

Tomcat

- description :
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Tomcat Versions

Apache Tomcat Version	Servlet Spec	Jsp Spec	Web Socket Spec	JDK
Apache Tomcat 9.0.33	4.0	2.3	1.1	JDK 8
Apache Tomcat 8.5.53	3.1	2.3	1.1	JDK 7
Apache Tomcat 8.0.53	3.1	2.3	1.1	JDK 7
Apache Tomcat 7.0.103	3.0	2.2	1.1	JDK 6
Apache Tomcat 6.0.53	2.5	2.1	-	JDK 5
Apache Tomcat 5.5.36	2.4	2.0	-	JDK 1.4
Apache Tomcat 4.1.40	2.3	1.2	-	JDK 1.3
Apache Tomcat 3.3.2	2.2	1.1	-	JDK 1.1

- [Tomcat](#)
- [Tomcat](#)
- [Tomcat](#)

2020.02.24 CVE-2020-1938 Apache Tomcat (Ghostcat)
 ([CVE-2020-1938](#)) , [CVE-2020-1938](#)

- 1.
2. server.xml, workers.properties

workers.properties

```

worker.list=loadbalancer

worker.loadbalancer.type=lb
worker.loadbalancer.balanced_workers=worker1,worker2
worker.loadbalancer.sticky_session=1

worker.worker1.type=ajp13
worker.worker1.host=127.0.0.1
worker.worker1.port=8020
worker.worker1.lbfactor=1
  
```

```
worker.worker1.secret=${random }
```

server.xml

```
<Connector protocol="AJP/1.3"
  secret="${random }"
  address="127.0.0.1"
  port="8020"
  redirectPort="8443" />
```

가 '8009' ,

catalina.sh ()

```
284
285 # Set UMASK unless it has been overridden
286 if [ -z "$UMASK" ]; then
287     UMASK="0027" --> 0022
288 fi
289 umask $UMASK
```

Tomcat root UMASK가 0022
0022 : Reading - 4, Writing - 2, Executing - 1, : 0777 - 0022 = 0755 ->
chmod 755 7: , 5: , 5:

가 가 was 가

```
{RSA_WEB_ROOT}/WEB-INF/web.xml 가, {TOMCAT_ROOT}/conf/web.xml
가
<error-code> ( )
: 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 500,
501, 502, 503, 504, 505
JSP Context front (
{TOMCAT_ROOT}/webapps/ROOT
```

* HTTP

{TOMCAT_ROOT}/conf/web.xml

```
<error-page>
  <error-code>401</error-code>
  <location>/error.jsp</location>
</error-page>
<error-page>
  <error-code>402</error-code>
  <location>/error.jsp</location>
```

```
</error-page>
```

```
.....
```

```
error.jsp
```

```
<%@ page language="java" contentType="text/html; charset=utf-8"%>
<!DOCTYPE HTML>
<html>

  <head>
    <meta http-equiv="Content-Type" content="text/html;
charset=UTF-8">
    <title>                .</title>
    <style type="text/css">
      body { background-repeat: repeat-x; background-color: white;
font-family: "          ", "Segoe UI", "verdana", "arial"; margin: 0em; color:
#575757; }
      .mainContent { margin-top:80px; width: 700px; margin-left:
120px ; margin-right: auto ; }
      /* title { color: #2778ec; font-size: 30pt; font-weight:
300; vertical-align:bottom; margin-bottom: 20px; font-family: "          ",
"Segoe UI", "verdana"; position: relative; } */
      .title { color: #228b22; font-size: 30pt; font-weight: 300;
vertical-align:bottom; margin-bottom: 20px; font-family: "          ", "Segoe
UI", "verdana"; position: relative; }
      .errorExplanation { color: #000000; font-size: 12pt; font-
family: "          ", "Segoe UI", "verdana", "arial"; text-decoration: none; }
      .taskSection { margin-top: 20px; margin-bottom: 40px;
position: relative; }
      .tasks { color: #000000; font-family: "          ", "Segoe
UI", "verdana"; font-weight:200; font-size: 12pt; padding-top: 5px; }
      li { margin-top: 8px; }
      .diagnoseButton { outline: none; font-size: 9pt; }
      .webpageURL { direction:ltr; }
      .hidden { display:none; }
      /* a { color: #0066cc; font-family: "          ", "Segoe UI",
"verdana", "arial"; font-size: 11pt; text-decoration: none; } */
      a { color: #008000; font-family: "          ", "Segoe UI",
"verdana", "arial"; font-size: 11pt; text-decoration: none; }
      a:hover { text-decoration: underline; }
      .lineBottom { border-bottom: 1px solid; }
      .lineTop { border-top: 1px solid; }
      .r { text-align: right; }
      .l { text-align: left; }
    </style>
  </head>

  <body>
    <div id="contentContainer" class ="mainContent">
      <div id="mainTitle" class="title">
        .</div>
```

```

        <div class="taskSection" id="taskSection">
            <ul id="taskList" class="tasks">
                <li id="task1">        <span id="webpage"
class="webpageURL"></span> (가)        .</li>
                <li id="task2">        .</li>
                <li id="task3">        .</li>
                <li id="task4">TLS    SSL
.        >        >        >        .</li>
            </ul>
            <ul id="cantDisplayTasks" class="tasks hidden">
                <li id="task1-1">        가        .</li>
                <li id="task1-2">        .</li>
                <li id="task1-3">        .</li>
            </ul>
            <ul id="notConnectedTasks" class="tasks hidden">
                <li id="task2-1">
.</li>
                <li id="task2-2">        가        .</li>
                <li id="task2-3">        가        .</li>
                <li id="task2-4">
.</li>
                <li id="task2-5">        .</li>
            </ul>
        </div>
        <div class="lineTop l"><a
href="http://<%=request.getServerName()%>" title="
">http://<%=request.getServerName()%></a></div>
        <% response.setStatus(404); %>
    </div>
    <script type="text/javascript">
        try { document.getElementById("webpage").innerHTML = location.href;
    } catch(e) {}
    </script>
</body>
</html>

```

1. *.log
 1. crontab 30
2. catalina.out
 1. logrotate.d ()

***.log**

crontab SHELL ({CATALINA_HOME}/bin/log_delete.sh)

```
#!/bin/sh
#30      *.log, *.txt
cd ${CATALINA_HOME}
find ./logs -mtime +30 -name '*.log' -exec rm -f {} \;
find ./logs -mtime +30 -name '*.txt' -exec rm -f {} \;
```

crontab or LogProc actctl.sh

```
//      가
$> chmod +x ${CATALINA_HOME}/bin/log_delete.sh
//
$> crontab -l //
$> crontab -e //
0 5 * * * ${CATALINA_HOME}/bin/log_delete.sh # 5
```

logrotate

```
// /etc/logrotate.d      tomcat      가
$> cat /etc/logrotate.d/tomcat //

/usr/local/tomcat/*log { // *log      catalina.out 가
    copytruncate
    daily
    rotate 200
    compress
    missingok
    notifempty
    dateext
    dateformat .%Y-%m-%d
}

$> //
$> $logrotate -f /etc/logrotate.d/tomcat
$> //
$> $logrotate -d /etc/logrotate.d/tomcat
```

```
copytruncate :
daily :
compress :      gzip
dateext :
missingok :
rotate 30 :      30
notifempty :
dateformat .%Y-%m-%d
```

catalina.out

[linux tomcat catalina.out](#)

[/ linux tomcat catalina.out](#)

[/ linux](#)

[tomcat catalina.out](#)

[Tomcat \(logrotate.d\)](#)

[logrotate.d](#)

[Tomcat](#) [catalina.out](#)
 [logrotate](#)

https

```
> https                    SSL
>        tomcat
> keystoreFile    keystorePass    가
```

```
<Connector port="8443"
protocol="org.apache.coyote.http11.Http11Protocol"
              maxThreads="150" SSLEnabled="true" scheme="https"
secure="true"
              clientAuth="false" sslProtocol="TLS" keystoreFile="
/sslcert.co.kr_xxxxx.jks        " keystorePass=".jks                "/>
```

[\[Tomcat\] apache-tomcat secretRequired](#) ([AJP Connector SSL](#), [secret key](#), [secret password](#))

```
'/'                    ("")                '/'
```

Apache-tomcat

- [\[CentOS\] apache-tomcat](#) [httpd 2.4.x, tomcat-connectors-1.2.46-src](#)
- [\[CentOS7\]](#) [\(mod_jk\) &](#)
- [Apache-Tomcat-7.0.100](#) [server.xml AJP](#)

Linux

-

Windows

/

[\[tomcat\]](#)

```
service.bat install
```

```
prompt
service.bat
```

```
sc delete
```

```
prompt
> >
```

Optimization, Tunning

- JAVA_OPTS

```
JAVA_OPTS="-Djava.awt.headless=true -server -Xms512m -Xmx8192m -
XX:NewSize=256m -XX:MaxNewSize=256m -XX:PermSize=256m -XX:MaxPermSize=512m -
XX:+DisableExplicitGC"
```

```
-Xms: Heap
-Xmx: Heap
setenv.sh, setenv.bat
```

Tomcat8 Heap memory size

```
setenv.bat
```

```
setenv.sh
```

```
export CATALINA_OPTS="$CATALINA_OPTS -Xms512m"
```

Tip

-
- [Tomcat](#)
- [Tomcat](#)

Troubleshooting

'Creation of SecureRandom instance for session ID generation using [SHA1PRNG] took'

```
: JAVA_OPTS="$JAVA_OPTS -Djava.security.egd=file:/dev/./urandom tomcat
/dev/random
```

(Apache Tomcat 8.5 → ApacheTomcat85)

tomcat7 the basedir environment variable is not defined tomcat7

CATALINA_HOME, JAVA_HOME /etc/profile, ~/.bash_profile, catalina.sh

80 (not root)

```

1~1024 root bind가 가 .
iptables 8080
# iptables -t nat -A PREROUTING -p tcp --dport 80 -j REDIRECT --to-port 8080

```

TOMCAT ROOT가 80

“Catalina”;

```

: Failed to start connector [Connector[AJP/1.3-8009]]
org.apache.catalina.LifecycleException: service.getName(): "Catalina";
    at
org.apache.catalina.connector.Connector.startInternal(Connector.java:1065)
    at org.apache.catalina.util.LifecycleBase.start(LifecycleBase.java:183)
    at
org.apache.catalina.core.StandardService.startInternal(StandardService.java:
460)
    at org.apache.catalina.util.LifecycleBase.start(LifecycleBase.java:183)
    at
org.apache.catalina.core.StandardServer.startInternal(StandardServer.java:74
4)
    at org.apache.catalina.util.LifecycleBase.start(LifecycleBase.java:183)
    at org.apache.catalina.startup.Catalina.start(Catalina.java:712)
    at sun.reflect.NativeMethodAccessorImpl.invoke0(Native Method)
    at
sun.reflect.NativeMethodAccessorImpl.invoke(NativeMethodAccessorImpl.java:57
)
    at
sun.reflect.DelegatingMethodAccessorImpl.invoke(DelegatingMethodAccessorImpl
.java:43)
    at java.lang.reflect.Method.invoke(Method.java:606)
    at org.apache.catalina.startup.Bootstrap.start(Bootstrap.java:294)
    at org.apache.catalina.startup.Bootstrap.main(Bootstrap.java:428)
Caused by: java.lang.IllegalArgumentException: AJP
secretRequired="true"
    at
org.apache.coyote.ajp.AbstractAjpProtocol.start(AbstractAjpProtocol.java:211
)
    at
org.apache.catalina.connector.Connector.startInternal(Connector.java:1058)

```

... 12 more

: server.xml Connector secretRequired="false" 가

```
<Connector secretRequired="false" connectionTimeout="20000" port="8080"
protocol="HTTP/1.1" redirectPort="8443"/>
```

Invalid byte tag in constant pool: 19

:

Tomcat 9.0.x : 9.0.0.M18
Tomcat 8.5.x : 8.5.12
Tomcat 8.0.x : 8.0.42
Tomcat 7.0.x : 7.0.76

https://avaible.tistory.com/261

- hot deploy

... 가 (context.xml
가)

```
<?xml version="1.0" encoding="UTF-8"?>
<Context>
  <WatchedResource>WEB-INF/web.xml</WatchedResource>
  <WatchedResource>WEB-INF/tomcat-web.xml</WatchedResource>
  <WatchedResource>${catalina.base}/conf/web.xml</WatchedResource>
  <Resources chahingAllowed="true" cacheMaxSize="1000000"/>
</Context>
```

(TOMCAT)

Ref

- Apache Tomcat Versions
•
• + server.xml

tomcat

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