How do I add cron job under Linux or UNIX like operating system?  
  
Cron allows Linux and Unix users to run commands or scripts at a given date and time. You can schedule scripts to be executed periodically. Cron is one of the most useful tool in a Linux or UNIX like operating systems. It is usually used for sysadmin jobs such as backups or cleaning /tmp/ directories and more. The cron service (daemon) runs in the background and constantly checks the /etc/crontab file, and /etc/cron.\*/ directories. It also checks the /var/spool/cron/ directory.

| **Tutorial details** | |
| --- | --- |
| Difficulty level | [Intermediate](https://www.cyberciti.biz/faq/tag/intermediate/) |
| Root privileges | [Yes](https://www.cyberciti.biz/faq/how-can-i-log-in-as-root/) |
| Requirements | Linux terminal |
| Category | [Processes Management](https://www.cyberciti.biz/faq/how-do-i-add-jobs-to-cron-under-linux-or-unix-oses/#Processes_Management) |
| OS compatibility | [FreeBSD](https://www.cyberciti.biz/faq/category/freebsd/) • [Linux](https://www.cyberciti.biz/faq/category/linux/) • [macOS](https://www.cyberciti.biz/faq/category/mac-os-x/) • NetBSD • [OpenBSD](https://www.cyberciti.biz/faq/category/openbsd/) • [Unix](https://www.cyberciti.biz/faq/category/unix/) • WSL |
| Est. reading time | 8 minutes |

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How to use crontab command for cron jobs

[](https://www.cyberciti.biz/faq/category/unix/)

You need to use the crontab command to edit/create, install, deinstall or list the cron jobs in Vixie Cron. Each user can have their own crontab file, and though these are files in /var/spool/cron/crontabs, they are not intended to be edited directly. You need to use crontab command for editing or setting up your own cron jobs.

Types of cron configuration files

There are different types of configuration files:

1. **The UNIX / Linux system crontab**: Usually, used by system services and critical jobs that requires root like privileges. The sixth field (see below for field description) is the name of a user for the command to run as. This gives the system crontab the ability to run commands as any user.
2. **The user crontabs**: User can install their own cron jobs using the crontab command. The sixth field is the command to run, and all commands run as the user who created the crontab

**Note**: This faq features cron implementations written by Paul Vixie and included in many Linux distributions and Unix like systems such as in the popular 4th BSD edition. The syntax is compatible with various implementations of crond.

How Do I install or create or edit my own cron jobs?

To edit or create your own crontab file, type the following command at the UNIX / Linux shell prompt:  
$ crontab -e

Do I have to restart cron after changing the crontable file?

No. Cron will examine the modification time on all crontabs and reload those which have changed. Thus cron need not be restarted whenever a crontab file is modified.

Syntax of crontab (field description)

The syntax is:

1 2 3 4 5 /path/to/command arg1 arg2

OR

1 2 3 4 5 /root/backup.sh

Where,

* 1: Minute (0-59)
* 2: Hours (0-23)
* 3: Day (0-31)
* 4: Month (0-12 [12 == December])
* 5: Day of the week(0-7 [7 or 0 == sunday])
* /path/to/command – Script or command name to schedule

Easy to remember format:

\* \* \* \* \* command to be executed

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| | | | |

| | | | ----- Day of week (0 - 7) (Sunday=0 or 7)

| | | ------- Month (1 - 12)

| | --------- Day of month (1 - 31)

| ----------- Hour (0 - 23)

------------- Minute (0 - 59)

Your cron job looks as follows for **system jobs**:

1 2 3 4 5 USERNAME /path/to/command arg1 arg2

OR

1 2 3 4 5 USERNAME /path/to/script.sh

Example: Run backup cron job script

If you wished to have a script named /root/backup.sh run every day at 3am, your crontab entry would look like as follows. First, install your cronjob by running the following command:  
# crontab -e  
Append the following entry:

0 3 \* \* \* /root/backup.sh

Save and close the file.

More examples

To run /path/to/command five minutes after midnight, every day, enter:

5 0 \* \* \* /path/to/command

Let us run /path/to/script.sh at 2:15pm on the first of every month, enter:

15 14 1 \* \* /path/to/script.sh

In this example, I am running /scripts/phpscript.php at 10 pm on weekdays, enter:

0 22 \* \* 1-5 /scripts/phpscript.php

Execute /root/scripts/perl/perlscript.pl at 23 minutes after midnight, 2am, 4am …, everyday, enter:

23 0-23/2 \* \* \* /root/scripts/perl/perlscript.pl

Want to run Unix command say /path/to/unixcommand at 5 after 4 every Sunday? enter:

5 4 \* \* sun /path/to/unixcommand

How do I use operators?

An operator allows you to specifying multiple values in a field. There are three operators:

1. **The asterisk (\*)**: This operator specifies all possible values for a field. For example, an asterisk in the hour time field would be equivalent to every hour or an asterisk in the month field would be equivalent to every month.
2. **The comma (,)** : This operator specifies a list of values, for example: “1,5,10,15,20, 25”.
3. **The dash (-)** : This operator specifies a range of values, for example: “5-15” days , which is equivalent to typing “5,6,7,8,9,….,13,14,15” using the comma operator.
4. **The separator (/)** : This operator specifies a step value, for example: “0-23/” can be used in the hours field to specify command execution every other hour. Steps are also permitted after an asterisk, so if you want to say every two hours, just use \*/2.

How do I disable email output?

By default the output of a command or a script (if any produced), will be email to your local email account. To stop receiving email output from crontab you need to append >/dev/null 2>&1. For example:

0 3 \* \* \* /root/backup.sh >/dev/null 2>&1

To mail output to particular email account let us say vivek@nixcraft.in you need to define MAILTO variable as follows:

MAILTO="vivek@nixcraft.in"

0 3 \* \* \* /root/backup.sh >/dev/null 2>&1

See “[Disable The Mail Alert By Crontab Command](https://www.cyberciti.biz/faq/disable-the-mail-alert-by-crontab-command/)” for more information.

Task: List all your cron jobs

Type the following command:  
# crontab -l  
# crontab -u username -l  
To remove or erase all crontab jobs use the following command:  
# Delete the current cron jobs #  
# crontab -r  
## Delete job for specific user. Must be run as root user ##  
# crontab -r -u username

Use special string to save time

Instead of the first five fields, you can use any one of eight special strings. It will not just save your time but it will improve readability.

|  |  |
| --- | --- |
| Special string | Meaning |
| @reboot | Run once, at startup. |
| @yearly | Run once a year, “0 0 1 1 \*”. |
| @annually | (same as @yearly) |
| @monthly | Run once a month, “0 0 1 \* \*”. |
| @weekly | Run once a week, “0 0 \* \* 0”. |
| @daily | Run once a day, “0 0 \* \* \*”. |
| @midnight | (same as @daily) |
| @hourly | Run once an hour, “0 \* \* \* \*”. |

Examples

Run ntpdate command every hour:

@hourly /path/to/ntpdate

Make a backup everyday:

@daily /path/to/backup/script.sh

More about /etc/crontab file and /etc/cron.d/\* directories

**/etc/crontab** is system crontabs file. Usually only used by root user or daemons to configure system wide jobs. All individual user must must use crontab command to install and edit their jobs as described above. /var/spool/cron/ or /var/cron/tabs/ is directory for personal user crontab files. It must be backup with users home directory.

Understanding Default /etc/crontab

Typical /etc/crontab file entries:

SHELL=/bin/bash

PATH=/sbin:/bin:/usr/sbin:/usr/bin

MAILTO=root

HOME=/

# run-parts

01 \* \* \* \* root run-parts /etc/cron.hourly

02 4 \* \* \* root run-parts /etc/cron.daily

22 4 \* \* 0 root run-parts /etc/cron.weekly

42 4 1 \* \* root run-parts /etc/cron.monthly

First, the environment must be defined. When you omit the SHELL line, /bin/sh is the default shell. Similarly, if PATH is not set, no default will be used. In other words, file locations need to be absolute. For example, instead of saying rsync, you need to use the full path: /usr/bin/local/rsync. Finally, when HOME is not set, cron will use the invoking users home directory. Therefore, I suggest you set up, SHELL, PATH, MAILTO, and HOME variable as per your needs.

Additionally, cron reads the files in /etc/cron.d/ directory. Usually system daemon such as sa-update or sysstat places their cronjob here. As a root user or superuser you can use following directories to configure cron jobs. You can directly drop your scripts here. The run-parts command run scripts or programs in a directory via /etc/crontab file:

|  |  |
| --- | --- |
| Directory | Description |
| /etc/cron.d/ | Put all scripts here and call them from /etc/crontab file. |
| /etc/cron.daily/ | Run all scripts once a day |
| /etc/cron.hourly/ | Run all scripts once an hour |
| /etc/cron.monthly/ | Run all scripts once a month |
| /etc/cron.weekly/ | Run all scripts once a week |

How do I use above directories to put my own scripts or jobs?

Here is a sample shell script called clean.cache. This script is created to clean up cached files every 10 days. This script is directly created at /etc/cron.daliy/ directory. In other words create a text file called /etc/cron.daily/clean.cache as follows.

*#!/bin/bash*

*# A sample shell script to clean cached file from lighttpd web server*

CROOT="/tmp/cachelighttpd/"

*# Clean files every $DAYS*

DAYS=10

*# Web server username and group name*

LUSER="lighttpd"

LGROUP="lighttpd"

*# Okay, let us start cleaning as per $DAYS*

**/**usr**/**bin**/find** ${CROOT} -type f -mtime +${DAYS} **|** **xargs** -r **/**bin**/rm**

*# Failsafe*

*# if directory deleted by some other script just get it back*

**if** **[** **!** -d $CROOT **]**

**then**

**/**bin**/mkdir** -p $CROOT

**/**bin**/chown** ${LUSER}:${LGROUP} ${CROOT}

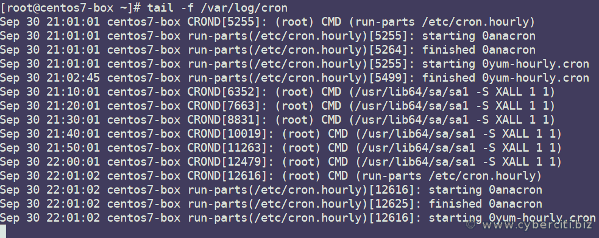
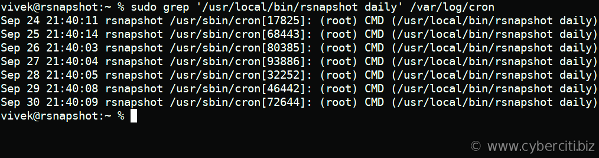
**fi**

Save and close the file. Set the permissions using the chmod command:  
# chmod +x /etc/cron.daily/clean.cache

How do I backup installed cron jobs entries?

Simply type the following command to backup your cronjobs to a nas server mounted at /nas01/backup/cron/users.root.bakup directory:  
# crontab -l > /nas01/backup/cron/users.root.bakup  
# crontab -u userName -l > /nas01/backup/cron/users.userName.bakup

crond and cron jobs log file

You can use the [cat command](https://www.cyberciti.biz/faq/linux-unix-appleosx-bsd-cat-command-examples/?utm_source=Linux_Unix_Command&utm_medium=faq&utm_campaign=nixcmd)/[grep command](https://www.cyberciti.biz/faq/howto-use-grep-command-in-linux-unix/?utm_source=Linux_Unix_Command&utm_medium=faq&utm_campaign=nixcmd)/tail command to view crond log file. For example, on a CentOS 7 Linux on can use the following commands:  
# cat /var/log/cron  
# tail -f /var/log/cron  
# grep "my-script.sh"  
# tail -f /var/log/cron  
  
Find out if daily backups jobs running or not on FreeBSD Unix server:  
$ sudo grep '/usr/local/bin/rsnapshot daily' /var/log/cron  
  
On modern **Linux distro** one can use the systemctl command or journalctl command:  
$ sudo systemctl status cron  
$ sudo journalctl -u cron  
$ sudo journalctl -u cron | grep backup-script.sh

Conclusion

You studied about cron, cron jobs and crontab, and how to use them on Linux and Unix like systems. For more information please see the following documentation using the [man command](https://bash.cyberciti.biz/guide/Man_command?utm_source=Linux_Unix_Command&utm_medium=faq&utm_campaign=nixcmd) or [help command](https://bash.cyberciti.biz/guide/Help_command?utm_source=Linux_Unix_Command&utm_medium=faq&utm_campaign=nixcmd):  
$ man 8 cron  
$ man 1 crontab  
$ man 5 crontab  
$ man 8 run-parts