USAGE:
mkg [1]
mkg [[switch=argument]. . .] filename.iso [2]
mkg [[switch=argument]. . .] [3]
mkg help[=md] [4]

Usage [1] and [2] create a bootable ISO output file with a current
Gentoo distribution.
For [1], implicit ISO output name is **gentoo.iso**
Usage [3] creates a VirtualBox VDI dynamic disk and a virtual machine
with name Gentoo.
Usage [4] prints this help, in markdown form if argument 'md' is
specified.
Warning: you should have at least 55 GB of free disk space in the
current directory or in vmpath if specified.

Arguments with white space (like `cflags="-O2 -march=..."`) should be
written in list form with commas and no spaces: `cflags=[-O2,-march=...]`
The same holds for paths with white space.

As of March, 2021, part of the build is performed
by *Github Actions* automatically. An ISO file of CloneZilla
supplemented with VirtualBox guest additions will be downloaded
from the resulting automated Github release. To disable this behavior
you can add `use_clonezilla_workflow=false` to command line, or build the
custom ISO file beforehand using the companion project
clonezilla__with__virtualbox. In this case, add:
`custom_clonezilla=your_build.iso`
to command line.
A similar procedure also applies to the minimal Gentoo install ISO.
MKG scripts and the stage3 archive are added within its squashfs filesystem
by the *Github Actions* workflow of the MKG Github site.
An ISO file labelled **downloaded.iso** is automatically released
by the workflow. It will be downloaded from the MKG Github release section.
To disable this behavior you can add `use_mkg_workflow=false`
to command line.

Options:

Boolean values are either `true` or `false`. For example, to build
a minimal distribution, add to command line:
`minimal=true`
or simply: `minimal` as `true` can be omitted (unlike `false`).

Examples

```
# ./mkg pdfpage
# ./mkg debug_mode verbose from_vm vm=Gentoo.iso gentoo_small.iso  ext_device=sdc device_installer blank burn
cleanup=false
# ./mkg download_arch=false download=false download_clonezilla=false  custom_clonezilla=clonezilla_cached.iso
```

```
nonroot_user=phil
# nohup ./mkg plot plot_color=red plot_period=10 plot_pause=7   compact minimal minimal_size=false  gui=false
elist=myebuilds  email=my.name@gmail.com email_passwd='mypasswd' &
# nohup ./mkg gui=false from_device=sdc gentoo_backup.iso &
```

Type Conventions:
b: true/false Boolean
o: on/off Boolean
n: Integer
f: Filepath
d: Directory path
e: Email address
s: String
u: URL

When a field depends on another, a colon separates the type and
the name of the dependency. dep is a reserved word for dummy defaults of dependencies i.e.
optional strings that may remain unspecified.
Some options are incompatible, e.g. `test_only` and `use_mkg_workflow`

Option	Description	Default value	Type
debug_mode	Do not clean up mkg custom logs at root of gentoo system files before VM shutdown. Boolean.	[false]	b
verbose	Increase verbosity	[false]	b
bios	Type of bootloader: BIOS or EFI (default)	[false]	b
blank	Blank rewritable optical disk before burning installation image.	[false]	b
build_virtualbox	Download code source and automatically build virtualbox and tools. Yields VirtualBox and vbox-img executables under main directory and subdirectory virtualbox with the build, including documentation.	[false]	b
burn	Burn to optical disc. Boolean.	[false]	b
cdrecord	cdrecord full path. Automatically determined if left unspecified.	[`which cdrecord`]	f:burn
cflags	GCC CFLAGS options for ebuilds	[[-march=native,-O2]]	s
cleanup	Clean up archives, temporary images and virtual machine after successful completion. Boolean.	[true]	b
clonezilla_install	Use the CloneZilla live CD instead of the official Gentoo minimal install CD. May be more robust for headless install, owing to a VB bug requiring artificial keyboard input (see doc).	[false]	b

Option	Description	Default value	Type
cloning_method	Method used by hot_install ext_device=... to intall Gentoo to disk. One of: 'guestfish' (default) or 'qemu'	[guestfish]	s:ext_device
compact	Compact virtual disk after VM building. Caution: this may impede hot_install and ext_device.	[false]	b
cpuexecutioncap	Maximum percentage of CPU per core (0 to 100)	[100]	n
CRAN_REPOS	CRAN repository URL for downloading extra R packages	[https://cloud.r-project.org]	s
create_squashfs	(Re)create the squashfs filesystem. Boolean.	[true]	b
custom_clonezilla	Use this previously created custom CloneZilla ISO with added VirtualBox and guest additions.	[dep]	s
device_installer	Create Gentoo clone installer on external device. **ext_device** value must be specified.	[ ]	
disconnect	Unmount guest virtual disk from host.	[true]	b
disable_md5_check	Disable MD5 checkums verification after downloads. Boolean.	[true]	b
download	Download install ISO image from Gentoo mirror. Boolean.	[true]	b
download_arch	Download and install stage3 archive to virtual disk. Booelan.	[true]	b
download_clonezilla	Refresh CloneZilla ISO download. An ISO file must have been downloaded to create the recovery image of the Gentoo platform once the virtual machine has ended its job. Boolean	[true]	b
download_clonezilla_path	Download the following CloneZilla ISO	[path1]	u
elist	File containing a list of Gentoo ebuilds to add to the VM on top of stage3. Note: if the default value is not used, adjust the names of the 'elist'.accept_keywords and 'elist'.use files	[ebuilds.list]	f
email	Email address to send a warning to upon build completion. Note: you will have to accept so-called *insecure software* with some providers. It is not insecure if you are using your private PC throughout.	[ ]	e

Option	Description	Default value	Type
email_passwd	Email password	[ ]	s:email
emirrors	Mirror sites for downloading ebuilds	[path2]	u
ext_device	Create Gentoo OS on external device. Argument is either a device label (e.g. sdb, hdb), or a mountpoint directory (if mounted), or a few consecutive letters of the vendor name (e.g. 'Samsu', 'PNY' or 'Kingst'), if there is just one such. Requires *hot_install* on commandline.	[ ]	s
force	Forcefully creates machine even if others with same same exist. Stops and restarts VBox daemons. Not advised if other VMs are running.	[false]	b
from_device	Do not Generate Gentoo but use the external device on which Gentoo was previously installed. Boolean.	[false]	b:ext_device
from_iso	Do not generate Gentoo but use the bootable ISO given on commandline.	[false]	b
from_vm	Do not generate Gentoo but use the VM. Boolean.	[false]	b
full_cleanup	Remove virtual disk, archives and ISO files on clean-up	[false]	b
github_release_path	URL to Github Release of clonezilla_with_virtualbox.iso	[path3]	s
github_release_path2	URL to Github Release of preprocessed_gentoo_install.iso	[path4]	s
gui	Binary: true corresponds to VBoxManage startvm ... –type=gui, false to –type=headless	[true]	b
help	This help	[ ]	
hot_install	Intall to Gentoo attached device (like /dev/sdb) possibly mounted (like /media/USER/567EAF). To be used with *ext_device=...*	[false]	b:ext_device
htmlpage	Create HTML help page	[false]	b
hwvirtex	Activate HWVIRTEX: on/off	[on]	o
interactive	Allow interaction with user. This may cause deadlock if process is detached from the console (*nohup* or other methods)	[true]	b
ioapic	IOAPIC parameter: on or off	[on]	o
kernel_config	Use a custom kernel config file	[.config]	f
livecd	Path to the live CD that will start the VM	[gentoo.iso]	f

Option	Description	Default value	Type
logging	Activate logging	[true]	b
manpage	Create manpage mkg.1	[false]	b
mem	VM RAM memory in MiB	[8000]	n
minimal	Remove *libreoffice* and *data science tools* from default list of installed software. Boolean.	[false]	b
minimal_size	Remove kernel sources to minimize packaging. Not advised for personal use but OK for deployment and distribution.	[true]	b
mirror	Mirror site for downloading of stage3 tarball	[path2]	u
ncpus	Number of VM CPUs. By default the third of available threads.	[count]	n
no_run	If using **share_root='r' or 'w'**, do not run the virtual machine but use the VDI disk corresponding to vm=. . . Otherwise start 15 minutes later.	[true]	b
nonroot_user	Non-root user	[fab]	s
pae	Activate PAE: on/off	[on]	o
paravirtprovider	Virtualization interface: kvm for GNU/Linux, may be tweaked (see VirtualBox documentation)	[kvm]	s
passwd	User password	[_user2021_]	s:vm
pdfpage	Create PDF help page	[false]	b
plot	Plot VDI disk size using GNUPlot	[false]	b
plot_color	Plot line color between simple quotes (e.g: 'cyan','red' etc.)	['cyan']	s
plot_pause	Number of seconds of plot display per minute of processing. Maximum 50.	[5]	n
plot_period	Number of minutes elapsed between two successive plots	[10]	n
plot_position	Plot position of on monitor screen (top-left angle) in pixels e.g '0,0' or '500,500'	['0,0']	s
plot_span	Number of minutes of virtual disk processing to be plotted, back in time	[1200]	n
processor	Processor type	[amd64]	s
quiet_mode	Silence output except for the most severe errors.	[false]	b
rootpasswd	Root password	[_dev2021_]	s:vm
rtcuseutc	Use UTC as time reference: on/off	[on]	o
scsi_address	In case of several optical disc burners, specify the SCSI address as x,y,z	[ ]	s

Option	Description	Default value	Type
shared_dir	Host mount point for guest virtual disk filesystem	[/vdi]	s
share_root	Mount guest virtual disk to host folder **shared_folder**. Argument is 'w' to enable write I/O otherwise read-only mode is assumed. May raise security issues, see Wiki.	[dep]	s:shared_dir
size	Dynamic disc size	[55000]	n
smtp_url	SMTP URL of email provider for end-of-job warning. Default: gmail SMTP	[smtps://smtp.gmail.com:465]	u
stage3	Path to stage3 archive	[stage3.tar.xz]	f
test_emerge	Test whether emerge will be able to install packages in the VM before starting it.	[false]	b
test_only	Only test if portage will be able to install packages. Do not create a virtual machine.	[false]	b
timezone	Set timezone. See /usr/share/zoneinfo for formats.	[US/Eastern]	s
usbehci	Activate USB2 driver: on/off	[off]	o
usbxhci	Activate USB3 driver: on/off. Note: if on, needs extension pack.	[off]	o
use_qemu	Use qemu instead of guestfish for installing Gentoo to block device with **hot_install** or with **share_root**	[false]	b
use_clonezilla_workflow	Use Github Actions workflow to add virtualbox guest additions to CloneZilla ISO.	[true]	b
use_mkg_workflow	Use Github Actions workflow to preprocess minimal Gentoo ISO by adding MKG scripts inside the squashfs filesystem.	[true]	b
vbox_version	Virtualbox version	[6.1.14]	s
vbox_version_full	Virtualbox full version	[6.1.14a]	s
vbpath	Path to VirtualBox directory	[/usr/bin]	d
vm	Virtual Machine name. Unless 'force=true' is used, a time stamp will be appended to avoid registry issues with prior VMs of the same name.	[Gentoo]	vm
vm_language	Add support for non-US English language as a default. Use standard abbreviations (fr for french, es for spanish) etc.	[us]	s

Option	Description	Default value	Type
vmpath	Path to VM base directory	[$PWD]	d
vtxvpid	Activate VTXVPID: on/off	[on]	o
workflow_tag	Tag version (vX.Y) of the release of file clonezilla_with_virtualbox by Github Actions	[v1.8]	s
workflow_tag2	Tag version (vX.Y) of the release of file preprocessed_gentoo_install.iso by Github Actions (MKG site)	[master]	s

path1: https://sourceforge.net/projects/clonezilla/files/clonezilla_live_alternative/20200703-focal/clonezilla-live-20200703-focal-amd64.iso/download
path2: http://gentoo.mirrors.ovh.net/gentoo-distfiles/
path3: https://github.com/fabnicol/clonezilla_with_virtualbox/releases/download/
path4: https://github.com/fabnicol/mkg/releases/download
count: nproc –all / 3