

# Composer CMS: Content Make System

Gary B. Genett

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# Chapter 1

## Composer CMS



“Creating Made Simple.”

Composer CMS v3.1   License: GPL  
Gary B. Genett      [composer@garybgenett.net](mailto:composer@garybgenett.net)

- Formats: webpage / html / pdf / epub / revealjs.html / docx

### 1.1 Overview

**Composer is a simple but powerful CMS based on Pandoc, Bootstrap and GNU Make.** It is a document and website build system that processes directories or individual files in Markdown format.

Traditionally, CMS stands for Content Management System. Composer is designed to be a Content **Make** System. Written content is vastly easier to manage as plain text, which can be crafted with simple editors and tracked with revision control. However, professional documentation, publications, and websites require formatting that is dynamic and feature-rich.

Pandoc is an extremely powerful document conversion tool, and is a widely used standard for processing Markdown into other formats. While it has reasonable defaults, there are a large number of options, and additional tools are required for some formats and features.

Composer consolidates all the necessary components, simplifies the options, and prettifies the output formats, all in one place. It also serves as a build system, so that large repositories can be managed as documentation archives or published as Static Websites.

```
# >>> Composer CMS v3.0 :: .../composer
# MAKEFILE_LIST      [../../composer/Makefile]
# COMPOSER_INCLUDES  [../../composer/.composer_mk]
# CURDIR             [../../composer]
# MAKECMDGOALS       [all] (all)
# MAKELEVEL          [1]

| >>> Creating      | .../composer :: Composer-v3.0.Manual.pdf
| >>> Creating      | .../composer :: README.html
| >>> Creating      | .../composer :: README.pdf
| >>> Creating      | .../composer :: README.epub
| >>> Creating      | .../composer :: README.revealjs.html
| >>> Creating      | .../composer :: README.docx
```

### 1.2 Quick Start

Use make help to get started:

```
make [-f .../ Makefile] [variables] <filename>.<extension>
make [-f .../ Makefile] [variables] <target>
```

Create documents from source Markdown files (see [Formatting Variables](#)):

```
make README.html
make Composer-v3.1.Manual.html c_list="README.md LICENSE.md"
```

Save a persistent configuration (see [Recommended Workflow and Configuration Settings](#)):

```
make template >.composer.mk
$EDITOR .composer.mk
    override COMPOSER_TARGETS := .targets Composer-v3.1.Manual.html
    override Composer-v3.1.Manual.html := README.md LICENSE.md
make clean
make all
```

Recursively install and build an entire directory tree (see [Recommended Workflow](#)):

```
cd .../documents
make -f .../.Composer/Makefile init
make -f .../.Composer/Makefile install-all
make all-all
```

See `help-all` for full details and additional targets.

## 1.3 Principles

The guiding principles of Composer:

- All source files in readable plain text
- Professional output, suitable for publication
- Minimal dependencies, and entirely command-line driven
- Separate content and formatting; writing and publishing are independent
- Inheritance and dependencies; global, tree, directory and file overrides
- Fast; both to initiate commands and for processing to complete

Direct support for key document types (see [Document Formatting](#)):

- Static Websites
- HTML
- PDF
- EPUB
- Reveal.js Presentations
- Microsoft Word & PowerPoint

## 1.4 Requirements

Composer has almost no external dependencies. All needed components are integrated directly into the repository, including Pandoc and YQ. Composer does require a minimal command-line environment based on GNU tools, particularly GNU Make, which is standard for all GNU/Linux systems. The Windows Subsystem for Linux for Windows and MacPorts for macOS both provide suitable environments.

The one large external requirement is TeX Live, and it can be installed using the package managers of each of the above systems. It is only necessary for creating PDF files.

Below are the versions of the components in the repository, and the tested versions of external tools for this iteration of Composer. Use `check` to validate your system.

The versions of the integrated repositories can be changed, if desired (see [Repository Versions](#)).

Repository	Commit	License
Pandoc	2.18	GPL
YQ	v4.24.2	MIT
Bootstrap	v5.1.3	MIT
Booltlint	v1.1.0	MIT
Bootswatch	v5.1.3	MIT
Font Awesome	6.1.2	MIT / CC-BY
Water.css	d950cbc9f8607521587f	MIT
Markdown Viewer	3bd40d84c071379440b3	MIT
Markdown Themes	6b3643d0f703727d8472	None
Reveal.js	4.3.1	MIT
Google Firebase	v12.4.7	MIT

Project	Composer Version
GNU Bash	5.1.16
– GNU Coreutils	8.32
– GNU Findutils	4.9.0
– GNU Sed	4.8
GNU Make	4.3
– Pandoc	2.18
– YQ	4.24.2
– TeX Live PDF	2021 3.141592653-2.6-1.40.22
Supporting Tools:	–
– Git SCM	2.37.4
– GNU Diffutils	3.8
– Rsync	3.2.4

Markdown Viewer is included both for its CSS stylesheets, and for real-time rendering of Markdown files as they are being written. To install, follow the instructions in the README.md.

Google Firebase is only necessary for uploading via the export-all and export-force targets. Binaries are included in the repository, but do not seem to work with all versions of their respective operating systems. If the included binary fails, use +update–firebase–tools to build a local version (see +update-\*).

---



# Chapter 2

## Composer Operation

### 2.1 Recommended Workflow

#### 2.1.1 Directory Tree

The ideal workflow is to put Composer in a top-level `.Composer` for each directory tree you want to manage, creating a structure similar to this:

```
... / .Composer
... /
... / t1d /
... / t1d/sub /
```

To save on disk space using a central Composer install for multiple directory trees, the `init` target can be used to create a linked `.Composer` directory, and then the entire directory tree can be converted to a Composer documentation archive (Quick Start example):

```
cd ... / documents
make -f ... / .Composer/Makefile init
make -f ... / .Composer/Makefile install-all
make all-all
```

#### 2.1.2 Customization

If specific settings need to be used, either globally or per-directory, `.composer.mk` and `.composer.yml` files can be created (see Configuration Settings, Quick Start example):

```
make template >.composer.mk      && $EDITOR .composer.mk
make template.yml >.composer.yml && $EDITOR .composer.yml
```

Custom targets can also be defined, using standard GNU Make syntax (see Custom Targets).

#### 2.1.3 Important Notes

GNU Make does not support file and directory names with spaces in them, and neither does Composer. Documentation archives which have such files or directories will produce unexpected results.

It is fully supported for input files to be symbolic links to files that reside outside the documentation archive:

```
cd ... / t1d
ln -rs ... / README.md .
make README.html
```

Similarly to source code, GNU Make is meant to only run one instance within the directory at a time, and Composer shares this requirement. It should be run as a single user, to avoid duplication and conflicts. Concurrent runs will produce unexpected results. It is highly recommended to set `MAKEJOBS` to a value greater than the default, to speed up processing.

It is best practice to `install-force` after every Composer upgrade, in case there are any changes to the Makefile template (see [Templates](#)). Everything in Composer sources from the main Makefile, so that is the only file which requires review to see what changes have been made between versions.

### 2.1.4 Next Steps

The archive is ready, and each directory is both a part of the collective and its own individual instance. Targets can be run per-file, per-directory, or recursively through an entire directory tree. The most commonly used targets are in [Primary Targets](#).

**Welcome to Composer. *Happy Making!***

## 2.2 Document Formatting

```
#WORKING:DOCS#####
.../_artifacts/pandoc/template.*  
.../_artifacts/pandoc/reference.*  
.../_artifacts/composer/composer-site.css  
.../_artifacts/composer/composer-html.css
```

As outlined in [Overview and Principles](#), a primary goal of Composer is to produce beautiful and professional output. Pandoc does reasonably well at this, and yet its primary focus is document conversion, not document formatting. Composer fills this gap by specifically tuning a select list of the most commonly used document formats.

The input Markdown format used by Composer is the Pandoc default. However, the Pandoc Extensions list has been modified slightly. See that section and the Pandoc Markdown documentation for the exact list and details for each.

Further options for each document type are in [Formatting Variables](#). All improvements not exposed as variables will apply to all documents created with a given instance of Composer.

Note that all the files referenced below are embedded in the ‘Embedded Files’ section of the Makefile. They are exported by the `+release` target (using `+setup`), and will be overwritten whenever it is run.

### 2.2.1 Static Websites

Bootstrap is a leading web development framework, capable of building static webpages that behave dynamically. Static sites are very easy and inexpensive to host, and are extremely responsive compared to truly dynamic webpages.

Composer uses this framework to transform an archive of simple text files into a modern website, with the appearance and behavior of dynamically indexed pages.

```
#WORKING:DOCS#####
.../_artifacts/bootstrap/bootstrap.js  
.../_artifacts/bootstrap/bootstrap.css  
.../_artifacts/composer/composer.site.css  
.../_artifacts/composer/composer.site.overlay.light.css  
.../_artifacts/composer/composer.site.overlay.dark.css  
.../_artifacts/images/logo.img  
.../_artifacts/images/icon.img
```

Bootlint Bootswatch

```
.../bootswatch/docs/index.html
```

- Examples: Example Website / README.site.html

### 2.2.2 HTML

In addition to being a helpful real-time rendering tool, Markdown Viewer includes several CSS stylesheets that are much more visually appealing than the Pandoc default, and which behave like normal webpages, so Composer uses them for all HTML-based document types, including EPUB.

Information on installing Markdown Viewer for use as a Markdown rendering tool is in Requirements.

- Example: README.html

### 2.2.3 PDF

The default formatting for PDF is geared towards academic papers and the typesetting of printed books, instead of documents that are intended to be purely digital.

Internally, Pandoc first converts to LaTeX, and then uses TeX Live to convert into the final PDF. Composer inserts customized LaTeX to modify the final output:

```
.../_artifacts/composer/composer-pdf.header
```

```
#WORK # .../_artifacts/composer/composer.pdf.latex
```

- Example: README.pdf

### 2.2.4 EPUB

The EPUB format is essentially packaged HTML, so Composer uses the same Markdown Viewer CSS stylesheets for it.

- Example: README.epub

### 2.2.5 Reveal.js Presentations

The CSS for Reveal.js presentations has been modified to create a more traditional and readable end result. The customized version is at:

```
.../_artifacts/composer/composer-revealjs.css
```

```
#WORK # .../_artifacts/composer/composer.revealjs.css
```

```
#WORK # rework this
```

It links in a default theme from the .../reveal.js/dist/theme directory. Edit the location in the file, or use c\_css to select a different theme.

It is set up so that a logo can be placed in the upper right hand corner on each slide, for presentations that need to be branded. Simply copy an image file to the logo location:

```
.../_artifacts/images/logo.img
```

To have different logos for different directories (using Recommended Workflow, Configuration Settings and Precedence Rules):

```
#WORK # no longer the best way to do this... cd .../presentations cp .../logo.img ./ ln -rs .../.Composer/_artifacts/composer/composer.revealjs.css ./composer-revealjs.css echo 'override c_type := revealjs' »./composer.mk make all
```

- Example: README.revealjs.html

## 2.2.6 Microsoft Word & PowerPoint

The internal Pandoc templates for these are exported by Composer, so they are available for customization:

```
.../_artifacts/pandoc/reference.docx
.../_artifacts/pandoc/reference.pptx
```

They are not currently modified by Composer.

– Example: README.docx

## 2.2.7 Plain Text

This output format is still parsable by Pandoc as valid Markdown, but is formatted to read as pure plain text that is only 80 columns wide. There are cases where this conversion is desirable, such as technical documentation, where it is easier to write and format as Pandoc Markdown but the output needs to be in a universally accepted text layout and presentation.

Composer currently does not modify this format, other than using the `--columns=80` and `--wrap=auto` options to Pandoc.

## 2.2.8 Pandoc Markdown

Output Markdown that is specific to Pandoc. This is for linting or creating standardized versions of source files for shared archives.

Due to the expressed purposes of this format, Composer will never modify it.

## 2.3 Configuration Settings

```
#WORKING:DOCS#####
```

### 2.3.1 GNU Make (.composer.mk)

### 2.3.2 Pandoc & Bootstrap (.composer.yml)

Composer uses `.composer.mk` files for persistent settings and definition of Custom Targets. By default, they are chained together across their Makefile tree (see `COMPOSER_INCLUDE` in Control Variables). A `.composer.mk` in the main Composer directory will be global to all directories. The targets and settings in the most local file override all others (see Precedence Rules).

The easiest way to create new `.composer.mk` and `.composer.yml` files is with the template and template.yml targets (Quick Start example):

```
make template >.composer.mk      && $EDITOR .composer.mk
make template.yml >.composer.yml  && $EDITOR .composer.yml
```

All variable definitions must be in the override `[variable] := [value]` format from the template target. Doing otherwise will result in unexpected behavior, and is not supported. The regular expression that is used to detect them:

```
override [[ : space : ]]+([ ^[ : space : ]]+)[[ : space : ]]+[:][=]
```

Variables can also be specified per-target, using GNU Make syntax:

```
README.%: override c_toc := 0
README.revealjs.html: override c_toc :=
```

In this case, there are multiple definitions that could apply to `README.revealjs.html`, due to the `%` wildcard. Since the most specific target match is used, the final value for `c_toc` would be empty.

Example configuration files:

```
.../.composer.mk
.../_artifacts/.composer.yml

#WORK .../_artifacts/README.site.yml .../README.site.html.yml
```

## 2.4 Precedence Rules

All processing in Composer is done in global-to-local order, so that the most local file or value always takes precedence.

### 2.4.1 Configuration Files

Both .composer.mk and .composer.yml files follow the model illustrated in COMPOSER\_INCLUDE under Control Variables. This means that the values in the most local file override all others.

```
#WORKING:DOCS#####
#
```

All values in .composer.mk take precedence over everything else, including environment variables.

### 2.4.2 Header & CSS Files

```
#WORK # the same for all...
```

```
.../_artifacts/composer/composer-pdf.header
.../.composer-pdf.header
./README.pdf.header
```

```
#WORK # the same for all...
```

```
.../_artifacts/composer/composer-html.css
.../.composer-html.css
./README.html.css
```

```
#WORK # the c_css layering...
```

1. c\_site » Bootstrap
2. c\_css
3. c\_site » .composer.yml :: [site-config].[css\_overlay] #WORK # comment 1. COMPOSER\_DIR/\_artifacts/composer/compo
4. c\_type.css
5. COMPOSER\_ART/composer/composer-c\_type.css
6. COMPOSER\_INCLUDE » .../.composer-c\_type.css
7. CURDIR/c\_base.<extension>.css

The first four are core to Composer, and are always included. COMPOSER\_INCLUDE and CURDIR files are optional, and only used if they exist.

### 2.4.3 Variables & Aliases

Variable aliases, such as COMPOSER\_DEBUGIT/c\_debug/V are prioritized in the order shown, with COMPOSER\_\* taking precedence over c\_\*, over the short alias.

Full COMPOSER\_\* variable names should always be used in .composer.mk files, to avoid being overwritten by recursive environment persistence.

### 2.4.4 Pandoc Options

```
#WORK # does not seem to be documented anywhere... test it, with examples here, regardless... # seems to be:
yaml_metadata_block, -defaults, -metadata*, etc.
```

## 2.5 Specifying Dependencies

If there are files or directories that have dependencies on other files or directories being processed first, this can be done simply using GNU Make syntax in .composer.mk:

```
LICENSE.html: README.html  
subdirs-all-__artifacts: subdirs-all-pandoc
```

This would require README.html to be completed before LICENSE.html, and for pandoc to be processed before \_\_artifacts. Directories need to be specified with the subdirs-all-\* syntax in order to avoid conflicts with target names (see Custom Targets).

Chaining of dependencies can be as complex and layered as GNU Make will support. Note that if a file or directory is set to depend on a target, that target will be run whenever the file or directory is called.

## 2.6 Custom Targets

If needed, custom targets can be defined inside a .composer.mk file (see Configuration Settings), using standard GNU Make syntax. Naming them as \*-export, \*-clean or \*-all will include them in runs of the respective targets. Targets with any other names will need to be run manually, or included in COMPOSER\_TARGETS.

```
#WORK # ... or, via Specifying Dependencies
```

There are a few limitations when naming custom targets. Targets starting with the regular expression [+] are hidden, and are skipped by auto-detection. Additionally, there is a list of reserved targets in Reserved, along with a list of reserved variables.

Any included .composer.mk files are sourced early in the main Composer Makefile, so matching targets and most variables will be overridden. In the case of conflicting targets, GNU Make will produce warning messages. Variables will have their values changed silently. Changing the values of internal Composer variables is not recommended or supported.

A final note is that \*-export, \*-clean and \*-all targets are stripped from COMPOSER\_TARGETS. In cases where this results in an empty COMPOSER\_TARGETS, there will be a message and no actions will be taken.

## 2.7 Repository Versions

There are a few internal variables used by +update to select the repository and binary versions of integrated components (see Requirements). These are exposed for configuration, but only within .composer.mk:

- PANDOC\_VER (must be a binary version number)
- PANDOC\_CMT (defaults to PANDOC\_VER)
- YQ\_VER (must be a binary version number)
- YQ\_CMT (defaults to YQ\_VER)
- BOOTSTRAP\_CMT
- BOOTLINT\_CMT
- BOOTSWATCH\_CMT
- FONTAWES\_CMT
- WATERCSS\_CMT
- MDVIEWER\_CMT
- MDTHEMES\_CMT
- REVEALJS\_CMT
- FIREBASE\_VER (must be a binary version number)
- FIREBASE\_CMT (defaults to FIREBASE\_VER)

Binaries for Pandoc, YQ and Google Firebase are installed in their respective directories. By moving or removing them, or changing the version numbers and foregoing all relevant variations of +update, the system versions will be used instead. This will work as long as the commit versions match, so that supporting files are in alignment, particularly for Pandoc.

It is possible that changing the versions will introduce incompatibilities with Composer, which are usually impacts to the prettification of output files (see Document Formatting). There may also be upstream changes to the command-line options for these tools.

---



# Chapter 3

## Composer Variables

### 3.1 Formatting Variables

Variable	Purpose	Value
c_site ~ S	Enable Static Websites	
c_type ~ T	Desired output format	html
c_base ~ B	Base of output file	
c_list ~ L	List of input files(s)	
c_lang ~ a	Language for document headers	en-US
c_logo ~ g	Logo image (HTML formats)	logo.img
c_icon ~ i	Icon image (HTML formats)	icon.img
c_css ~ c	Location of CSS file	theme.html-default.css
c_toc ~ t	Table of contents depth	
c_level ~ l	Chapter/slide header level	2
c_margin ~ m	Size of margins (PDF)	0.8in
c_options ~ o	Custom Pandoc options	

Values (c_type)	Format	Extension
html	HyperText Markup Language	*.html
pdf	Portable Document Format	*.pdf
epub	Electronic Publication	*.epub
revealjs	Reveal.js Presentation	*.revealjs.html
docx	Microsoft Word	*.docx
pptx	Microsoft PowerPoint	*.pptx
text	Plain Text (well-formatted)	*.txt
markdown	Markdown (for testing)	*.md.txt

- Other `c_type` values will be passed directly to Pandoc
- Special `c_css` values:
  - `css_alt` = Use the alternate default stylesheet
  - `0` = Revert to the Pandoc default
- Special `c_toc` value: `0` = List all headers, and number sections
- Special `c_level` value: `0` = Varies by `c_type` (see `c_level`)
- An empty `c_margin` value enables individual margins:
  - `c_margin_top ~ mt`
  - `c_margin_bottom ~ mb`
  - `c_margin_left ~ ml`
  - `c_margin_right ~ mr`

### 3.1.1 c\_site

```
#WORK
```

### 3.1.2 c\_type / c\_base / c\_list

The compose target uses these variables to decide what to build and how. The output file is [c\_base].<extension>, and is constructed from the c\_list input files, in order. The <extension> is selected based on the c\_type table above. Generally, it is not required to use the compose target directly for supported c\_type files, since it is run automatically based on what output file <extension> is specified.

The automatic input file detection works by matching one of the following (Quick Start example):

make README.html	~ README (empty [COMPOSER_EXT])
make README.html	~ README.md
make README.md.html	~ README.md
make Composer-v3.1.Manual.html	c_list="README.md LICENSE.md"

Other values for c\_type, such as json or man, for example, can be passed through to Pandoc manually:

```
make compose c_type="json" c_base="README" c_list="README.md"
make compose c_type="man" c_base="Composer-v3.1.Manual" c_list="README.md"
```

Any of the file types supported by Pandoc can be created this way. The only limitation is that the input files must be in Markdown format.

Finally, note that c\_list has alternate meanings for these targets:

- commit
- site-list

### 3.1.3 c\_lang

- Primarily for PDF, this specifies the language that the table of contents (c\_toc) and chapter headings (c\_level) will use.

### 3.1.4 c\_logo

```
#WORK # # revealjs
#WORK # document ./g/_data/zactive/coding/composer/_artifacts/images
.../_artifacts/images
```

### 3.1.5 c\_icon

```
#WORK # html # revealjs
```

### 3.1.6 c\_css

```
#WORK # document ./g/_data/zactive/coding/composer/_artifacts/theme
.../_artifacts/themes
```

- By default, a CSS stylesheet from Markdown Viewer is used for HTML and EPUB, and one of the Reveal.js themes is used for Reveal.js Presentations. This variable allows for selection of a different file in all cases.
- The special value css\_alt selects the alternate default stylesheet. Using 0 reverts to the Pandoc default.
- Composer includes several different CSS files, depending on the c\_type of the file being built. See Header & CSS Files under Precedence Rules for details on how they are layered together.

### 3.1.7 c\_toc

- Setting this to a value of [1–6] creates a table of contents at the beginning of the document. The numerical value is how many header levels deep the table should go. A value of 6 lists all header levels.
- Using a value of 0 lists all header levels, and additionally numbers all the sections, for reference.

### 3.1.8 c\_level

- This value has different effects, depending on the c\_type of the output document.
- For HTML, any value enables section–divs, which wraps headings and their section content in `<section>` tags and attaches identifiers to them instead of the headings themselves. This is for CSS styling, and is generally desired.
- For PDF, there are 3 top-level division types: part, chapter, and section. This sets the top-level header to the specified type, which changes the way the document is presented. Using part divides the document into “Parts”, each starting with a stand-alone title page. With this division type, each second-level heading starts a new “Chapter”. A chapter simply starts a new section on a new page, and lower-level headings continue as running portions within it. Finally, section creates one long running document with no blank pages or section breaks (like a HTML page). To set the desired value:
  - part ~ 0
  - chapter ~ 2
  - section ~ Any other value
- For EPUB, this creates chapter breaks at the specified level, starting the section on a new page. The special 0 simply sets it to the default value of 2.
- For Reveal.js Presentations, the top-level headings can persist on the screen when moving through slides in their sections, or they can rotate out as their own individual slides. Setting to 0 enables persistent headings, and all other values use the default.
- An empty value defers to the Pandoc defaults in all cases.

### 3.1.9 c\_margin

- The default margins for PDF are formatted for typesetting of printed books, where there is a large amount of open space around the edges and the text on each page is shifted away from where the binding would be. This is generally not what is desired in a purely digital PDF document.
- This is one value for all the margins. Setting it to an empty value exposes variables for each of the individual margins: c\_margin\_top, c\_margin\_bottom, c\_margin\_left and c\_margin\_right.

### 3.1.10 c\_options

- In some cases, it may be desirable to add additional Pandoc options. Anything put in this variable will be passed directly to Pandoc as additional command-line arguments.

## 3.2 Control Variables

---

Variable	Purpose	Value
MAKEJOBS	Parallel processing threads	1 (makejobs)
COMPOSER_DEBUGIT	Use verbose output	(debugit)
COMPOSER_DOCOLOR	Enable title/color sequences	(boolean)
COMPOSER_INCLUDE	Include all: .composer.mk	1 (boolean)
COMPOSER_DEPENDS	Sub-directories first: all	(boolean)
COMPOSER_KEEPING	Log entries / cache files	100 (keeping)
COMPOSER_LOG	Timestamped command log	.composer.log
COMPOSER_EXT	Markdown file extension	.md
COMPOSER_TARGETS	See: all/clean	config/targets
COMPOSER_SUBDIRS	See: all/clean/install	config/targets
COMPOSER_EXPORTS	See: c_site/export	config

---

Variable	Purpose	Value
COMPOSER_IGNORES	See: c_site/export	config

- $MAKEJOBS \sim J$
- $COMPOSER_DEBUGIT \sim V$
- $COMPOSER_DOCOLOR \sim C$
- $COMPOSER_KEEPING \sim K$
- $(makejobs) = \text{empty} \text{ is disabled} / \text{number of threads} / 0 \text{ is no limit}$
- $(debugit) = \text{empty} \text{ is disabled} / \text{any value enables} / 0 \text{ is full tracing}$
- $(keeping) = \text{empty} \text{ is none} / \text{number to keep} / 0 \text{ is no limit}$
- $(boolean) = \text{empty} \text{ is disabled} / \text{any value enables}$

### 3.2.1 MAKEJOBS

```
#WORK # a small number of large directories will process faster than a large number of small ones, especially with
site # windows subsystem for linux (increase memory...): /mnt/c/Users/*/.wslconfig # [wsl2] # processors=2 #
memory=2GB # swap=0 # a first troubleshooting step is to do MAKEJOBS="1" # this came up with site-library
when two different sub-directories triggered a rebuild simultaneously
```

- By default, Composer progresses linearly, doing one task at a time. If there are dependencies between items, this can be beneficial, since it ensures things will happen in a particular order. The downside, however, is that it is very slow.
- Composer supports GNU Make parallel execution, where multiple threads can be working through tasks independently. Experiment with lower values first. When recursing through large directories, each make that instantiates into a sub-directory has its own jobs server, so the total number of threads running can proliferate rapidly.
- This can drastically speed up execution, processing thousands of files and directories in minutes. However, values that are too high can exhaust system resources. With great power comes great responsibility.
- A value of 0 does parallel execution with no thread limit.

### 3.2.2 COMPOSER\_DEBUGIT

- Provides more explicit details about what is happening at each step. It generates a lot more output, and can be slower. It will also be hard to read unless MAKEJOBS is set to 1.
- Full tracing using 0 outputs complete GNU Make and GNU Bash debugging information. This is extraordinarily verbose, and it is recommended to pipe it to a file for review.
- This variable is repurposed in +debug to pass a list of targets to test.

### 3.2.3 COMPOSER\_DOCOLOR

- Composer uses colors to make all output and help text easier to read. The escape sequences used to accomplish this can create mixed results when reading in an output file or a \$PAGER, or just make it harder to read for some.
- This is also used internally for targets like +debug-file, +test-file and template, where plain text is required.

### 3.2.4 COMPOSER\_INCLUDE

- On every run, Composer walks through the `MAKEFILE_LIST`, all the way back to the main Makefile, looking for `.composer.mk` files in each directory. By default, it reads all of them in order starting from the main Composer directory. When this option is disabled, only Composer and the current directory will be used.
- In the example directory tree below, it will read all of them in order from top to bottom: `.Composer/.composer.mk`, `.composer.mk`, `tld/.composer.mk`, and finally `tld/sub/.composer.mk`. With this disabled, only `.Composer/.composer.mk` and `tld/sub/.composer.mk` are read.
- This is why it is best practice to have a `.Composer` directory at the top level for each documentation archive (see Recommended Workflow). Not only does it allow for strict version control of Composer per-archive, it also provides a mechanism for setting Composer Variables globally.

- This option is enabled by default, so care should be taken with variables that are generally specific to a particular directory or file, and are not meant to be applicable globally. They will be propagated down the tree, which is generally not desired except in very specific cases. Using COMPOSER\_CURDIR to limit their scope is highly recommended, similar to template (see Templates).
- This setting also causes .composer.yml and .composer-\* files to be processed in an identical manner (see Configuration Files and Header & CSS Files under Precedence Rules).

Example directory tree (see Recommended Workflow):

```
.../ . Composer/Makefile
.../ . Composer/.composer.mk
.../ Makefile
.../ . composer.mk
.../ tld/Makefile
.../ tld/.composer.mk
.../ tld/sub/Makefile
.../ tld/sub/.composer.mk
```

### 3.2.5 COMPOSER\_DEPENDS

- When doing all-all, Composer will process the current directory before recursing into sub-directories. This reverses that, and sub-directories will be processed first.
- In the example directory tree in COMPOSER\_INCLUDE above, the default would be: .../ , .../ tld, and then .../ tld/sub. If the higher-level directories have dependencies on the sub-directories being run first, this will support that by doing them in reverse order, processing them from bottom to top.
- This has no effect on any other targets, such as install or clean.

### 3.2.6 COMPOSER\_KEEPING

```
#WORK # 0 deletes all... # COMPOSER_KEEPING test & document # clean-clean test & document #
clean-clean only runs on all, so single files could go forever...?
```

### 3.2.7 COMPOSER\_LOG

- Composer appends to a .composer.log log file in the current directory whenever it executes Pandoc. This provides some accounting, and is used by list to determine which \*.md files have been updated since the last time Composer was run.
- This setting can change the name of the log file, or disable it completely (empty value).
- It is removed each time clean is run.

### 3.2.8 COMPOSER\_EXT

- The Markdown file extension Composer uses: \*.md. This is for auto-detection of files to add to COMPOSER\_TARGETS, files to output for list, and other tasks. This is a widely used standard, including GitHub. Another commonly used extension is: \*.markdown.
- In some cases, they do not have any extension, such as README and LICENSE in source code directories. Setting this to an empty value causes them to be detected and output. It also causes all other files to be processed, because it becomes the wildcard \*, so use with care. It is likely best to use COMPOSER\_TARGETS to explicitly set the targets list in these situations.

```
#WORK # add a note that a per-target "override README.html :=" is probably best... # come to think of it,
probably should just go back to not allowing an empty value...?
```

```
#WORK # document! # .targets # COMPOSER_TARGETS # COMPOSER_SUBDIRS # COMPOSER_EXPORTS # COMPOSER_IGNORES
```

### 3.2.9 COMPOSER\_TARGETS

```
#WORK # does not pick up .* files/directories # these are actually excluded in COMPOSER_IGNORES now...
# wildcard '*' is taken literally
```

- The list of output files to create or delete with clean and all. Composer does auto-detection using c\_type and COMPOSER\_EXT, so this does not usually need to be set. Hidden files that start with . are skipped.
- Setting this manually disables auto-detection. It can also include non-file targets added into a .composer.mk file (see Custom Targets).
- The .null target is special, and when used as a value for COMPOSER\_TARGETS or COMPOSER\_SUBDIRS it will display a message and do nothing. A side-effect of this target is that an actual file or directory named .null will never be created or removed by Composer.
- An empty value triggers auto-detection.
- Use config or targets to check the current value.

### 3.2.10 COMPOSER\_SUBDIRS

```
#WORK # wildcard '*' is taken literally
```

- The list of sub-directories to recurse into with install, clean, and all. The behavior and configuration is identical to COMPOSER\_TARGETS above, including auto-detection and the .null target. Hidden directories that start with . are skipped.
- An empty value triggers auto-detection.
- Use config or targets to check the current value.

### 3.2.11 COMPOSER\_EXPORTS

```
#WORK # this one will be complicated... maybe? # has, effectively, the same .null behavior as above... #
also overridden by COMPOSER_IGNORES # document .targets token... # .null has no special meaning and is
removed if present # hidden variables... # /g/_data/zactive/coding/composer/+Composer # # # #
wildcard
'*' globs
```

### 3.2.12 COMPOSER\_IGNORES

```
#WORK # either remove site here, or add it to the ones above... # also, there are also implications for site-library...
# .targets has no special meaning and is removed if present # .null has no special meaning and is removed if present
# hard-coded +Composer .* +* / .* + # . +* should also be documented in the "Operation" section somewhere...
# wildcard '*' globs
```

- The list of COMPOSER\_TARGETS, COMPOSER\_SUBDIRS and COMPOSER\_EXPORTS to skip with export, site, install, clean, and all. This allows for selective auto-detection, when the list of items to process is larger than those to leave alone.
- Use config to check the current value.

## 3.3 Helper Variables

Variable	Purpose	Value
CURDIR	GNU Make current directory	\$PWD :: make
COMPOSER_CURDIR	Detects COMPOSER_INCLUDE	CURDIR :: .composer.mk
COMPOSER_DIR	Location of Composer	.../composer
COMPOSER_ROOT	Topmost level of current tree	.../composer
COMPOSER_EXPORT	Target: export	COMPOSER_ROOT/+Composer (mk)
COMPOSER_LIBRARY	Target: site/site-library	(yml)
COMPOSER_SRC	Repositories and downloads	COMPOSER_DIR/.sources
COMPOSER_ART	Composer supporting files	COMPOSER_DIR/_artifacts
COMPOSER_DAT	Pandoc supporting files	COMPOSER_ART/pandoc

Variable	Purpose	Value
COMPOSER_TMP	Cache and working directory	CURDIR/.composer.tmp

- *(mk)* = configurable in *.composer.mk*
- *(yml)* = configurable in *.composer.yml*

These are internal variables only exposed within *.composer.mk* files. See Configuration Settings and Custom Targets for more details.

### 3.3.1 CURDIR

```
#WORK
```

### 3.3.2 COMPOSER\_CURDIR

```
#WORK # can also be used to detect first pass, using "ifeq", to prevent "warning: overriding recipe for target" warnings...
```

- This is set to CURDIR when reading in a *.composer.mk* file in the GNU Make running directory, and is empty otherwise. This provides a way to limit particular portions of the file to the local directory, regardless of whether COMPOSER\_INCLUDE is set or not.
- Uses for this are to limit the availability of targets to the local directory, or to prevent variable values from recursing down to sub-directories.
- Generally speaking, it is best practice to completely encapsulate all *.composer.mk* files with this, except for the specific portions that need to be passed down, similar to template (see Templates).

Example usage in a *.composer.mk* file:

```
ifeq ($($COMPOSER_CURDIR),)  
...  
endif
```

### 3.3.3 COMPOSER\_DIR

```
#WORK
```

### 3.3.4 COMPOSER\_ROOT

```
#WORK
```

### 3.3.5 COMPOSER\_EXPORT

```
#WORK # hidden variables...
```

- [*EXPORT\_DIRECTORY*]
- [*EXPORT\_GIT\_REPO*]
- [*EXPORT\_GIT\_BNCH*]
- [*EXPORT\_FIRE\_ACCT*]
- [*EXPORT\_FIRE\_PROJ*]

### 3.3.6 COMPOSER\_LIBRARY

```
#WORK
```

### 3.3.7 COMPOSER\_SRC

```
#WORK
```

### **3.3.8 COMPOSER\_ART**

#WORK

### **3.3.9 COMPOSER\_DAT**

#WORK

### **3.3.10 COMPOSER\_TMP**

#WORK

---

# Chapter 4

## Composer Targets

### 4.1 Primary Targets

Target	Purpose
help	Basic help overview (default)
help-all	Console version of README.md (no reference sections)
template	Print settings template: .composer.mk
template.yml	Print settings template: .composer.yml
template.md	Print markdown file template
compose	Document creation engine (see c_type)
site	Build HTML files as Static Websites (see c_site)
site-all	Do site recursively: COMPOSER_SUBDIRS
site-force	Do site recursively: including COMPOSER_LIBRARY
site-clean	Remove c_site only: COMPOSER_LIBRARY/COMPOSER_TMP
install	Current directory initialization: Makefile
install-all	Do install recursively (no overwrite)
install-force	Recursively force overwrite of Makefile files
clean	Remove output files: COMPOSER_TARGETS :: *-clean
clean-all	Do clean recursively: COMPOSER_SUBDIRS
*-clean	Any targets named this way will also be run by clean
all	Create output files: COMPOSER_TARGETS :: *-all
all-all	Do all recursively: COMPOSER_SUBDIRS
*-all	Any targets named this way will also be run by all
list	Show updated files: *COMPOSER_EXT » COMPOSER_LOG

#### 4.1.1 help / help-all

- Outputs all of the documentation for Composer. The README.md has a few extra sections covering internal targets, along with reserved target and variable names, but is otherwise identical to the help-all output.

#### 4.1.2 template / template.yml / template.md

- Prints useful templates for creating new files (see Templates):
  - Composer .composer.mk (see Configuration Settings)
  - Composer c\_site and Pandoc .composer.yml (see Static Websites and Configuration Settings)
  - Pandoc markdown

### 4.1.3 `compose`

- This is the very core of Composer, and does the actual work of the Pandoc conversion. Details are in the `c_type` / `c_base` / `c_list` section of [Formatting Variables](#).

### 4.1.4 `site` / `site-all` / `site-force`

```
#WORK # site rebuilds indexes, force recursively
```

### 4.1.5 `site-clean`

```
#WORK
```

### 4.1.6 `install` / `install-all` / `install-force`

- Creates the necessary Makefile files to set up a directory or a directory tree as a Composer archive. By default, it will not overwrite any existing files.
- Doing a simple install will only create a file in the current directory, whereas install-all will recurse through the entire directory tree. A full install-force is the same as install-all, with the exception that it will overwrite all Makefile files.
- The topmost directory will have the Makefile created for it modified to point to Composer.

### 4.1.7 `clean` / `clean-all` / `*-clean`

- Deletes all `COMPOSER_TARGETS` output files in the current directory, and then runs all `*-clean` targets.
- Doing clean-all does the same thing recursively, through all the `COMPOSER_SUBDIRS`.

### 4.1.8 `all` / `all-all` / `*-all`

- Creates all `COMPOSER_TARGETS` output files in the current directory, and then runs all `*-all` targets.
- Doing all-all does the same thing recursively, through all the `COMPOSER_SUBDIRS`.

### 4.1.9 `list`

- Outputs all the `COMPOSER_EXT` files that have been modified since `COMPOSER_LOG` was last updated. Acts as a quick reference to see if anything has changed.
- Since the `COMPOSER_LOG` file is updated whenever Pandoc is executed, this target will primarily be useful when all is the only target used to create files in the directory.

## 4.2 Additional Targets

---

Target	Purpose
<code>+release</code>	Upgrade all tools and supporting files to next versions
<code>+release-all</code>	Also make <code>README.*</code> files and Static Websites
<code>+update</code>	Update all included components (see Requirements)
<code>+update-all</code>	Additionally perform all source code builds
<code>+update-list</code>	Show changes made to each (see Repository Versions)
<code>+update-*</code>	Complete fetch and build for a specific component
<code>+debug</code>	Diagnostics, tests targets list in <code>COMPOSER_DEBUGIT</code>
<code>+debug-file</code>	Export <code>+debug</code> results to a plain text file
<code>check</code>	List system packages and versions (see Requirements)
<code>check-all</code>	Complete check package list, and system information
<code>config</code>	Show values of all Composer Variables
<code>config-all</code>	Complete config, including environment variables
<code>config-*</code>	Export individual Composer Variables values
<code>config.yml</code>	JSON export of <code>.composer.yml</code> configuration

Target	Purpose
targets	List all available targets for the current directory
init	Create and link a .Composer in current directory
commit	Git commit of current directory tree or c_list
commit-all	Automatic commit, without \$EDITOR step
export	Synchronize +Composer export of COMPOSER_ROOT
export-all	Also publish to upstream hosting providers
export-force	Publish only, without synchronizing first
*-export	Any targets named this way will also be run by export
site-library	Build or update the COMPOSER_LIBRARY
site-list	COMPOSER_LIBRARY for current directory or c_list
site-list-all	Do site-list for current directory tree
site-list-list	All metadata fields and values, sorted by most used
site-list-null	List files which are missing metadata fields
site-list.*	Direct export of metadata or index, c_list searchable

#### 4.2.1 +release / +release-all / +update / +update-all / +update-list / +update-\*

#WORK # break this up into two sections...

- Using the repository configuration (see Repository Versions), these fetch and build all external components.
- Simply doing +update will fetch all source repositories and pre-built binaries.
- The +update-all target additionally performs all relevant source code builds. For some repositories, this is necessary to create the final output files used by Composer, and in other cases this builds local binaries which replace the included ones. Additional external tools may be required to perform these steps (see check-all).
- To review the resulting differences between upstream sources and the local directories, use +update-list.
- Each component directory has a corresponding +update-\* target which performs the equivalent of +update-all for only that component.
- Finally, +release runs +update-all and +setup, which together turn the current directory into a functional clone of Composer, including overwriting all supporting files.
- Beyond this, +release-all also uses +setup-all and site-template to build the README.\* files and create an example Static Websites in the \_site directory.
- One of the unique features of Composer is that everything needed to compose itself is embedded in the Makefile, so it is fully self-contained.

Creating a development clone:

#WORK # should create a “development/contributing/support” section, and reference this... # also:  
<https://github.com/garybgenett/gary-os/blob/main/.vimrc>

```
mkdir .../composer
cd .../composer
make -f .../.Composer/Makefile +release
```

Note that some additional external tools may be required to perform the builds, such as npm (see check-all).

#### 4.2.2 +debug / +debug-file

- This is the tool to use for any support issues. Submit the output file to: composer@garybgenett.net
- Internally, it also runs:
  - +test
  - check-all
  - config-all
  - targets
- If issues are occurring when running a particular set of targets, list them in COMPOSER\_DEBUGIT.
- For general issues, run in the top-level directory (see Recommended Workflow). For specific issues, run in the directory where the issue is occurring.

For example:

```
make COMPOSER_DEBUGIT="README.html Composer-v3.1.Manual.html" +debug+file
```

#### 4.2.3 check / check-all

- Use check to see the minimum list of required external components and their versions, in relation to the system installed versions.
- Doing check-all will show the complete list of tools that are used by Composer, along with which targets they are needed by.

#### 4.2.4 config / config-all / config.\* / config.yml / targets

#WORK # break this up into two sections...

- The current values of all Composer Variables is output by config, and config-all will additionally output all environment variables.
- Individual Composer Variables can be exported with config.\*. This is useful for scripting in .composer.mk (see Custom Targets).
- A JSON version of the .composer.yml configuration is exported with config.yml. This is available for any external scripting, such as in .composer.mk (see Custom Targets), and is parsable with YQ.
- A structured list of detected targets, \*-export, \*-clean and \*-all targets, COMPOSER\_TARGETS, and COMPOSER\_SUBDIRS is printed by targets.
- Together, config and targets reveal the entire internal state of Composer.

#### 4.2.5 init

#WORK

#### 4.2.6 commit / commit-all

- Using the directory structure in Recommended Workflow, .../ is considered the top-level directory. Meaning, it is the last directory before linking to Composer.
- If the top-level directory is a Git repository (it has <directory>.git or <directory>/.git), this target creates a commit of the current directory tree with the title format below.
- For example, if it is run in the .../ tld directory, that entire tree would be in the commit, including .../ tld/sub. The purpose of this is to create quick and easy checkpoints when working on documentation that does not necessarily fit in a process where there are specific atomic steps being accomplished.
- When this target is run in a Composer directory, it uses itself as the top-level directory. When calling Composer directly using -f, the current directory is used.
- Using commit-all automatically does the commit instead of opening the text editor in the \$EDITOR variable.
- In the context of commit, the c\_list variable is repurposed to select the limited list of directories and/or files that should be committed. All selected directories and files must exist in the current directory tree.

Commit title format:

```
[ Composer CMS v3.1 :: 2024-12-03T20:00:00 -08:00]
```

Example using c\_list:

```
make commit c_list="Makefile _artifacts"
```

#### 4.2.7 export / export-all / export-force / \*-export

#WORK # ... and then runs all \*-export targets. # hidden variables... # ./g/\_data/zactive/coding/composer/+Composer # # # #

#### 4.2.8 site-library

#WORK

#### 4.2.9 site-list / site-list-all / site-list-list / site-list-null / site-list.\*

```
#WORK # use site-list-list first, to track down, then site-list-all for details, because it can be expensive to run...
# .metadata and .index
```

- In the context of site-list, the c\_list variable is repurposed to #WORK

### 4.3 Internal Targets

---

Target	Purpose
help-help	Complete README.md content (similar to help-all)
[help-template]	Animated demonstration, for screenshots and for fun!
.headers	Series of targets that handle all informational output
.headers-template	For testing default .headers output
.headers-template-all	For testing complete .headers output
.make	Complete contents of GNU Make internal state
.targets	Extracted list of all targets from .make
.null	Placeholder to specify or detect empty values
[+release-+test]	Full validation pass, with +debug, skips +update
+setup	Extracts embedded files from Makefile
+setup-all	Also builds all README.* output files
+test	Test suite, validates all supported features
+test-file	Export +test results to a plain text file
+test-dir	Only create directory structure, and do +release
+test-list	Output available test cases, for running directly
check-help	Minimized check output (used for Requirements)
site-.composer.mk	COMPOSER_LIBRARY configured template: .composer.mk
site-.composer.yml	COMPOSER_LIBRARY configured template: .composer.yml
site-template	Static Websites example _site in COMPOSER_DIR
site-template-+test	Version configured to test specific variations
site-template-config	Only create directory structure and source files
subdirs	Expands COMPOSER_SUBDIRS into subdirs-*-* targets
list-list	Same as list, but only lists the files (no headers)

*None of these are intended to be run directly during normal use. They are only listed here for completeness.*

---



# Chapter 5

## Reference

### 5.1 Configuration

#### 5.1.1 Pandoc Extensions

Composer uses the markdown input format, with these extensions:

```
+ascii_identifiers
+auto_identifiers
+emoji
+fancy_lists
+fenced_divs
+footnotes
+gfm_auto_identifiers
+header_attributes
+implicit_figures
+implicit_header_references
+inline_notes
+intraword_underscores
+line_blocks
+link_attributes
+lists_without_preceding_blankline
+markdown_in_html_blocks
+pandoc_title_block
+pipe_tables
+raw_attribute
+raw_html
+raw_tex
+shortcut_reference_links
+smart
+strikeout
+superscript
+task_lists
+yaml_metadata_block
```

When reading docx files with [extract], these import extensions are used:

```
-empty_paragraphs
-styles
```

### 5.1.2 Templates

The install target Makefile template (for reference only):

```
override COMPOSER_MY_PATH := $(abspath $(dir $(lastword $(MAKEFILE_LIST))))  
override COMPOSER_TEACHER := $(abspath $(dir $(COMPOSER_MY_PATH)))/Makefile  
include $(COMPOSER_TEACHER)
```

Use the template target to create .composer.mk files:

```
# override MAKEJOBS := 1  
# override COMPOSER_DEBUGIT :=  
# override COMPOSER_DOCOLOR :=  
# override COMPOSER_INCLUDE := 1  
# override COMPOSER_DEPENDS :=  
# override COMPOSER_KEEPING := 100  
# override COMPOSER_LOG := .composer.log  
# override COMPOSER_EXT := .md  
# override c_site :=  
# override c_type := html  
# override c_lang := en-US  
# override c_logo := $(COMPOSER_DIR)/_artifacts/images/logo.img  
# override c_icon := $(COMPOSER_DIR)/_artifacts/images/icon.img  
# override c_css := $(COMPOSER_DIR)/_artifacts/themes/theme.html-default.css  
  
ifeq ($(COMPOSER_CURDIR),)  
  
# override COMPOSER_TARGETS := README.site.html README.html README.pdf README.epub README.  
# override COMPOSER_SUBDIRS := .null  
# override COMPOSER_EXPORTS := *.html *.pdf *.epub *.revealjs.html *.docx *.pptx *.txt *.m  
# override COMPOSER_IGNORES := +Composer .* +*  
# override c_base :=  
# override c_list :=  
# override c_toc :=  
# override c_level := 2  
# override c_margin := 0.8in  
# override c_margin_top :=  
# override c_margin_bottom :=  
# override c_margin_left :=  
# override c_margin_right :=  
# override c_options :=  
  
endif
```

Use the template.yml target to create .composer.yml files:

```
variables:  
  title-prefix: null  
#  site-config:  
#    navbars:  
#      brand: null  
#      homepage: null  
#    search:  
#      name: null  
#      site: null  
#      call: null  
#      form: null  
#    copyright: null  
#    composer: 1
```

```
#      pages:
#      css_overlay: dark
#      copy_protect: null
#      header:
#          - null
#      footer:
#          - null
#      cols:
#          break: lg
#          scroll: 1
#          order:
#              - 1
#              - 2
#              - 3
#          reorder:
#              - 1
#              - 3
#              - 2
#          size:
#              - 3
#              - 7
#              - 2
#          resize:
#              - 6
#              - 12
#              - 6
#      dates:
#      parse:
#          - "2006-01-02T15:04:05-07:00"
#          - 2006-01-02 15:04 -07:00
#          - "2006-01-02"
#          - January 2, 2006
#          - January 2, 2006 3:04 PM MST -07:00
#      display: "2006-01-02"
#      library: "2006"
#      timezone: -08:00
#      site-helpers:
#      metainfo:
#          display: '<date> :: <title><|> — <author|; >'
#          empty: '* (no metadata)*'
#      metalist:
#          title:
#              title: 'Title: <name>',
#              display: 'Title: <|>, <|>',
#              empty: '* (no title)*'
#          date:
#              title: 'Year: <name>',
#              display: 'Date: <|>, <|>',
#              empty: '* (no date)*'
#          author:
#              title: 'Author: <name>',
#              display: 'Authors: <|>, <|>',
#              empty: '* (no author)*'
#      readtime:
#          display: '* Reading time: <word> words, <time> minutes*'
#          wpm: 220
```

```
#      redirect:
#          title: 'Moved To: <link>',
#          display: '**This link has been permanently moved to: <link>**'
#          exclude:
#              - "null"
#          time: 5
#      site-library:
#          folder:
#              name: null
#              auto_update: null
#          pages:
#              anchor_links: 1
#              append:
#                  - null
#          digest:
#              title: Latest Updates
#              continue: '*[...]*'
#              permalink: '*(link to full page)*'
#              chars: 1024
#              count: 10
#              expanded: 0
#              spacer: 1
#          lists:
#              expanded: 0
#              spacer: 1
#          sitemap:
#              title: Site Map
#              exclude:
#                  - "null"
#              expanded: 0
#              spacer: 1
#          site-nav-top: null
#          site-nav-bottom: null
#          site-nav-left: null
#          site-nav-right: null
#          site-info-top: null
#          site-info-bottom: null
```

Use the template.md target to create new markdown files:

---

```
title: "Composer CMS: Content Make System"
date: 2024-12-03 20:00 -08:00
author:
    - Gary B. Genett
```

---

\*Happy Making!\*

### 5.1.3 Defaults

The default .composer.mk in the Composer directory:

```
#####
# Composer CMS :: GNU Make Configuration
#####
ifeq ($COMPOSER_CURDIR, )
#####
```

```
#####
# Settings

override COMPOSER_TARGETS := \
    README.site.html \
    README.html \
    README.pdf \
    README.epub \
    README.revealjs.html \
    README.docx \
    LICENSE.html

#>> README.pptx \
#>> README.txt \
#>> README.md.txt \

override COMPOSER_SUBDIRS := .null

#####
# Defaults

README% LICENSE.%: override c_logo := _artifacts/images/logo-v1.0.png
README% LICENSE.%: override c_icon := _artifacts/images/icon-v1.0.png
README% LICENSE.%: override c_toc := 0

#####
# Files

override README.site.html := _artifacts/README.site.md
README.site.html: override c_site := 1
README.site.html: override c_toc :=

override README.pdf := README.md LICENSE.md

override README.revealjs.html := _artifacts/README.revealjs.md
README.revealjs.html: override c_toc :=

LICENSE.html: override c_site := 1
LICENSE.html: override c_toc :=

#####
endif
#####
# End Of File
#####
```

The template `.composer.yml` in the `_artifacts` directory:

```
#####
# Composer CMS :: YAML Configuration
#####

variables:

#####
# site
```

```
title-prefix: "EXAMPLE SITE"

#####
site-config:

navbars:
  brand: "LOGO / BRAND"
  homepage: http://www.garybgenett.net/projects/composer
  search:
#>    name: "SEARCH"
    name: |
      <!-- composer --> icon search -->
    site: https://duckduckgo.com
    call: q
    form: |
      <!-- composer --> form sites garybgenett.net -->
      <!-- composer --> form ia web -->
      <!-- composer --> form kae d -->
      <!-- composer --> form ko 1 -->
      <!-- composer --> form kp -1 -->
      <!-- composer --> form kv 1 -->
      <!-- composer --> form kz -1 -->
#>    copyright: "COPYRIGHT"
    copyright: |
      <!-- composer --> icon gpl -->
      <!-- composer --> icon cc-by-nc-nd -->
      <!-- composer --> icon copyright -->
    COPYRIGHT
#>    composer: 1

#>    pages:
#>      css_overlay: dark
#>      copy_protect: null
#>      header: [ "null" ]
#>      footer: [ "null" ]

#>    cols:
#>      break: lg
#>      scroll: 1
#>      order: [ 1, 2, 3 ]
#>      reorder: [ 1, 3, 2 ]
#>      size: [ 3, 7, 2 ]
#>      resize: [ 6, 12, 6 ]

#>    dates:
#>      parse: [ "2006-01-02T15:04:05-07:00", "2006-01-02 15:04 -07:00", "2006-01-02", "Janu
#>      display: "2006-01-02"
#>      library: "2006"
#>      timezone: "-08:00"

#####
site-helpers:

#>    metainfo:
#>      display: "<date> :: <title><|> — <author|; >"
```

```
#>> empty: "* (no metadata)*"

metalist:
#>> title:
#>>   title: "Title: <name>"
#>>   display: "Title: <|>, <|>"
#>>   empty: "* (no title)*"
#>> date:
#>>   title: "Year: <name>"
#>>   display: "Date: <|>, <|>"
#>>   empty: "* (no date)*"
#>> author:
#>>   title: "Author: <name>"
#>>   display: "Authors: <|>, <|>"
#>>   empty: "* (no author)*"
tags:
  title: "Tag: <name>"
  display: "Tags: <|>, <|>"
  empty: "* (no tags)*"

#>> readtime:
#>>   display: "* Reading time: <word> words, <time> minutes *"
#>>   wpm: 220

#>> redirect:
#>>   title: "Moved To: <link>"
#>>   display: "**This link has been permanently moved to: <link>**"
#>>   exclude: [ "null" ]
#>>   time: 5

#####
site-library:

  folder:
    name: null
#>>   auto_update: null

#>> pages:
#>>   anchor_links: 1
#>>   append: [ "null" ]

#>> digest:
#>>   title: "Latest Updates"
#>>   continue: "* [...] *"
#>>   permalink: "* (link to full page)*"
#>>   chars: 1024
#>>   count: 10
#>>   expanded: 0
#>>   spacer: 1

#>> lists:
#>>   expanded: 0
#>>   spacer: 1

#>> sitemap:
#>>   title: "Site Map"
```

```
#>     exclude: [ "null" ]
#>     expanded: 0
#>     spacer: 1

#####
site-nav-top:

MENU:
  - MAIN: <composer_root>/index.html
  - PAGES:
    - Composer README: <composer_root>/..>/index.html
    - spacer
    - Introduction:
      - _: <composer_root>/index.html
      - Default Site: <composer_root>/null/index.html
      - Configured Site: <composer_root>/config/index.html
      - Pandoc Markdown: <composer_root>/pandoc/MANUAL.html
      - Bootstrap Default: <composer_root>/bootstrap/site/content/docs/5.1/getting-started
    - Layout & Elements:
      - _: <composer_root>/examples.html
      - Metainfo Page: <composer_root>/config/pages.html
      - Metainfo File: <composer_root>/config/pages/2022-01-01+template_0.html
      - Themes & Overlays: <composer_root>/themes/index.html
      - Default Library Page:
        - _: <composer_root>/_library/index.html
        - Configured Library Page: <composer_root>/config/_library-config/index.html
#>    - Default Digest Page: <composer_root>/index-digest.html
#>    - Configured Digest Page: <composer_root>/config/index-digest.html

CONTENTS:
  - CONTENTS:
    - contents
#>    - contents 6
#>    - contents 0

SPACE:
  - spacer

LIBRARY:
  - DATES:
    - library date
  - AUTHORS:
    - library author
  - TAGS:
    - library tags

#####
site-nav-bottom:

PATH:
  - SITEMAP: <composer_root>/_library/sitemap.html

INFO:
  - metalist title
  - metalist date
  - metalist author
  - metalist tags

#####
site-nav-left:
```

```
BEGIN:  
MENU:  
  - fold-begin 0 . 0 LEFT FOLD  
  - __: |  
    * ITEM 1  
    * ITEM 2  
    * ITEM 3  
  - fold-end  
MIDDLE:  
  - spacer  
TEXT:  
  - box-begin 0 LEFT BOX  
  - __: |  
    LEFT TEXT  
  - box-end  
SPACE:  
  - spacer  
CONTENTS:  
  - box-begin 0 CONTENTS  
  - metainfo  
  - metalist title  
  - metalist date  
  - metalist author  
  - metalist tags  
  - contents  
#>>  - contents 6  
#>>  - contents 0  
  - readtime  
  - box-end  
END:
```

```
#####
site-nav-right :
```

```
BEGIN:  
MENU:  
  - fold-begin 0 . 0 RIGHT FOLD  
  - __: |  
    * ITEM 1  
    * ITEM 2  
    * ITEM 3  
  - fold-end  
MIDDLE:  
  - spacer  
TEXT:  
  - box-begin 0 RIGHT BOX  
  - __: |  
    RIGHT TEXT  
  - box-end  
SPACE:  
  - spacer  
LIBRARY:  
  - fold-begin group library  
  - fold-begin 0 0 library DATES  
  - library date
```

```
— fold-end
— fold-begin 0 0 library AUTHORS
— library author
— fold-end
— fold-begin 0 . library TAGS
— library tags
— fold-end
— fold-end group
END:
#####
site-info-top :

TEXT:
— _: |
    TOP TEXT
INFO:
#> — metainfo
#> — metalist title
#> — metalist date
#> — metalist author
#> — metalist tags
#> — readtime
ICON:
— icon github https://github.com/garybgenett/composer Composer CMS
#> — _: |
#>     <!-- composer --> icon gpl -->
#>     <!-- composer --> icon cc-by-nc-nd -->
#>     <!-- composer --> icon copyright -->
#####
site-info-bottom :

TEXT:
— _: |
    BOTTOM TEXT
INFO:
#> — metainfo
#> — metalist title
#> — metalist date
#> — metalist author
#> — metalist tags
— readtime
ICON:
#####
# End Of File
#####
```

## 5.2 Reserved

### 5.2.1 Target Names

Do not create targets which match these, or use them as prefixes:

+debug

```
+release
+setup
+test
+update
. headers
. make
. null
. targets
all
check
clean
commit
compose
config
export
extract
help
init
install
list
site
subdirs
targets
template
```

### 5.2.2 Variable Names

Do not create variables which match these, and avoid similar names:

```
+debug-output
+setup-targets
+test+test
+test-.headers
+test-COMPOSER_INCLUDE-.composer-html.css
+test-COMPOSER_INCLUDE-.composer.mk
+test-COMPOSER_INCLUDE-.composer.mk-
+test-COMPOSER_INCLUDE-.composer.yml
+test-COMPOSER_INCLUDE-init
+test-COMPOSER_INCLUDE-init-run
+test-count
+test-done
+test-fail
+test-find
+test-hold
+test-init
+test-load
+test-log
+test-make
+test-mark
+test-name
+test-pwd
+test-run
+test-speed-init
+test-speed-init-site
+update-.null
+update-all
+update-bin
```

```
+update-bin-os
+update-bld
+update-bld-list
+update-commands
+update-src
+update-targets
.
. headers
. headers-action
. headers-compose
. headers-compose-options
. headers-dir
. headers-file
. headers-line
. headers-list-make
. headers-list-path
. headers-note
. headers-options
. headers-options-files
. headers-options-out
. headers-rm
. headers-skip
. headers-subdirs
. headers-table
. headers-template-extension
. headers-template-prefix
/
7Z
7Z_VER
ASPELL
ASPELL_DIR
BASE64
BASH
BASH_VER
BOOTLINT_CMT
BOOTLINT_DIR
BOOTLINT_HOME
BOOTLINT_LIC
BOOTLINT_NAME
BOOTLINT_SRC
BOOTSTRAP_ART_CSS
BOOTSTRAP_ART_JS
BOOTSTRAP_CMT
BOOTSTRAP_DEF_CSS
BOOTSTRAP_DEF_JS
BOOTSTRAP_DIR
BOOTSTRAP_DIR_CSS
BOOTSTRAP_DIR_JS
BOOTSTRAP_DOC_VER
BOOTSTRAP_HOME
BOOTSTRAP_LIC
BOOTSTRAP_NAME
BOOTSTRAP_SRC
BOOTSWATCH_CMT
BOOTSWATCH_CSS_ALT
BOOTSWATCH_CSS_DARK
```

BOOTSWATCH\_CSS\_LIGHT  
BOOTSWATCH\_CSS\_SOLAR\_DARK  
BOOTSWATCH\_CSS\_SOLAR\_LIGHT  
BOOTSWATCH\_DIR  
BOOTSWATCH\_HOME  
BOOTSWATCH\_LIC  
BOOTSWATCH\_NAME  
BOOTSWATCH\_SRC  
CAT  
CHECKIT  
CHMOD  
CLEANER  
CODEBLOCK  
COLUMNS  
COLUMN\_2  
COMMA  
COMMENTED  
COMPOSER  
COMPOSER\_ART  
COMPOSER\_BASENAME  
COMPOSER\_BIN  
COMPOSER\_CLOSING  
COMPOSER\_CMS  
COMPOSER\_COLOR  
COMPOSER\_COMPOSER  
COMPOSER\_CONTACT  
COMPOSER\_CONTENTS  
COMPOSER\_CONTENTS\_DIRS  
COMPOSER\_CONTENTS\_EXT  
COMPOSER\_CONTENTS\_FILES  
COMPOSER\_CONV  
COMPOSER\_CSS  
COMPOSER\_CSS\_PUBLISH  
COMPOSER\_CURDIR  
COMPOSER\_CUSTOM  
COMPOSER\_DAT  
COMPOSER\_DEBUGIT  
COMPOSER\_DEBUGIT\_ALL  
COMPOSER\_DEPENDS  
COMPOSER\_DIR  
COMPOSER\_DOCOLOR  
COMPOSER\_DOMAIN  
COMPOSER\_EXPORT  
COMPOSER\_EXPORTS  
COMPOSER\_EXPORTS\_DEFAULT  
COMPOSER\_EXPORTS\_EXT  
COMPOSER\_EXPORTS\_LIST  
COMPOSER\_EXPORT\_DEFAULT  
COMPOSER\_EXPORT\_REGEX  
COMPOSER\_EXT  
COMPOSER\_EXT\_DEFAULT  
COMPOSER\_EXT\_SPECIAL  
COMPOSER\_FILENAME  
COMPOSER\_FIND  
COMPOSER\_FULLSCREEN  
COMPOSER\_HEADLINE

COMPOSER\_HIDDEN\_FILES  
COMPOSER\_HOMEPAGE  
COMPOSER\_ICON  
COMPOSER\_ICON\_VER  
COMPOSER\_IGNORES  
COMPOSER\_IGNORES\_DEFAULT  
COMPOSER\_IGNORES\_EXT  
COMPOSER\_IGNORES\_LIST  
COMPOSER\_IMAGES  
COMPOSER\_INCLUDE  
COMPOSER\_INCLUDES  
COMPOSER\_INCLUDES\_DIRS  
COMPOSER\_KEEPING  
COMPOSER\_LIBRARY  
COMPOSER\_LIBRARY\_AUTO\_UPDATE  
COMPOSER\_LIBRARY\_DIR  
COMPOSER\_LIBRARY\_PATH  
COMPOSER\_LIBRARY\_ROOT  
COMPOSER\_LIBRARY\_ROOT\_REGEX  
COMPOSER\_LICENSE  
COMPOSER\_LICENSE\_HEADLINE  
COMPOSER\_LOG  
COMPOSER\_LOGO  
COMPOSER\_LOGO\_VER  
COMPOSER\_LOG\_DEFAULT  
COMPOSER\_MY\_PATH  
COMPOSER\_NOCOLOR  
COMPOSER\_OPTIONS  
COMPOSER\_OPTIONS\_EXPORT  
COMPOSER\_OPTIONS\_GLOBAL  
COMPOSER\_OPTIONS\_LOCAL  
COMPOSER\_OPTIONS\_MAKE  
COMPOSER\_OPTIONS\_PANDOC  
COMPOSER\_OPTIONS\_PUBLISH  
COMPOSER\_PANDOC  
COMPOSER\_REGEX  
COMPOSER\_REGEX\_DEFINE  
COMPOSER\_REGEX\_OVERRIDE  
COMPOSER\_REGEX\_PREFIX  
COMPOSER\_RELDATE  
COMPOSER\_RELEASE  
COMPOSER\_REPOPAGE  
COMPOSER\_RESERVED  
COMPOSER\_RESERVED\_DOITALL  
COMPOSER\_RESERVED\_DOITALL\_ENV  
COMPOSER\_RESERVED\_SKIP  
COMPOSER\_ROOT  
COMPOSER\_ROOT\_PATH  
COMPOSER\_ROOT\_REGEX  
COMPOSER\_SELF  
COMPOSER\_SETTINGS  
COMPOSER\_SRC  
COMPOSER\_SUBDIRS  
COMPOSER\_SUBDIRS\_DEFAULT  
COMPOSER\_SUBDIRS\_LIST  
COMPOSER\_TAGLINE

---

COMPOSER\_TARGETS  
COMPOSER\_TARGETS\_DEFAULT  
COMPOSER\_TARGETS\_LIST  
COMPOSER\_TEACHER  
COMPOSER\_TECHNAME  
COMPOSER\_TIMESTAMP  
COMPOSER\_TINYNAME  
COMPOSER\_TMP  
COMPOSER\_TMP\_FILE  
COMPOSER\_VERSION  
COMPOSER\_YML  
COMPOSER\_YML\_ARRAY  
COMPOSER\_YML\_DATA  
COMPOSER\_YML\_DATA\_METALIST  
COMPOSER\_YML\_DATA\_PARSE  
COMPOSER\_YML\_DATA\_SKEL  
COMPOSER\_YML\_DATA\_SKEL\_COMMENT  
COMPOSER\_YML\_DATA\_SKEL\_METALIST  
COMPOSER\_YML\_DATA\_VAL  
COMPOSER\_YML\_LIST  
COMPOSER\_YML\_LIST\_FILE  
CONFIGS  
CONVICT  
COPYRIGHT\_FULL  
COPYRIGHT\_SHORT  
COREUTILS\_VER  
CP  
CREATED\_TAGLINE  
CREATOR  
CSS\_ALT  
CSS\_ICONS  
CSS\_ICON\_ARROW\_D  
CSS\_ICON\_ARROW\_L  
CSS\_ICON\_ARROW\_R  
CSS\_ICON\_ARROW\_U  
CSS\_ICON\_COPYRIGHT  
CSS\_ICON\_GITHUB  
CSS\_ICON\_MENU  
CSS\_ICON\_SEARCH  
CSS\_THEME  
CSS\_THEMES  
CURL  
CURL\_VER  
CUSTOM\_HTML\_CSS  
CUSTOM\_LPDF\_LATEX  
CUSTOM\_PRES\_CSS  
CUSTOM\_PUBLISH\_CSS  
CUSTOM\_PUBLISH\_CSS\_OVERLAY  
CUSTOM\_PUBLISH\_SH  
DATE  
DATEFORMAT  
DATEMARK  
DATENOW  
DATETIME  
DATESTRING  
DEBUGIT

DEPTH\_DEFAULT  
DEPTH\_MAX  
DESC\_DOCX  
DESC\_EPUB  
DESC\_HTML  
DESC\_LINT  
DESC\_LPDF  
DESC\_PPTX  
DESC\_PRES  
DESC\_TEXT  
DIFF  
DIFFUTILS\_VER  
DISPLAY\_BANNER\_AUTO  
DISPLAY\_BANNER\_AUTO\_MOD  
DISPLAY\_BANNER\_TIME  
DISPLAY\_BANNER\_TIME\_MOD  
DISPLAY\_SHELF\_AUTO  
DISPLAY\_SHELF\_AUTO\_MOD  
DISPLAY\_SHELF\_SHOW  
DISPLAY\_SHELF\_SHOW\_MOD  
DISPLAY\_SHELF\_SIZE  
DISPLAY\_SHELF\_SIZE\_MOD  
DISPLAY\_SHELF\_TIME  
DISPLAY\_SHELF\_TIME\_MOD  
DISPLAY\_SHOW\_DEFAULT  
DISTRIB  
DIST\_ICON\_v1.0  
DIST\_LOGO\_v1.0  
DIST\_SCREENSHOT\_v1.0  
DIST\_SCREENSHOT\_v3.0  
DIST\_SCREENSHOT\_v4.0  
DIVIDE  
DOFORCE  
DOITALL  
DOMAKE  
DONOTDO  
DOSETUP  
DO\_HEREDOC  
ECHO  
ENDOLINE  
ENV  
ENV\_MAKE  
EOL  
EXAMPLE  
EXPAND  
EXPORTS  
EXPR  
EXTN\_DEFAULT  
EXTN\_DOCX  
EXTN\_EPUB  
EXTN\_HTML  
EXTN\_LINT  
EXTN\_LPDF  
EXTN\_OUTPUT  
EXTN\_PPTX  
EXTN\_PRES

EXTN\_TEXT  
EXTRACT  
EXT\_ICON\_CC  
EXT\_ICON\_GPL  
FIND  
FINDUTILS\_VER  
FIND\_ALL  
FIREBASE  
FIREBASE\_BIN  
FIREBASE\_BIN\_BLD  
FIREBASE\_CMT  
FIREBASE\_DIR  
FIREBASE\_HOME  
FIREBASE\_LIC  
FIREBASE\_LNX\_BIN  
FIREBASE\_LNX\_DST  
FIREBASE\_LNX\_SRC  
FIREBASE\_LNX\_ZIP  
FIREBASE\_MAC\_BIN  
FIREBASE\_MAC\_DST  
FIREBASE\_MAC\_SRC  
FIREBASE\_MAC\_ZIP  
FIREBASE\_NAME  
FIREBASE\_RUN  
FIREBASE\_SRC  
FIREBASE\_URL  
FIREBASE\_VER  
FIREBASE\_VER\_COMPOSER  
FIREBASE\_WIN\_BIN  
FIREBASE\_WIN\_DST  
FIREBASE\_WIN\_SRC  
FIREBASE\_WIN\_ZIP  
FONTAWES\_CMT  
FONTAWES\_DIR  
FONTAWES\_HOME  
FONTAWES\_LIC  
FONTAWES\_NAME  
FONTAWES\_SRC  
GIT  
GITIGNORE\_FIREBASE  
GITIGNORE\_GIT  
GITIGNORE\_LIST  
GITIGNORE\_NPM  
GITIGNORE\_WGET  
GIT\_LOG\_COUNT  
GIT\_LOG\_FORMAT  
GIT\_OPTS\_CONVICT  
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*Happy Making!*



# Chapter 6

## Composer CMS: License

### 6.1 Copyright

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# Chapter 7

## GNU GPL

*Source: <https://www.gnu.org/licenses/gpl-3.0.html>*

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Finally, every program is threatened constantly by software patents. States should not allow patents to restrict development and use of software on general-purpose computers, but in those that do, we wish to avoid the special danger that patents applied to a free program could make it effectively proprietary. To prevent this, the GPL assures that patents cannot be used to render the program non-free.

The precise terms and conditions for copying, distribution and modification follow.

## 7.2 TERMS AND CONDITIONS

### 7.2.1 0. Definitions.

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A “covered work” means either the unmodified Program or a work based on the Program.

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### 7.2.2 1. Source Code.

The “source code” for a work means the preferred form of the work for making modifications to it. “Object code” means any non-source form of a work.

A “Standard Interface” means an interface that either is an official standard defined by a recognized standards body, or, in the case of interfaces specified for a particular programming language, one that is widely used among developers working in that language.

The “System Libraries” of an executable work include anything, other than the work as a whole, that (a) is included in the normal form of packaging a Major Component, but which is not part of that Major Component, and (b) serves only to enable use of the work with that Major Component, or to implement a Standard Interface for which an implementation is available to the public in source code form. A “Major Component”, in this context, means a major essential component (kernel, window system, and so on) of the specific operating system (if any) on which the executable work runs, or a compiler used to produce the work, or an object code interpreter used to run it.

The “Corresponding Source” for a work in object code form means all the source code needed to generate, install, and (for an executable work) run the object code and to modify the work, including scripts to control those activities. However, it does not include the work’s System Libraries, or general-purpose tools or generally available free programs which are used unmodified in performing those activities but which are not part of the work. For example, Corresponding Source includes interface definition files associated with source files for the work, and the source code for shared libraries and dynamically linked subprograms that the work is specifically designed to require, such as by intimate data communication or control flow between those subprograms and other parts of the work.

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### 7.2.7 6. Conveying Non-Source Forms.

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- b) Convey the object code in, or embodied in, a physical product (including a physical distribution medium), accompanied by a written offer, valid for at least three years and valid for as long as you offer spare parts or customer support for that product model, to give anyone who possesses the object code either (1) a copy of the Corresponding Source for all the software in the product that is covered by this License, on a durable physical medium customarily used for software interchange, for a price no more than your reasonable cost of physically performing this conveying of source, or (2) access to copy the Corresponding Source from a network server at no charge.
- c) Convey individual copies of the object code with a copy of the written offer to provide the Corresponding Source. This alternative is allowed only occasionally and noncommercially, and only if you received the object code with such an offer, in accord with subsection 6b.
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- e) Convey the object code using peer-to-peer transmission, provided you inform other peers where the object code and Corresponding Source of the work are being offered to the general public at no charge under subsection 6d.

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