



## Purpose

This document will cover how to monitor JBoss/WildFly servers using the JBoss/WildFly wizard and `check_jvm.jar` plugin within Nagios XI, so that users may be notified when JBoss/WildFly applications are behaving unexpectedly. For the remainder of this documentation JBoss refers to JBoss or WildFly.

## Target Audience

This document is intended for use by Nagios XI Administrators who want to monitor their JBoss instances.

## Prerequisites

This document assumes you have the following:

- A remote JBoss server
- A Nagios XI server with a network route to the JBoss server

The `check_jvm.jar` monitoring plugin is executed either on the [Nagios XI server](#) or the [JBoss server](#). Either method requires some prerequisite steps to be followed first which are outlined below.

## Plugin Executed From Nagios XI Server

If you intend to run the plugin from the XI server, you'll need to install Java on the Nagios XI server. At the time of this writing, any Java 7+ implementation should work with the `check_jvm.jar` plugin, but only Oracle Java and OpenJDK have been tested. The following commands require you to establish a terminal session to your Nagios XI server as the root user.

### CentOS / RHEL / Oracle Linux

To install OpenJDK 8 on CentOS / RHEL / Oracle Linux execute the following command:

```
yum install -y java-1.8.0-openjdk-devel
```

## Debian 9 / Ubuntu 16,18

To install OpenJDK 8 on Debian 9 / Ubuntu 16,18 execute the following commands:

```
apt-get update
apt-get install -y openjdk-8-jdk
```

You will also need to copy the `jboss-client.jar` from your JBoss server to the Nagios XI server as this is required for the `check_jvm.jar` plugin. This documentation is using `/opt/wildfly/bin/client/jboss-client.jar` in the following examples and copying it to `/usr/local/nagios/libexec/`. In the following commands replace `xi_address` with the IP address of your Nagios XI server. To copy the file, establish a terminal session to your JBoss server and execute the following commands:

```
cd /opt/wildfly/bin/client/
scp jboss-client.jar root@xi_address:/usr/local/nagios/libexec/
```

Once these steps have been performed please proceed to the [Configuration Wizard](#) section of this document.

## Plugin Executed From Remote JBoss Server

If the plugin is to be remotely executed on the JBoss server, NCPA will need to be installed on the JBoss server as per the [Installing NCPA](#) documentation.

Once installed you will need to download the `check_jvm.jar` plugin to the NCPA's `plugins` folder. The plugin can be downloaded directly from the Nagios XI server, in the following commands replace `xi_address` with the IP address of your Nagios XI server. In a terminal session on the JBoss server execute the following commands:

```
cd /usr/local/ncpa/plugins/
```

```
wget http://xi_address/nagiosxi/includes/configwizards/java-as/plugins/check_jvm.jar
```

The `check_jvm.jar` is a Java file that NCPA cannot run by default. To have NCPA associate `.jar` files with Java you will need to add a line to the `/usr/local/ncpa/etc/ncpa.cfg` file.

When being executed on the NCPA server you also need to specify the `java.class.path` directive which points to the location of the `jboss-client.jar` file on the JBoss server. This documentation is using `/opt/wildfly/bin/client/jboss-client.jar` in the following examples.

To edit the `ncpa.cfg` file execute the following command:

```
sudo vi /usr/local/ncpa/etc/ncpa.cfg
```

*When using `vi`, to make changes press `i` on the keyboard first to enter insert mode and press `Esc` to exit insert mode.*

Locate the `[plugin directives]` section by typing this command in:

```
/[plugin
```

Scroll down a few lines and find the following line:

```
.py = python $plugin_name $plugin_args
```

Insert the following line after the `.py` line:

```
.jar = java -Djava.class.path=/opt/wildfly/bin/client/jboss-client.jar:$plugin_name  
GenericASCheck $plugin_args
```

The lines above are one long line, they are wrapped in this documentation due to the length of the command.

When you have finished, save the changes in vi by typing:

```
:wq
```

and press Enter.

The last step required is to restart the `ncpa_listener` service. The command to do this may vary depending on your operating system (full details can be found in the [Installing NCPA](#) documentation). In this example to restart the service on CentOS 7 would be:

```
systemctl restart ncpa_listener.service
```

Once these steps have been performed please proceed to the [Configuration Wizard](#) section of this document.

## The JBoss Configuration Wizard

The JBoss config wizard uses JMX to retrieve JVM and system statistics and compare them to the thresholds you set in the wizard. Checks can either be combined into one service or separated.

To begin using the JBoss configuration wizard, navigate via the top bar to **Configure > Configuration Wizards**. Then, select the **JBoss/WildFly** wizard. In the following screenshot you can see how the search field allows you to quickly find a wizard.

The screenshot shows the Nagios XI interface. The top navigation bar includes 'Home', 'Views', 'Dashboards', 'Reports', 'Configure' (circled in blue), 'Tools', 'Help', and 'Admin'. The left sidebar has a 'Configure' section with 'Configuration Wizards' circled in blue. The main content area is titled 'Configuration Wizards - Select a Wizard' and features a search bar with 'JBoss' entered. A blue box highlights the 'JBoss/Wildfly' wizard card, which includes the text 'Monitor JBOSS/Wildfly JVMs through JMX (uses NCPA or requires Java)'.

**Step 1** requires you to provide the details for the Nagios XI server to connect to JBoss via JMX. In **JBoss Server Information**, specify the following:

- **IP Address** is the network address of the JBoss server
- **Access JBoss Server via** asks you how to access JBoss statistics. **JMX** is when Nagios XI connects instead of using NCPA to execute the plugin remotely.
- **NCPA Listener Port** and **NCPA Token** only appear when you select the NCPA access method. You defined these options when

The screenshot shows the 'Configuration Wizard: JBOSS/Wildfly - Step 1' page. The 'Plugin and Agent Setup' section contains instructions and links for installing NCPA and the Java Application Server Plugin. The 'JBoss Server Information' section contains a form with the following fields: 'IP Address' (text input), 'Access JBoss Server via' (dropdown menu set to 'JMX'), 'Service URL' (text input with a placeholder example), 'JBoss Username' (text input), and 'JBoss Password' (text input). At the bottom, there are 'Back' and 'Next' buttons.

installing NCPA earlier.

- **Service URL** is the URL required to form the JMX connection, this will be of the form of `service:jmx:remote+http://<host>:<port>`
- **JBoss Username** and **JBoss Password** are the credentials required to access the JVM's internal statistics

After making all your selections click **Next** to proceed to **Step 2**.

**Step 2** provides you with multiple monitoring options.

In **Remote Host Details** you have the choice of defining the **Host Name** to your requirements. All the services created by this wizard will be assigned to this newly created host. You also have the option to combine the checks into one service.

**Configuration Wizard: JBOSS/Wildfly - Step 2**

Remote Host Details

**IP Address:** 10.25.9.2

**Host Name:** JBoss  
The host name you want associated with this check.

**Service Description:** JBoss JVM Statistics

**Classpath:** /usr/local/nagios/libexec/jboss-client.jar  
If you need to manually set the classpath, do so here.

**Combine into one service**  
This allows you to perform all checks on a single JVM, rather than spooling one JVM per check.

If you have selected **NCPA** then the **Classpath** field will not be displayed.

If you are using **JMX** then you will need to define the location of the `jboss-client.jar` file in the **Classpath** field as per the [Plugin Executed From Nagios XI Server](#) steps earlier in this documentation.

The **Heap-Allocated Memory** and **Non-Heap-Allocated Memory** options should be self-explanatory to anyone familiar with Java; simply check and un-check the relevant boxes to determine which checks to run, and enter your desired warning and critical thresholds.

The **Other System Statistics** options should likewise be self-explanatory, simply check and un-check the relevant boxes to determine which checks to run, and enter your desired warning and critical thresholds.

Click Next and then complete the wizard by choosing the required options in Step 3 – Step 5.

To finish up, click on **Finish** in the final step of the wizard.

#### Heap-Allocated Memory

Measure these statistics in:

- Heap-Allocated Memory**  
Measures the memory usage of the entire heap.  
⚠️  ⚠️
- Eden Space**  
Measures the memory usage of objects which haven't yet seen garbage collection.  
⚠️  ⚠️
- Survivor/Tenured Space**  
Measures the memory usage of the objects which have survived at least one garbage collection cycle.  
⚠️  ⚠️
- Old Gen**  
Measures the memory usage of the objects which have been moved out of Survivor Space but are still in use.  
⚠️  ⚠️

#### Non-Heap-Allocated Memory

Measure these statistics in:

- Simple Non-Heap-Allocated Memory**  
Measures the memory usage of everything not on the heap.  
⚠️  ⚠️
- Code Cache**  
Measures the memory usage of the JIT-compiled code.  
⚠️  ⚠️
- Compressed Class Space**  
Measures the memory usage of the compressed classes in your Tomcat instance.  
⚠️  ⚠️
- Metaspace**  
Measures the memory usage of the class metadata in your Tomcat instance.  
⚠️  ⚠️

#### Other System Statistics

- JVM CPU Usage**  
Measures the CPU Usage incurred by the JVM alone (values are between 0 and 100).  
⚠️  % ⚠️  %
- System CPU Usage**  
Measures the CPU Usage of the system as a whole (values are between 0 and 100).  
⚠️  % ⚠️  %
- Uptime**  
Measures the uptime of the JVM in seconds.  
⚠️  ⚠️
- Class Count**  
Measures the number of currently-loaded classes in the JVM.  
⚠️  ⚠️
- Thread Count**  
Measures the number of active threads in the JVM.  
⚠️  ⚠️

Once the wizard applies the configuration, click the **View status details for <your host>** link to see the new service(s) that have been created.

Host	Service	Status	Duration	Attempt	Last Check	Status Information
JBoss	JBoss JVM Statistics	Ok	3h 12m 23s	1/5	2018-06-15 11:17:46	OK: 5 checks returned OK

## Finishing Up

This completes the documentation on how to monitor JBoss in Nagios XI.

If you have additional questions or other concerns, please visit us at our support forums:

<https://support.nagios.com/forum>

The Nagios Support Knowledgebase is also a great support resource:

<https://support.nagios.com/kb>