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Rocky Enterprise Linux 9.2 Manual Pages on command 'systemd-gpt-auto-generator.8'

\$ man systemd-gpt-auto-generator.8

SYSTEMD-GPT-AUTO-GENERATOR(8) systemd-gpt-auto-generator SYSTEMD-GPT-AUTO-GENERATOR(8)

NAME

systemd-gpt-auto-generator - Generator for automatically discovering and mounting root, /home/, /srv/, /var/ and /var/tmp/ partitions, as well as discovering and enabling swap partitions, based on GPT partition type GUIDs

SYNOPSIS

/lib/systemd/system-generators/systemd-gpt-auto-generator

DESCRIPTION

systemd-gpt-auto-generator is a unit generator that automatically discovers root, /home/, /srv/, /var/, /var/tmp/, the EFI System Partition, the Extended Boot Loader Partition and swap partitions and creates mount and swap units for them, based on the partition type GUIDs of GUID partition tables (GPT), see UEFI Specification[1], chapter 5. It implements the Discoverable Partitions Specification[2]. Note that this generator has no effect on non-GPT systems, and on specific mount points that are directories already containing files. Also, on systems where the units are explicitly configured (for example, listed in fstab(5)), the units this generator creates are overridden, but additional implicit dependencies might be created.

This generator will only look for the root partition on the same physical disk the EFI System Partition (ESP) is located on. Note that support from the boot loader is required: the EFI variable LoaderDevicePartUUID of the 4a67b082-0a4c-41cf-b6c7-440b29bb8c4f vendor UUID is used to determine from which partition, and hence the disk from which the system was booted. If the boot loader does not set this variable, this generator will not be able to autodetect the root partition. See the Boot Loader Interface[3] for details.

Similarly, this generator will only look for the other partitions on the same physical disk as the root partition. In this case, boot loader support is not required. These partitions will not be searched for on systems where the root file system is distributed on multiple disks, for example via btrfs RAID.

systemd-gpt-auto-generator is useful for centralizing file system configuration in the partition table and making configuration in /etc/fstab or on the kernel command line unnecessary.

This generator looks for the partitions based on their partition type GUID. The following partition type GUIDs are identified:

Table 1. Partition Type GUIDs

222222222222222222222222222222222222222	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	777777777777777777777777777777777777777	222

?Partition Type GUID ? Name ? Mount Point ? Explanation ?

?44479540-f297-41b2	2-9af7-d131d	5f0458a ?	Root Partition ?/ ? On 32-bit x86	?
?	? (x86)	?	? systems, the first ?	
?	?	?	? x86 root partition ?	
?	?	?	? on the disk the EFI ?	
?	?	?	? ESP is located on ?	
?	?	?	? is mounted to the ?	
?	?	?	? root directory /. ?	

?4f68bce3-e8cd-4db1-96e7-fbcaf984b709 ? Root Partition ? / ? On 64-bit x86 ?					
?	? (x86-64)	?	? systems, the	e first ?	
?	?	?	? x86-64 root	?	
?	?	?	? partition on the	?	
?	?	?	? disk the EFI ES	P is ?	
?	?	?	? located on is	?	
?	?	?	? mounted to the	root?	
?	?	?	? directory /.	?	

?69dad710-2ce4-4e3c-b16c-21a1d49abed3 ? Root Partition ? / ? On 32-bit ARM ? ? (32-bit ARM) ? systems, the first ? ? ? ? ARM root partition ? ? on the disk the EFI? ? ESP is located on ? ? is mounted to the ? ? ? root directory /. ? ?b921b045-1df0-41c3-af44-4c6f280d3fae ? Root Partition ? / ? On 64-bit ARM ? ? (64-bit ARM) ? systems, the first ? ? ? ARM root partition ? ? ? on the disk the EFI? ? ESP is located on ? ? is mounted to the ? ? ? root directory /. ? ?993d8d3d-f80e-4225-855a-9daf8ed7ea97 ? Root Partition ? / ? On Itanium systems, ? ? ? (Itanium/IA-64) ? ? the first Itanium ? ? ? ? root partition on ? ? the disk the EFI ? ? ESP is located on ? ? ? is mounted to the ? ? ? root directory /. ? ?60d5a7fe-8e7d-435c-b714-3dd8162144e1 ? Root Partition ? / ? On RISC-V 32-bit ? ? ? (RISCV-V 32) ? systems, the first ? ? RISCV-V 32-bit root? ? partition on the ?

? disk the EFI ESP is ?

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	?	?	?	? located on is ?
	?	?	?	? mounted to the root ?
	?	?	?	? directory /. ?
???	??????????????????????	???????????	??????????	???????????????????????????????????????
	?72ec70a6-cf74-40e6-b	od49-4bda08	e8f224 ? Ro	oot Partition ?/ ? On RISC-V 64-bit ?
	?	? (RISCV-V	64) ?	? systems, the first ?
	?	?	?	? RISCV-V 64-bit root ?
	?	?	?	? partition on the ?
	?	?	?	? disk the EFI ESP is ?
	?	?	?	? located on is ?
	?	?	?	? mounted to the root ?
	?	?	?	? directory /. ?
???	??????????????????????	???????????	?????????	???????????????????????????????????????
	?933ac7e1-2eb4-4f13-b	0844-0e14e2	aef915 ? Ho	ome Partition ? /home/ ? The first home ?
	?	?	?	? partition on the ?
	?	?	?	? disk the root ?
	?	?	?	? partition is ?
	?	?	?	? located on is ?
	?	?	?	? mounted to /home/. ?
???	???????????????????????	???????????	?????????	???????????????????????????????????????
	?3b8f8425-20e0-4f3b-9	07f-1a25a76	f98e8 ? Ser	ver Data ? /srv/ ? The first server ?
	?	? Partition	?	? data partition on ?
	?	?	?	? the disk the root ?
	?	?	?	? partition is ?
	?	?	?	? located on is ?
	?	?	?	? mounted to /srv/. ?
???	??????????????????????	???????????	?????????	***************************************
	?4d21b016-b534-45c2-	a9fb-5c16e0	91fd2d ? Va	riable Data ? /var/ ? The first variable ?
	?	? Partition	?	? data partition on ? Page 4/8

?	?	?	? the disk the root ?
?	?	?	? partition is ?
?	?	?	? located on is ?
?	?	?	? mounted to /var/ ? ?
?	?	?	? under the condition ?
?	?	?	? its partition UUID ?
?	?	?	? matches the first ?
?	?	?	? 128 bit of the ?
?	?	?	? HMAC-SHA256 of the ?
?	?	?	? GPT type uuid of ?
?	?	?	? this partition ?
?	?	?	? keyed by the ?
?	?	?	? machine ID of the ?
?	?	?	? installation stored ?
?	?	?	? in machine-id(5). ?

?7ec6f557-3bc5-4aca-	b293-16ef5d	f639d1 ? Te	emporary Data ? /var/tmp/	? The first temporary ?
?	? Partition	?	? data partition on ?	
?	?	?	? the disk the root ?	
?	?	?	? partition is ?	
?	?	?	? located on is ?	
?	?	?	? mounted to ?	
?	?	?	? /var/tmp/.	

?0657fd6d-a4ab-43c4-8	34e5-0933c8	4b4f4f ? Sw	ар	? n/a	? All swap partitions?
?	?	?	? located	on the c	disk ?
?	?	?	? the roo	t partitior	n ?
?	?	?	? is locat	ed on ar	e ?
?	?	?	? enable	d.	?

?c12a7328-f81f-11d2-ba4b-00a0c93ec93b ? EFI System ? /efi/				FI System ? /efi/ or /boot/ ? The first ESP ?
	?	? Partition (ESP) ?		? located on the disk ?
	?	?	?	? the root partition ?
	?	?	?	? is located on is ?
	?	?	?	? mounted to /boot/ ?
	?	?	?	? or /efi/, see ?
	?	?	?	? below. ?
???	?????????????????????	?????????	???????????	???????????????????????????????????????
	?bc13c2ff-59e6-4262-	a352-b275fd	d6f7172 ? Ext	rended Boot ? /boot/ ? The first Extended ?
	?	? Loader	Partition ?	? Boot Loader ?
	?	?	?	? Partition is ?
	?	?	?	? mounted to /boot/, ?
	?	?	?	? see below. ?
???	????????????????????	?????????	???????????	???????????????????????????????????????
	This generator understands the following attribute flags for partitions: Table 2. Partition Attributes			
	????????????????????????????????????			???????????????????????????????????????
	?Name	? Value	? Applio	cable to ? Explanation ?
	???????????????????????????????????????			???????????????????????????????????????
	?GPT_FLAG_READ_0	ONLY	? 0x100000	0000000000 ? /, /home/, /srv/, ? Partition is ?
	? ?		? /var/, /var/tn	np/, ? mounted read-only ?
	? ?		? Extended B	oot ? ?
	? ?		? Loader Part	tition ? ?
	??????????????????	?????????	??????????	???????????????????????????????????????
	?GPT_FLAG_NO_AU	ТО	? 0x8000000	000000000 ? /, /home/, /srv/, ? Partition is not ?
	? ?		? /var/, /var/tn	np/, ? mounted ?
	? ?		? Extended B	oot ? automatically ?
	? ?		? Loader Part	tition ? ?
	??????????????????	?????????	??????????	???????????????????????????????????????
	?GPT_FLAG_NO_BL0	OCK_IO_PR	ROTOCOL?	0x0000000000000002 ? EFI System
				Dana 0/0

? Partition (ESP) ? mounted

?

?

?

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The /home/, /srv/, /var/ and /var/tmp/ partitions may be encrypted in LUKS format. In this case, a device mapper device is set up under the names /dev/mapper/home, /dev/mapper/srv, /dev/mapper/var and /dev/mapper/tmp. Note that this might create conflicts if the same partition is listed in /etc/crypttab with a different device mapper device name.

When systemd is running in the initrd the / partition may be encrypted in LUKS format as well. In this case, a device mapper device is set up under the name /dev/mapper/root, and a sysroot.mount is set up that mounts the device under /sysroot. For more information, see

Mount and automount units for the EFI System Partition (ESP) are generated on EFI systems.

The ESP is mounted to /boot/ (except if an Extended Boot Loader partition exists, see below), unless a mount point directory /efi/ exists, in which case it is mounted there.

Since this generator creates an automount unit, the mount will only be activated on-demand, when accessed. On systems where /boot/ (or /efi/ if it exists) is an explicitly configured mount (for example, listed in fstab(5)) or where the /boot/ (or /efi/) mount point is non-empty, no mount units are generated.

If the disk contains an Extended Boot Loader partition, as defined in the Boot Loader Specification[4], it is made available at /boot/ (by means of an automount point, similar to the ESP, see above). If both an EFI System Partition and an Extended Boot Loader partition exist the latter is preferably mounted to /boot/. Make sure to create both /efi/ and /boot/ to ensure both partitions are mounted.

When using this generator in conjunction with btrfs file systems, make sure to set the correct default subvolumes on them, using btrfs subvolume set-default.

systemd-gpt-auto-generator implements systemd.generator(7).

KERNEL COMMAND LINE

bootup(7).

systemd-gpt-auto-generator understands the following kernel command line parameters: systemd.gpt_auto, rd.systemd.gpt_auto

Those options take an optional boolean argument, and default to yes. The generator is enabled by default, and a negative value may be used to disable it.

root=

When used with the special value "gpt-auto", automatic discovery of the root partition based on the GPT partition type is enabled. Any other value disables this generator.

rw, ro

Mount the root partition read-write or read-only initially.

Note that unlike most kernel command line options these settings do not override configuration in the file system, and the file system may be remounted later. See systemd-remount-fs.service(8).

SEE ALSO

systemd(1), systemd.mount(5), systemd.swap(5), systemd-fstab-generator(8), systemd-cryptsetup@.service(8), machine-id(5), cryptsetup(8), fstab(5), btrfs(8)

NOTES

1. UEFI Specification

https://uefi.org/specifications

2. Discoverable Partitions Specification

https://systemd.io/DISCOVERABLE_PARTITIONS

3. Boot Loader Interface

https://systemd.io/BOOT_LOADER_INTERFACE

4. Boot Loader Specification

https://systemd.io/BOOT_LOADER_SPECIFICATION

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