

# SLE BCI variants

## TOPIC

Understand the differences between SLE BCI-Base, SLE BCI-Minimal, SLE BCI-Micro, and SLE BCI-BusyBox.

## GOAL

Understand specifics of each SLE BCI variant, and choose the right SLE BCIs for your projects.

## EFFORT

10 minutes of reading time.

## REQUIREMENTS

- Familiarity with the concept of SLE Base Container Image.

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# 1 Introduction to BCI variants

SUSE offers several general-purpose SLE Base Container Images that are intended as deployment targets or as foundations for creating customized images: BCI-Base, SLE BCI-Minimal, SLE BCI-Micro, and SLE BCI-BusyBox. These images share the common SLES base, and none of them ship with a specific language or an application stack. All images feature the RPM database (even if the specific image does not include the RPM package manager) that can be used to verify the provenance of every file in the image. Each image includes the SLES certificate bundle, which allows the deployed applications to use the system's certificates to verify TLS connections.

The table below provides a quick overview of the differences between SLE BCI-Base, SLE BCI-Minimal, SLE BCI-Micro, and SLE BCI-BusyBox.

TABLE 1: SUPPORT MATRIX

Features	SLE BCI-Base	SLE BCI-Minimal	SLE BCI-Micro	SLE BCI-BusyBox
glibc	✓	✓	✓	✓
CA certificates	✓	✓	✓	✓
rpm database	✓	✓	✓	✓
coreutils	✓	✓	✓	busybox
bash	✓	✓	✓	✗
rpm (binary)	✓	✓	✗	✗
zypper	✓	✗	✗	✗

## 2 SLE BCI-Base and SLE BCI-Init

This SLE Base Container Image comes with the Zypper package manager and a free SLE-BCI repository. This allows you to install software available in the repository and customize the image during the build. The downside is the size of the image. It is the largest of the general-purpose SLE BCIs, so it is not always the best choice for a deployment image.

A variant of SLE BCI-Base called SLE BCI-Init comes with systemd preinstalled. The SLE BCI-Init container image can be useful in scenarios requiring systemd for managing services in a single container.



### Important: Using SLE BCI-Init with Docker or nerdctl

When using SLE BCI-Init container with Docker, you must use the following arguments for systemd to work correctly in the container:

```
# docker run -ti --tmpfs /run -v /sys/fs/cgroup:/sys/fs/cgroup:rw --cgroupns=host registry.suse.com/bci/bci-init:latest
```

In case of nerdctl, the correct command is as follows:

```
# nerdctl run -ti --env container=containerd --tmpfs /run -v /sys/fs/cgroup:/sys/fs/cgroup:rw --cgroupns=host registry.suse.com/bci/bci-init:latest
```

To correctly shut down the container use the following command:

```
# docker kill -s SIGRTMIN+3 CONTAINER_ID
```

## 3 SLE BCI-Minimal

SLE BCI-Minimal is a stripped-down version of the SLE BCI-Base image. SLE BCI-Minimal comes without Zypper, but it does have the RPM package manager installed. This significantly reduces the size of the image. However, while the `rpm` command can install and remove packages, it lacks support for repositories and automated dependency resolution. The SLE BCI-Minimal image is therefore intended for creating deployment containers, and then installing the desired RPM packages inside the containers. Although you can install the required dependencies, you need to download and resolve them manually. However, this approach is not recommended as it is prone to errors.

## 4 SLE BCI-Micro

This image is similar to SLE BCI-Minimal but without the RPM package manager. The primary use case for the image is deploying static binaries produced externally or during multi-stage builds. As there is no straightforward way to install additional dependencies inside the container

image, we recommend deploying a project using the SLE BCI-Minimal image only when the final build artifact bundles all dependencies and has no external runtime requirements (like Python or Ruby).

## 5 SLE BCI-Micro

Similar to SLE BCI-Micro, the SLE BCI-BusyBox image comes with the most basic tools only. However, these tools are provided by the BusyBox project. This has the benefit of further size reduction. Furthermore, the image contains no GPLv3 licensed software. When using the image, keep in mind that there are certain differences between the BusyBox tools and the GNU Coreutils. So scripts written for a system that uses GNU Coreutils may require modification to work with BusyBox.

## 6 SLE BCI sizes

For your reference, the list below provides an approximate size of each SLE BCI. Keep in mind that the provided numbers are rough estimations.

- SLE BCI-Base ~94 MB
- SLE BCI-Minimal ~42 MB
- SLE BCI-Micro ~26 MB
- SLE BCI-BusyBox ~14 MB

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