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Running Multiple Tomcat Instances on One Server

Sep 29th, 2011 | [Comments](#)

Here's a brief step by step guide to running more than one instance of Tomcat on a single machine.



Step 1: Install the Tomcat files

Download Tomcat [4.1](#) or [5.5](#), and unzip it into an appropriate directory. I usually put it in /usr/local, so it ends up in a directory called /usr/local/apache-tomcat-5.5.17 (5.5.17 being the current version as of this writing), and make a symlink named /usr/local/tomcat to that directory. When later versions come out, I can unzip them and relink, leaving the older version in case things don't work out (which rarely if ever happens, but I'm paranoid).

Step 2: Make directories for each instance

For each instance of Tomcat you're going to run, you'll need a directory that will be *CATALINA_BASE*. For example, you might make them */var/tomcat/serverA* and */var/tomcat/serverB*.

In each of these directories you need the following subdirectories: *conf*, *logs*, *temp*, *webapps*, and *work*.

Put a *server.xml* and *web.xml* file in the *conf* directory. You can get these from the *conf* directory of the directory where you put the tomcat installation files, although of course you should tighten up your *server.xml* a bit.

The *webapps* directory is where you'll put the web applications you want to run on the particular instance of Tomcat.

I like to have the Tomcat manager webapp installed on each instance, so I can play with the webapps, and see how many active sessions there are. See my instructions for [configuring the Tomcat manager webapp](#).

Step 3: Configure the ports and/or addresses for each instance

Tomcat listens to at least two network ports, one for the shutdown command, and one or more for accepting requests. Two instances of Tomcat can't listen to the same port number on the same IP address, so you will need to edit your *server.xml* files to change the ports they listen to.

The first port to look at is the shutdown port. This is used by the command line shutdown script (actually, but the Java code it runs) to tell the Tomcat instance to shut itself down. This port is defined at the top of the *server.xml* file for the instance.

```
<Server port="8001" shutdown="_SHUTDOWN_COMMAND_" debug="0">
```

Make sure each instance uses a different port value. The port value will normally need to be higher than 1024, and shouldn't conflict with any other network service running on the same system. The shutdown string is the value that is sent to shut the server down. Note that Tomcat won't accept shutdown commands that come from other machines.

Unlike the other ports Tomcat listens to, the shutdown port can't be configured to listen to its port on a different IP address. It always listens on 127.0.0.1.

The other ports Tomcat listens to are configured with the *<Connector>* elements, for instance the HTTP or JK listeners. The *port* attribute configures which port to listen to. Setting this to a different value on the different Tomcat instances on a machine will avoid conflict.

Of course, you'll need to configure whatever connects to that Connector to use the different port. If a web server is used as the front end using *mod_jk*, *mod_proxy*, or the like, then this is simple enough - change your web server's configuration.

In some cases you may not want to do this, for instance you may not want to use a port other than 8080 for HTTP connectors. If you want all of your Tomcat instances to use the same port number, you'll need to use different IP addresses. The server system must be configured with multiple IP addresses, and the *address* attribute of the *<Connector>* element for each Tomcat instance will be set to the appropriate IP address.

Step 4: Startup

Startup scripts are a whole other topic, but here's the brief rundown. The main difference from running a single Tomcat instance is you need to set CATALINA_BASE to the directory you set up for the particular instance you want to start (or stop). Here's a typical startup routine:

```
JAVA_HOME=/usr/java
JAVA_OPTS="-Xmx800m -Xms800m"
CATALINA_HOME=/usr/local/tomcat
CATALINA_BASE=/var/tomcat/serverA
export JAVA_HOME JAVA_OPTS CATALINA_HOME CATALINA_BASE

$CATALINA_HOME/bin/catalina.sh start
```

Posted by Kief Morris Sep 29th, 2011

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Joe

"For each instance of Tomcat you're going to run, you'll need a directory that will be CATALINA_HOME" - Shouldn't that be CATALINA_BASE?



kief

Joe, you're right, I've corrected in now. Thanks for pointing it out!



Nagkeeran

I have tried this> Not working .
reason CATALINA_BASE & CATALINA_HOME taking same path

I couldn't to fixed this problem

```
: \Tomcat\tomcatclpl>startup.batTomcat MASS ServiceUsing CATALINA_BASE: "C:\Tomcat\tomcatclpl"Using CATALINA_HOME: "C:\Tomcat\tomcatclpl"Using CATALINA_TMPDIR: "C:\Tomcat\tomcatclpl\temp"Using JRE_HOME: "C:\Program Files\Java\jdk1.6.0_01"Using CLASSPATH: "C:\Tomcat\tomcatclpl\bin\bootstrap.jar"
C:\Tomcat\tomcatclpl>
```

<http://stackoverflow.com/quest...>



Bijuphilip0

Thanks for this. Will also want to run "ln -s ../lib lib" in each tomcat server directory.



Anonymous

Thank you....very helpful.Gr8 work.



Subbu

Can we use virtual host in apache config file to deploy 2 instances of the same application on the same server?



Muhammad Mustafa

i want how to diffrentiate in visibility of both tomcat?

is there any option to change header name?



Muhammad Mustafa

Hi



elsie

I did create a second item in the registry keys and that works...
so my problem is solved...



Hi, i want to install 2 instances of tomcat 6 on a windows 2008R2 server.
one did work, with setting catalina_HOME to the applicationserver instance, and setting following register keys

I have a second instance running on port 90 under directory applicationserver_port90
Do i need to create a second item in my register or how do i set 2 values of the catalina_HOME?

thanks for any reply or help !

[HKEY_LOCAL_MACHINE\SOFTWARE\Wow6432Node\Apache Software Foundation\Procrun
2.0\securex\Parameters]

```
[HKEY_LOCAL_MACHINE\SOFTWARE\Wow6432Node\Apache Software Foundation\Procrun
2.0\securex\Parameters\Java]"Jvm"="D:\j2sdk1.6.0_20\jre\bin\server\jvm.dll""Classpath"="D:
\apache-tomcat-6.0.26\applicationserver\bin\tomcat-juli.jar;D:\apache-tomcat-6.0.26
\applicationserver\bin\tomcat-juli.jar;D:\apache-tomcat-6.0.26\applicationserver
\bin\bootstrap.jar""Options"=hex(7):2d,00,44,00,63,00,61,00,74,00,61,00,6c,00,69,00,6e,00,61,0
0,\ 2e,00,62,00,61,00,73,00,65,00,3d,00,44,00,3a,00,5c,00,61,00,70,00,61,00,63,\
00,68,00,65,00,2d,00,74,00,6f,00,6d,00,63,00,61,00,74,00,2d,00,36,00,2e,00,\
30,00,2e,00,32,00,36,00,00,00,2d,00,44,00,63,00,61,00,74,00,61,00,6c,00,69,\
00,6e,00,61,00,2e,00,68,00,6f,00,6d,00,65,00,3d,00,44,00,3a,00,5c,00,61,00,\
70,00,61,00,63,00,68,00,65,00,2d,00,74,00,6f,00,6d,00,63,00,61,00,74,00,2d,\
00,36,00,2e,00,30,00,2e,00,32,00,36,00,00,00,2d,00,44,00,6a,00,61,00,76,00,\
61,00,2e,00,65,00,6e,00,64,00,6f,00,72,00,73,00,65,00,64,00,2e,00,64,00,69,\
00,72,00,73,00,3d,00,44,00,3a,00,5c,00,61,00,70,00,61,00,63,00,68,00,65,00,\
2d,00,74,00,6f,00,6d,00,63,00,61,00,74,00,2d,00,36,00,2e,00,30,00,2e,00,32,\
00,36,00,5c,00,65,00,6e,00,64,00,6f,00,72,00,73,00,65,00,64,00,00,00,2d,00,\
44,00,6a,00,61,00,76,00,61,00,2e,00,69,00,6f,00,2e,00,74,00,6d,00,70,00,64,\
00,69,00,72,00,3d,00,44,00,3a,00,5c,00,61,00,70,00,61,00,63,00,68,00,65,00,\
2d,00,74,00,6f,00,6d,00,63,00,61,00,74,00,2d,00,36,00,2e,00,30,00,2e,00,32,\
00,36,00,5c,00,74,00,65,00,6d,00,70,00,00,00,2d,00,44,00,6a,00,61,00,76,00,\
61,00,2e,00,75,00,74,00,69,00,6c,00,2e,00,6c,00,6f,00,67,00,67,00,69,00,6e,\
00,67,00,2e,00,6d,00,61,00,6e,00,61,00,67,00,65,00,72,00,3d,00,6f,00,72,00,\
67,00,2e,00,61,00,70,00,61,00,63,00,68,00,65,00,2e,00,6a,00,75,00,6c,00,69,\
00,2e,00,43,00,6c,00,61,00,73,00,73,00,4c,00,6f,00,61,00,64,00,65,00,72,00,\
4c,00,6f,00,67,00,4d,00,61,00,6e,00,61,00,67,00,65,00,72,00,00,00,2d,00,44,\
00,6a,00,61,00,76,00,61,00,2e,00,75,00,74,00,69,00,6c,00,2e,00,6c,00,6f,00,\
67,00,67,00,69,00,6e,00,67,00,2e,00,63,00,6f,00,6e,00,66,00,69,00,67,00,2e,\
```

```
00,66,00,69,00,6c,00,65,00,3d,00,44,00,3a,00,5c,00,61,00,70,00,61,00,63,00,\
68,00,65,00,2d,00,74,00,6f,00,6d,00,63,00,61,00,74,00,2d,00,36,00,2e,00,30,\
00,2e,00,32,00,36,00,5c,00,63,00,6f,00,6e,00,66,00,5c,00,6c,00,6f,00,67,00,\
67,00,69,00,6e,00,67,00,2e,00,70,00,72,00,6f,00,70,00,65,00,72,00,74,00,69,\
00,65,00,73,00,00,00,2d,00,58,00,58,00,3a,00,4d,00,61,00,78,00,50,00,65,00,\
72,00,6d,00,53,00,69,00,7a,00,65,00,3d,00,32,00,35,00,36,00,6d,00,00,00,00,\
00"JvmMs"=dword:00000400"JvmMx"=dword:00000400
[HKEY_LOCAL_MACHINE\SOFTWARE\Wow6432Node\Apache Software Foundation\Procrun
2.0\securex\Parameters\Log]"Path"="D:\\apache-tomcat-6.0.26\\applicationserver
\\logs""StdError"="auto""StdOutput"="auto"
[HKEY_LOCAL_MACHINE\SOFTWARE\Wow6432Node\Apache Software Foundation\Procrun
2.0\securex\Parameters
\Start]"Class"="org.apache.catalina.startup.Bootstrap""Params"=hex(7):73,00,74,00,61,00,72,00,7
4,00,00,00,00,00"Mode"="jvm"
[HKEY_LOCAL_MACHINE\SOFTWARE\Wow6432Node\Apache Software Foundation\Procrun
2.0\securex\Parameters
\Stop]"Class"="org.apache.catalina.startup.Bootstrap""Params"=hex(7):73,00,74,00,6f,00,70,00,00
,00,00,00"Mode"="jvm"
```



xue yang

If you knows ,you can send e-mail to me.
the e-mail address is cn.ivan.mail@gmail.com



xue yang

I hava some questions.
How to running multiple Tomcat instances on One windows Server?

How to write the bat file for start on of the tomcat instances.



Stephen Ocaya

I get it Now ... These setting are put \$CATALINA_HOME/bin/[setenv.sh](#) Hope some one might be wondering as well



Stephen Ocaya

the part i do not get is the startup where are these things

```
JAVA_HOME=/usr/java
```

```
JAVA_OPTS="-Xmx800m -Xms800m"
```

```
CATALINA_HOME=/usr/local/tomcat
```

```
CATALINA_BASE=/var/tomcat/serverA
```

export JAVA_HOME JAVA_OPTS CATALINA_HOME CATALINA_BASE or where do i put them? before running the start



Guest

Thanks for nice tutorial. I configured two Tomcat instances in just 5 minutes.

I am running serverA instance at port number 8010 and serverB at port number 8011.

Now I want to shutdown only serverB instance which is running at port number 8011.

How can I do that. Do I need to give any option with SHUTDOWN command? Can you please provide here it's command with full options. I am running Tomcat at localhost.



maddy

created 3 separate instances of tomcat and changed the port numbers in server.xml. but when i am trying to start each tomcat instance each one is using the same port numbers? how can i overcome this problem and start all the 3 instances?



kief

Hi Maddy, a few things that come to mind:

Are you sure you changed all of the port numbers in server.xml to non-clashing ones?

Tomcat will have at least 2, sometimes more ports for each instance: the shutdown-port, an http port, and potentially an ajp port as well. All of these need to be unique.

Otherwise, if your tomcat instance is not running on the ports you set in server.xml then most likely when tomcat is starting the CATALINA_BASE is not pointing at the right directory. Double check how you are setting it.

Make sure Tomcat is not already running. Sometimes when you shut down Tomcat it doesn't shut down properly, and still holds ports open. The next time you start it fails complaining about the ports already being open.

If you are on Linux, you can use `lsof` and `netstat` to see which ports are opened by which

process.



Prakashbehara

really informative and very straightforward approach. thanks.



Mihai Caraman

You the man, thx!



Henry

This is really helpful. Thanks!



Joshua Johnson

Concise and to the point, clean. Good to know.



Craig Cleaveland

Don't you also need to use a different PIDFILE in the startup script for each instance?



Kief Morris

Craig, I don't really use pidfiles, I find them unreliable. Instead (on Linux) I use lsof to find the pid either by checking processes that have catalina.out open or, more reliably, by checking processes that have one of Tomcat's ports open.

But if you use Tomcat's startup/shutdown scripts with pidfile options, it should put the pidfile in \$CATALINA_BASE/logs. Since you've got a separate CATALINA_BASE for each running instance, there's no clash.



Julia

I'm working on getting a 2nd instance of Tomcat to run concurrently with the 1st instance. I can get it to start, but it's not loading the application. It's throwing the following error, highlighted in red below. Any ideas?Reading /openwrap/WEB-INF/pagemap.xml

** Error \openwrap\WEB-INF\pagemap.xml (The system cannot find the path specified)

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Reactions



Kief is a software delivery consultant with ThoughtWorks in London, specializing in tools, practices, and processes for the continuous delivery of software.



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