How to Install Tomcat 9 on CentOS 8

Apache Tomcat is an open-source implementation of the Java Servlet, JavaServer Pages, Java Expression Language, and Java WebSocket technologies. It is one of the most widely adopted applications and web servers in the world today. Tomcat is simple to use and has a robust ecosystem of add-ons.

Installation Tutorial

This tutorial explains how to install Tomcat 9.0 on CentOS 8.

Installing Java

Tomcat 9 requires Java SE 8 or later. We will install OpenJDK 11, the open-source implementation of the Java Platform.

Run the following command as root or user with sudo privileges to install Java:

```
# dnf install java-11-openjdk-devel
```

Once the installation is complete, verify it by checking the Java version:

```
# java -version
```

The output should look something like this:

```
openjdk version "11.0.5" 2019-10-15 LTS
OpenJDK Runtime Environment 18.9 (build 11.0.5+10-LTS)
OpenJDK 64-Bit Server VM 18.9 (build 11.0.5+10-LTS, mixed mode, sharing)
```

Creating a System User

Running Tomcat under the root user is a security risk. We'll create a new system user and group with home directory /opt/tomcat that will run the Tomcat service. To do so, enter the following command:

```
# useradd -m -U -d /opt/tomcat -s /bin/false tomcat
```

Downloading Tomcat

Tomcat binary distribution is available for download from the Tomcat downloads page.

At the time of writing, the latest Tomcat version is `9.0.30`. Before continuing with the next step, check the Tomcat 9 download page to see if a newer version is available.

Download the Tomcat zip file with `wget` to the `/tmp` directory:

```
# VERSION=9.0.30
# wget https://www-eu.apache.org/dist/tomcat/tomcat-9/v${VERSION}/bin/apache-tomcat-${VERSION}.tar.gz -P /tmp
```

Once the download is complete, extract the tar file to the /opt/tomcat directory:

```
# tar -xf /tmp/apache-tomcat-${VERSION}.tar.gz -C /opt/tomcat/
```

Tomcat is updated on a regular basis. To have more control over versions and updates, we'll create a symbolic link called latest, that points to the Tomcat installation directory:

```
# ln -s /opt/tomcat/apache-tomcat-${VERSION} /opt/tomcat/latest
```

The system user that was previously created, must have access to the tomcat installation directory. Change the directory ownership to user and group tomcat:

```
# chown -R tomcat: /opt/tomcat
```

Make the shell scripts inside the bin directory executable:

```
# sh -c 'chmod +x /opt/tomcat/latest/bin/*.sh'
```

These scripts are later used to start and stop Tomcat from the systemd unit file.

Creating a Systemd Unit File

Instead of manually starting and stopping the Tomcat server, we'll set it to run as a service. Open your text editor and create a tomcat.service unit file in the /etc/systemd/system/ directory:

```
# vim /etc/systemd/system/tomcat.service
```

Paste the following content:

```
[Unit]
Description=Tomcat 9 servlet container
After=network.target

[Service]
Type=forking

User=tomcat
Group=tomcat

Environment="JAVA_HOME=/usr/lib/jvm/jre"
Environment="JAVA_OPTS=-Djava.security.egd=file:///dev/urandom"

Environment="CATALINA_BASE=/opt/tomcat/latest"
Environment="CATALINA_HOME=/opt/tomcat/latest"
Environment="CATALINA_PID=/opt/tomcat/latest/temp/tomcat.pid"
Environment="CATALINA_OPTS=-Xms512M -Xmx1024M -server -XX:+UseParallelGC"

ExecStart=/opt/tomcat/latest/bin/startup.sh
ExecStop=/opt/tomcat/latest/bin/shutdown.sh

[Install]
WantedBy=multi-user.target
```

Save and close the file.

Notify systemd that a new service file exists, by typing:

```
# systemctl daemon-reload
```

Enable and start the Tomcat service:

```
# systemctl enable --now tomcat
```

Check the service status; the output should show that the Tomcat server is enabled and running:

```
# systemctl status tomcat
```

```

● tomcat.service - Tomcat 9 servlet container
   Loaded: loaded (/etc/systemd/system/tomcat.service; enabled; vendor
preset: disabled)
   Active: active (running) since Wed 2020-01-15 20:38:07 UTC; 30s ago
  Process: 3957 ExecStart=/opt/tomcat/latest/bin/startup.sh (code=exited,
status=0/SUCCESS)
  ...
```

Configuring Firewall

If your server is protected by a firewall and you want to access the tomcat interface from the outside of the local network, you need to open port 8080.

Use the following commands to open the necessary port:

```
# firewall-cmd --permanent --zone=public --add-port=8080/tcp
sudo firewall-cmd --reload
```

Typically, when running Tomcat in a production environment, you should use a load balancer or reverse proxy. It's a best practice to allow access to `port 8080` only to your internal network.

Additional: Configuring Tomcat Web Management Interface

At this point, you should be able to access Tomcat with a web browser on `port 8080`. The web management interface is not accessible because we have not created a user yet.

Tomcat users and roles are defined in the `tomcat-users.xml` file.

If you open the file, you will notice that it is filled with comments and examples describing how to configure the file.

```
# vim /opt/tomcat/latest/conf/tomcat-users.xml
```

Tomcat users are defined the user in the `tomcat-users.xml` file. To create a new user that can access the tomcat web interface (manager-gui and admin-gui), edit file as shown below. Make sure you change the username and password to something more secure:

```

<tomcat-users>
<!--
    Comments
-->
   <role rolename="admin-gui"/>
   <role rolename="manager-gui"/>
   <user username="admin" password="admin_password" roles="admin-
gui,manager-gui"/>
</tomcat-users>
```

By default Tomcat web management interface is configured to allow access only from the localhost.

If you need to access the web interface from anywhere open the following files and comment or remove the lines highlighted in yellow:

```
# vim /opt/tomcat/latest/webapps/manager/META-INF/context.xml
```

```
<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" />
-->
</Context>
```

```
# vim /opt/tomcat/latest/webapps/host-manager/META-INF/context.xml

<sxh xml>
<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" />
-->
</Context>
</sxh>

Please note, allowing access from anywhere is not recommended because it is
a security risk.

If you want to access the web interface only from a specific IP, instead of
commenting the blocks add your public IP to the list.

Let's say your public IP is ''41.41.41.41'' and you want to allow access
only from that IP:

<code># vim /opt/tomcat/latest/webapps/manager/META-INF/context.xml
```

```

<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|41.41.41.41" />
</Context>
```

```
# vim /opt/tomcat/latest/webapps/host-manager/META-INF/context.xml
```

```

<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|41.41.41.41" />
</Context>
```

The list of allowed IP addresses is a list separated with vertical bar |. You can add single IP addresses or use a regular expressions.

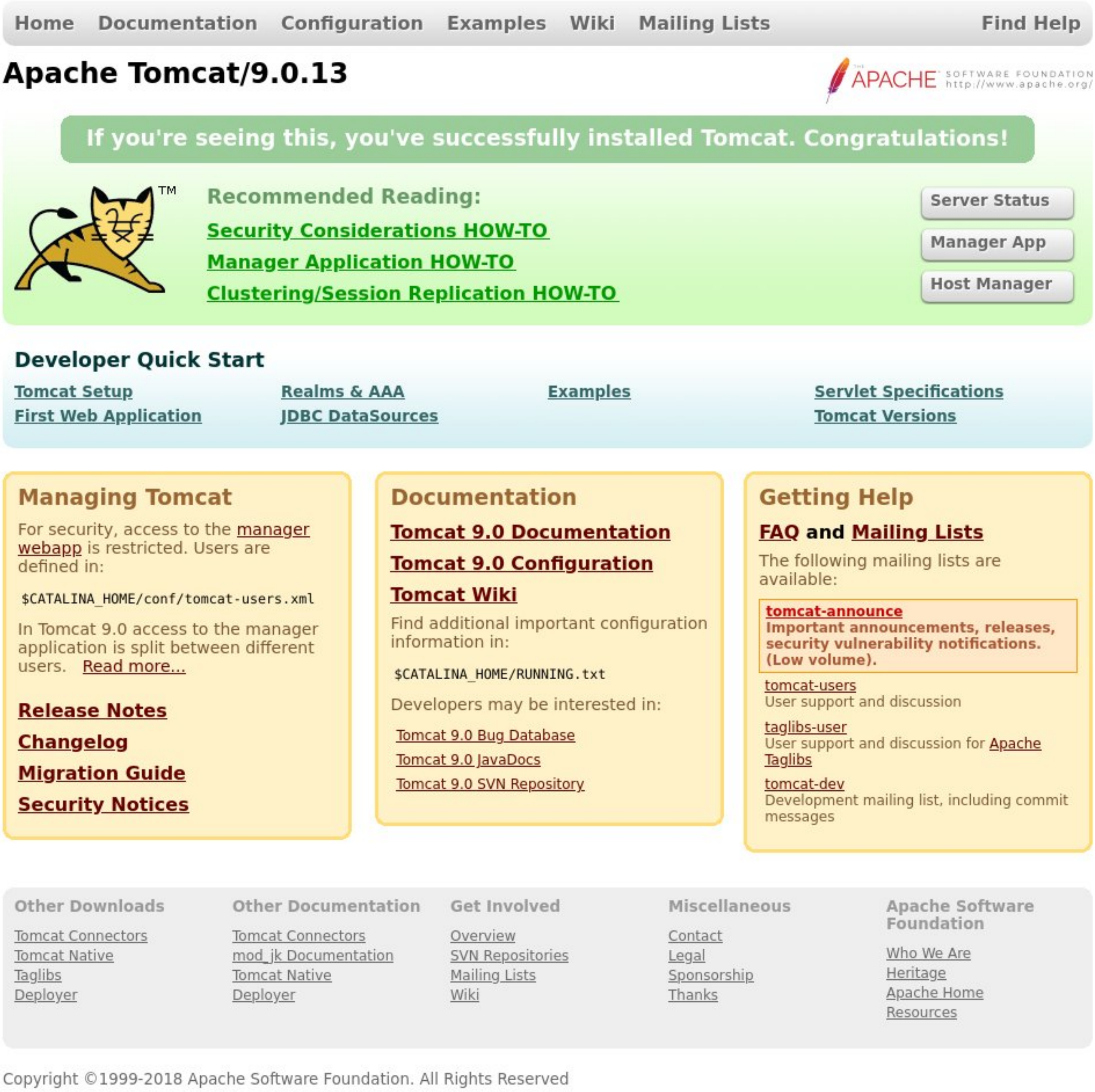
Once done, restart the Tomcat service for changes to take effect:

```
# systemctl restart tomcat
```

Testing Management Interface Installation

Open your browser and type: `http://<your_domain_or_IP_address>:8080`

Upon successful installation, a screen similar to the following should appear:



Apache Tomcat/9.0.13

If you're seeing this, you've successfully installed Tomcat. Congratulations!

Recommended Reading:
Security Considerations HOW-TO
Manager Application HOW-TO
Clustering/Session Replication HOW-TO

Developer Quick Start

Tomcat Setup
First Web Application
Realms & AAA
JDBC DataSources
Examples
Servlet Specifications
Tomcat Versions

Managing Tomcat

For security, access to the manager webapp is restricted. Users are defined in:

```
$CATALINA_HOME/conf/tomcat-users.xml
```

In Tomcat 9.0 access to the manager application is split between different users. Read more...

Release Notes
Changelog
Migration Guide
Security Notices

Documentation

Tomcat 9.0 Documentation
Tomcat 9.0 Configuration
Tomcat Wiki

Find additional important configuration information in:

```
$CATALINA_HOME/RUNNING.txt
```

Developers may be interested in:

Tomcat 9.0 Bug Database
Tomcat 9.0 JavaDocs
Tomcat 9.0 SVN Repository

Getting Help

FAQ and Mailing Lists

The following mailing lists are available:

tomcat-announce
Important announcements, releases, security vulnerability notifications. (Low volume).

tomcat-users
User support and discussion

taglibs-user
User support and discussion for Apache Taglibs

tomcat-dev
Development mailing list, including commit messages

Other Downloads
Tomcat Connectors
Tomcat Native
Taglibs
Deployer

Other Documentation
Tomcat Connectors
mod_jk Documentation
Tomcat Native
Deployer

Get Involved
Overview
SVN Repositories
Mailing Lists
Wiki

Miscellaneous
Contact
Legal
Sponsorship
Thanks

Apache Software Foundation
Who We Are
Heritage
Apache Home
Resources

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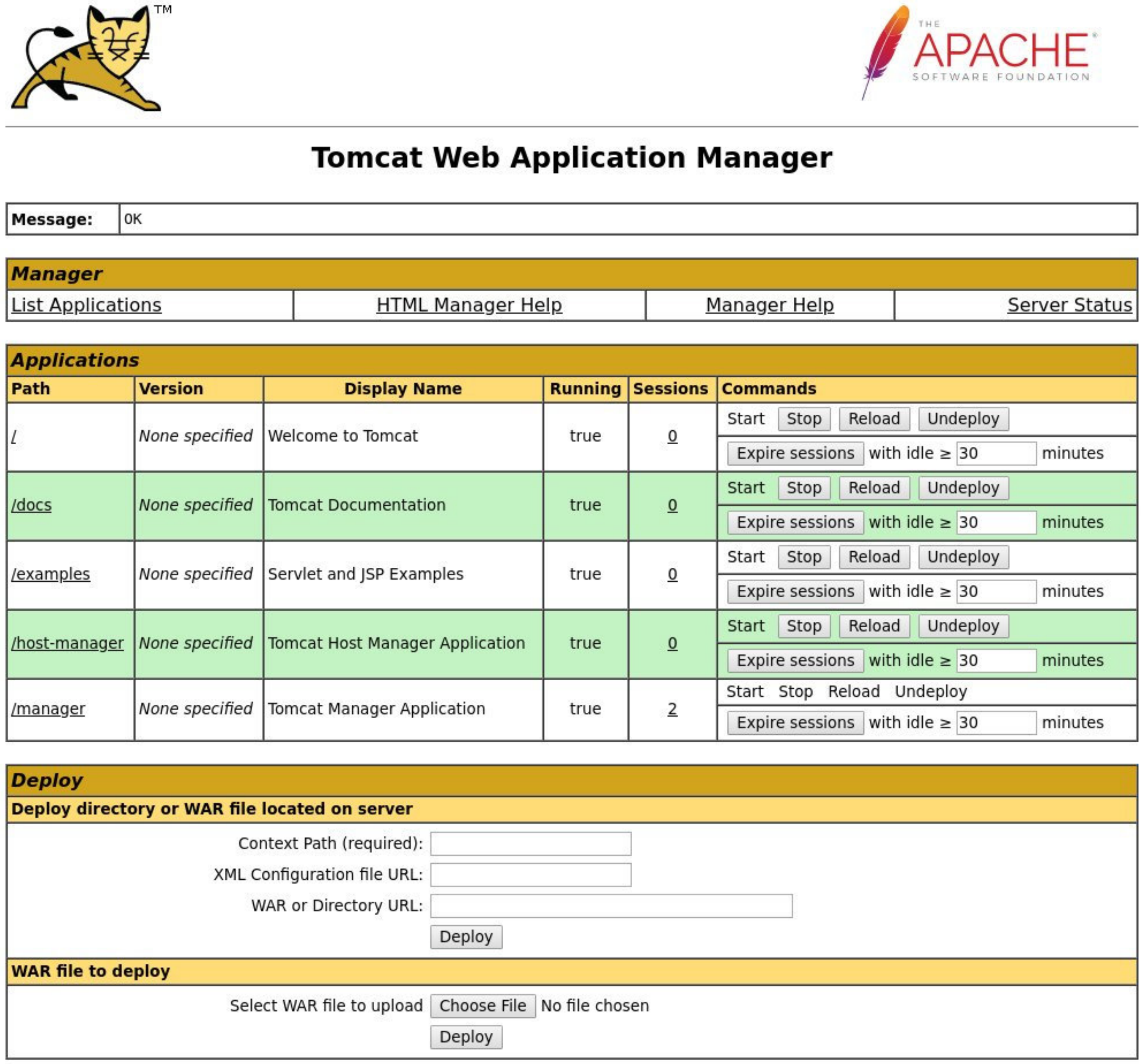
Tomcat web application manager dashboard allows you to deploy, undeploy, start, stop, and reload your applications. It is available at: `http://<your_domain_or_IP_address>:8080/manager/html`.



Tomcat Web Application Manager

Message:	OK

Manager			
List Applications	HTML Manager Help	Manager Help	Server Status

Applications

Path	Version	Display Name	Running	Sessions	Commands
/	*None specified*	Welcome to Tomcat	true	0	Start Stop Reload Undeploy Expire sessions with idle ≥ 30 minutes
/docs	*None specified*	Tomcat Documentation	true	0	Start Stop Reload Undeploy Expire sessions with idle ≥ 30 minutes
/examples	*None specified*	Servlet and JSP Examples	true	0	Start Stop Reload Undeploy Expire sessions with idle ≥ 30 minutes
/host-manager	*None specified*	Tomcat Host Manager Application	true	0	Start Stop Reload Undeploy Expire sessions with idle ≥ 30 minutes
/manager	*None specified*	Tomcat Manager Application	true	2	Start Stop Reload Undeploy Expire sessions with idle ≥ 30 minutes

Deploy

Deploy directory or WAR file located on server

Context Path (required):

XML Configuration file URL:

WAR or Directory URL:

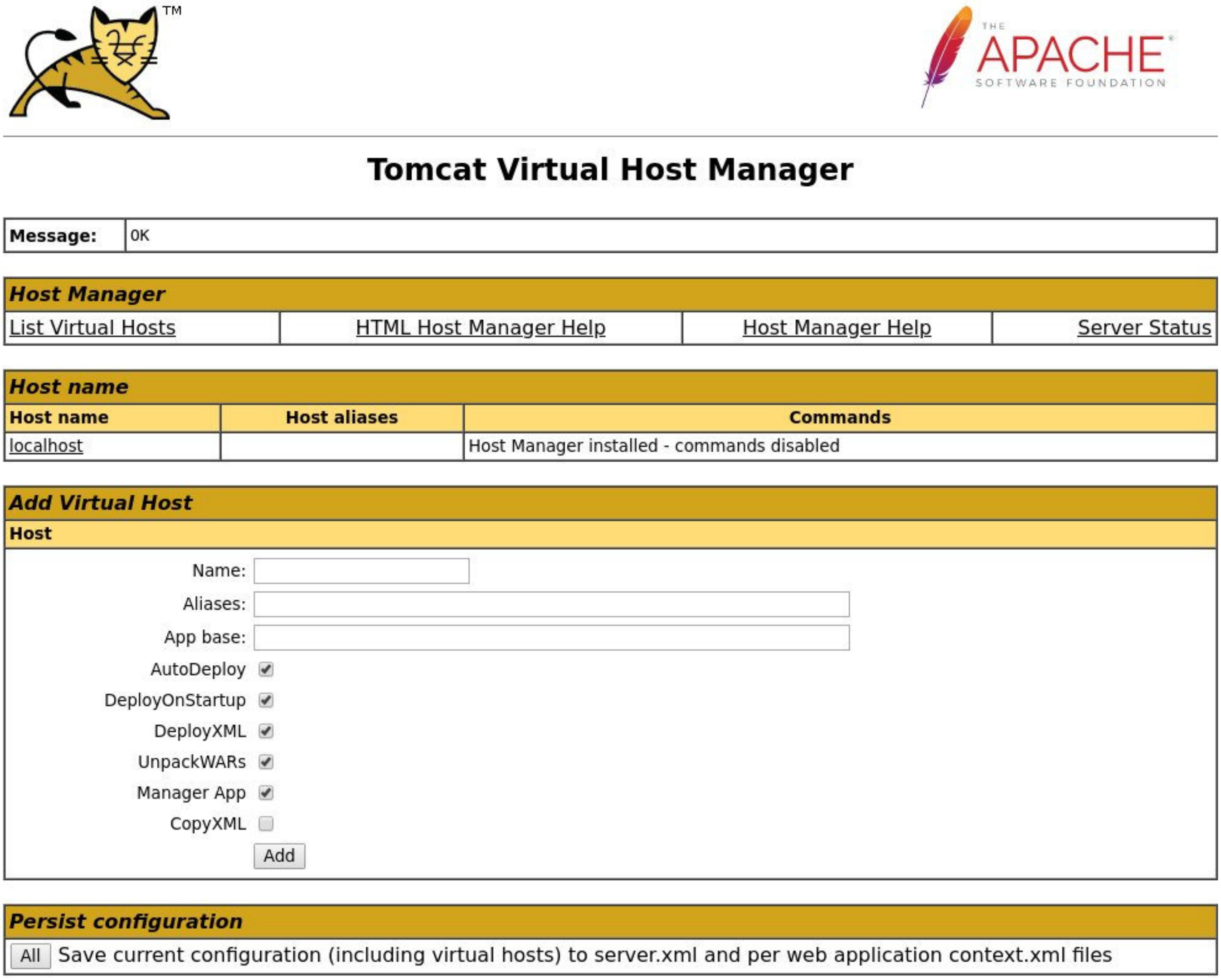
Deploy

WAR file to deploy

Select WAR file to upload Choose File No file chosen

Deploy

Tomcat virtual host manager dashboard allows you to create, delete, and manage Tomcat virtual hosts. It is available at: `http://<your_domain_or_IP_address>:8080/host-manager/html`.



Tomcat Virtual Host Manager

Message:	OK

Host Manager			
List Virtual Hosts	HTML Host Manager Help	Host Manager Help	Server Status

Host name

Host name	Host aliases	Commands
localhost		Host Manager installed - commands disabled

Add Virtual Host

Host

Name:

Aliases:

App base:

AutoDeploy ☑

DeployOnStartup ☑

DeployXML ☑

UnpackWARs ☑

Manager App ☑

CopyXML □

Add

Persist configuration

All Save current configuration (including virtual hosts) to server.xml and per web application context.xml files

Last update: **2020/01/23 13:33**