

## Task 4. Apache Tomcat

### Review

Show tomcat LoadBalancing with mod\_jk

Show tomcat Clustering with mod\_jk

### Task1

1. Setup apache2 web server VM with mod\_jk module.

```
mc [root@vm4-]:/etc/httpd/conf
File Edit View Search Terminal Help
[root@vm4- conf]# httpd -M |grep jk
jk_module (shared)
[root@vm4- conf]#
```

2. Setup 3 VMs with tomcat server and configure them. Tomcat instances surname-tomcat1, surname-tomcat2, surname-tomcat3
3. Add test.jsp from presentation to all tomcat servers.

Test JSP - Mozilla Firefox

Tomcat | apache | Apache | rename | How to | loadmod | Working | The Ap

← → ↻ 🏠 ⓘ elizarov-tomcat1:8080/test.jsp

TomcatA Machine

Session ID : 4BC9983FF683DD0BF5FD3BDB0AD4965E

Test JSP - Mozilla Firefox

Tomcat | apache | Apache | rename | How to | loadmod | Working | The Ap

← → ↻ 🏠 ⓘ elizarov-tomcat2:8080/test.jsp

TomcatB Machine

Session ID : 83119A43A8EB1235B91B6222519079D3

Test JSP - Mozilla Firefox

Tomcat | apache | Apache | rename | How to | loadmod | Working

← → ↻ 🏠 ⓘ elizarov-tomcat3:8080/test.jsp

TomcatC Machine

Session ID : 4418A6B51326871585F74995D3DE095E

4. Deploy clusterjsp.war on each tomcat:

- Autodeploy on surname-tomcat1

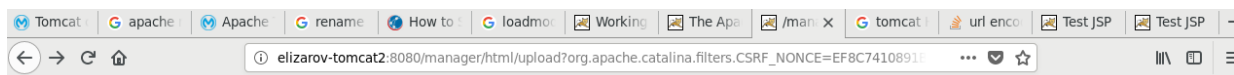
```
root@vml1: ~]#
bash-4.2$ scp clusterjsp.war root@elizarov-tomcat1:/opt/tomcat/webapps
The authenticity of host 'elizarov-tomcat1 (10.6.145.74)' can't be established.
ECDSA key fingerprint is SHA256:N1LyL7NTnZqa6DCVTNoYV3kTHXiGHkL7LV5FyvS8Yak.
ECDSA key fingerprint is MD5:b5:78:75:cf:43:1a:ca:b1:ba:0b:8e:4f:40:1d:12:df.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added 'elizarov-tomcat1' (ECDSA) to the list of known hosts.
root@elizarov-tomcat1's password:
clusterjsp.war                                     100% 3055      5.6MB/s   00:00
bash-4.2$
```

- Deploy via browse local host on surname-tomcat2

```
mc [root@elizarov-tomcat2]:/opt/tomcat/webapps/manager/META-INF
File Edit View Search Terminal Help
context.xml [----] 4 L: [ 1-18 19/ 23] *(888 /1230b) 0032 0x020
<?xml version="1.0" encoding="UTF-8"?>
<!--
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contributor license agreements. See the NOTICE file distributed with
this work for additional information regarding copyright ownership.
The ASF licenses this file to You under the Apache License, Version 2.0
(the "License"); you may not use this file except in compliance with
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distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.
-->
<Context antiResourceLocking="false" privileged="true" >
<!-- <Valve className="org.apache.catalina.valves.RemoteAddrValve"
allow="127.\d+\.\d+\.\d+::1|0:0:0:0:0:0:0:1" />-->
<Manager sessionAttributeValueClassNameFilter="java\.lang\.(?:Boolean|Integer|Long|Number|string)|org\.apache\.catalina\.filters\.CsrfPreventionFilter\$Lru
</Context>
```

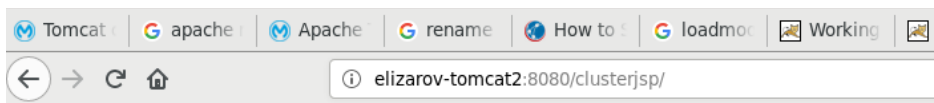


## Tomcat Web Application Manager

| Message:                          | OK             |                                   |         |                              |   |
|-----------------------------------|----------------|-----------------------------------|---------|------------------------------|---|
| Manager                           |                |                                   |         |                              |   |
| <a href="#">List Applications</a> |                | <a href="#">HTML Manager Help</a> |         | <a href="#">Manager Help</a> |   |
| <a href="#">Server Status</a>     |                |                                   |         |                              |   |
| Applications                      |                |                                   |         |                              |   |
| Path                              | Version        | Display Name                      | Running | Sessions                     | Commands  |
| /                                 | None specified | Welcome to Tomcat                 | true    | 1                            | Start <button>Stop</button> <button>Reload</button> <button>Undeploy</button> |
|                                   |                |                                   |         |                              | <button>Expire sessions</button> with idle ≥ 30 minutes                       |
| /clusterjsp                       | None specified | clusterjsp                        | true    | 0                            | Start <button>Stop</button> <button>Reload</button> <button>Undeploy</button> |
|                                   |                |                                   |         |                              | <button>Expire sessions</button> with idle ≥ 30 minutes                       |

## Cluster - HA JSP Sample

```
mc [root@elizarov-tomcat2]:/opt/tomcat/conf
File Edit View Search Terminal Help
tomcat-users.xml [----] 38 L: [ 28+19 47/ 49] *(2264/2314b) 0034 0x022
application.
-->
<!--
NOTE: The sample user and role entries below are intended for use with the
examples web application. They are wrapped in a comment and thus are ignored
when reading this file. If you wish to configure these users for use with the
examples web application, do not forget to remove the <!-- ..> that surrounds
them. You will also need to set the passwords to something appropriate.
-->
<!--
<role rolename="tomcat"/>
<role rolename="role1"/>
<role rolename="manager-gui"/>
<user username="tomcat" password="<tomcat>" roles="tomcat,manager-gui"/>
<user username="both" password="<tomcat>" roles="tomcat,role1"/>
<user username="role1" password="<tomcat>" roles="role1"/>
-->
<role rolename="manager-gui"/>
<role rolename="admin-gui"/>
<user username="tomcat" password="1234" roles="manager-gui,admin-gui"/>
</tomcat-users>
1Help 2Save 3Mark 4Replac 5Copy 6Move 7Search 8
```



## Cluster - HA JSP Sample

### HttpSession Information:

- Served From Server: **elizarov-tomcat2**
- Server Port Number: **8080**
- Executed From Server: **elizarov-tomcat2**
- Executed Server IP Address: **10.6.145.25**
- Session ID: **2691016E61D2C4A820188939DA94A0C6**
- Session Created: Mon Sep 30 22:01:09 MSK 2019
- Last Accessed: Mon Sep 30 22:01:09 MSK 2019
- Session will go inactive in **1800 seconds**

### Enter session attribute data:

Name of Session Attribute:

Value of Sesion Attribute:

ADD SESSION DATA

RELOAD PAGE

CLEAR SESSION

## - Deploy via ContextPath on surname-tomcat3

|               |                |                                 |      |   |  |
|---------------|----------------|---------------------------------|------|---|--|
| /docs         | None specified | Tomcat Documentation            | true | 0 | Expire sessions with idle ≥ 30 minutes                               |
| /examples     | None specified | Servlet and JSP Examples        | true | 0 | Start Stop Reload Undeploy<br>Expire sessions with idle ≥ 30 minutes |
| /host-manager | None specified | Tomcat Host Manager Application | true | 0 | Start Stop Reload Undeploy<br>Expire sessions with idle ≥ 30 minutes |
| /manager      | None specified | Tomcat Manager Application      | true | 1 | Start Stop Reload Undeploy<br>Expire sessions with idle ≥ 30 minutes |

### Deploy

#### Deploy directory or WAR file located on server

|               |                |                                 |      |   |  |
|---------------|----------------|---------------------------------|------|---|--|
| /docs         | None specified | Tomcat Documentation            | true | 0 | Start Stop Reload<br>Expire sessions with idle ≥ 30          |
| /examples     | None specified | Servlet and JSP Examples        | true | 0 | Start Stop Reload<br>Expire sessions with idle ≥ 30          |
| /host-manager | None specified | Tomcat Host Manager Application | true | 0 | Start Stop Reload<br>Expire sessions with idle ≥ 30          |
| /manager      | None specified | Tomcat Manager Application      | true | 1 | Start Stop Reload Undeploy<br>Expire sessions with idle ≥ 30 |
| /testapp      | None specified | clusterjsp                      | true | 0 | Start Stop Reload<br>Expire sessions with idle ≥ 30          |

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elizarov-tomcat3:8080/testapp/

# Cluster - HA JSP Sample

**HttpSession Information:**

- Served From Server: **elizarov-tomcat3**
- Server Port Number: **8080**
- Executed From Server: **elizarov-tomcat3**
- Executed Server IP Address: **10.6.144.45**
- Session ID: **8F5A8E3D26B40334B87D2F0E682E3E19**
- Session Created: Mon Sep 30 22:43:48 MSK 2019
- Last Accessed: Mon Sep 30 22:43:48 MSK 2019
- Session will go inactive in **1800 seconds**

**Enter session attribute data:**

Name of Session Attribute:

Value of Sesion Attribute:

ADD SESSION DATA

RELOAD PAGE

CLEAR SESSION

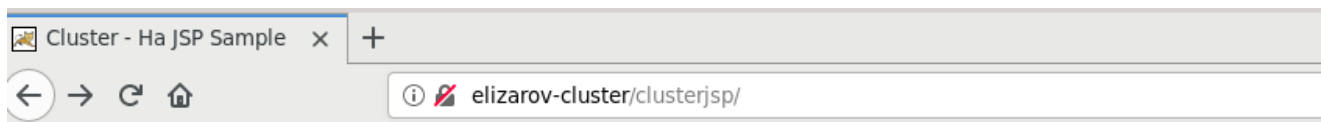
## Task2

1. Using :d
  - a. Configure 4 separate Virtual hosts for surname-tomcat1, surname-tomcat2 surname-tomcat3 and Tomcat Cluster - surname-cluster
  - b. Configure mod\_jk – worker.properties

```
apache_tomcat2_mod_jk-conf.sh_org [----] 0 L:[ 1+ 1 2/ 44] *(12 /1519b) 0010 0x00A  
#!/bin/bash
```

```
cat <<EOF >/etc/httpd/conf/workers.properties  
worker.list=elizarov-cluster,elizarov-tomcat1,elizarov-tomcat2,elizarov-tomcat3  
worker.elizarov-tomcat1.port=8009  
worker.elizarov-tomcat1.host=elizarov-tomcat1  
worker.elizarov-tomcat1.type=ajp13  
worker.elizarov-tomcat1.lbfactor=1  
worker.elizarov-tomcat2.port=8009  
worker.elizarov-tomcat2.host=elizarov-tomcat2  
worker.elizarov-tomcat2.type=ajp13  
worker.elizarov-tomcat2.lbfactor=1  
worker.elizarov-tomcat3.port=8009  
worker.elizarov-tomcat3.host=elizarov-tomcat3  
worker.elizarov-tomcat3.type=ajp13  
worker.elizarov-tomcat3.lbfactor=1  
worker.elizarov-cluster.type=lb  
worker.elizarov-cluster.balanced_workers=elizarov-tomcat1,elizarov-tomcat2,elizarov-tomcat3  
worker.elizarov-cluster.sticky_session=1  
EOF
```

```
cat <<EOF >/etc/httpd/conf.d/mod_jk.conf  
# This file configures mod_jk module..  
loadModule jk_module /etc/httpd/modules/mod_jk.so  
# Where to find workers.properties..  
JkWorkersFile /etc/httpd/conf/workers.properties  
# Set path to jk shared memory. Generally, you'll want this to point to your local state or logs directory..  
JkShmFile /var/log/httpd/mod_jk.shm  
JkLogFile /var/log/httpd/mod_jk.log  
JkLogLevel info  
JkLogStampFormat "[%a %b %d %H:%M:%S %Y]"  
JkOptions +ForwardKeySize +ForwardURICompat -ForwardDirectories  
  
JkMount /clusterjsp elizarov-cluster  
  
JkMount /clusterjsp* elizarov-cluster  
<VirtualHost *:80>  
    ServerName elizarov-cluster  
    JkMount /* elizarov-cluster  
</VirtualHost>  
EOF
```



# Cluster - HA JSP Sample

## HttpSession Information:

- Served From Server: **elizarov-cluster**
- Server Port Number: **80**
- Executed From Server: **elizarov-tomcat1**
- Executed Server IP Address: **10.6.145.74**
- Session ID: **79121E92B360CBA6ECB6979B62948884**
- Session Created: Tue Oct 01 21:14:59 MSK 2019
- Last Accessed: Tue Oct 01 21:14:59 MSK 2019
- Session will go inactive in **1800 seconds**

## Enter session attribute data:

Name of Session Attribute:

Value of Sesion Attribute:

ADD SESSION DATA

RELOAD PAGE

CLEAR SESSION

## Data retrieved from the HttpSession:

- Setup cluster and check that you can reach clusterjsp app via surname-cluster
- Check session persistence by stopping active tomcat server.

## Task3

1. Configure Log4j2 logging for one of the tomcat servers.

[illegible]