

Run a Minecraft server using Spigot

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Introduction

So what's the big deal?

- Minecraft one of the [most-played video games](#) in the world
 - 70+ million purchased accounts
- After single player, most players start searching for multiplayer servers
- Most popular multiplayer server software is [Spigot](#)
 - Spigot is open source Java project that lets you run a server and extend it with plugins
 - Over 100,000 Spigot servers in existence today
 - Makes Spigot one of the most stable and diverse options for running a Minecraft server
- For today's talk, we will be covering Spigot

Compiling Spigot

Getting BuildTools

- To use Spigot, you must use their BuildTools utility to build and compile Spigot from source code
- Install the prerequisites before getting started
 - *Fedora*: `$ sudo dnf install java-1.8.0-openjdk git`
 - *CentOS / RHEL-based derivatives*: `$ sudo yum install java-1.8.0-openjdk git`
- Next, download BuildTools from the [Spigot Jenkins](#)
- Before executing anything, make sure your git line endings are consistent by using the following command
 - `$ git config --global --unset core.autocrlf`
- Now we're ready to run

Running BuildTools

- Execute BuildTools in the command line to begin compiling Spigot
 - `$ java -jar BuildTools.jar --rev 1.9`
 - This will generate Minecraft 1.9 Spigot server JAR
- A few different JAR files now appear in the directory, such as:
 - `craftbukkit-1.x.x.jar`
 - `Spigot-1.x.x.jar`
 - `x.x` represents the current version of Minecraft
- CraftBukkit is the original Minecraft server implementation, but is no longer *officially* maintained (Spigot team releases updates for CraftBukkit)
- Spigot is a fork of CraftBukkit with a few performance enhancements under the hood. Therefore, you'll want to use the Spigot JAR file.

Starting the server

Introducing the terminal multiplexer

- Time to run your server! Variety of methods to do this.
- Scenario: You want to run your server on a headless machine. You're connected in a terminal window and run your server. But you need to disconnect. **You need a terminal multiplexer.**
- Introducing *tmux*
 - This presentation will only cover the basics, for more help, see the [cheatsheet](#)
- Create a tmux session, write a basic start-up script, run Spigot server inside of the tmux session
 - Enables you to keep running your server even when you're not connected to your server
- `$ sudo dnf install tmux`

Writing the start-up script

- Start-up script is a simple, two-line bash script to run your server
 - `#!/bin/bash`
 - `java -Xms1024M -Xmx1024M -jar spigot.jar`
 - Above lines start your server with 1GB of RAM
- Put this in the same directory as your Spigot JAR for simplicity
- Make sure the script is executable
 - `$ chmod +x start.sh`
- Once your script is ready, it's time to open tmux

Starting a tmux session

- Now it's time to create the tmux session where your Minecraft server will run
- The following commands are what you should execute in your new session
- Press CTRL+B, then 'D' to detach from the session when you're done
- Te

```
$ tmux new -s minecraft
```

```
$ cd /path/to/start.sh
```

```
$ ./start.sh
```

- Your server will now begin starting up, although you will need to agree to the EULA for the server to start completely

Configure Spigot

A note about configuration

- Many configuration tips and guides available for configuring a Spigot server
 - See the [Spigot Wiki](#) for extended reading
- In this presentation, we will cover the most basic and important configuration tips
- Two files we will be working with:
 - server.properties, the Minecraft vanilla server configuration file
 - spigot.yml, the Spigot server configuration file

server.properties

- **server-ip**

- Default: <empty>
- When blank, this assumes the localhost. If your machine does not have multiple IP addresses, leaving this blank is acceptable.

- **server-port**

- Default: 25565
- Specify the TCP port that you want your Spigot server to listen on.

- **enable-query**

- Default: false
- Set this to true to allow external services to ping your server for information, such as a listing website showing online players and active plugins.

server.properties (con.)

- **query.port**

- Must be manually entered
- You should set this UDP port to a different number than your server TCP port to prevent anyone on the Internet from easily finding out information about your server, if you do not wish to share it.

- **max-players**

- Default: 10
- Specify the maximum number of players that can play on your server at the same time.

- **motd**

- Default: A Minecraft Server
- Change this line to a server name for your Minecraft server that appears on the Multiplayer menu. You can have up to two lines on the menu; to split your MOTD, use the `\n` escape character.

spigot.yml

- The *spigot.yml* file has default configuration for Spigot server
 - Several options that can be changed
 - If performance is a concern, you can tweak settings to maximize performance on older systems
 - Full Spigot configuration guide can be found on their [wiki](#), but will cover some basic configuration options here
- **settings > restart-on-crash**
 - If server crashes, Spigot can auto-restart the server via your start script (useful if running server long-term)
 - Make sure your start script is specified correctly for this setting
- **world-settings > dragon-death-sound-radius**
 - Adjust the range of dragon death sound for all players (default: anyone online will hear dragon death sound if a player slays the dragon)
 - Allows you to set a radius to limit the range of the death noise

spigot.yml (con.)

● world-settings > anti-xray

- Hacks / cheats in Minecraft are plenty, especially x-ray hacks
 - Lets players see through “useless” blocks and find more valuable ones behind them
 - Spigot has its own anti-xray protection built-in to counter this hack
- Two engine modes: mode 1 and mode 2
- Mode 1: Lighter protection that’s not as effective but conserves resources
- Mode 2: More computing power but attempts to obfuscate all non-visible blocks on the fly
- Try playing around with it to find what works best for you and your system

● world-settings > arrow-despawn-rate

- Performance-oriented tweak
- If you lower default rate for arrows to despawn, you reduce load on server for rendering items
- When players are frequently using bows and arrows, this is a useful tweak to gain performance back on the system

Plugins

Finding plugins

- In addition to configuration options, Spigot has a rich API for writing plugins / mods for Spigot servers
- User-submitted plugins and resources on [Spigot Resource Manager](#)
- Searching for plugins that interest you is a great way to expand the potential of your server, and to make it more interesting for your players
- Popular plugins:
 - WorldEdit
 - WorldGuard
 - EssentialsX
 - SuperCraftBros
 - And more...

Live demo

See some of the topics of this talk in action in a production server

- To demonstrate the possibilities of what you can do with Minecraft on a Linux system, we will demonstrate a live production server running Spigot
 - Will also introduce and explain BungeeCord, an additional tool for linking multiple Spigot servers together
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Questions?
Comments?
Concerns?

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