

Building from source

Prerequisites

- Java 21 (NEW since <https://github.com/hyperledger/besu/pull/7177>)
 - note that gradle 8.7 is incompatible with Java 22, you need Java 21
 - eg if installing java via homebrew,
 - `brew install openjdk@21`
- For Mac installations: MacOS High Sierra 10.13 or later
- For Windows: Besu is currently supported only on 64-bit versions of Windows, and requires a 64-bit version of JDK/JRE. We recommend that you also remove any 32-bit JDK/JRE installations.

Checkout source code

```
git clone --recursive git@github.com:hyperledger/besu.git
```

or

```
git clone --recursive https://github.com/hyperledger/besu
```

See what tasks are available

To see all of the gradle tasks that are available:

```
cd besu
./gradlew tasks
```

Build from source

Build the distribution binaries:

```
cd besu
./gradlew installDist
```

Run from the binaries you built from source

To see help menu:

```
cd build/install/besu
./bin/besu --help
```

Run Besu with default options (by default this stores all persistent data in `build/install/besu`):

```
cd build/install/besu
./bin/besu
```

To set custom CLI options:

```
cd build/install/besu
./bin/besu --discovery-enabled=false --data-path=/tmp/besutmp
```

Building and Running on Windows

Note: On Windows, to run gradlew, you must have the JAVA_HOME system variable set to the Java installation directory. For example:

```
JAVA_HOME = C:\Program Files\Java\jdk21.0_181
```

Note: If you are using WSL (Windows Subsystem for Linux) with Ubuntu to build and run Besu using DNS discovery, you might need to change the default DNS provided by Windows. See issue <https://github.com/hyperledger/besu/issues/3046> for more detail.

Running tests

Dependencies

There are two dependencies required if you want to run the tests: libsodium version 1.0.16 or higher and libnss version 3.35 or higher.

If you are not planning on running the tests, you can skip this step.

To install the dependencies type in the following commands on MacOS or Ubuntu.

MacOS:

```
$ brew install libsodium nss
```

Ubuntu (16.04 LTS):

```
$ apt install libsodium18 libnss3
```

Ubuntu (18.04 LTS):

```
$ apt install libsodium23 libnss3
```

Ubuntu (20.04 LTS):

```
$ apt install libsodium23 libnss3
```

Ubuntu (14.04 LTS):

For libsodium you can find the appropriate package (v1.0.16-0) files here:

<https://launchpad.net/ubuntu/+source/libsodium>

<https://launchpad.net/~phoerious/+archive/ubuntu/keepassxc/+sourcepub/8814980/+listing-archive-extra>

For libnss you can find the appropriate package (v3.35) files here:

<https://packages.ubuntu.com/bionic/libnss3>

The `sudo` command might be needed on Linux, and if the screen prompts you to enter a password, type your password and press enter.

```
cd besu
```

```
./gradlew build
```

```
./gradlew integrationTest LTS
```