

# Requirements and prerequisites

## System

To install WebCallServer you need a Linux x86\_64 server that matches the following minimum specifications:

- 2 gigabytes of RAM
- 10 gigabytes of disk space
- 1 CPU core

The following must be installed on the server:

- [Java VM](#)
- [glibc-2.17](#)
- [fontconfig](#) (if [MCU mixer](#) with captions is planned to use)

WCS can be configured to work in networks of varying topology, for instance, behind corporate NAT or for using a public IP address to services external clients. For quick setup and evaluation of WCS capabilities we recommend using a VPS or a dedicated server with a static and public IP address that is also the IP address of the network interface of the same server. Usually, such a virtual or dedicated server can be rented from a number of providers.

## Supported Linux distribution packages

Any distribution package will do: CentOS, Debian, Ubuntu, RedHat, Fedora. Today, server is tested to be compatible with the following distribution packages:

- CentOS 7.6, 7,8, 8, Stream
- Ubuntu 18.04, 20.04
- Fedora 31, 32, 33
- Debian 9, 10
- Amazon Linux 2

The recommended distribution package is CentOS 7.6 or Ubuntu 18.04, a stable work on older distribution packages is not guaranteed.

## Preparing to install

Make sure the server is connected to the Internet and you have root access via SSH.

Set your host name in `/etc/hosts`

```
127.0.0.1    localhost localhost.localdomain localhost4
localhost4.localdomain4
::1         localhost localhost.localdomain localhost6
localhost6.localdomain6
192.168.1.5  yourdomain.com
```

Check if host name is resolved correctly with command

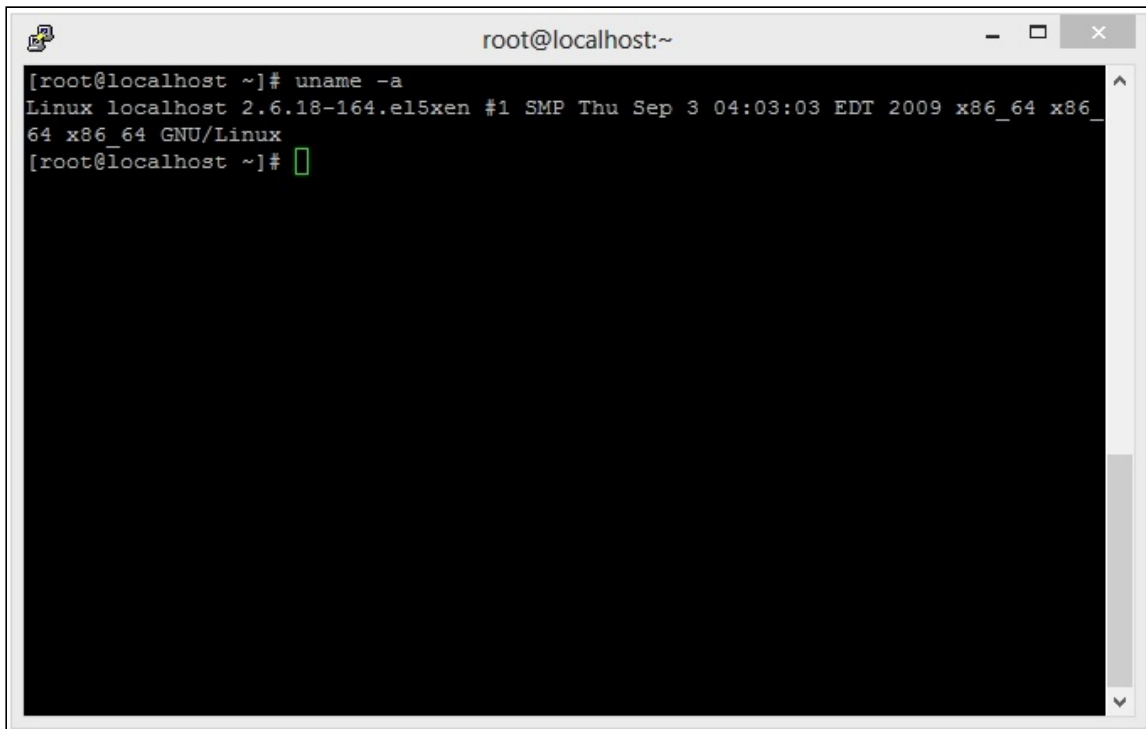
```
ping $HOSTNAME
```

In some distribution packages (i.e., CentOS) `wget` is not installed by default. In this case, install `wget` using the following command

```
sudo yum install wget
```

In some Debian or Ubuntu distributions, `curl` may be not installed in its turn. In this case, install `curl` using the following command

```
sudo apt update && apt upgrade
sudo apt install curl
```



```
root@localhost:~
[root@localhost ~]# uname -a
Linux localhost 2.6.18-164.el5xen #1 SMP Thu Sep 3 04:03:03 EDT 2009 x86_64 x86_
64 x86_64 GNU/Linux
[root@localhost ~]#
```

This is how the server ready to install WCS looks from the Putty SSH client. Please note that we use an x86\_64 system.

# JDK installation

Often Linux distributions have a preinstalled JVM.

We recommend installing the latest version of JDK (Java Development Kit), because JDK has a number of useful diagnostics tools that JVM lacks.

Today, the following JDK versions are tested and recommended to use: 8, 12, 14, 15, 16, 17, 21. WCS can be unstable with another JDK versions.

## JDK installation from repository

JDK installation from OS repository (CentOS for example) should be done as follows

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

## Manual JDK installation

### JDK 12

This is the example script for OpenJDK 12 installation using the package downloaded from <https://download.java.net/java/GA/>:

```
# Download JDK package
sudo rm -rf jdk*
curl -s
https://download.java.net/java/GA/jdk12.0.2/e482c34c86bd4bf8b56c0b35558996b9/10/
12.0.2_linux-x64_bin.tar.gz | tar -zx
[ ! -d jdk-12.0.2/bin ] && exit 1

# Prepare installation folder
sudo mkdir -p /usr/java
[ -d /usr/java/jdk-12.0.2 ] && sudo rm -rf /usr/java/jdk-12.0.2

# Move JDK files to installation folder
sudo mv -f jdk-12.0.2 /usr/java
[ ! -d /usr/java/jdk-12.0.2/bin ] && exit 1

# Make /usr/java/default symlink to installation folder for convenience
sudo rm -f /usr/java/default
sudo ln -sf /usr/java/jdk-12.0.2 /usr/java/default

# Make the necessary symlinks
sudo update-alternatives --install "/usr/bin/java" "java" "/usr/java/jdk-
12.0.2/bin/java" 1
sudo update-alternatives --install "/usr/bin/jstack" "jstack" "/usr/java/jdk-
12.0.2/bin/jstack" 1
sudo update-alternatives --install "/usr/bin/jcmd" "jcmd" "/usr/java/jdk-
12.0.2/bin/jcmd" 1
sudo update-alternatives --install "/usr/bin/jmap" "jmap" "/usr/java/jdk-
12.0.2/bin/jmap" 1
```

```
sudo update-alternatives --set "java" "/usr/java/jdk-12.0.2/bin/java"  
sudo update-alternatives --set "jstack" "/usr/java/jdk-12.0.2/bin/jstack"  
sudo update-alternatives --set "jcmd" "/usr/java/jdk-12.0.2/bin/jcmd"  
sudo update-alternatives --set "jmap" "/usr/java/jdk-12.0.2/bin/jmap"
```

## JDK 14

This is the example script for OpenJDK 14 installation using the package downloaded from <https://download.java.net/java/GA:>

```
# Download JDK package  
sudo rm -rf jdk*  
curl -s  
https://download.java.net/java/GA/jdk14.0.1/664493ef4a6946b186ff29eb326336a2/7/G  
14.0.1_linux-x64_bin.tar.gz | tar -zx  
[ ! -d jdk-14.0.1/bin ] && exit 1  
  
# Prepare installation folder  
sudo mkdir -p /usr/java  
[ -d /usr/java/jdk-14.0.1 ] && sudo rm -rf /usr/java/jdk-14.0.1  
  
# Move JDK files to installation folder  
sudo mv -f jdk-14.0.1 /usr/java  
[ ! -d /usr/java/jdk-14.0.1/bin ] && exit 1  
  
# Make /usr/java/default symlink to installation folder for convenience  
sudo rm -f /usr/java/default  
sudo ln -sf /usr/java/jdk-14.0.1 /usr/java/default  
  
# Make the necessary symlinks  
sudo update-alternatives --install "/usr/bin/java" "java" "/usr/java/jdk-  
14.0.1/bin/java" 1  
sudo update-alternatives --install "/usr/bin/jstack" "jstack" "/usr/java/jdk-  
14.0.1/bin/jstack" 1  
sudo update-alternatives --install "/usr/bin/jcmd" "jcmd" "/usr/java/jdk-  
14.0.1/bin/jcmd" 1  
sudo update-alternatives --install "/usr/bin/jmap" "jmap" "/usr/java/jdk-  
14.0.1/bin/jmap" 1  
sudo update-alternatives --set "java" "/usr/java/jdk-14.0.1/bin/java"  
sudo update-alternatives --set "jstack" "/usr/java/jdk-14.0.1/bin/jstack"  
sudo update-alternatives --set "jcmd" "/usr/java/jdk-14.0.1/bin/jcmd"  
sudo update-alternatives --set "jmap" "/usr/java/jdk-14.0.1/bin/jmap"
```

## JDK 15

This is the example script for OpenJDK 15 installation using the package downloaded from <https://download.java.net/java/GA:>

```
# Download JDK package  
sudo rm -rf jdk*  
curl -s  
https://download.java.net/java/GA/jdk15.0.2/0d1cfde4252546c6931946de8db48ee2/7/G  
15.0.2_linux-x64_bin.tar.gz | tar -zx  
[ ! -d jdk-15.0.2/bin ] && exit 1
```

```

# Prepare installation folder
sudo mkdir -p /usr/java
[ -d /usr/java/jdk-15.0.2 ] && sudo rm -rf /usr/java/jdk-15.0.2

# Move JDK files to installation folder
sudo mv -f jdk-15.0.2 /usr/java
[ ! -d /usr/java/jdk-15.0.2/bin ] && exit 1

# Make /usr/java/default symlink to installation folder for convenience
sudo rm -f /usr/java/default
sudo ln -sf /usr/java/jdk-15.0.2 /usr/java/default

# Make the necessary symlinks
sudo update-alternatives --install "/usr/bin/java" "java" "/usr/java/jdk-15.0.2/bin/java" 1
sudo update-alternatives --install "/usr/bin/jstack" "jstack" "/usr/java/jdk-15.0.2/bin/jstack" 1
sudo update-alternatives --install "/usr/bin/jcmd" "jcmd" "/usr/java/jdk-15.0.2/bin/jcmd" 1
sudo update-alternatives --install "/usr/bin/jmap" "jmap" "/usr/java/jdk-15.0.2/bin/jmap" 1
sudo update-alternatives --set "java" "/usr/java/jdk-15.0.2/bin/java"
sudo update-alternatives --set "jstack" "/usr/java/jdk-15.0.2/bin/jstack"
sudo update-alternatives --set "jcmd" "/usr/java/jdk-15.0.2/bin/jcmd"
sudo update-alternatives --set "jmap" "/usr/java/jdk-15.0.2/bin/jmap"

```

## JDK 16

This is the example script for OpenJDK 16 installation using the package downloaded from <https://download.java.net/java/GA/>:

```

# Download JDK package
sudo rm -rf jdk*
curl -s
https://download.java.net/java/GA/jdk16/7863447f0ab643c585b9bdeb67c69db/36/GPL/16_linux-x64_bin.tar.gz | tar -zx
[ ! -d jdk-16/bin ] && exit 1

# Prepare installation folder
sudo mkdir -p /usr/java
[ -d /usr/java/jdk-16 ] && sudo rm -rf /usr/java/jdk-16

# Move JDK files to installation folder
sudo mv -f jdk-16 /usr/java
[ ! -d /usr/java/jdk-16/bin ] && exit 1

# Make /usr/java/default symlink to installation folder for convenience
sudo rm -f /usr/java/default
sudo ln -sf /usr/java/jdk-16 /usr/java/default

# Make the necessary symlinks
sudo update-alternatives --install "/usr/bin/java" "java" "/usr/java/jdk-16/bin/java" 1
sudo update-alternatives --install "/usr/bin/jstack" "jstack" "/usr/java/jdk-16/bin/jstack" 1
sudo update-alternatives --install "/usr/bin/jcmd" "jcmd" "/usr/java/jdk-

```

```

16/bin/jcmd" 1
sudo update-alternatives --install "/usr/bin/jmap" "jmap" "/usr/java/jdk-
16/bin/jmap" 1
sudo update-alternatives --set "java" "/usr/java/jdk-16/bin/java"
sudo update-alternatives --set "jstack" "/usr/java/jdk-16/bin/jstack"
sudo update-alternatives --set "jcmd" "/usr/java/jdk-16/bin/jcmd"
sudo update-alternatives --set "jmap" "/usr/java/jdk-16/bin/jmap"

```

## JDK 17

This is the example script for OpenJDK 17 installation using the package downloaded from <https://download.java.net/java/GA:>

```

# Download JDK package
sudo rm -rf jdk*
curl -s
https://download.java.net/java/GA/jdk17.0.2/dfd4a8d0985749f896bed50d7138ee7f/8/G
17.0.2_linux-x64_bin.tar.gz | tar -zx
[ ! -d jdk-17.0.2/bin ] && exit 1

# Prepare installation folder
sudo mkdir -p /usr/java
[ -d /usr/java/jdk-17.0.2 ] && sudo rm -rf /usr/java/jdk-17.0.2

# Move JDK files to installation folder
sudo mv -f jdk-17.0.2 /usr/java
[ ! -d /usr/java/jdk-17.0.2/bin ] && exit 1

# Make /usr/java/default symlink to installation folder for convenience
sudo rm -f /usr/java/default
sudo ln -sf /usr/java/jdk-17.0.2 /usr/java/default

# Make the necessary symlinks
sudo update-alternatives --install "/usr/bin/java" "java" "/usr/java/jdk-
17.0.2/bin/java" 1
sudo update-alternatives --install "/usr/bin/jstack" "jstack" "/usr/java/jdk-
17.0.2/bin/jstack" 1
sudo update-alternatives --install "/usr/bin/jcmd" "jcmd" "/usr/java/jdk-
17.0.2/bin/jcmd" 1
sudo update-alternatives --install "/usr/bin/jmap" "jmap" "/usr/java/jdk-
17.0.2/bin/jmap" 1
sudo update-alternatives --set "java" "/usr/java/jdk-17.0.2/bin/java"
sudo update-alternatives --set "jstack" "/usr/java/jdk-17.0.2/bin/jstack"
sudo update-alternatives --set "jcmd" "/usr/java/jdk-17.0.2/bin/jcmd"
sudo update-alternatives --set "jmap" "/usr/java/jdk-17.0.2/bin/jmap"

```

## JDK 21

This is the example script for OpenJDK 21 installation using the package downloaded from <https://download.java.net/java/GA:>

```

# Download JDK package
sudo rm -rf jdk*
curl -s
https://download.java.net/java/GA/jdk21.0.2/f2283984656d49d69e91c558476027ac/13/

```

```
21.0.2_linux-x64_bin.tar.gz | tar -zx
[ ! -d jdk-21.0.2/bin ] && exit 1

# Prepare installation folder
sudo mkdir -p /usr/java
[ -d /usr/java/jdk-21.0.2 ] && sudo rm -rf /usr/java/jdk-21.0.2

# Move JDK files to installation folder
sudo mv -f jdk-21.0.2 /usr/java
[ ! -d /usr/java/jdk-21.0.2/bin ] && exit 1

# Make /usr/java/default symlink to installation folder for convenience
sudo rm -f /usr/java/default
sudo ln -sf /usr/java/jdk-21.0.2 /usr/java/default

# Make the necessary symlinks
sudo update-alternatives --install "/usr/bin/java" "java" "/usr/java/jdk-21.0.2/bin/java" 1
sudo update-alternatives --install "/usr/bin/jstack" "jstack" "/usr/java/jdk-21.0.2/bin/jstack" 1
sudo update-alternatives --install "/usr/bin/jcmd" "jcmd" "/usr/java/jdk-21.0.2/bin/jcmd" 1
sudo update-alternatives --install "/usr/bin/jmap" "jmap" "/usr/java/jdk-21.0.2/bin/jmap" 1
sudo update-alternatives --set "java" "/usr/java/jdk-21.0.2/bin/java"
sudo update-alternatives --set "jstack" "/usr/java/jdk-21.0.2/bin/jstack"
sudo update-alternatives --set "jcmd" "/usr/java/jdk-21.0.2/bin/jcmd"
sudo update-alternatives --set "jmap" "/usr/java/jdk-21.0.2/bin/jmap"
```

## Installation checking

To check JDK installation use the following command

```
java -version
```

JDK installing is done

```
root@p11:~  
[root@p11 ~]# java -version  
java version "1.8.0_161"  
Java(TM) SE Runtime Environment (build 1.8.0_161-b12)  
Java HotSpot(TM) 64-Bit Server VM (build 25.161-b12, mixed mode)  
[root@p11 ~]#  
[root@p11 ~]#  
[root@p11 ~]#  
[root@p11 ~]#  
[root@p11 ~]#  
[root@p11 ~]#  
[root@p11 ~]#  
[root@p11 ~]#  
[root@p11 ~]#  
[root@p11 ~]#  
[root@p11 ~]#  
[root@p11 ~]#  
[root@p11 ~]#  
[root@p11 ~]#  
[root@p11 ~]#  
[root@p11 ~]#  
[root@p11 ~]#  
[root@p11 ~]#  
[root@p11 ~]#  
[root@p11 ~]#
```

Here is how the server with installed JVM / JDK looks. Please notice the line: 64-Bit Server VM. Java works in the 64-bit mode with the server settings.

### fontconfig installation

If [MCU mixer](#) is planned to use with participant names displaying, and JDK 12 or 14 is installed, it would be necessary to install fontconfig library:

```
sudo yum install -y fontconfig
```