allow the Proxy to participate actively in workload management and classification. The Proxy also provides function for caching responses.



In this lab, you'll see an example of how a proxy server can handle workload.

Exercise instructions

Below is a list of exercise topics

- Part 1: Augment profile
- Part 2: Create cluster member
- Part 3: Create proxy server
- Part 4: Test proxy server

Some instructions in this lab are Windows operating-system specific. If you plan on running the lab on an operating-system other than Windows, you will need to execute the appropriate commands, and use appropriate files. Example:

For Windows the files extensions are .bat

For **Elinux** the file extensions are **.sh** for your operating system.

The directory locations are specified in the lab instructions using symbolic references; for example:

Reference Variable	Windows Location	
<was_home></was_home>	C:\WebSphere\AppServer	AIX /usr/WebSphere/AppServer
<temp></temp>	C:\temp	/tmp
<machine_name></machine_name>	Hostname or host address for the machine in use	Hostname or host address for the machine in use

Windows users: Note that when directory locations are passed in as parameters to a Java program, it is necessary to replace the backslashes with forward slashes to follow the Java convention.

Part 1: Augment profile

Machine to be used should already have WebSphere Network Deployment v6.0.2 (WAS602) installed and three profiles (Deployment Manager profile, Application Server profile, and Custom profile) created as described in the lab requirements section.

NOTE: This lab assumes the Deployment Manager is the default profile

- 1. Stop all the WebSphere processes if they are running. The processes include:
 - 1) Server1
 - 2) Node Agents for Application Server profile and Custom profile
 - 3) Deployment Manager
- ____ 2. Augment the Deployment Manager profile

This process will add the required proxy server template and proxy console

____a. On the command prompt, change directory to <WAS_HOME>/bin

Example:

Windows : cd C:\WebSphere\AppServer\bin

Linux : cd /opt/WebSphere/AppServer/bin

AIX : cd /**usr/WebSphere/AppServer/bin**

_ b. Run the augmentProxyServer command for Deployment Manager profile .

augmentProxyServer < Profile_Name>

Example:

Windows : augmentProxyServer Dmgr01

Linux UNIX : ./augmentProxyServer.sh Dmgr01

NOTE: Augmenting the profile can take 10 to 20 minutes depending on the machine resources. Do not kill the running augmentProxyServer command. You can monitor the progress of the augmentProxyServer command by viewing this log:

<WAS_HOME>\logs\wasprofile\wasprofile_augment_<Profile_Name>.log

____ 3. Augment the Custom profile

While still in <WAS_ROOT>/bin directory, run the augmentProxyServer command for the Custom profile (which will eventually contain a proxy server)

augmentProxyServer < Profile_Name>

Example:

Windows : augmentProxyServer Custom01

Linux UNIX : ./augmentProxyServer.sh Custom01

4. After successfully augmenting the Deployment Manager, you can see the new server type of "Proxy Servers" in the administrative console of the Deployment Manager.

____a. Start the Deployment Manager .

Windows startManager.bat

Linux UNIX ./startManager.sh

** Note that since Deployment Manager (Dmgr) profile is the default profile, you can run the startManager command from <WAS_HOME>/bin without a "-profileName" parameter, or it can be run from <dmgrProfile>/bin.

____b. Start a browser for the administrative console

http://<machine_name>:9060/ibm/console/

** NOTE: The port number for the Dmgr console can be different than 9060 if there are other profiles created before the Dmgr.

- ____ c. Log in with a desired userid
- ____d. Expand Servers.

The **Proxy Servers** option is now available

____e. Click on the Proxy Servers.

The proxy servers panel displays.

Welcome test Logout Support Help			
= Welcome	Proxy Servers		
🗄 Guided Activities	Proxy Servers		2 -
E Servers	Proxy Servers		
Application servers Generic servers Proxy Servers JMS Servers	A server that acts as an intermediary for HTT server acts as a surrogate for the application services such as workload management, cros	P requests that are serviced by applical servers in the enterprise and can enha s-cell routing and other services that of	tion servers or web servers. The proxy nce the overall experience by providing ffload the application server.
Web servers Clusters	New Delete Templates Start Stop		
Cluster topology Generic Server Clusters			
Core groups	Select Name 🛟	Node 🗘	Status ሷ
 Core group settings Core group bridge settings 	Total 0		

The ability to view the "Proxy Servers" panel indicates your profile was properly augmented.

5. Within a command window with the current directory set to <WAS_HOME>/bin directory, start the node agents for the Custom profile and the Application Server profile using the startNode command.

<WAS_HOME>/bin: > startNode <Profile_Name>

Example:



6. You can use the administrative console to check on the node agents status. Expand **System** administration, then click on **Node agents**. Once the nodes are started, their status will be **3**.

Welcome test Logout Support Help				
= Welcome	lode agents			
Guided Activities Guided Activi	Node agents ? –			
	Node agents			
Applications	The node agent process serves as a	an intermediary between the a	pplication servers on the nod	e and the deployment
🗄 Resources	manager. The node agent process runs on every node and is specialized to perform node-specific administration functions, such as server process monitoring, configuration supprovide and is specialized to perform node-specific administration functions,			
🗄 Security				
Environment	Stop Restart Restart all Servers on Node			
System administration				
= Cell				
Deployment manager	Select Name 🛟	Node 🗘	Version 🗘	Status ሷ
 Nodes Node agents 	nodeagent	Custom01Node	6.0.2.0	⇒
Node groups	nodeagent wsbeta073AppSrv01Node01 6.0.2.0			
 Save Changes to Master Repository Console settings 	Total 2			

Part 2: Create cluster member

In this section you will create a cluster and cluster members

Show Me Demo Click the "Show Me Demo" icon to view a flash demo of this exercise. Note that the sample demo names do not necessarily match those in the lab.

NOTE: Make sure the Deployment Manager and the node agents have been started.

- 7. Create a new cluster "cluster1" using the administrative console.
 - ____a. From the administrative console, expand Servers
 - ___ b. Click on Clusters
 - ____ c. Click **New** on the Server Cluster panel

Welcome test Logout Support Help			
= Welcome	Server Cluster		
	Server Cluster ? _		
Servers	Server Cluster		
 Application servers Generic servers Proxy Servers JMS Servers Web servers Cluster topology 	A server duster consists of a group of application servers. If one of the member servers fails, requests will be routed to other members of the cluster. Preferences New Delete Start Stop Ripplestart ImmediateStop		
Generic Server Clusters	Select Name 🗘 Status ሷ		
 Core groups Core group settings Core group bridge settings 	None Total 0		

____d. In the 'Create a new cluster' panel, type **cluster1** in *Cluster name* input field. Allow the other fields to default



___ e. Click Next

You will now add 2 new members to the cluster with these specifics:

Names: server2 and server3

Node: use the Application Server profile node where server1 is running

Template: use the existing server1 template in which the default application was installed

- ___ f. Type server2 in the Member Name input field
- ___g. Select the Application Server node
- ___ h. For Select template, select the radio button for Existing application server. Ensure you select the template for server1
- ___ i. Click Apply

Server Cluster	
Create a new cluster	2 🗉
Create a new cluster	
Step 1: Enter basic cluster information.	Create cluster members
Step 2: Create cluster members Step 3: Summary	Enter information about this new cluster member, and click Apply to add this cluster member to the member list. Use the Edit function to edit the properties of a cluster member that are already included in this list. Use the Delete function to remove a cluster member from this list.
	* Member name server2 Select node
	<pre>wsbeta073AppSrv01Node01(6.0.2.0) * Weight 2</pre>
	🗹 Generate Unique Http Ports
	Select template: Default application server template Choose a server template from this list: default 👻
	 Existing application server Choose a server from this list: wsbeta073Cell01/wsbeta073AppSrv01Node01/server1
;	Apply

- ___j. Type server3 in the Member Name input field
- ___ k. Click Apply.

You should now have 2 members in your list

Step 1: Enter basic	Create cluster members			
Cluster information. Step 2: Create cluster members Step 3: Summary	Enter information about this ne member to the member list. Us member that are already includ cluster member from this list. * Member name Select node wsbeta073AppSrv01Node01(* Weight 2 V Generate Unique Http Por Apply	w cluster member, and click Apply f se the Edit function to edit the prop led in this list. Use the Delete func 6.0.2.0) V	to add this rerties of a tion to rem	cluster cluster ove a
	Edit Delete			
	Select Application servers	Nodes	Version	Weight
	server2	wsbeta073AppSrv01Node01	6.0.2.0	2
	server3	wsbeta073AppSrv01Node01	6.0.2.0	2
Previous Next Can	- cel			

___ I. Click Next

- ____m. Check the summary to ensure the configurations for both members are correct. Click the **Previous** button to return to previous panels for corrections.
- ___ n. When the definitions are verified, click Finish
- 8. Save your configurations by clicking Save / Synchronize changes with nodes
- 9. Click on cluster1 to access it's members
- 10. Select one member at a time and click **Start** to start them. Note that it can be faster to start the server members one at a time rather than starting them concurrently
- _____11. Both server2 and server3 should be successfully started as shown below

Sorvor	Ister	Cluster members				e
A grou	p of servers that are	managed together and parti-	cipate in work	load management for	a group of applicatio	ns.
Reque	sts to duster membe	ers are rerouted when failures	occur.			
⊕ Pref	ferences					
New	Delete Start	Stop ImmediateStop	Termina	te		
	6 👯 📽					
Select	Member name 💠	Node 🗘	Version 🗘	Configured weight 🗘	Runtime weight 🗘	Status ሷ
	<u>server2</u>	wsbeta073AppSrv01Node01	6.0.2.0	2	2	€
	<u>server3</u>	wsbeta073AppSrv01Node01	6.0.2.0	2	2	€

Show Me Demo Clinames for the demo	ick "Show Me Demo" icon to view a flash demo of this exercise. Note that the nay not necessarily match what is in the exercise.
1. From the admini	strative Console, expand Servers
a. Click on Prox	xy Servers
b. Click New or	n the proxy servers panel
c. Select the Cu	stom profile Node on 'Select node' field
d. Type <i>proxys</i>	<i>erver1</i> in the Server Name field
y Servers	
eate new Proxy server Step 1: Select a node	Select a node
Step 2: Select a server template Step 3: Specify server specific properties Step 4: Confirm	Select a node that corresponds to the Proxy server you want to add. Select node Custom01Node * Server Name proxyserver1
new server.	
Next Cancel	

- ____f. Select the proxy_server template
- ___g. Click Next
- ___h. Ensure the "Generate Unique HTTP ports" option is checked
- ___ i. Click Next
- ____j. Review the "Summary of actions" and click Finish if they are correct

____k. Save / Synchronize changes with nodes

- 2. Start proxyserver1
- **3.** Once the proxy server is successfully started, explorer the proxy server configuration
 - ____a. Click on proxyserver1
 - ____ b. Under Communications, expand Ports

____c. Take note of the PROXY_HTTP_ADDRESS port number. You will need it in the next part of the lab. The default setting is port 80.

Communications				
	Ports			
	Port Name	Port	details	
	BOOTSTRAP_ADDRESS	9813		
	SOAP_CONNECTOR_ADDRESS	8881		
	DRS_CLIENT_ADDRESS	7873		
	SAS_SSL_SERVERAUTH_LISTENER_ADDRESS	0		
	CSIV2_SSL_SERVERAUTH_LISTENER_ADDRESS	0		
	CSIV2_SSL_MUTUALAUTH_LISTENER_ADDRESS	0		
	WC_defaulthost	9080		
	DCS_UNICAST_ADDRESS	9355		
	WC_defaulthost_secure	9443		
	PROXY_HTTP_ADDRESS	80		
	PROXY_HTTPS_ADDRESS	443		
	ORB_LISTENER_ADDRESS	0		

You have now created the proxy server.

Part 4: Test proxy server

In this section you will test the proxy server using the snoop servlet in the **Default Application**. The default application should already be installed on your machine and federated into the Deployment Manager as stated in the lab requirements. You will observe the proxy server sending requests to both server2 and server3 which are both cluster members for cluster1 with default weight 2

Scenario 1

1. Start a browser for the snoop servlet with the following address:

http://<machine name>:80/snoop

Note the use of port 80 which is the port we recorded for the proxy server http address (PROXY_HTTP_ADDRESS) earlier. Port 80 will be used in this particular scenario to test snoop servlet through a proxy server.

Scroll down the Browser and observer the Local Host and Local port number where the packets have been routed to a specific server.

Refresh the browser several times and observe the "Local Port" change as the packets are routed between server2 and server3.

Local Host	<server address="" ip=""></server>
Local Port	9080

Scenario 2

- 2. Another test it to change the weight for one of the cluster members, then observe the frequency of packets routing to the 2 servers. There will be a difference from the first scenario where the weights were the same and with the current scenario where the weights are different. One of the server's frequencies will be different.
 - ____a. From administrative console, expand Servers ->Click on Clusters -> Click on cluster1 -> Click on cluster members
 - ____b. Select server3 and change the weight to 4

ver Cluster	2
Sonvor Clustor	Schuster 1 > Chuster members > conver3
Server Cluster	<u>Custeri</u> > <u>Custer members</u> > servers
An application	server that belongs to a group of application servers called a cluster.
Configuration	
General Pr	operties
* Member	name
server3	
* Weight	
4	
*	
* Unique 1 1112992	2720086
Apply	OK Reset Cancel

- ___ c. Click Apply
- ___ d. Click **OK**
- ____e. **Save** the changes on your configuration.
- 3. Restart server3. Ensure all the nodes are synchronized.
- 4. Observe snoop servlet's (<u>http://<machine_name>:80/snoop</u>) behavior like you did in the first scenario. You'll see a difference in frequency between the 2 servers

This completes the lab

What you did in this exercise

In this lab, you augmented the Deployment Manager and Custom profiles and provided the ability to create a proxy server. After you created the proxy server, you tested snoop application in a cluster through the proxy server and observed proxy server routing HTTP traffic to cluster members depending on the weight specified for each cluster member.