Install and Run Multiple Tomcat and JAVA server instances on single Windows server Howto

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I've had a *task at my work place to install Multiple Tomcat servers on Windows 2012 Server* **R2 the task seems trivial however I've faced few minor issues and the few searches in Google returned very few articles discussing the topic and this give me the idea that it might be** *helpful to others to come up with my own article as this might save time for those Linux guys who need to install Multiple Tomcat instances on the same Windows server without spending too much time to dig into the arcane winblows.*

   I stumbled on some issues during installation *thus took the time to systemize below shortly how I managed to run 2 Tomcat servers on One Windows 2012 R2 machine.*

   First thing to do is to obtain latest compiled Tomcat server archive from [Tomcat's official download page here.](#)

   Latest Tomcat stable release as of time of writting this article is 7.0.69, **so I've downloaded 64 Bit archive (as the server is running X64 Operating system) and unarchived it twice on the Install server under 2 separate directory locations under:**

   D:\Tomcat\Tomcat_Instance-1

and

D:\Tomcat\Tomcat_Instance-2

Copy of the 7.0.69 X86 **tomcat zip archive is here** and X64 bit tomcat 7.0.69 is here

   Once the files are properly untarred I also needed to download also **Java** as the **WAR application** supposed to run on the Windows machine had as requirement **Java JDK 8.**

   Downloading Java is a trivial task, however in my case the server used to be in DMZ (Demiliterized Zone) / Firewalled network and hence instead of using the default Java installer provided from Oracle website which is trying to download from Internet, I had instead to download and use the Offline current JAVA 8u91 version**.**
Just for sake of some convenience I've made a mirrored version of X86 JAVA 8 (8u91) is here **and** JAVA 8u91 X64 version here

JAVA JDK install is a trivial task just run the isntaller set the proper locations initially for JDK base folder in my case this was:

D:\Java\jdk

and later throughout during install, I was asked also to fill in full path location for JRE, in my case this was

D:\Java\jre

It was a little bit surprising for me that JRE install path had to be entered and because I was not careful enough I had twice entered the same path for both JRE and JDK, i.e. entered on both prompts:
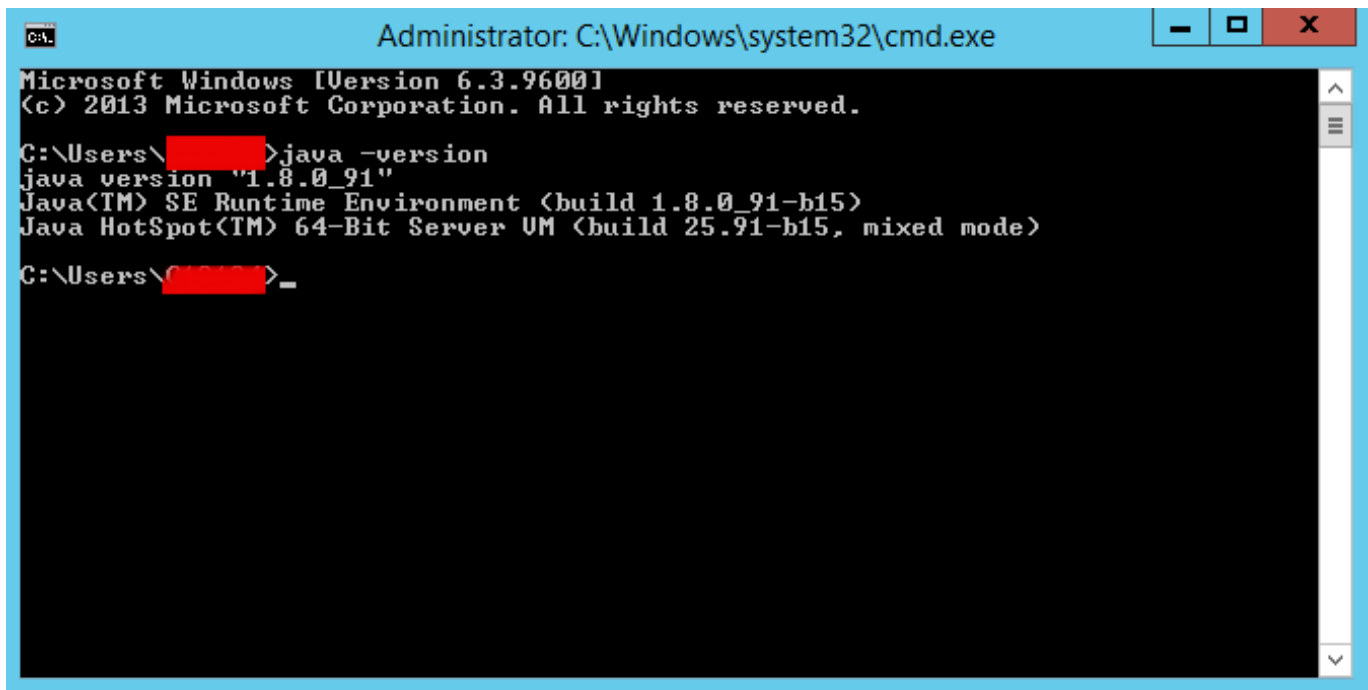
D:\Java

This caused issues and a messed Java install but I realized that after the 3rd re-install of Java

when I decided to also read instead of by habit click Next / Next and Complete the install as used to be in the good old days of Windows XP and Windows 98 :)

Once Java set up correctly I've tested it with:

C:\Users\georgi> *java -version*

It is also necessery to set properly following 2 JAVA command line environment variables:

JAVA_HOME

JRE_HOME

On the logged in user Environment Variables with which Tomcat will be running on how to do that check my previous article how to add Environment Variables on Windows

Make sure you have the following 2 environment variables set upped:

JAVA_HOME=D:\Java\jdk

JRE_HOME=D:\Java\jre

For one time set (assuming Java is installed) under D:Javajre and D:Javajdk, you will need to type in command prompt:

set JAVA_HOME=D:\Java\jdk

set JRE_HOME=D:\Java\jre

Once assured Java is running fine I proceeded to run the Tomcat serevrs, in order to make them working it was necessery to change all coinciding Port names under:

conf/server.xml

because if there are coinciding ports (assuming that like me you're trying to run both Tomcat under the same IP address), the servers will fail to run because they're trying to bind under the same Port TCP addresses.

Assuming that the tomcat archive files are copied from .zip into **D:TomcatTomcat_Instance-1** and **D:TomcatTomcat_Instance-2** folders and you have in each of the 2 the following directory structure:

/bin : This directory contains the startup and shutdown scripts for both Windows and Linux.
/conf : This directory contains the main configuration files for Tomcat. The two most important are the server.xml and the global web.xml .
/server : This directory contains the Tomcat Java Archive files.
/lib : This directory contains Java Archive files that Tomcat is dependent upon.
/logs : This directory contains Tomcat's log files.
/src : This directory contains the source code used by the Tomcat server. Once Tomcat is released, it will probably contain interfaces and abstract classes only.
/webapps : All web applications are deployed in this directory; it contains the WAR file.
/work : This is the directory in which Tomcat will place all servlets that are generated from JSPs. If you want to see exactly how a particular JSP is interpreted, look in this directory.

You will need to edit server.xml in both of the Tomcats and make sure the configuration for ports is not coinciding, i.e., I've changed the following configurations for **Tomcat_Instance-2** installation:

Connector Port : This is the port where Apache Tomcat listen for the HTTP requests. Default port is **8080**, I've changed this to **8089** for second Tomcat server

Shutdown Port : This port is used when we try to shutdown the Apache Tomcat Server. Default port is **8005** so changed that to **8006** in **Tomcat_Instance-2**

AJP (Apache JServ Protocol) Connector Port : The Apache JServ Protocol (AJP) is a binary protocol that can conduct inbound requests from a web server through to an application server that sits behind the web server.

I've commented out the configuration for AJP completely and used for my custom needs the following **server.xml** configuration:

Redirect Port : Any redirection happening inside Apache Tomcat will happen through this port. In Apache TOMCAT there are two instance where redirect Port is mentioned. First one is for the Apache TOMCAT server and other one is for the AJP port. Default here is port **8443** so changed that one to to listen to **8444** instead.

Another thing necessery to do is to create **setenv.bat file under both D:\TomcatTomcat_Instance-1\bin and D:\Tomcat\Tomcat_Instance-2\bin** with following content:

```
  set JRE_HOME=D:\java\jre
set JAVA_HOME=d:\java\jdk
exit /b 0
```

The quickest way to do it without bothering with Notepad text editor is by issuing:

```
  cd tomcat\Tomcat_Instance1\bin
echo set JRE_HOME=D:\java\jre > setenv.bat
echo set JAVA_HOME=D:javajdk >> setenv.bat
```

```
cd tomcat\Tomcat_Instance2\bin
echo set JRE_HOME=D:\java\jre > setenv.bat
echo set JAVA_HOME=D:\java\jdk >> setenv.bat
```

The setenv.sh is a standard variables file read by Tomcat on Instance start up time

  Next part of Tomcat installation is to install each of the 2 instances after defining CATALINA_BASE to point to first and second Tomcat instance directories, e.g open a Command Prompt **(cmd.exe)** and run there:

```
set CATALINA_BASE=D:\Tomcat\Tomcat_Instance-1
```

```
C:|> d:
```

```
D:|> cd Tomcat\Tomcat_Instance-1\bin
```

D:Tomcat\Tomcat_Instance-1\bin> **service install Tomcat_Instance-1**

You will get output like:

Using CATALINA_BASE: " D:\Tomcat\Tomcat_Instance-1"
Using CATALINA_HOME: " D:\Tomcat\Tomcat_Instance-1"
Using CATALINA_TMPDIR: " D:\TomcatTomcat_Instance-1\temp"
Using JRE_HOME: "D:\java\jre"
Using CLASSPATH: "D:\Tomcat\Tomcat_Instance-1\bin\bootstrap.jar;
D:\Tomcat\Tomcat_Instance-1\bin\tomcat-juli.jar"

Then for the second Tomcat server instance run in command prompt:

set CATALINA_BASE=D:\Tomcat\Tomcat_Instance-2

d:

cd Tomcat\Tomcat_Instance-2\bin
service install Tomcat_Instance-2

Using CATALINA_BASE: " D:\Tomcat\Tomcat_Instance-2"
Using CATALINA_HOME: " D:\Tomcat\Tomcat_Instance-2"
Using CATALINA_TMPDIR: " D:\Tomcat\Tomcat_Instance-2\temp"
Using JRE_HOME: "D:\java\jre"
Using CLASSPATH: "D:\Tomcat\Tomcat_Instance-1\bin\bootstrap.jar;
D:\TomcatTomcat_Instance-2\bin\tomcat-juli.jar"
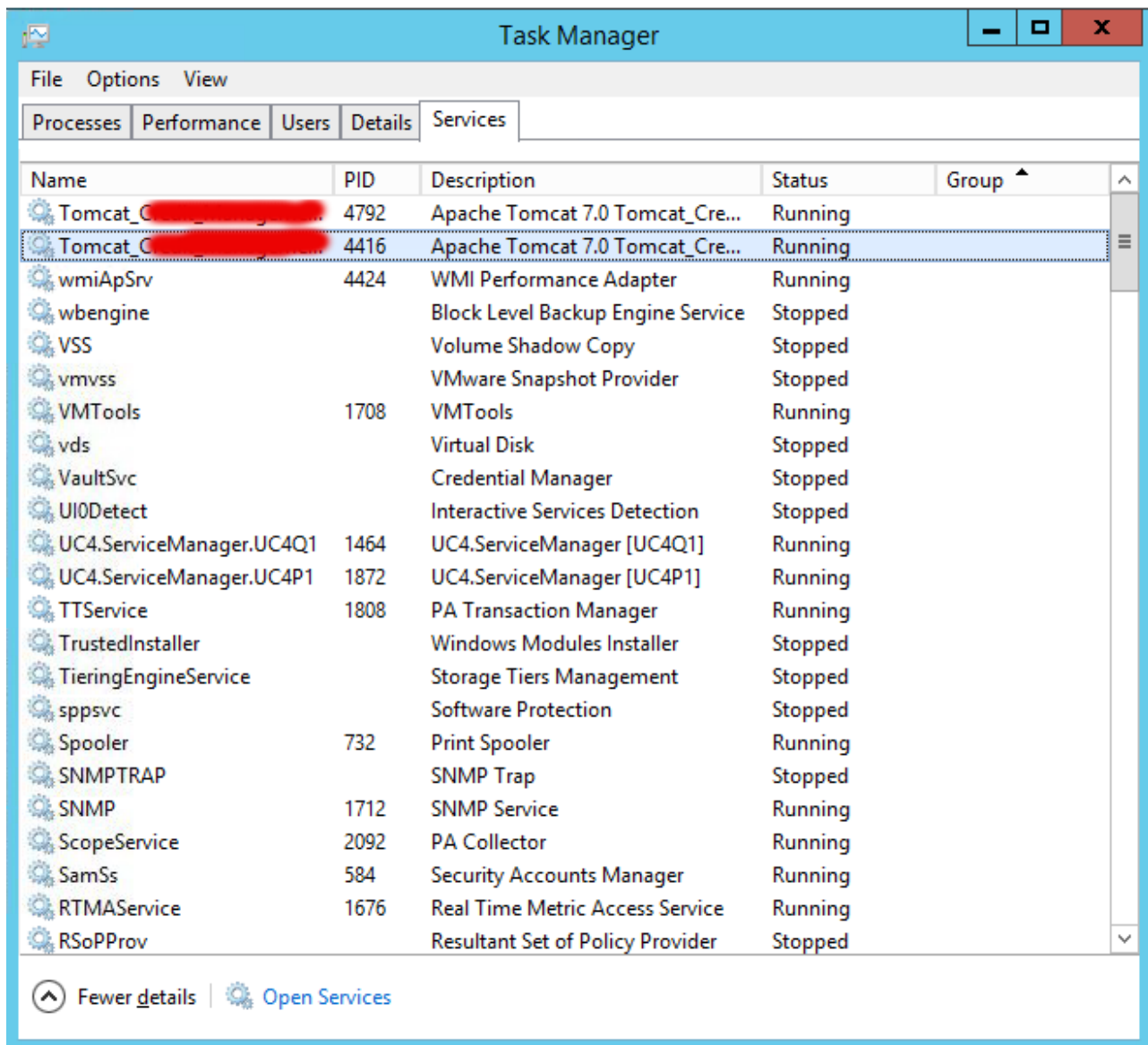
Name	PID	Description	Status	Group
Tomcat_☰☰☰☰☰	4792	Apache Tomcat 7.0 Tomcat_Cre...	Running	
Tomcat_☰☰☰☰☰	4416	Apache Tomcat 7.0 Tomcat_Cre...	Running	
wmiApSrv	4424	WMI Performance Adapter	Running	
wbengine		Block Level Backup Engine Service	Stopped	
VSS		Volume Shadow Copy	Stopped	
vmvss		VMware Snapshot Provider	Stopped	
VMTools	1708	VMTools	Running	
vds		Virtual Disk	Stopped	
VaultSvc		Credential Manager	Stopped	
UI0Detect		Interactive Services Detection	Stopped	
UC4.ServiceManager.UC4Q1	1464	UC4.ServiceManager [UC4Q1]	Running	
UC4.ServiceManager.UC4P1	1872	UC4.ServiceManager [UC4P1]	Running	
TTService	1808	PA Transaction Manager	Running	
TrustedInstaller		Windows Modules Installer	Stopped	
TieringEngineService		Storage Tiers Management	Stopped	
sppsvc		Software Protection	Stopped	
Spooler	732	Print Spooler	Running	
SNMPTRAP		SNMP Trap	Stopped	
SNMP	1712	SNMP Service	Running	
ScopeService	2092	PA Collector	Running	
SamSs	584	Security Accounts Manager	Running	
RTMAService	1676	Real Time Metric Access Service	Running	
RSoPProv		Resultant Set of Policy Provider	Stopped	

Here is all the service.bat batch file parameters:

> **D:\Tomcat\Tomcat_Instance-11\bin>service.bat /**
> **?**
> **Unknown parameter "/?"**

> **Usage: service.bat install/remove [service_name] [/user username]**

To test both Tomcat servers where they run simultaneously without issues, I run in 2 separate command prompts - opened (cmd.exe) two times and run in each of them:

  What this little command does is uses Tomcat7.exe command to Add / Remove / Modify the Tomcat instance into Windows Services, the same can be happily done also with the good old ₛ꜀ (service configure) windows command.

> **D:**

> **cd Tomcat\Tomcat_Instance-1\bin\startup.bat**

> **D:**

  cd Tomcat\Tomcat_Instance-2\bin\startup.bat

  **Both executed without errors in command line and to stop them I've pressed the usual CTRL+C.
To make sure once again both server instances ran wihtout errors, I've checked in**
D:TomcatTomcat_Instance-{1,2}logs/catalina*.log **and in both of them all looked fine.**
**Another good check if you want to be 10000% sure Tomcat is running is to look up for Tomcat
listening on above configured ports, for example run below in cmd:**

  D:Tomcat> netstat -a|findstr "8080"

I've also used the 2 following command to set up proper Services description for both of services:

  **D:\Tomcat\Tomcat_Instance-1\tomcat7 //US//Tomcat_Instance1 --Description="Apache
Tomcat Server - Tomcat-Instance1.my-site.com"**

  **D:\Tomcat\Instance_Instance-2\tomcat7 //US//Tomcat_Instance2 --Description="Apache
Tomcat Server - Tomcat-Instance2.my-site.com "**

  A very [helpful resource during the Apache (Windows Service) instance install / setup /modification that
helped me is on Tomcat's official site here](#)

N! B! Very important note to make here for anyone experiencing strange issues when trying to add multiple issues is below:

I've experienced some issues while trying to add the 2 Tomcat servers into Windows services initially with tomcat7.exe command like so:

Trying installing Tomcat71 service with cmd:

> **tomcat7 //IS//Tomcat71 --DisplayName="Apache Tomcat 7" ^**
> **--Install="D:\Tomcat\Tomcat_Instance-1\bin\tomcat7.exe" --Jvm=auto ^**
> **--StartMode=jvm --StopMode=jvm ^**
> **--StartClass=org.apache.catalina.startup.Bootstrap --StartParams=start ^**
> **--StopClass=org.apache.catalina.startup.Bootstrap --StopParams=stop**

And Tomcat72 instance with cmd:

> **tomcat7 //IS//Tomcat71 --DisplayName="Apache Tomcat 7" ^**
> **--Install="D:\Tomcat\Tomcat_Instance-2\bin\tomcat7.exe" --Jvm=auto ^**
> **--StartMode=jvm --StopMode=jvm ^**
> **--StartClass=org.apache.catalina.startup.Bootstrap --StartParams=start ^**
> **--StopClass=org.apache.catalina.startup.Bootstrap --StopParams=stop**

I've tried multiplet imes to Add and remove the **Tomcat71** and **Tomcat72** Windows service names (with) Tomcat DS (Delete Service)

> **tomcat7 //DS/Tomcat71**

tomcat7 //DS/Tomcat72

And strangely the two instances were continuously crashing when I tried to start them (with Properties button and Start instruction) from *Windows Task Manager* **(taskmgr.exe**) -> **Services**

  Finally I realized the issue is caused by some problems that somehow occured with Windows Service Names Tomcat71 and Tomcat72 by simply readding the two instances under another name the instances stopped crashing and all worked thanks to help of colleague Anatoliy who pointed me tot he problem by trying to install his own instances under a different service name).

  Thanks God finally the 2 instances run fine !