Basic Container Management Using Podman

Podman is a daemonless container engine serving as the default management tool on SUSE Linux Enterprise Server for NVIDIA. By allowing administrators to run, deploy and organize lightweight virtual environments without a hypervisor, it provides near-native performance and isolates applications efficiently. Using containers and pods minimizes overhead while enabling precise control of system resources and network interfaces.

Prerequisites

- Installed Podman

Publication Date: 05 Nov 2026

Contents

1 Basics about containers 2

2 About Podman 2

3 Getting container images 3

4 Working with containers 6

5 Working with pods 9

6 Legal Notice 12

A GNU Free Documentation License 13

1 Basics about containers

Containers offer a lightweight virtualization method to run multiple virtual environments (containers) simultaneously on a single host. Unlike technologies such as Xen or KVM, where the processor simulates a complete hardware environment and a hypervisor controls virtual machines, containers provide virtualization on the operating system level, where the kernel controls the isolated containers.

ADVANTAGES OF USING CONTAINERS

- Containers make it possible to isolate applications in self-contained units.
- Containers provide near-native performance. Depending on the runtime, a container can use the host kernel directly, thus minimizing overhead.
- It is possible to control network interfaces and apply resources limits inside containers through kernel control groups.

LIMITATIONS OF CONTAINERS

- Containers run on the host system's kernel, so they cannot use different kernels or different kernel versions.
- The security of containers depends on the host system. Containerized applications can be secured through AppArmor or SELinux profiles. Securing containers is harder than securing virtual machines because of the larger attack surface.

2 About Podman

Podman is a short name for Pod Manager Tool. It is a daemonless container engine that enables you to run and deploy applications using containers and container images. Podman provides a command-line interface to manage containers.

As Podman does not have a daemon, it provides integration with systemd. This makes it possible to control containers via systemd units. You can create these units for existing containers as well as generate units that can start containers if they do not exist in the system. Podman can run systemd inside containers.

Podman enables you to organize your containers into pods. Pods share the same network interface and resources. A typical use case for organizing a group of containers into a pod is a container that runs a database and a container with a client that accesses the database.

2.1 Installation of Podman

Podman is included in SLE for NVIDIA by default. However, if Podman is missing, you can install it as described below:

1. Run the command:

```
> sudo transactional-update pkg install podman
```

2. Restart your system to boot into the new snapshot.

3 Getting container images

To run a container, you need an image. An image includes all dependencies needed to run an application. You can obtain images from an image registry. Available registries are defined in the `/etc/containers/registries.conf` configuration file. If you have a local image registry or want to use other registries, add the registries into the configuration file.

Important: No tools for building images in SUSE Linux Enterprise Server for NVIDIA

SUSE Linux Enterprise Server for NVIDIA does not provide tools for building custom images. Therefore, the only way to get an image is to pull it from an image registry.

Note: openSUSE registry and Docker Hub not enabled by default

The openSUSE registry and Docker Hub are not configured in the default installation. To download container images from those registries, you need to add the registries to the `/etc/containers/registries.conf` file as follows:

```
unqualified-search-registries = ["registry.suse.com", "registry.opensuse.org",
 "docker.io"]
```

The **`podman pull`** command pulls an image from an image registry. The syntax is as follows:

```
# podman pull [OPTIONS] SOURCE
```

The *source* can be an image without the registry name. In that case, Podman tries to pull the image from all registries configured in the `/etc/containers/registries.conf` file. The default image tag is `latest`. The default location of pulled images is `/var/lib/containers/storage/overlay-images/`.

To view all possible options of the **`podman pull`** command, run:

```
# podman pull --help
```



Note: Getting images using Cockpit

If you are using Cockpit, you can also pull images from an image registry in the *Podman containers* menu by clicking + *Get new image*.

Podman enables you to search for images in an image registry or a list of registries using the command:

```
# podman search IMAGE_NAME
```

Alternatively, you can use the skopeo tool to manage container images and image repositories. For details, refer to the following section.

3.1 skopeo

skopeo (https://github.com/containers/skopeo) is a command-line utility for managing, inspecting and signing container images and image repositories. skopeo allows you to inspect containers and repositories on remote and local container registries, and also facilitates copying container images between different storage back-ends.

skopeo works with the following registry types:

containers-storage:*IMAGE_REFERENCE*
: An image located in a local image store.

docker://*IMAGE_REFERENCE*
: An image in a registry.

skopeo provides several commands to manage images and registries:

`inspect`
: The command fetches the repository manifest and can show you information like tags available for the specified repository, labels of a container image, the operating system of an image, and so on.

The command has the following syntax:

```
> skopeo inspect REGISTRY_TYPEIMAGE_NAME
```

An example of usage follows:

```
> skopeo inspect docker://registry.suse.com/suse/pcp:latest
{
  "Name": "registry.suse.com/suse/pcp",
  "Digest":
 "sha256:eee17c009fb8b05e5825a8c9658d972ab13a17541180bd7a1348fccc6e4fc77f",
  "RepoTags": [
      "5",
      "5-12.54",
      "5-13.10",
      ...
      ],
  "Created": "2023-06-19T16:59:01.617731565Z",
  "DockerVersion": "20.10.23-ce",
  "Labels": {
      "com.suse.application.pcp.created": "2023-06-19T16:58:29.786850402Z",
      "com.suse.application.pcp.description": "Performance Co-Pilot (pcp) container
 image based on the SLE Base Container Image. This container image is not supported
 when using a container runtime other than podman.",
      ...
      ],
      "Architecture": "amd64",
  "Os": "linux",
  "Layers": [
      "sha256:a05e4c4d1fc89c7f7aa60829b8631b64873df6041f627eb2b43524e9e010446e",
      "sha256:19793da49ce886a67aa62657dc24a105a26d63568ce27de241246bc6cc9bc008",
      "sha256:403f9ef6c98d4cf277caf3166ca4455817828e33c8b699237bb8eb24cb2b41bf"
  ],
  "LayersData": [
      {
          "MIMEType": "application/vnd.docker.image.rootfs.diff.tar.gzip",
          "Digest":
 "sha256:a05e4c4d1fc89c7f7aa60829b8631b64873df6041f627eb2b43524e9e010446e",
          "Size": 47291175,
          "Annotations": null
      },
      ...
  ],
  "Env": [
      "PATH=/usr/local/sbin:/usr/local/bin:/usr/sbin:/usr/bin:/sbin:/bin"
```

copy

The command enables you to copy container images between registries, container storage back-ends and local directories.

An example of usage follows:

```
> skopeo copy oci:busybox_ocilayout:latest dir:existingemptydirectory
```

delete

To mark an image for later removal by the registry's garbage collector.

```
> skopeo delete docker://registry.example.com/example/pause:latest
```

sync

To synchronize images between registry repositories and local directories.

4 Working with containers

4.1 Running containers

After you have pulled your container image, you can create containers based on it. You can run an instance of the image using the **podman run** command. The command syntax is as follows:

```
# podman run [OPTIONS] IMAGE [CONTAINER_NAME]
```

IMAGE is specified in the format *transport:path*. If *transport* is omitted, the default `docker` is used. The *path* can reference a specific image registry. If omitted, Podman searches for the image in registries defined in the `/etc/containers/registries.conf` file. An example that runs a container called `sles15` based on the `sle15` image follows:

```
# podman run registry.opensuse.org/suse/templates/images/sle-15-sp4/base/images/suse/
sle15 sles15
```

Below is a list of frequently used options. For a complete list of available options, run the command: **podman run --help**.

`--detach, -d`

The container will run in the background.

`--env, -e=env`

This option allows arbitrary environment variables that are available for the process to be launched inside of the container. If an environment variable is specified without a value, Podman will check the host environment for a value and set the variable only if it is set on the host.

`--help`

Prints help for the **`podman run`** command.

`--hostname=`***name***`, -h`

Sets the container host name that is available inside the container.

`--pod=`***name***

Runs the container in an existing pod. To create a pod, prefix the pod name with `new:`.

`--read-only`

Mounts the container's root file system as read-only.

`--systemd=true|false|always`

Runs the container in systemd mode. The default is true.

4.2 Checkpointing containers

On SUSE Linux Enterprise Server for NVIDIA, the **`podman container checkpoint`** is not available. To checkpoint a container, use the Cockpit Web interface as described in the Further actions with running containers (https://documentation.suse.com/sle-micro/6.2/html/Micro-cockpit/index.html#further-actions-with-containers) section.

4.3 Listing containers

Podman enables you to list all running containers using the **`podman ps`** command. The generic syntax of the command is as follows:

```
# podman  ps [OPTIONS]
```

Command options can change the displayed information. For example, using the `--all` option will output all containers created by Podman (not only the running containers).

For a complete list of **`podman ps`** options, run:

```
# podman ps --help
```

4.4 Stopping containers

If the **`podman run`** command finished successfully, a new container has been started. You can stop the container by running:

```
# podman stop [OPTIONS] CONTAINER
```

You can specify a single container name or ID or a space-separated list of containers. The command takes the following options:

`--all, -a`
: Stops all running containers.

`--latest, -l`
: Instead of providing a container name, the last created container will be stopped.

`--time, -t=`***seconds***
: Seconds to wait before forcibly stopping the container.

To view all possible options of the **`podman stop`** command, run the following:

```
# podman stop --help
```

4.5 Starting containers

To start already created but stopped containers, use the **`podman start`** command. The command syntax is as follows:

```
# podman start [OPTIONS] CONTAINER
```

`CONTAINER` can be a container name or a container ID.

For a complete list of possible options of **`podman start`**, run the command:

```
# podman start --help
```

4.5.1 Committing modified containers

You can run a new container with specific attributes that are not part of the original image. To save the container with these attributes as a new image, you can use the **`podman commit`** command:

```
# podman commit [OPTIONS] CONTAINER IMAGE
```

CONTAINER is a container name or a container ID. *IMAGE* is the new image name. If the image name does not start with a registry name, the value `localhost` is used.

4.6 Removing containers

To remove one or more unused containers from the host, use the **`podman rm`** command as follows:

```
# podman rm [OPTIONS] CONTAINER
```

CONTAINER can be a container name or a container ID.

The command does not remove the specified container if the container is running. To remove a running container, use the `-f` option.

For a complete list of **`podman rm`** options, run:

```
# podman rm --help
```



Note: Deleting all stopped containers

You can delete all stopped containers from your host with a single command:

```
# podman container prune
```

Make sure that each stopped container is intended to be removed before you run the command, otherwise you might remove containers that are still in use and were stopped only temporarily.

5 Working with pods

Containers can be grouped into a pod. The containers in the pod then share network, pid and IPC namespace. Pods can be managed by **`podman pod`** commands. This section provides an overview of the commands for managing pods.

5.1 Creating pods

The command **`podman pod create`** is used to create a pod. The syntax of the command is as follows:

```
# podman pod create [OPTIONS]
```

The command outputs the pod ID. By default, the pods are created without being started. You can start a pod by running a container in the pod, or by starting the pod as described in *Section 5.3, "Starting/stopping/restarting pods"*.



Note: Default pod names

If you do not specify a pod name with the `--name` option, Podman will assign a default name for the pod.

For a complete list of possible options, run the following command:

```
# podman pod create --help
```

5.2 Listing pods

You can list all pods by running the command:

```
# podman pod list
```

The output looks as follows:

```
POD ID        NAME               STATUS   CREATED       # OF CONTAINERS  INFRA ID
30fba506fecb  upbeat_mcclintock  Created  19 hours ago  1                4324f40c9651
976a83b4d88b  nervous_feynman    Running  19 hours ago  2                daa5732ecd02
```

As each pod includes the `INFRA` container, the number of containers in a pod is always larger than zero.

5.3 Starting/stopping/restarting pods

After a pod is created, you must start it, as it is not in the state `running` by default. In the commands below, *`POD`* can be a pod name or a pod ID.

To start a pod, run the command:

```
# podman pod start [OPTIONS] POD
```

For a complete list of possible options, run:

```
# podman pod start --help
```

To stop a pod, use the **`podman pod stop`** as follows:

```
# podman pod stop POD
```

To restart a pod, use the **`podman pod restart`** command as follows:

```
# podman pod restart POD
```

5.4 Managing containers in a pod

To add a new container to a pod, use the **`podman run`** command with the option `--pod`. A general syntax of the command follows:

```
# podman run [OPTIONS] --pod POD_NAME IMAGE
```

For details about the **`podman run`** command, refer to *Section 4.1, "Running containers"*.



Note: Only new containers can be added to a pod

The **`podman start`** command does not allow for starting a container in a pod if the container was not added to the pod during the container's initial running.

You cannot remove a container from a pod and keep the container running, because the container itself is removed from the host.

Other actions like start, restart and stop can be performed on specific containers without affecting the status of the pod.

5.5 Monitoring processes in pods

To view all containers in all pods, use the following command:

```
# podman ps -a --pod
```

The output of the command will be similar to the following one:

```
CONTAINER ID  IMAGE                         COMMAND    CREATED       STATUS                  [...]
```

```
4324f40c9651  k8s.gcr.io/pause:3.2                   21 hours ago  Created
daa5732ecd02  k8s.gcr.io/pause:3.2                   22 hours ago  Up 3 hours ago
e5c8e360c54b  localhost/test:latest       /bin/bash  3 days ago    Exited (137) 3 days ago
82dad15828f7  localhost/opensuse/toolbox  /bin/bash  3 days ago    Exited (137) 3 days ago
1a23da456b6f  docker.io/i386/ubuntu       /bin/bash  4 days ago    Exited (0) 6 hours ago
df890193f651  localhost/opensuse/toolbox  /bin/bash  4 days ago    Created
```

The first two records are the `INFRA` containers of each pod, based on the `k8s.gcr.io/pause:3.2` image. Other containers in the output are stand-alone containers that do not belong to any pod.

5.6 Removing pods

There are two ways to remove pods. You can use the **`podman pod rm`** command to remove one or more pods. Alternatively, you can remove all stopped pods using the **`podman pod prune`** command.

To remove a pod or several pods, run the **`podman pod rm`** command as follows:

```
# podman pod rm POD
```

`POD` can be a pod name or a pod ID.

To remove all currently stopped pods, use the **`podman pod prune`** command. Make sure that all stopped pods are intended to be removed before you run the **`podman pod prune`** command, otherwise you might remove pods that are still in use.

6 Legal Notice

Copyright© 2006– 2026 SUSE LLC and contributors. All rights reserved.

Permission is granted to copy, distribute and/or modify this document under the terms of the GNU Free Documentation License, Version 1.2 or (at your option) version 1.3; with the Invariant Section being this copyright notice and license. A copy of the license version 1.2 is included in the section entitled “GNU Free Documentation License”.

For SUSE trademarks, see https://www.suse.com/company/legal/↗. All other third-party trademarks are the property of their respective owners. Trademark symbols (®, ™ etc.) denote trademarks of SUSE and its affiliates. Asterisks (*) denote third-party trademarks.

All information found in this book has been compiled with utmost attention to detail. However, this does not guarantee complete accuracy. Neither SUSE LLC, its affiliates, the authors, nor the translators shall be held liable for possible errors or the consequences thereof.

A GNU Free Documentation License

Copyright (C) 2000, 2001, 2002 Free Software Foundation, Inc. 51 Franklin St, Fifth Floor, Boston, MA 02110-1301 USA. Everyone is permitted to copy and distribute verbatim copies of this license document, but changing it is not allowed.

0. PREAMBLE

The purpose of this License is to make a manual, textbook, or other functional and useful document "free" in the sense of freedom: to assure everyone the effective freedom to copy and redistribute it, with or without modifying it, either commercially or non-commercially. Secondarily, this License preserves for the author and publisher a way to get credit for their work, while not being considered responsible for modifications made by others.

This License is a kind of "copyleft", which means that derivative works of the document must themselves be free in the same sense. It complements the GNU General Public License, which is a copyleft license designed for free software.

We have designed this License to use it for manuals for free software, because free software needs free documentation: a free program should come with manuals providing the same freedoms that the software does. But this License is not limited to software manuals; it can be used for any textual work, regardless of subject matter or whether it is published as a printed book. We recommend this License principally for works whose purpose is instruction or reference.

1. APPLICABILITY AND DEFINITIONS

This License applies to any manual or other work, in any medium, that contains a notice placed by the copyright holder saying it can be distributed under the terms of this License. Such a notice grants a world-wide, royalty-free license, unlimited in duration, to use that work under the conditions stated herein. The "Document", below, refers to any such manual or work. Any member of the public is a licensee, and is addressed as "you". You accept the license if you copy, modify or distribute the work in a way requiring permission under copyright law.

A "Modified Version" of the Document means any work containing the Document or a portion of it, either copied verbatim, or with modifications and/or translated into another language.

A "Secondary Section" is a named appendix or a front-matter section of the Document that deals exclusively with the relationship of the publishers or authors of the Document to the Document's overall subject (or to related matters) and contains nothing that could fall directly within that overall subject. (Thus, if the

Document is in part a textbook of mathematics, a Secondary Section may not explain any mathematics.) The relationship could be a matter of historical connection with the subject or with related matters, or of legal, commercial, philosophical, ethical or political position regarding them.

The "Invariant Sections" are certain Secondary Sections whose titles are designated, as being those of Invariant Sections, in the notice that says that the Document is released under this License. If a section does not fit the above definition of Secondary then it is not allowed to be designated as Invariant. The Document may contain zero Invariant Sections. If the Document does not identify any Invariant Sections then there are none.

The "Cover Texts" are certain short passages of text that are listed, as Front-Cover Texts or Back-Cover Texts, in the notice that says that the Document is released under this License. A Front-Cover Text may be at most 5 words, and a Back-Cover Text may be at most 25 words.

A "Transparent" copy of the Document means a machine-readable copy, represented in a format whose specification is available to the general public, that is suitable for revising the document straightforwardly with generic text editors or (for images composed of pixels) generic paint programs or (for drawings) some widely available drawing editor, and that is suitable for input to text formatters or for automatic translation to a variety of formats suitable for input to text formatters. A copy made in an otherwise Transparent file format whose markup, or absence of markup, has been arranged to thwart or discourage subsequent modification by readers is not Transparent. An image format is not Transparent if used for any substantial amount of text. A copy that is not "Transparent" is called "Opaque".

Examples of suitable formats for Transparent copies include plain ASCII without markup, Texinfo input format, LaTeX input format, SGML or XML using a publicly available DTD, and standard-conforming simple HTML, PostScript or PDF designed for human modification. Examples of transparent image formats include PNG, XCF and JPG. Opaque formats include proprietary formats that can be read and edited only by proprietary word processors, SGML or XML for which the DTD and/or processing tools are not generally available, and the machine-generated HTML, PostScript or PDF produced by some word processors for output purposes only.

The "Title Page" means, for a printed book, the title page itself, plus such following pages as are needed to hold, legibly, the material this License requires to appear in the title page. For works in formats which do not have any title page as such, "Title Page" means the text near the most prominent appearance of the work's title, preceding the beginning of the body of the text.

A section "Entitled XYZ" means a named subunit of the Document whose title either is precisely XYZ or contains XYZ in parentheses following text that translates XYZ in another language. (Here XYZ stands for a specific section name mentioned below, such as "Acknowledgements", "Dedications", "Endorsements", or "History".) To "Preserve the Title" of such a section when you modify the Document means that it remains a section "Entitled XYZ" according to this definition.

The Document may include Warranty Disclaimers next to the notice which states that this License applies to the Document. These Warranty Disclaimers are considered to be included by reference in this License, but only as regards disclaiming warranties: any other implication that these Warranty Disclaimers may have is void and has no effect on the meaning of this License.

2. VERBATIM COPYING

You may copy and distribute the Document in any medium, either commercially or non-commercially, provided that this License, the copyright notices, and the license notice saying this License applies to the Document are reproduced in all copies, and that you add no other conditions whatsoever to those of this License. You may not use technical measures to obstruct or control the reading or further copying of the copies you make or distribute. However, you may accept compensation in exchange for copies. If you distribute a large enough number of copies you must also follow the conditions in section 3.

You may also lend copies, under the same conditions stated above, and you may publicly display copies.

3. COPYING IN QUANTITY

If you publish printed copies (or copies in media that commonly have printed covers) of the Document, numbering more than 100, and the Document's license notice requires Cover Texts, you must enclose the copies in covers that carry, clearly and legibly, all these Cover Texts: Front-Cover Texts on the front cover, and Back-Cover Texts on the back cover. Both covers must also clearly and legibly identify you as the publisher of these copies. The front cover must present the full title with all words of the title equally prominent and visible. You may add other material on the covers in addition. Copying with changes limited to the covers, as long as they preserve the title of the Document and satisfy these conditions, can be treated as verbatim copying in other respects.

If the required texts for either cover are too voluminous to fit legibly, you should put the first ones listed (as many as fit reasonably) on the actual cover, and continue the rest onto adjacent pages.

If you publish or distribute Opaque copies of the Document numbering more than 100, you must either include a machine-readable Transparent copy along with each Opaque copy, or state in or with each Opaque copy a computer-network location from which the general network-using public has access to download using public-standard network protocols a complete Transparent copy of the Document, free of added material. If you use the latter option, you must take reasonably prudent steps, when you begin distribution of Opaque copies in quantity, to ensure that this Transparent copy will remain thus accessible at the stated location until at least one year after the last time you distribute an Opaque copy (directly or through your agents or retailers) of that edition to the public.

It is requested, but not required, that you contact the authors of the Document well before redistributing any large number of copies, to give them a chance to provide you with an updated version of the Document.

4. MODIFICATIONS

You may copy and distribute a Modified Version of the Document under the conditions of sections 2 and 3 above, provided that you release the Modified Version under precisely this License, with the Modified Version filling the role of the Document, thus licensing distribution and modification of the Modified Version to whoever possesses a copy of it. In addition, you must do these things in the Modified Version:

A. Use in the Title Page (and on the covers, if any) a title distinct from that of the Document, and from those of previous versions (which should, if there were any, be listed in the History section of the Document). You may use the same title as a previous version if the original publisher of that version gives permission.

B. List on the Title Page, as authors, one or more persons or entities responsible for authorship of the modifications in the Modified Version, together with at least five of the principal authors of the Document (all of its principal authors, if it has fewer than five), unless they release you from this requirement.

C. State on the Title page the name of the publisher of the Modified Version, as the publisher.

D. Preserve all the copyright notices of the Document.

E. Add an appropriate copyright notice for your modifications adjacent to the other copyright notices.

F. Include, immediately after the copyright notices, a license notice giving the public permission to use the Modified Version under the terms of this License, in the form shown in the Addendum below.

G. Preserve in that license notice the full lists of Invariant Sections and required Cover Texts given in the Document's license notice.

H. Include an unaltered copy of this License.

I. Preserve the section Entitled "History", Preserve its Title, and add to it an item stating at least the title, year, new authors, and publisher of the Modified Version as given on the Title Page. If there is no section Entitled "History" in the Document, create one stating the title, year, authors, and publisher of the Document as given on its Title Page, then add an item describing the Modified Version as stated in the previous sentence.

J. Preserve the network location, if any, given in the Document for public access to a Transparent copy of the Document, and likewise the network locations given in the Document for previous versions it was based on. These may be placed in the "History" section. You may omit a network location for a work that was published at least four years before the Document itself, or if the original publisher of the version it refers to gives permission.

K. For any section Entitled "Acknowledgements" or "Dedications", Preserve the Title of the section, and preserve in the section all the substance and tone of each of the contributor acknowledgements and/or dedications given therein.

L. Preserve all the Invariant Sections of the Document, unaltered in their text and in their titles. Section numbers or the equivalent are not considered part of the section titles.

M. Delete any section Entitled "Endorsements". Such a section may not be included in the Modified Version.

N. Do not retitle any existing section to be Entitled "Endorsements" or to conflict in title with any Invariant Section.

O. Preserve any Warranty Disclaimers.

If the Modified Version includes new front-matter sections or appendices that qualify as Secondary Sections and contain no material copied from the Document, you may at your option designate some or all of these sections as invariant. To do this, add their titles to the list of Invariant Sections in the Modified Version's license notice. These titles must be distinct from any other section titles.

You may add a section Entitled "Endorsements", provided it contains nothing but endorsements of your Modified Version by various parties--for example, statements of peer review or that the text has been approved by an organization as the authoritative definition of a standard.

You may add a passage of up to five words as a Front-Cover Text, and a passage of up to 25 words as a Back-Cover Text, to the end of the list of Cover Texts in the Modified Version. Only one passage of Front-Cover Text and one of Back-Cover Text may be added by (or through arrangements made by) any one entity. If the Document already includes a cover text for the same cover, previously added by you or by arrangement made by the same entity you are acting on behalf of, you may not add another; but you may replace the old one, on explicit permission from the previous publisher that added the old one.

The author(s) and publisher(s) of the Document do not by this License give permission to use their names for publicity for or to assert or imply endorsement of any Modified Version.

5. COMBINING DOCUMENTS

You may combine the Document with other documents released under this License, under the terms defined in section 4 above for modified versions, provided that you include in the combination all of the Invariant Sections of all of the original documents, unmodified, and list them all as Invariant Sections of your combined work in its license notice, and that you preserve all their Warranty Disclaimers.

The combined work need only contain one copy of this License, and multiple identical Invariant Sections may be replaced with a single copy. If there are multiple Invariant Sections with the same name but different contents, make the title of each such section unique by adding at the end of it, in parentheses, the name of the original author or publisher of that section if known, or else a unique number. Make the same adjustment to the section titles in the list of Invariant Sections in the license notice of the combined work.

In the combination, you must combine any sections Entitled "History" in the various original documents, forming one section Entitled "History"; likewise combine any sections Entitled "Acknowledgements", and any sections Entitled "Dedications". You must delete all sections Entitled "Endorsements".

6. COLLECTIONS OF DOCUMENTS

You may make a collection consisting of the Document and other documents released under this License, and replace the individual copies of this License in the various documents with a single copy that is included in the collection, provided that you follow the rules of this License for verbatim copying of each of the documents in all other respects.

You may extract a single document from such a collection, and distribute it individually under this License, provided you insert a copy of this License into the extracted document, and follow this License in all other respects regarding verbatim copying of that document.

7. AGGREGATION WITH INDEPENDENT WORKS

A compilation of the Document or its derivatives with other separate and independent documents or works, in or on a volume of a storage or distribution medium, is called an "aggregate" if the copyright resulting from the compilation is not used to limit the legal rights of the compilation's users beyond what the individual works permit. When the Document is included in an aggregate, this License does not apply to the other works in the aggregate which are not themselves derivative works of the Document.

If the Cover Text requirement of section 3 is applicable to these copies of the Document, then if the Document is less than one half of the entire aggregate, the Document's Cover Texts may be placed on covers that bracket the Document within the aggregate, or the electronic equivalent of covers if the Document is in electronic form. Otherwise they must appear on printed covers that bracket the whole aggregate.

8. TRANSLATION

Translation is considered a kind of modification, so you may distribute translations of the Document under the terms of section 4. Replacing Invariant Sections with translations requires special permission from their copyright holders, but you may include translations of some or all Invariant Sections in addition to the original versions of these Invariant Sections. You may include a translation of this License, and all the license notices in the Document, and any Warranty Disclaimers, provided that you also include the original English version of this License and the original versions of those notices and disclaimers. In case of a disagreement between the translation and the original version of this License or a notice or disclaimer, the original version will prevail.

If a section in the Document is Entitled "Acknowledgements", "Dedications", or "History", the requirement (section 4) to Preserve its Title (section 1) will typically require changing the actual title.

9. TERMINATION

You may not copy, modify, sublicense, or distribute the Document except as expressly provided for under this License. Any other attempt to copy, modify, sublicense or distribute the Document is void, and will automatically terminate your rights under this License. However, parties who have received copies, or rights, from you under this License will not have their licenses terminated so long as such parties remain in full compliance.

10. FUTURE REVISIONS OF THIS LICENSE

The Free Software Foundation may publish new, revised versions of the GNU Free Documentation License from time to time. Such new versions will be similar in spirit to the present version, but may differ in detail to address new problems or concerns. See https://www.gnu.org/copyleft/.

Each version of the License is given a distinguishing version number. If the Document specifies that a particular numbered version of this License "or any later version" applies to it, you have the option of following the terms and conditions either of that specified version or of any later version that has been published (not as a draft) by the Free Software Foundation. If the Document does not specify a version number of this License, you may choose any version ever published (not as a draft) by the Free Software Foundation.

ADDENDUM: How to use this License for your documents

```
Copyright (c) YEAR YOUR NAME.
```

```
Permission is granted to copy, distribute and/or modify this document
under the terms of the GNU Free Documentation License, Version 1.2
or any later version published by the Free Software Foundation;
with no Invariant Sections, no Front-Cover Texts, and no Back-Cover Texts.
A copy of the license is included in the section entitled “GNU
Free Documentation License”.
```

If you have Invariant Sections, Front-Cover Texts and Back-Cover Texts, replace the “with...Texts.” line with this:

```
with the Invariant Sections being LIST THEIR TITLES, with the
Front-Cover Texts being LIST, and with the Back-Cover Texts being LIST.
```

If you have Invariant Sections without Cover Texts, or some other combination of the three, merge those two alternatives to suit the situation.

If your document contains nontrivial examples of program code, we recommend releasing these examples in parallel under your choice of free software license, such as the GNU General Public License, to permit their use in free software.