

LEARNING centos

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Chapter 1: Getting started with centos

Remarks

CentOS versions download: here

"The CentOS Linux distribution is a stable, predictable, manageable and reproducible platform derived from the sources of Red Hat Enterprise Linux (RHEL). Since March 2004, CentOS Linux has been a community-supported distribution derived from sources freely provided to the public by Red Hat. As such, CentOS Linux aims to be functionally compatible with RHEL.

The CentOS Project is a community-driven free software effort focused around the goal of providing a rich base platform for open source communities to build upon. We will provide a development framework for cloud providers, the hosting community, and scientific data processing, as a few examples. We work with several 'upstream' communities to help them layer and distribute their software more effectively on a platform they can rely on.

The CentOS Project is modelled on the structure of the Apache Foundation, with a governing board that oversees various semi-autonomous Special Interest Groups or 'SIGs'. These groups are focused on providing various enhancements, addons, or replacements for core CentOS Linux functionality. A few notable examples of SIGs are:

Core - Building and releasing the core CentOS Linux platform. Xen4CentOS - Providing Xen4 support for CentOS 6 CentOS Design - Improving the user experience with high quality artwork."*

*find more here: https://www.centos.org/about/

Versions

CentOS Version	Release Date
5	2007-04-12
6	2011-07-10
7	2014-07-07

Examples

Installation or Setup

Detailed instructions on getting CentOS 7 installation and basic set up for starting on.

- 1. Download latest CentOS .ISO https://www.centos.org/download/
- 2. After downloading the last version of CentOS using above links or using official CentOS

download page. Burn it to a DVD or create a bootable USB stick using LiveUSB Creator called Unetbootin.

3. After you have created the installer bootable media, place your DVD/USB into your system appropriate drive, start the computer, select your bootable unit and the first CentOS 7 prompt should appear. At the prompt choose Install CentOS 7 and press [Enter] key.

CentOS 7	
Install Cent0S 7	
Test this media & install CentOS 7	
Troubleshooting	>

4. The system will start loading media installer and a Welcome screen should appear. Select your Installation Process Language, that will assist you through the entire installation procedure and click on Continue.

C OK 1 C OK 1	Started Configure read-only is Started udev Coldplug all Dec Starting udev Wait for Complex Started Import network confis Started Create static device Starting udev Kernel Device M Reached target Local File Sys Started Udev Kernel Device M Started Device-Mapper Multips Started udev Wait for Complex Started udev Wait for Complex Started Activation of DM RAIS Reached target Local File Sys Started Activation of DM RAIS Reached target Local File Sys Starting Trigger Flushing of Starting Trigger Flushing of Starting Create Volatile File Reached target Encrypted Volu- Started Trigger Flushing of A Started Trigger Flushing of A Started Trigger Flushing of Started Trigger Flushing of Started Trigger Flushing of Started Trigger Flushing of Started Trigger Flushing of A Started Update UTMP about Sys Reached target System Initia Reached target System Initia Reached target Sockets. Istening on Open-iSCSI iscs Listening on D-Bus System Mes Reached target Basic System. Starting Firewalld - dynamic Starting Terminate Plymouth B Starting Wait for Plymouth B	root support. vices. ete Device Initialization puration from initranfs. nodes in /dev. Manager stems (Pre). anager. ath Device Controller. te Device Initialization. ID sets D sets. stems. Journal to Persistent Sto ite Out Runtime Data es and Directories umes. Journal to Persistent Sto te Out Runtime Data. s and Directories. ystem Reboot/Shutdown stem Reboot/Shutdown itation. id Socket. iuio Socket. SD Stack Activation Socker ssage Bus Socket. firewall daemon log/dmesg Root Screen to Quit	CENTOS 7 INSTALLATION
CentC	05	WELCOME TO CE	NTOS 7.
	What langu	age would you like to use dur	ing the installation process?
	English	English >	English (United States)
	Afrikaans	Afrikaans	English (United Kingdom)
	አማርኛ	Amharic	English (India)
	العربية	Arabic	English (Canada)
	अअमीस	Assamese	English (Denmark)
	Asturianu	Asturian	English (Ireland)
	Беларуская	Belarusian	English (New Zealand)
	Български	Bulgarian	English (Nigeria)
	বাংলা	Bengali	English (Hong Kong SAR China)
	Type here to search.	a	
			Guit Continue

5. The next step, present screen prompt is Installation Summary. It contains a lot of options to fully customize your system. First thing you may want to setup is your time settings. Click on Date & Time and select your server physical location from the provided map and hit on upper Done button to apply configuration.

<u></u>	INSTALLA	ATION SUMMARY		CENTO:	S 7 INSTALLATI
CentOS L	OCALIZA	TION			1
	\odot	DATE & TIME Europe/Bucharest timezone		KEYBOAR English (U:	D 5)
	á	LANGUAGE SUPPORT English (United States)			
s and a second	OFTWAR	RE			
	0	INSTALLATION SOURCE	4	SOFTWAI Minimal Ins	RE SELECTION
9	SYSTEM				
		INSTALLATION DESTINATION	2	NETWOR	K & HOSTNAME
		Mir un	o't touch your	Quit	Begin Installation
			na mata yata t	orana testa kon	una arga mutananan.



6. The next step is to choose your Language Support and Keyboard settings. Choose your main and extra language for your system and when you're finished hit on Done button.

1000	INSTALLA	TION SUMMARY		CENTOS	7 INSTALLATI
				🖾 us	
CentOS	LOCALIZA	TION			- 1
	\odot	DATE & TIME Europe/Bucharest timezone		KEYBOAR English (US	D 5)
	3	LANGUAGE SUPPORT English (United States)			
	SOFTWAR	E			
	0	INSTALLATION SOURCE	6	SOFTWAR Minimal Ins	RE SELECTION
	SYSTEM				
		INSTALLATION DESTINATION	2	NETWORK	& HOSTNAME
				Quit	Begin Installation
		We won't	touch your d	fisks until you	click 'Begin Installation'.
LANGUAGE SU	PPORT			CENT	OS 7 INSTALLATION

Sele Catata Ĉeŝtina Cymraeg Dansk	ct additional languag Catatan Czech Welsh Danish	e support to be installed: English (United States) English (United Kingdom) English (India) English (Australia)
Deutsch Ελληνικά English	German Greek English	English (Canada) English (Denmark) English (ireland)
Español Eesti Euskara فارسی Suomi	Spanish Estonian Basque Persian Finnish Econch	 English (New Zealand) English (Nigeria) English (Hong Kong SAR China) English (Philippines) English (Singapore) English (South Africa)

7. The same way choose your Keyboard Layout by hitting the plus button and test your keyboard configuration using the right input filed. After you finish setting up your keyboard, you can use any key combination for switching between keyboards, in my case I am using

Alt+Ctrl. After selection of your desired key combination, press Done again to apply changes and go back to main screen on Installation Summary.

	INSTALLA	TION SUMMARY		CENTOS	7 INSTALLATION
CentOS	LOCALIZA	TION			
	0	DATE & TIME Europe/Bucharest timezone		KEYBOAR	D 5)
	á	LANGUAGE SUPPORT English (United States)			
	SOFTWAR	E			
	0	INSTALLATION SOURCE	4	SOFTWARE SELECTION Minimal Install	
	SYSTEM				
		INSTALLATION DESTINATION	2	NETWORK	& HOSTNAME
				Quit	Begin Installation
		We wa	n't touch your o	disks until you	click 'Begin Installation'.

EYBOARD Done	LAYOUT	ci	ENTOS 7 INS Bus	TALLATIO Help!
Which key	ADD A KEYBOARD LAYOUT You may add a keyboard layout by selecting it below:			op of the
ust to sete	English (Nigeria)		1	
Foolish (US	German			
angenn (sou	German (Austria)			
	German (Austria, eliminate dead keys)			
	German (Austria, Macintosh)			
	German (Austria, Sun dead keys)			
	German (dead acute)			
	German (dead grave acute)			comigare
	German (Dvorak)			Options
	German (eliminate dead keys)			
	German (legacy)			
	German (Macintosh)			
	ger		Ø	
		Cancel	Add	
+ -				-

this system? You may move any layout to the top of the
Test the layout configuration below:
Layout switching not configure
Options

Done:	LA	YC	UT								CENTOS 7 II	Help
Vhich keyb st to selec	LA W	ny o	UT SWI h combi	CHING	OPTIO	NS uld you	prefer	for swi	tching be	tween keyb	oard layouts	top of the
	1	0	Alt+Caps	Lock								
nglish (US)		<	Alt+Ctrl	8								
ierman			Alt+Shift									
			Alt+Spac	e								
			Any Win	key (wh	ile press	ed)						
			Both Alt	keys tog	gether							
			Both Ctrl	keys to	gether							ot configure
			Both Shif	t keys t	ogether							Options
			Caps Loc	k	and souther	a na	140001204					
		-	Caps Loc	k (to fir	st layou	t), Shift	+Caps Lo	ick (to ta	st (ayout)		35	
			Caps Loc	k (white	pressed	ŋ, Alt+C	aps Loca	does th	e original c	apstock action	1	
		5	Loft Alt	<u>s</u>								
		ä.	Line Alk									
										Cancel	ОК	
+ -				-	_	_	_	_	_	<u></u>	1	

8. Now we can add LANGUAGE SUPPORT if you don't want to use English. Click on "LANGUAGE SUPPORT" to open the dialog.

	INSTALLA	TION SUMMARY		CENTO	S 7 INSTA	LLATION
				🖽 us		Help!
CentOS	LOCALIZA	TION				- 1
	Θ	DATE & TIME Europe/Berlin timezone		KEYBOAI English (l	RD JS), Germa	n
	á	LANGUAGE SUPPORT English (United States)				
	SECURITY	1				- 1
		SECURITY POLICY No profile selected				
	SOFTWAR	E				
		INSTALLATION SOURCE	4	SOFTWA	RE SELEC	TION
	10.000			Quit	Begin In	stallation
			We won't touch ye	our disks until yo	u click 'Begin	Installation".
	A Please co	omplete items marked with this ico	before continuing t	o the next step.		

9. By default, CentOS comes with English language preinstalled, but we can add more languages easily. In my case, I am adding Deutsch German with Deutsch (Deutschland) as the additional language. Press Done after selection.

German > Deutsch (Deutschland)
Greek Deutsch (Österreich)
CT C CT
English Deutsch (Schweiz)
Spanish Deutsch (Belgien)
Estonian Deutsch (Luxemburg)
Basque
Persian
Finnish
French
Galician
Gujarati
Hindi

10. On the next step you can customize your installation by using other Installation Sources than

your local DVD/USB media, such as a network locations using HTTP, HTTPS, FTP or NFS protocols and even add some additional repositories, but use this methods only if you know what you're doing. So leave the default Auto-detected installation media and hit on Done to continue.

	INSTALLA	TION SUMMARY	CENTOS 7 INSTALLATI
44			🖽 us
entOS			
	0	DATE & TIME	KEYBOARD
	U	Europe/Bucharest timezone	English (US)
	á	LANGUAGE SUPPORT English (United States)	
	SOFTWAR	E	
	0	INSTALLATION SOURCE	SOFTWARE SELECTION Minimal Install
	SYSTEM		
		INSTALLATION DESTINATION	
		Automatic partitioning selected	Not connected
ISTALLATI		Automatic partitioning selected	Ouit Begin Installat touch your disks until you click Begin Installat CENTOS 7 INSTALLATIO
VSTALLATIO	ON SOURCE	Automatic partitioning selected We won't i puld you like to use?	Ouit Begin Installat touch your disks until you click Begin Installa CENTOS 7 INSTALLATIO
Vhich installa	ON SOURCE	Automatic partitioning selected We won't sould you like to use? In media:	Quit Begin Installer touch your disks until you click Begin Installer CENTOS 7 INSTALLATION US
Vhich installa Auto-det Device: sr0 Label: Cent	ON SOURCE ation source we ected installatio t05_7_x86_64	Automatic partitioning selected We won't build you like to use? In media: Verify	Ouit Degin Installat touch your disks until you click Begin Installa CENTOS 7 INSTALLATIO
Vhich installa Auto-det Device: sr0 Label: Cent On the n	ON SOURCE ation source we ected installatio tOS_7_x86_64 etwork:	Automatic partitioning selected We won't i build you like to use? In media: Venify	Quit Degin Installat touch your disks until you click Begin Installa CENTOS 7 INSTALLATION US
Vhich installa Vhich installa Auto-det Device: sr0 Label: Cent On the n http://	on source we etted installatio t05_7_x86_64 etwork:	Automatic partitioning selected We won't We won't automatic partitioning selected We won't Verify	Quit Begin Installer touch your disks until you click Begin Installer CENTOS 7 INSTALLATION US Processory
Vhich installa Auto-det Device: ar0 Label: Cent On the n http:// w	on source we ected installatio to5_7_x86_64 etwork:	Automatic partitioning selected We won't i sould you like to use? In media: Venify refers to a mirror list.	Ouit Degn Installat touch your disks until you click Begin Installat CENTOS 7 INSTALLATION In us Provy setup
Vhich installa • Auto-det Device: sr0 Label: Cent • On the n • http:// •	on source we etion source we ected installatio 0 c05_7_x86_64 etwork: 0 This UR cositories Name	Automatic partitioning selected We won't build you like to use? In media Venify refers to a mirror list. Name:	Ouit Begin Installat touch your disks until you click Begin Installat CENTOS 7 INSTALLATION US Provy setup
Vhich installa Onte installa Auto-det Device: ar0 Label: Cent On the n http:// 3 Additional rep Enabled N	on source we exten source we exted installatio () (OS_7_x86_64 etwork: () () This UR iositories Name	Automatic partitioning selected We won't We won't suld you like to use? In media Venify refers to a mirror list.	Ouit Degn Installat touch your disks until you click Begin Installat CENTOS 7 INSTALLATIO
Vhich installa Auto-det Device: sr0 Label: Cent On the n http:// w Additional rep Enabled N	on source we ected installatio to5_7_x86_64 etwork:	Automatic partitioning selected We won't Sould you like to use? In media: Venify refers to a mirror list.	Ouit Degin Installat touch your disks until you click Begin Installat CENTOS 7 INSTALLATION This URL refers to a mirror last
Which installa Which installa Auto-det Device: sr0 Label: Cent On the n http:// w	on source we etion source we ected installatio (COS_7_x86_64 etwork: (C) This UR cositories Name	Automatic partitioning selected We won't We won't Sould you like to use? In media Venify refers to a mirror list Ittp:// Proory URL:	Ouit Begin Installat touch your disks until you click Begin Installat CENTOS 7 INSTALLATION This URL refers to a mirror list
Which installa Multiplication	on source we exten source we exted installatio () () () () () () () () () () () () ()	Automatic partitioning selected We won't We won't automatic partitioning selected We won't suid you tike to use? n media Verify refers to a mirror list Name: http:// * Provy URL: Username:	Ouit Degm Installat touch your disks until you click Begin Installat CENTOS 7 INSTALLATIO Image: Distance Prinky setup. This URL refers to a mirror list

11. On the next step you can choose your system installation software. On this step CentOS offers a lot of Server and Desktop platform environments that you choose from, but, if you want a high degree of customization, especially if you are going to use CentOS 7 to run as a server platform, then I suggest you select Minimal Install with Compatibility Libraries as Addons, which will install a minimal basic system software and later you can add other packages as your needs require using:

INSTALL	ATION SUMMARY	CENTOS 7 INS	TALLATIO
		🖾 us	Help!
	No profile selected		
SOFTWA	RE		
0	INSTALLATION SOURCE	SOFTWARE SELECT Minimal Install	NON
SYSTEM			
9	INSTALLATION DESTINATION Automatic partitioning selected	KDUMP Kdump is enabled	
¢	NETWORK & HOST NAME Not connected		
	[Quit Begi	n Installation
	We won't t	ouch your disks until you click 'Be	gin Installat



10. Now it's time to partition your hard-drive. Click on Installation Destination menu, select your disk and choose I will configure partitioning. Read more about what partition to choose here: https://www.centos.org/docs/5/html/Installation_Guide-en-US/s1-diskpartitioning-x86.html

	INSTALLA	TION SUMMARY		CENTO	S 7 INSTALLATI
CentOS	0	DATE & TIME Europe/Bucharest timezone LANGUAGE SUPPORT English (United States)		KEYBOAF English (U	RD IS)
	SOFTWAR	E INSTALLATION SOURCE Local media	6	SOFTWA Minimal In	RE SELECTION
	SYSTEM	INSTALLATION DESTINATION Error checking s_ge configuration	22	NETWOR	K & HOSTNAME
		We wo	i't touch your d	Quit lisks until you	Begin Installation

Dine						CENTOS 7 INSTALLATION
evice Selection						
Select the device(s) you'd like to in "Begin Installation" button.	stall to	. The	y will I	be left u	ntouc	hed until you click on the main menu's
Local Standard Disks						
20.48 GB						
sda / 20.47 GB free						Disks left unselected here will not be touched.
sda / 20.47 GB free Gpecialized & Network Disks Add a disk						Disks left unselected here will not be touched.
sda / 20.47 GB free						Disks left unselected here will not be touched. Disks left unselected here will not be touched.
sda / 20.47 GB free						Disks left unselected here will not be touched. Disks left unselected here will not be touched.

- 11. On the next screen, choose LVM (Logical Volume Manager) as partition layout and, then, click on Click here to create them automatically, option which will create three system partition using XFS filesystem, automatically redistributing your hard-disk space and gathering all LVS into one big Volume Group named "centos".
 - /boot Non LVM
 - /(root) LVM
 - Swap LVM

	SUMMARY		CENT	OS 7 INSTALLAT	ION
	NING				ENTO
 New CentOS 7 You haven't create CentOS 7 installation Click here to on button. Create new mound button. New mount points partitioning scheme LVM 	C D	ts for your atirally, ing the "+" owing	When you create mount po	nnts for your Cento Iere.	05 7 in
UAL PARTITIONING	C B			CENTOS 7	INST
DATA		Centos-root			
SYSTEM		Mamai	60.08		
/boot	500 MB	Name: Mount Point:	root		
fal	500 MB	Name: Mount Point: Label:	root		
intee-soot wap entos-swap	500 MB 10 GB > 2.04 GB	Name: Mount Point: Label: Desired Capacity Device Type:	root / / / 10 GB LVM	*	П в Г я
boot dal entos-sol wap entos-swap	500 MB 10 GB > 2.04 GB	Name: Mount Point: Label: Desired Capacity Device Type: File System: Volume Group	root / / / 10 GB LVM xfs centos	~ ~ (0 B free) ~	⊂ E ⊽ :
/boot ida1 antos exet swap rentos -swap - % C III	500 MB	Name: Mount Point: Label: Desired Capacity Device Type:	root / / 10 GB LVM xfs centos e. The settings you make until you click on the main	 ✓ ✓ (O B free) ✓ Up on this screen will menu's 'Begin Insta 	□ E I IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII

12. If you are not pleased with the default partition layout done automatically by the installer you can completely add, modify or resize your partition scheme and when you finish hit on Done button and Accept Changes on the Summary of Changes prompt.

DATA	SUMMARY OF CHANGES Your customizations will result in the following changes taking effect on the disks you've selected:							
cantos-homa	Order	Action	Туре	Device Name	Mountpoint			
SYSTEM	5	Create Device	partition	Sebe				
/boot	6	Create Format	physical volume (LVM)	sda2				
sdal	7	Create Device	lumug	centes:				
I make an and	8	Create Device	tembr	centos-var				
hor	9	Create Format	sta	centos var	/var			
CONTRACTOR OF THE OWNER	10	Create Device	tomly	centos-home.				
swap	11	Create Format	10	centos-bome	/home			
centos-swap	32	Create Device	Lymby	centos-swap				
	13	Create Format	swap	centos-swap				
	1.4	Create Device	lamix.	centos voliti				
	15	Create Format	ufs.	centos-root	1			
- :			Cancel & Retur	n to Custom Part	itioning Accept Changes			
					interest of some des			

NOTE: For those users, who have hard-disks more than 2TB in size, the installer automatically will convert partition table to GPT, but if you wish to use GPT table on smaller disks than 2TB, then you should use the argument inst.gpt to the installer boot command line in order to change the default behavior.

13. The next step is to set your system hostname and enable networking. Click on Network & Hostname label and type your system FQDN (Fully Qualified Domain Name) on Hostname filed, then enable your Network interface, switching the top Ethernet button to ON. If you have a functional DHCP server on you network then it will automatically configure all your network setting for enabled NIC, which should appear under your active interface.

	INSTALLA	TION SUMMAR	Y		CENTOS 7	INSTALLATION
CentOS	LOCALIZA	TION				
	Θ	DATE & TIME Europe/Buchard	est timezone	<u>}</u>	KEYBOARD English (US)	
	á	LANGUAGE S English (United	UPPORT States)			
	SOFTWAR	E				
	\bigcirc	INSTALLATIO Local media	N SOURCE	6	SOFTWARE : Minimal Instal	SELECTION
	SYSTEM					
	C	INSTALLATIO Custom partitio	N DESTINATION	Ď5	NETWORK &	HOSTNAME
					Quit	Begin Installation
NETWORK &	HOSTNAME				CENTOS 7	INSTALLATION
Etherne httst Grea	t (eno16777 vatem PRO/1000 N	736) 17 Sangle Pourt Artepter	2	Ethernet (en	o16777736)	011
			Hardware Address	00.0C 29:43:03	2.88	
			Speed IP Address	1000 Mb/s		
			Subnet Mask	255.255.255.0		
			Default Route	192.168.1.1	1949-19	
			DNS	192.168.1.1 8.	8.8.8	
+ -						Configure
Hostname:	ver.centos.tan					

14. If your system will be destined as a server it's better to set static network configuration on Ethernet NIC by clicking on Configure button and add all your static interface settings like in the screenshot below, and when you're finished hit on Save button, disable and enable Ethernet card by switching the button to OFF and ON, and, then hit on Done to apply setting and go back to main menu.

Ethernet		Editing eno16	777736		
Intel Corpor	Connection name:	eno16777736			
	General Ethernet	802.1x Security DCE	3 IPv4 Settings	Pv6 Settings	
	Method: Manual			~	
	Addresses				
	Address	Netmask	Gateway	Add	
	192 168 1 50	24	192,168.1.1	Delete	
	DNS servers:	192.168.1.1:8.8.8.8			
	Search domains:				
	DHCP client (D)				
	Require IPv4 a	addressing for this conne	ection to complete		
	1			Routes	Configure

		Editing	ens33		
nnection name:	ens33				
General	Ethernet	802. Ix Security	DCB	IPv4 Settings	IPv6 Settings
	-				
levice:	ens33				
loned MAC addr	ess:				
ITU:	automati	c			- + byt
					and the second second

		Editing	ens33		
onnection name:	00033				
General	Ethernet	802.1x Security	DCB	IPv4 Settings	IPv6 Settings
Address Monu	iatic (DHCP) iatic (DHCP) addi	resses only			
Addres Link-Li Share Addition Disabl	ocal Only d to other compu ed :h domains:	ters			
Addition Disabl Additional searce DHCP client ID:	ocal Only d to other compu ed :h domains:	ters			

15. Add the entries for Address, Netmask and Gateway as per your static IP environment. In my case I am using Address as 192.168.1.100, Netmask 255.255.255.0, Gateway as 192.168.1.1 and DNS servers as 8.8.8.8 8.8.4.4 These values may vary according to your network environment. After that press Save.

IMPORTANT: If you do not have an IPv6 internet connection, then set IPv6 from auto to ignore on the IPv6 tab, otherwise you won't be able to reach the internet from this server on IPv4 as CentOS seems to ignore the correct IPv4 setup then and uses IPv6 instead which fails.

		Editing	ens33		
innection name:	00033				
General	Ethernet	802.1x Security	DCB	IPv4 Settings	IPv6 Settings
Address Address Address Addre Addre Auton Auton Manu DNS ser Link-L Search (Share	natic natic, addresses o natic, DHCP only al ocal Only d to other comput	nly			
IPv6 privacy ex	tensions: Disab	led			
Require IPv	5 addressing for th	his connection to complet	0		Poutes

16. Next, we have to turn the connection ON as shown in the screenshot below. Further press Done.

NETWORK & HOST NAME		CENTOS 7 INSTALLATIO
Ethernet (ens33) Intel Corporation #25451M Gigalitä Ethernet Controller (C	Ethernet (ens33) Connected Hardware Address 00:0C:29:27:DF:14 Speed 1000 Mb/s IP Address 192:168.1.1 Subnet Mask 255:255:255.0 Default Route 192:168.1.1	
+ – Host name: server1.example.com	DNS 8.8.8.8.8.4.4	Configure

17. Now it's time to start installation process by pressing on Begin Installation button and set up a strong password for root account.

IN	STALLATION SUMMARY	CENTOS 7 INSTALLATIO
		🖽 de 🛛 🛛 Help!
CentOS SEC	URITY	
	SECURITY POLICY No profile selected	
SOF	TWARE	
	O INSTALLATION SOURCE	SOFTWARE SELECTION Minimal Install
SYS	TEM	
	Automatic partitioning selected	KDUMP Kdump is enabled
		Quit Brown Installation
	We won't touch y	our disks until you click 'Begin Installat

18. The installation process will start now and you get a small blue progress bar in the next windows. Now we have to set the ROOT PASSWORD and add a new non-root user in the USER CREATION option. I will first go for root password.



19. Enter a secure password of your choice and press Done

ROOT PASSWORD		CENTOS 7 INSTALLATI
	International Contractions of Contraction	Les de Les de
Root Password:		e root user.
	· · · · · · · · · · · · · · · · · · ·	Good
Confirm:	••••••	
		1

20. Next we will go for USER CREATION.



21. Next I will create user, as in my case I used the Full name "Administrator" and Username "administrator", check the option Require the password to use this account and then press Done. Off-course you can use any value as per your choice.

TE USER	CENTOS 7 I	NSTALLATI
	🖾 de	Help
Full name	Administrator	
User name	administrator	
	Tip: Keep your user name shorter than 32 characters and do not use spaces.	
	C Make this user administrator	
	Require a password to use this account	
Password		
	Good	
Confirm password		
	Advanced	

22. Press Finish. Have patience and wait for the completion of the setup.



23. After completion of the installation, it will ask to reboot the server, just press Finish configuration.



24. The server reboots and will request your username and password afterwards.



Congratulation! You have now installed last version of CentOS on your bare new machine. Remove any installation media and reboot your computer so you can login to your new minimal CentOS 7 environment and perform other system tasks, such as update you system and install other useful software needed to run day to day tasks.

25. Now we are ready to do login with the user that we just created above or we can use the root credentials.

First Login on CentOS

Login as root user to the server so we can do some final installation steps.

The first one is to install all available updates with yum.

yum update

confirm with "y" to proceed with the installation of the updates.

I will install two command line editors to be able to edit configuration files on the shell:

```
yum install nano vim
```

Network Configuration

CentOS 7.2 minimal don't come pre-installed with the ifconfig command we will install it as follows:

yum install net-tools

If you want to change or see the network configuration file, just edit the file

```
nano /etc/sysconfig/network-scripts/ifcfg-ens33
```

It will be like this when you configured a static IP address:

```
TYPE="Ethernet"
BOOTPROTO="none"
DEFROUTE="yes"
IPV4_FAILURE_FATAL="no"
IPV6INIT="no"
IPV6_AUTOCONF="yes"
IPV6_DEFROUTE="yes"
IPV6_PEERDNS="yes"
IPV6_PEERROUTES="yes"
IPV6_FAILURE_FATAL="no"
NAME="ens33"
UUID="eb1ba0ce-af9f-4953-a6a7-3d05a15c8d4f"
DEVICE="ens33"
ONBOOT="yes"
IPADDR="192.168.1.100"
PREFIX="24"
GATEWAY="192.168.1.1"
DNS1="192.168.1.1"
DNS2="8.8.8.8"
DNS3="8.8.4.4"
    Or like this when you use DHCP:
TYPE="Ethernet"
BOOTPROTO="dhcp"
DEFROUTE="yes"
IPV4_FAILURE_FATAL="no"
IPV6INIT="yes"
IPV6_AUTOCONF="yes"
IPV6_DEFROUTE="yes"
```

```
IPV6_FAILURE_FATAL="no"
NAME="ens33"
UUID="eblba0ce-af9f-4953-a6a7-3d05a15c8d4f"
DEVICE="ens33"
ONBOOT="yes"
HWADDR="00:50:56:15:23:79"
PEERDNS="yes"
PEERROUTES="yes"
IPV6_PEERDNS="yes"
IPV6_PEERROUTES="yes"
IPV6_PRIVACY="no"
```

Change the values if required.

Note: The above DEVICE name may vary so please check the equivalent file in the directory /etc/sysconfig/network-scripts.

Adjust /etc/hosts

Adjust the file /etc/hosts as follows:

nano /etc/hosts

Make the values like this:

```
127.0.0.1 localhost localhost.localdomain localhost4 localhost4.localdomain4
192.168.1.100 server1.example.com server1
::1 localhost localhost.localdomain localhost6 localhost6.localdomain6
```

Congratulations! Now we have basic minimal CentOS 7 server setup

Now you may prefer to use GUI instead, here is a variety of flavor you could choose from:

Installing GNOME-Desktop:

Install GNOME Desktop Environment by entering.

yum -y groups install "GNOME Desktop"

To start the GUI enter after finishing installation:

startx

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How to use GNOME Shell?

The default GNOME Desktop of CentOS 7 starts with classic mode but if you'd like to use GNOME Shell, set like follows:

Option A: If you start GNOME with startx, set like follows.

```
# echo "exec gnome-session" >> ~/.xinitrc
# startx
```

Option B: set the system graphical login systemctl set-default graphical.target and reboot the system. After system starts

- 1. Click the button which is located next to the "Sign In" button.
- 2. Select "GNOME" on the list. (The default is GNOME Classic)
- 3. Click "Sign In" and log in with GNOME Shell.

K	Session KDE Plasma Workspace KDE Plasma Workspace (failsafe session) Cinnamon Cinnamon (Software Rendering) • GNOME
Password.	GNOME Classic Custom MATE
Cancel	XTCE Session

GNOME shell starts like follows:



Installing KDE-Desktop:

Install KDE Desktop Environment by entering

yum -y groups install "KDE Plasma Workspaces"

Input a command like below after finishing installation:

```
# echo "exec startkde" >> ~/.xinitrc
# startx
```

KDE Desktop Environment starts like follows:

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Installing MATE Desktop Environment:

Install MATE Desktop Environment by entering.

yum --enablerepo=epel -y groups install "MATE Desktop"

Input a command like below after finishing installation:

```
# echo "exec /usr/bin/mate-session" >> ~/.xinitrc
# startx
```

MATE Desktop Environment starts.

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Installing Xfce Desktop Environment:

Install Xfce Desktop Environment by entering.

yum --enablerepo=epel -y groups install "Xfce"

Input a command like below after finishing installation:

```
# echo "exec /usr/bin/xfce4-session" >> ~/.xinitrc
# startx
```

Xfce Desktop Environment starts.



OTHER WAY TO DO IT:

Rather than make use of the hacking of a startx command into a .xinitrc file, it's probably better to tell Systemd that you want to boot into a graphical GUI vs. the terminal.

To accomplish this simply do the following:

```
$ sudo yum groupinstall "GNOME Desktop"
$ ln -sf /lib/systemd/system/runlevel5.target /etc/systemd/system/default.target
```

Then simply reboot.

The last bit will associate the runlevel 5 target as your default with respect to Systemd.

Doing it with Systemd

You can also use Systemd to accomplish this. This is arguably the better method since you're managing the state of the system directly through Systemd and its CLIs.

You can see what your current default target is:

```
$ sudo systemctl get-default
multi-user.target
```

And then change it to graphical:

```
$ sudo systemctl set-default
```

Targets

In Systemd the targets runlevel5.target and graphical.target are identical. So too are runlevel2.target and multi-user.target.

Runlevel	Target Units		Description
0	runlevel0.target, po	oweroff.target	Shut down and power off the system.
1	runlevel1.target, re	escue.target	Set up a rescue shell.
2	runlevel2.target, mu	ulti-user.target	Set up a non-graphical multi-user system.
3	runlevel3.target, mu	ulti-user.target	Set up a non-graphical multi-user system.
4	runlevel4.target, mu	ulti-user.target	Set up a non-graphical multi-user system.
5	runlevel5.target, gi	raphical.target	Set up a graphical multi-user system.
6	runlevel6.target, re	eboot.target	Shut down and reboot the system.

RHEL / CentOS Linux Install Core Development Tools Automake, Gcc (C/C++), Perl, Python & Debuggers

Q. How do I install all developer tools such as GNU GCC C/C++ compilers, make and others, after installing CentOS or RHEL or Fedora Linux from a shell prompt?

You need to install 'Development Tools' group on RHEL/CentOS/Fedora/Scientific/Red Hat Enterprise Linux. These tools include core development tools such as automake, gcc, perl, python, and debuggers which is required to compile software and build new rpms:

- 1. flex
- 2. gcc c/c++ compiler
- 3. redhat-rpm-config
- 4. strace
- 5. rpm-build
- 6. make
- 7. pkgconfig
- 8. gettext
- 9. automake
- 10. strace64
- 11. gdb
- 12. bison
- 13. libtool
- 14. autoconf
- 15. gcc-c++ compiler
- 16. binutils and all dependencies.

Installation:

Open the terminal or login over ssh session and type the following command as root user:

```
# yum groupinstall 'Development Tools'
```

Sample outputs that follows:

```
Loading "fastestmirror" plugin
Loading mirror speeds from cached hostfile
* base: mirror.steadfast.net
* updates: dist1.800hosting.com
* addons: centos.mirrors.tds.net
* extras: dist1.800hosting.com
Setting up Group Process
Loading mirror speeds from cached hostfile
* base: mirror.steadfast.net
* updates: dist1.800hosting.com
* addons: centos.mirrors.tds.net
* extras: dist1.800hosting.com
Package make - 1:3.81-3.el5.i386 already installed and latest version
Package gettext - 0.14.6-4.el5.i386 already installed and latest version
Package binutils - 2.17.50.0.6-6.el5.i386 already installed and latest version
Resolving Dependencies
--> Running transaction check
---> Package automake.noarch 0:1.9.6-2.1 set to be updated
---> Package frysk.i686 0:0.0.1.2008.03.19.rh1-1.el5 set to be updated
--> Processing Dependency: libgcj.so.7rh for package: frysk
--> Processing Dependency: glib-java >= 0.2.6 for package: frysk
---> Package autoconf.noarch 0:2.59-12 set to be updated
--> Processing Dependency: imake for package: autoconf
---> Package rcs.i386 0:5.7-30.1 set to be updated
---> Package strace.i386 0:4.5.16-1.el5.1 set to be updated
---> Package redhat-rpm-config.noarch 0:8.0.45-24.el5 set to be updated
---> Package elfutils.i386 0:0.125-3.el5 set to be updated
--> Processing Dependency: libdw.so.1 for package: elfutils
. . . . . . . . . . .
. . . .
Transaction Summary
_____
Install 105 Package(s)
Update 0 Package(s)
        0 Package(s)
Remove
Total download size: 127 M
Is this ok [y/N]: y
Downloading Packages:
00:12
01:03
00:10
00:03
00:11
```

Now you can compile and use any application on your system.

Verification

To display Gnu gcc/c/c++ compiler version type:

\$ gcc --version

Sample outputs:

gcc (GCC) 4.4.7 20120313 (Red Hat 4.4.7-4) Copyright (C) 2010 Free Software Foundation, Inc. This is free software; see the source for copying conditions. There is NO warranty; not even for MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE.

How do I list all currently running services in Fedora / RHEL / CentOS Linux server?

There are various ways and tools to find and list all running services under Fedora / RHEL / CentOS Linux systems.

```
service command - list running services
```

The syntax is as follows for CentOS/RHEL 6.x and older (pre systemd):

```
service --status-all
service --status-all | more
service --status-all | grep ntpd
service --status-all | less
```

Print the status of any service. To print the status of apache (httpd) service:

service httpd status

List all known services (configured via SysV)

chkconfig --list

List service and their open ports

netstat -tulpn

Turn on / off service

```
ntsysv
chkconfig service off
chkconfig service on
chkconfig httpd off
chkconfig ntpd on
```

ntsysv is a simple interface for configuring runlevel services which are also configurable through chkconfig. By default, it configures the current runlevel. Just type ntsysv and select service you want to run.

A note about RHEL/CentOS 7.x with systemd

If you are using systemd based distro such as Fedora Linux v22/23/24 or RHEL/CentOS Linux 7.x+. Try the following command to list running services using the systemctl command. It control the systemd system and service manager.

To list systemd services on CentOS/RHEL 7.x+ use

The syntax is:

```
systemctl
systemctl | more
systemctl | grep httpd
systemctl list-units --type service
systemctl list-units --type mount
```

To list all services:

systemctl list-unit-files

Sample outputs:

[vivek@centos7 ~]\$ systemctl list-unit-files	
UNIT FILE	STATE
proc-sys-fs-binfmt_misc.automount	static
dev-hugepages.mount	static
dev-mqueue.mount	static
proc-sys-fs-binfmt_misc.mount	static
sys-fs-fuse-connections.mount	static
sys-kernel-config.mount	static
sys-kernel-debug.mount	static
tmp.mount	disabled
brandbot.path	disabled
systemd-ask-password-console.path	static
systemd-ask-password-plymouth.path	static
systemd-ask-password-wall.path	static
session-1.scope	static
auditd.service	enabled
autovt@.service	disabled
blk-availability.service	disabled
brandbot.service	static
console-getty.service	disabled
console-shell.service	disabled
container-getty@.service	static
cpupower.service	disabled
crond.service	enabled
dbus-org.freedesktop.hostnamel.service	static
dbus-org.freedesktop.localel.service	static
dbus-org.freedesktop.login1.service	static
dbus-org.freedesktop.machine1.service	static
dbus-org.freedesktop.network1.service	invalid
dbus-org.freedesktop.NetworkManager.service	enabled
dbus-org.freedesktop.nm-dispatcher.service	enabled
dbus-org.freedesktop.timedate1.service	static
dbus.service	static
debug-shell.service	disabled

above image shows List all units installed on the CentOS /RHEL 7 systemd based system, along with their current states

To view processes associated with a particular service (cgroup), you can use the systemd-cgtop command. Like the top command, systemd-cgtop lists running processes based on their service:

systemd-cgtop

Sample outputs:

Path	Tasks	*CPU	Memory	Input/s
Output/s			2010000	1997
	100		1000 200	
1	85	0.3	240.1M	T .
-	2	- F 19		
/system.silce/NetworkManager.service	4	1.00	0.00	7.
/system_slice/auditd_service	3	121	-	
-	÷			
/system.slice/crond.service	1	-	-	
-				
/system.slice/dbus.service	1		-	
/system.slice/lvm2-lvmetad.service	1		-	
/system.slice/polkit.service	1	121	12	-
/system.slice/postfix.service	3	(m)	-	-
/system.slice/rsyslog.service	1	-	-	
/system.slice/sshd.service	1		. 7	75
-				
/system.slice/tty.slice/getty@tty1.service	1	-	-	-
-		19424	125	141
/system.sitce/systemu-jodinaid.selvice	1		-	_
/system_slice/systemd=logind_service	1	-		_
-				
/system.slice/systemd-udevd.service	1	-		
-				
/system.slice/tuned.service	1	12		
-				
/system.slice/wpa_supplicant.service	1	-	-	
/user.slice/user-0.slice/session-2.scope	1	1.000	-	-
/user.slice/user-1000.slice/session-1.scope	4		-	
-				

To list SysV services only on CentOS/RHEL 7.x+ use (does not include native systemd services)

chkconfig --list

Sample outputs:

[vive	k@centos	7 -]\$ chkc	onfig -	-list				
Note:	This ou systemd systemd	tput shows services. configura	SysV so SysV co tion.	ervices o onfigura	only and tion dat	does no a might	t include be overr	a native idden by native
	If you To see 'system	want to li services e ctl list-d	st syste nabled (ependen)	amd serv on partic cies [ta:	ices use cular ta rget]'.	'system rget use	ctl list	-unit-files'.
netco netwo	nsole rk	0:off 0:off	1:off 1:off	2:off 2:on	3:off 3:on	4:off 4:on	5:off 5:on	6:off 6:off
netwo	rk	0:off	1:off	2:on	3:on	4:on	5:on	6:off

Fig.02: List Sysv based services on systemd

FIREWALL HOW TO:

https://www.digitalocean.com/community/tutorials/how-to-set-up-a-firewall-using-firewalld-on-centos-7

References

- https://wiki.centos.org/Documentation
- https://www.centos.org/docs/5/
- https://wiki.centos.org/Manuals/ReleaseNotes/CentOS7
- Install Gnome GUI on CentOS 7 / RHEL 7
- 8.3. WORKING WITH SYSTEMD TARGETS

Documentation How To guide for CentOS

CentOS versions 2 - 5

CentOS version 7

CentOS 7 is fully based on RedHat the detail documentation, examples and system administration guides are located here:CentOS 7 full documention

Read Getting started with centos online: https://riptutorial.com/centos/topic/7640/getting-startedwith-centos

Credits

S. No	Chapters	Contributors
1	Getting started with centos	Community, Krasimir Vatchinsky