

# Deploying SUSE Linux Enterprise Micro in Public Clouds

## WHAT?

This article provides details about the SLE Micro images intended for deployment in public clouds. On top of that, it also provides information on creating new users of the system.

## WHY?

You want to learn about the specifics of the SLE Micro images for public clouds.

## EFFORT

It takes up to 10 minute to read the article.


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# 1 About SLE Micro in public clouds

SLE Micro is a lightweight and secure operating system that can be deployed into clouds of several vendors (for example, AWS, Microsoft Azure, Google Cloud).

The generic information about public cloud images is provided in the [Public Cloud Guide \(https://documentation.suse.com/sle-public-cloud/all/html/public-cloud/public-cloud.html\)](https://documentation.suse.com/sle-public-cloud/all/html/public-cloud/public-cloud.html) . There you can find subscription plans, image lifecycle, information regarding support, and so on.

SLE Micro creates its own internal snapshots that are not related nor can interfere with the external snapshots of the disk. External snapshots can be created using the cloud framework tools for backup purposes or for making new images. For details about SLE Micro snapshots, refer to [SLE Micro snapshotting \(https://documentation.suse.com/sle-micro/6.0/html/Micro-snapper-basic-concepts/index.html#snapper-about-snapshots\)](https://documentation.suse.com/sle-micro/6.0/html/Micro-snapper-basic-concepts/index.html#snapper-about-snapshots) .

## 2 Deployment of SLE Micro images to public clouds

### 2.1 Required and recommended disk size

The root volume is set to the size specified by the cloud vendors, for example, 10 GB in AWS and GCE and 30 GB in Azure.

The recommended size for SLE Micro is 12 GB. However, the size depends on the number and size of workloads you intend to run.

As with almost each change of the root file system, a new snapshot is created. Keep in mind that these snapshots also take up some size, even though Btrfs snapshots are space-efficient.

The root volume automatically grows as you change the size of the underlying disk. When you are running low on disk space, you can always stop your instance and increase the size of the system disk, up to the limitation of individual disk sizes in each cloud framework.

### 2.2 Deploying SLE Micro images into public clouds

The following procedure summarizes the deployment and post-deployment of the SLE Micro image.

1. Deploy the image to the public cloud. The specific procedure differs depending on particular cloud vendors. Refer to the particular documentation for details.
2. The image comes with a default initial configuration that might not suit your needs. For example, you want to add another user on top of the default *user*. To change this configuration, proceed as described in [Section 2.2.1, “Modifying the default configuration”](#).
3. Register the system as described in [Section 2.2.2, “Registration”](#).
4. You may want to create different users from the running system. For a procedure of doing so, refer to [Section 2.3, “Adding users with the \*\*useradd\*\* command”](#).

### 2.2.1 Modifying the default configuration

The default configuration is stored in `/usr/lib/ignition/base.d/base.ign` that is a part of the read-only file system. Therefore, direct changes to this file are not allowed. To modify this file, perform the following steps:

1. Remove the flag file `/boot/writable/firstboot_happened`.
2. Run the following command:

```
# transactional-update shell
```

3. Edit the `/usr/lib/ignition/base.d/base.ign` file to suit your needs. Here you can also add other users of the system, repartition the system and so on.

The file is read by Ignition during the next boot. Ignition reconfigures the system according to the instructions in the file. For details about the Ignition configuration, refer to [Ignition configuration examples \(https://documentation.suse.com/sle-micro/6.0/html/Micro-deployment-raw-images/index.html#deployment-configuring-with-ignition\)](https://documentation.suse.com/sle-micro/6.0/html/Micro-deployment-raw-images/index.html#deployment-configuring-with-ignition).

4. Exit the `transactional-update` shell by entering `exit`.
5. As Ignition runs in the `initramfs`, you need to rebuild it by running the command:

```
# transactional-update initrd
```

6. To grant the newly created user access rights using the SSH key provided by the cloud framework, ensure that the following `systemd` service is started:

```
# systemctl start afterburn-sshkeys@USER_NAME
```

7. Reboot the system.



## Note: SSH keys handling

Keep in mind that the SSH key that is used to start the SLE Micro instance and passed using the instance metadata service will be set up for the default user `suse`.

### 2.2.2 Registration

After you deploy the image, you need to register the system. In newer images, you can use the `registercloudquest` command to register the system. For details, refer to the [Public Cloud Guide \(https://documentation.suse.com/sle-public-cloud/all/html/public-cloud/cha-admin.html#sec-admin-register\)](https://documentation.suse.com/sle-public-cloud/all/html/public-cloud/cha-admin.html#sec-admin-register).

Alternatively, you can register your system as described in [SLE Micro registration \(https://documentation.suse.com/sle-micro/5.3/html/SLE-Micro-all/cha-postinstall-registration.html#sec-images-registration\)](https://documentation.suse.com/sle-micro/5.3/html/SLE-Micro-all/cha-postinstall-registration.html#sec-images-registration).

### 2.2.3 Tools involved in initializing SLE Micro in public clouds

SLE Micro images use tools that run on the first boot. The tools (Ignition or Combustion) configure the system according to a provided set of instructions. However, in the SLE Micro images for public cloud deployment, there is only Ignition by default. That said, you may use Combustion too, but you need to proceed as described in [Section 2.2.3.1, “Using Combustion in deployment in public clouds”](#). Additionally, Afterburn is also used when deploying SLE Micro in public clouds.

In the default Ignition configuration, Ignition is responsible for creating the default user: `suse`. Ignition interacts with the instance metadata service of the cloud provider only to get the so-called user data. Other data, like the user specified in Azure or the SSH key from the GCE, are not parsed from this metadata service.

Afterburn writes the SSH key to the `suse` home directory using the instance metadata service (IMDS). To transfer the SSH key from the IMDS, the `afterburn-sshkeys@suse` is used. The service is started automatically by `systemd`.

Ignition runs on the first boot only. To distinguish the first boot from succeeding boots, the flag file `/boot/writable/firstboot_happened` is created. Whenever you want to trigger Ignition again, you need to remove this file.

The default Ignition configuration is stored in the configuration file: `/usr/lib/ignition/base.d/base.ign`. You can modify this file to perform configuration changes. For details, refer to [Section 2.2.1, “Modifying the default configuration”](#).

### 2.2.3.1 Using Combustion in deployment in public clouds

To configure your instance with Combustion, you need to create a separate disk in the cloud framework. The disk must have the required directory structure as described [here](https://documentation.suse.com/sle-micro/5.5/single-html/SLE-Micro-deployment/#cha-images-combustion) (<https://documentation.suse.com/sle-micro/5.5/single-html/SLE-Micro-deployment/#cha-images-combustion>). Then you need to create an instance with this configuration disk attached. If the use of Combustion is needed for integration into your environment, you can build your own images using `keg` and `keg-recipes`. The `keg-recipes` project contains the image description used by SUSE to build the images we publish. For details, refer to [keg-recipes](https://github.com/SUSE-Enceladus/keg-recipes/) (<https://github.com/SUSE-Enceladus/keg-recipes/>).

## 2.3 Adding users with the `useradd` command

You can use the `useradd` command to add users to an already running system. However, as SUSE Linux Enterprise Micro is Btrfs-based, the `/home` directory is mounted as a subvolume. Therefore, you must use the `useradd` command accordingly.

To add a regular user without `sudo` privileges, proceed as described below:

1. Run the `useradd` command as follows:

```
# useradd --btrfs-subvolume-home --create-home USER_NAME
```

The `--btrfs-subvolume-home` option denotes that the `/home` directory is mounted as a subvolume. The `--create-home` option creates the `/home` under the particular subvolume. If you omit these options, the `/home` directory for the particular user will not be created.

2. Set a password for the new user:

```
# passwd USER_NAME
```


To give the new user `sudo` privileges, add the user to the `wheel` group:

```
# usermod -aG wheel USER_NAME
```

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