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# Setup:Installation Guide/System Preparation/Linux

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## Installing Apache and PHP on Linux

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**Important!** The web server delivers your BlueSpice installation to the user's browser. Without a web server, BlueSpice cannot be used. The source code of BlueSpice is based on the scripting language "PHP". This must also be installed on your server in order to operate BlueSpice. The steps listed here are required.

## Introduction

---

Apache or Nginx are available as web servers under Linux. BlueSpice can theoretically also be operated with Nginx, but in this documentation only Apache is treated in detail. Of course, you can also install Nginx with the appropriate expertise and operate it according to the here documented Virtualhost configuration of Apache.

**Note:** If "User is not in the sudoers file." type "su" in the terminal and execute. Write a "sudo" in front of a command.

## Installation

---

Install Apache and PHP using the Aptitude package manager with the following steps:

```
apt update; \
apt install apache2 \
    libapache2-mod-php7.4 \
    php7.4 \
    php7.4-cli \
    php7.4-common \
    php7.4-curl \
    php7.4-gd \
    php7.4-intl \
    php7.4-json \
    php7.4-mbstring \
    php7.4-mysql \
    php7.4-opcache \
    php7.4-tidy \
    php7.4-xml \
    php7.4-zip; \
apt clean
```

Depending on requirements, further PHP extensions may be necessary, e.g. for an LDAP connection.

## Configuring PHP

---

After the installation has been completed, first configure PHP. First change to the directory `/etc/php/7.4/apache2` through the terminal and then execute the `php.ini` file with the command `nano php.ini`.

Find the following settings and change the values accordingly. If a setting is commented out with a semicolon in front of it, please remove it.

```
date.timezone = Europe/Berlin
max_execution_time = 600
post_max_size = 128M
upload_max_filesize = 128M
```

Set the value for 'date.timezone' according to your own time zone.

Save and exit the php.ini again.

## Configuring Apache

**Note:** In this documentation, we assume the recommended installation with [ShortURL](#). In this case, the root directory of the web server is in `/var/www/bluespice`, but the actual source code of BlueSpice is in `/var/www/bluespice/w`. This configuration is designed accordingly.

### Multiple virtual hosts

This guide applies to cases where BlueSpice is being installed on a dedicated server. If you have other virtual hosts configured, you may need to specify an alias for the `/w/` subfolder. Add the following to your Apache's http-specific configuration: `Alias /w/ /path/to/w/` (e.g., `Alias /w/ /var/www/html/example.com/w/`)

To configure a VirtualHost for BlueSpice, please proceed as follows:

1. Change to the directory `/etc/apache2/sites-available`.
2. In a text editor of your choice, open the file `bluespice.conf`, which does not yet exist, and create it. Copy the entire contents of the following file into this new configuration file:
  1. For BlueSpice free: [apache\\_vhost\\_bluespice\\_free.txt](#)
  2. For BlueSpice pro: [apache\\_vhost\\_bluespice\\_pro.txt](#)
3. In rows 3 and 4, replace "SERVERNAME" and "SERVERALIAS" according to your server name and domain. If the server is explicitly operated with only one VirtualHost for BlueSpice, you can also completely remove these two lines.
4. Save the file and close it.

Delete the VirtualHost created by default during the Apache installation with the command `a2dissite 000-default`. Then activate the just created VirtualHost with the command `a2ensite bluespice`.

Next, activate the Module Rewrite, which we configured in the `bluespice.conf`, by entering the following command: `a2enmod rewrite`

Next, create the directory `/var/www/bluespice` (`mkdir /var/www/bluespice`) and restart Apache with the command `service apache2 restart`.

Next, call up the URL of your BlueSpice server (localhost). If configured correctly, Apache should respond to the request with the error message "Not found", which is completely correct at the time of installation.



## Next step

If you have successfully completed all these steps, you can proceed to the next step "[MariaDB](#)".

## Elasticsearch on Linux



OpenSearch is available up to BlueSpice 4.3. Newer versions of BlueSpice 4 support [OpenSearch](#).

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**Note:** Elasticsearch is a prerequisite for the operation of Advanced Search. The steps listed here are optional and only required if you plan to use them in your BlueSpice installation.

## Adding the package sources

Elasticsearch is not included in the package manager on Debian. However, the manufacturer provides a repository for the software. Add it with the following commands to your Debian installation. Prerequisite is that you have installed the program "gnupg" ( `apt install gnupg` ).

```
wget -q0 - https://artifacts.elastic.co/GPG-KEY-elasticsearch | apt-key add -; \  
echo "deb https://artifacts.elastic.co/packages/6.x/apt stable main" > /etc/apt  
/sources.list.d/elastic-6.x.list
```

## Installing Elasticsearch

The subsequent installation of Elasticsearch will guide you through these commands.

```
apt update; \  
apt install elasticsearch; \  
apt clean
```

## Installing ingest-attachment

For the advanced search in BlueSpice you need the plugin "ingest-attachment" for Elasticsearch. This Install it with the following command:

```
/usr/share/elasticsearch/bin/elasticsearch-plugin install -b ingest-attachment
```

## Start Elasticsearch and add it to startup

Add the Elasticsearch to startup and then start the service:

```
systemctl enable elasticsearch; \  
service elasticsearch start
```

## Next step

If you have completed all steps successfully, you can proceed to the next step "[Python](#)".

## Introduction to the Bluespice installation guide for Linux

This chapter discusses how to prepare a complete Linux Server environment before running BlueSpice on it.

Due to the variety of Linux distributions on the market, this documentation has to choose one distribution. Therefore, we use Debian version 10 (buster).

Furthermore, Apache is used as a web server and Jetty as an application server. Alternatives are briefly discussed in the respective articles.

First, start with [installing Apache and PHP](#).

## Jetty on Linux

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**Note:** Jetty is a prerequisite for using PDF export and VisualDiff (BlueSpice pro only). The steps listed here are optional and only required if you plan to use one or more of these services in your BlueSpice installation.

## Introduction

An alternative to Jetty is Apache Tomcat, which you can also find in the package manager of Debian. However, since Jetty works better, this is preferred in this documentation.

## Installing Jetty

Install Jetty via Aptitude:

```
apt update; \  
apt install jetty9; \  
apt clean
```

## Configuration

**Note:** If you do not have the rights to save, run "sudo nano /etc/default/jetty9" in the terminal. And put the following line at the very end of the file.

To configure, open the file `/etc/default/jetty9` in a text editor of your choice (vi, nano). Put the following line at the very end of the file:

```
JAVA_OPTIONS="-Xms512m -Xmx1024m -Djetty.host=127.0.0.1"
```

Restart Jetty with the command `service jetty9 restart`.

## Installing the web apps

In your browser, open the official download page on [bluespice.com](https://bluespice.com) (1). Click on "Download" (2).

1. Unzip the BlueSpice-free-4.x.x.zip file.
2. Rename the folder "BlueSpice-free-4.x.x" to `bluespice`.
3. Rename the "bluespice" subfolder to `w`.
4. Now move the unzipped bluespice folder in the terminal with the command `sudo mv /yourfilepath /bluespice /var/www`.

After successful installation of BlueSpice, follow the next steps to install the web services and activate the respective BlueSpice extension:

- [PDF Export](#)
- [Drawio](#)



## Next step

---

If you have successfully completed all steps, you can proceed to the next step:

- From BlueSpice 4.4: [OpenSearch](#).
- Up to BlueSpice 4.3: [Elasticsearch](#).

## MariaDB on Linux

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**Important!** BlueSpice stores your content in a database for which you need to install a corresponding server. The steps listed here are required.

## Installing MariaDB

---

Install MariaDB via Aptitude:

```
apt update; \  
apt install mariadb-server mariadb-client; \  
apt clean
```

## Create database user for BlueSpice

---

After installation, immediately create a database user for MariaDB directly with the following command:

```
mysql -e "GRANT ALL ON bluespice.* TO 'bluespice'@'127.0.0.1' IDENTIFIED BY '<a  
password of your choice>';"
```

**Important!** Remember the username and password for later parts of the Installation.

## Next Step

---

If you have completed all steps successfully, you can proceed to the next step "[Jetty](#)".

## Memcached on Linux

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**Note:** Memcached is a cache server to improve the performance of your BlueSpice installation. It is not required for the actual operation of BlueSpice. The steps listed here are therefore optional.

## Installation

Install Memcached with Aptitude:

```
apt-get update; \  
apt-get -y install memcached; \  
apt-get clean
```

## Configuration

Open the file containing the memcached configuration (for example, /etc/memcached.conf on Debian / Ubuntu). Find the '-m' argument there and increase the available memory according to your server's capabilities:

```
-m 512
```

Save and close the file and restart memcached with `service memcached restart`.

## Next step

If you have completed all steps successfully and want to install BlueSpice pro, proceed to the next step "[Mathoid](#)". If you want to install BlueSpice free, you can now continue with [Installing BlueSpice](#).

## Installing PhantomJS

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**Note:** PhantomJS is a so-called headless browser that can render screenshots of web pages. This is required for the web page preview in Advanced Search and the Recent Changes Overview in your BlueSpice installation. These are functionalities of BlueSpice pro. For this purpose, the steps listed here are required.

**Important!** In this documentation, we use PhantomJS version 2.1.1. This is just an example of the latest version that you can download at the time of installation.

## Download

Go to the [download page of PhantomJS](#) and download the 64-bit version for Linux. Transfer the file to your server.

## Installation

Unpack the downloaded bz2 archive on the server with the command `tar xjf phantomjs-2.1.1-linux-x86_64.tar.bz2`. In the unpacked folder `phantomjs-2.1.1-linux-x86_64`, you will find another folder with the name `bin`. Within this folder is the file `phantomjs`. Copy this file into the `/usr/local/bin` folder. Then adjust the rights of the file:

```
chown root:staff /usr/local/bin/phantomjs; \  
chmod +x /usr/local/bin/phantomjs
```

## Completing the system preparation

If you have completed all steps successfully, you can now continue with [installing BlueSpice](#).

## Installing Python on Linux

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**Important!** Python is required to render the MediaWiki extension "SyntaxHighlight", which is part of BlueSpice. The steps listed here are required.

## Installation

Install Python via Aptitude:

```
apt-get update; \
apt-get -y install python3; \
apt-get clean
```

## Next step

If you have successfully completed all steps, you can proceed to the next step "[Memcached](#)".

## Installing Texvc

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**Note:** Texvc is a program that reads in mathematical expressions. It is needed for the correct operation of the MediaWiki extension "Math". These are functionalities of BlueSpice pro. For this purpose, the steps listed here are required for BlueSpice pro.

## Prerequisite

---

A prerequisite for installing Texvc is the installation of some external packages in your Linux distribution with the following commands:

```
apt update; \  
apt install dvipng \  
g++ \  
gcc \  
make \  
ocaml-nox \  
texlive-latex-base \  
texlive-latex-extra; \  
apt clean
```

## Installation

---

To install Texvc, go to the codebase of your BlueSpice sources in the folder `extensions/Math/math`. Here, execute the command `make`. Texvc will now be compiled.

After finishing the process, move the `texvc` file that was just created in the same folder to `/usr/local/bin` and make it executable by the following commands.

```
chown root:staff /usr/local/bin/math; \  
chmod +x /usr/local/bin/math
```

## Next Step

---

If you have completed all steps successfully, you can proceed to the next step "[PhantomJS](#)".