



Software Management

Linux Essentials



TRAINING
CENTER



Packages, Package Managers, Repositories

- **Package** is linux way of naming application
- **Package manager** is software that handle the process of installing, maintaining, and uninstalling these packages
- YUM is CentOS default package manager
- **Repository** is a central database of software packages.

```
[ec2-user@ip-172-31-45-199 ~]$ yum --version
4.2.17
  Installed: dnf-0:4.2.17-6.el8.noarch at Thu 23 Apr 2020 05:14:53 AM GMT
  Built      : Red Hat, Inc. <http://bugzilla.redhat.com/bugzilla> at Tue 18 Feb 2020 01:20:38 PM GMT

  Installed: rpm-0:4.14.2-37.el8.x86_64 at Thu 23 Apr 2020 05:14:01 AM GMT
  Built      : Red Hat, Inc. <http://bugzilla.redhat.com/bugzilla> at Fri 21 Feb 2020 01:46:44 PM GMT
[ec2-user@ip-172-31-45-199 ~]$
```

Yum repository configuration files

/etc/yum.conf

```
[main]
gpgcheck=1
installonly_limit=3
clean_requirements_on_remove=True
best=True
skip_if_unavailable=False
~
~
~
~
~
~
~
~
~
~
"/etc/yum.conf" 6L, 108C
```

• /etc/yum.repos.d/repo_name.repo

```
[rhel-8-appstream-rhui-debug-rpms]
name=Red Hat Enterprise Linux 8 for $basearch - AppStream from RHUI (Debug RPMs)
mirrorlist=https://rhui3.REGION.aws.ce.redhat.com/pulp/mirror/content/dist/rhel8
/rhui/8/$basearch/appstream/debug
enabled=0
gpgcheck=1
gpgkey=file:///etc/pki/rpm-gpg/RPM-GPG-KEY-redhat-release
sslverify=1
sslclientkey=/etc/pki/rhui/content-rhel8.key
sslclientcert=/etc/pki/rhui/product/content-rhel8.crt
sslcacert=/etc/pki/rhui/cdn.redhat.com-chain.crt

[rhel-8-appstream-rhui-rpms]
name=Red Hat Enterprise Linux 8 for $basearch - AppStream from RHUI (RPMs)
mirrorlist=https://rhui3.REGION.aws.ce.redhat.com/pulp/mirror/content/dist/rhel8
/rhui/8/$basearch/appstream/os
enabled=1
gpgcheck=1
gpgkey=file:///etc/pki/rpm-gpg/RPM-GPG-KEY-redhat-release
sslverify=1
sslclientkey=/etc/pki/rhui/content-rhel8.key
sslclientcert=/etc/pki/rhui/product/content-rhel8.crt
sslcacert=/etc/pki/rhui/cdn.redhat.com-chain.crt
```

Yum basic commands

`yum install package_name` - installs package and its dependencies

```
[ec2-user@ip-172-31-45-199 ~]$ sudo yum install nano
Last metadata expiration check: 0:30:54 ago on Tue 16 Jun 2020 09:01:33 AM UTC.
Dependencies resolved.
=====
Package                Architecture          Version               Repository            Size
=====
Installing:
 nano                  x86_64                2.9.8-1.el8           rhel-8-baseos-rhui-rpms 580 k
=====
Transaction Summary
=====
Install 1 Package

Total download size: 580 k
Installed size: 2.2 M
Is this ok [y/N]: y
Downloading Packages:
nano-2.9.8-1.el8.x86_64.rpm                                4.0 MB/s | 580 kB      00:00
-----
Total                                                       3.1 MB/s | 580 kB      00:00
Running transaction check
Transaction check succeeded.
Running transaction test
Transaction test succeeded.
Running transaction
  Preparing      :                                1/1
  Installing     : nano-2.9.8-1.el8.x86_64        1/1
  Running scriptlet: nano-2.9.8-1.el8.x86_64        1/1
  Verifying      : nano-2.9.8-1.el8.x86_64        1/1

Installed:
  nano-2.9.8-1.el8.x86_64

Complete!
[ec2-user@ip-172-31-45-199 ~]$
```

Yum basic commands

`yum remove package_name` - removes package and its dependencies

```
[ec2-user@ip-172-31-45-199 ~]$ sudo yum remove nano
Dependencies resolved.
=====
Package                Architecture          Version               Repository            Size
=====
Removing:
 nano                  x86_64                2.9.8-1.el8          @rhel-8-baseos-rhui-rpms  2.2 M
Transaction Summary
=====
Remove 1 Package

Freed space: 2.2 M
Is this ok [y/N]: y
Running transaction check
Transaction check succeeded.
Running transaction test
Transaction test succeeded.
Running transaction
  Preparing                :                               1/1
  Running scriptlet: nano-2.9.8-1.el8.x86_64                1/1
  Erasing                : nano-2.9.8-1.el8.x86_64          1/1
  Running scriptlet: nano-2.9.8-1.el8.x86_64                1/1
  Verifying               : nano-2.9.8-1.el8.x86_64          1/1

Removed:
 nano-2.9.8-1.el8.x86_64

Complete!
[ec2-user@ip-172-31-45-199 ~]$
```

Yum basic commands

`yum check-update` - lists installed packages which updates available

```
[ec2-user@ip-172-31-45-199 ~]$ sudo yum check-update
Last metadata expiration check: 0:39:59 ago on Tue 16 Jun 2020 09:01:33 AM UTC.

bind-export-libs.x86_64                32:9.11.13-5.el8_2                rhel-8-baseos-rhui-rpms
cloud-init.noarch                      18.5-12.el8_2.2                   rhel-8-appstream-rhui-rpms
coreutils.x86_64                       8.30-7.el8_2.1                    rhel-8-baseos-rhui-rpms
coreutils-common.x86_64               8.30-7.el8_2.1                    rhel-8-baseos-rhui-rpms
dnf-plugin-subscription-manager.x86_64 1.26.17-1.el8_2                    rhel-8-baseos-rhui-rpms
gnutls.x86_64                         3.6.8-10.el8_2                    rhel-8-baseos-rhui-rpms
initscripts.x86_64                    10.00.6-1.el8_2.1                 rhel-8-baseos-rhui-rpms
insights-client.noarch                 3.0.13-1.el8_1                    rhel-8-appstream-rhui-rpms
kernel.x86_64                         4.18.0-193.6.3.el8_2              rhel-8-baseos-rhui-rpms
kernel-core.x86_64                    4.18.0-193.6.3.el8_2              rhel-8-baseos-rhui-rpms
kernel-modules.x86_64                 4.18.0-193.6.3.el8_2              rhel-8-baseos-rhui-rpms
kernel-tools.x86_64                   4.18.0-193.6.3.el8_2              rhel-8-baseos-rhui-rpms
kernel-tools-libs.x86_64               4.18.0-193.6.3.el8_2              rhel-8-baseos-rhui-rpms
microcode_ctl.x86_64                  4:20191115-4.20200602.2.el8_2     rhel-8-baseos-rhui-rpms
openldap.x86_64                       2.4.46-11.el8_1                   rhel-8-baseos-rhui-rpms
python3-perf.x86_64                    4.18.0-193.6.3.el8_2              rhel-8-baseos-rhui-rpms
python3-subscription-manager-rhsm.x86_64 1.26.17-1.el8_2                    rhel-8-baseos-rhui-rpms
python3-syspurpose.x86_64              1.26.17-1.el8_2                    rhel-8-baseos-rhui-rpms
python3-unbound.x86_64                 1.7.3-11.el8_2                    rhel-8-appstream-rhui-rpms
rh-amazon-rhui-client.noarch            3.0.28-1.el8_1                    rhui-client-config-server-8
rhnsd.x86_64                           5.0.35-3.module+el8+2754+6a08e8f4 rhel-8-appstream-rhui-rpms
selinux-policy.noarch                   3.14.3-41.el8_2.4                 rhel-8-baseos-rhui-rpms
selinux-policy-targeted.noarch           3.14.3-41.el8_2.4                 rhel-8-baseos-rhui-rpms
subscription-manager.x86_64              1.26.17-1.el8_2                    rhel-8-baseos-rhui-rpms
subscription-manager-rhsm-certificates.x86_64 1.26.17-1.el8_2                    rhel-8-baseos-rhui-rpms
tzdata.noarch                          2020a-1.el8                        rhel-8-baseos-rhui-rpms
unbound-libs.x86_64                     1.7.3-11.el8_2                    rhel-8-appstream-rhui-rpms
[ec2-user@ip-172-31-45-199 ~]$
```

Yum basic commands

`yum update package_name` - updates package and its dependencies

```
[ec2-user@ip-172-31-45-199 ~]$ sudo yum update rhnsd
Last metadata expiration check: 0:44:02 ago on Tue 16 Jun 2020 09:01:33 AM UTC.
Dependencies resolved.
=====
Package                Architecture    Version                               Repository        Size
=====
Upgrading:
rhnsd                  x86_64          5.0.35-3.module+el8+2754+6a08e8f4    rhel-8-appstream-rhui-rpms 51 k
=====
Transaction Summary
=====
Upgrade 1 Package

Total download size: 51 k
Is this ok [y/N]: y
Downloading Packages:
rhnsd-5.0.35-3.module+el8+2754+6a08e8f4.x86_64.rpm                433 kB/s | 51 kB    00:00
-----
Total                                                                335 kB/s | 51 kB    00:00
Running transaction check
Transaction check succeeded.
Running transaction test
Transaction test succeeded.
Running transaction
  Preparing                :                               1/1
  Running scriptlet: rhnsd-5.0.35-3.module+el8+2754+6a08e8f4.x86_64 1/1
  Upgrading           : rhnsd-5.0.35-3.module+el8+2754+6a08e8f4.x86_64 1/2
  Running scriptlet: rhnsd-5.0.35-3.module+el8+2754+6a08e8f4.x86_64 1/2
  Running scriptlet: rhnsd-5.0.35-3.module+el8.1.0+3455+3ddf2832.x86_64 2/2
  Cleanup             : rhnsd-5.0.35-3.module+el8.1.0+3455+3ddf2832.x86_64 2/2
  Running scriptlet: rhnsd-5.0.35-3.module+el8.1.0+3455+3ddf2832.x86_64 2/2
  Verifying           : rhnsd-5.0.35-3.module+el8+2754+6a08e8f4.x86_64 1/2
  Verifying           : rhnsd-5.0.35-3.module+el8.1.0+3455+3ddf2832.x86_64 2/2

Upgraded:
rhnsd-5.0.35-3.module+el8+2754+6a08e8f4.x86_64

Complete!
[ec2-user@ip-172-31-45-199 ~]$
```

Yum basic commands

`yum repolist all` - lists all enabled and disabled yum repositories

```
[ec2-user@ip-172-31-45-199 ~]$ sudo yum repolist all
repo id                                repo name                                status
codeready-builder-for-rhel-8-rhui-debug-rpms  Red Hat CodeReady Linux Builder for RHEL 8 x86_64 (Debug RPMs) from R disabled
codeready-builder-for-rhel-8-rhui-rpms        Red Hat CodeReady Linux Builder for RHEL 8 x86_64 (RPMs) from RHUI disabled
codeready-builder-for-rhel-8-rhui-source-rpms  Red Hat CodeReady Linux Builder for RHEL 8 x86_64 (Source RPMs) from disabled
rhel-8-appstream-rhui-debug-rpms             Red Hat Enterprise Linux 8 for x86_64 - AppStream from RHUI (Debug RP disabled
rhel-8-appstream-rhui-rpms                   Red Hat Enterprise Linux 8 for x86_64 - AppStream from RHUI (RPMs) enabled
rhel-8-appstream-rhui-source-rpms            Red Hat Enterprise Linux 8 for x86_64 - AppStream from RHUI (Source R disabled
rhel-8-baseos-rhui-debug-rpms                 Red Hat Enterprise Linux 8 for x86_64 - BaseOS from RHUI (Debug RPMs) disabled
rhel-8-baseos-rhui-rpms                       Red Hat Enterprise Linux 8 for x86_64 - BaseOS from RHUI (RPMs) enabled
rhel-8-baseos-rhui-source-rpms                Red Hat Enterprise Linux 8 for x86_64 - BaseOS from RHUI (Source RPMs disabled
rhui-client-config-server-8                   Red Hat Update Infrastructure 3 Client Configuration Server 8 enabled
[ec2-user@ip-172-31-45-199 ~]$
```


Yum basic commands

`yum history` - shows all past yum command transactions

```
[ec2-user@ip-172-31-45-199 ~]$ sudo yum history
```

ID	Command line	Date and time	Action(s)	Altered
7	update	2020-06-16 09:48	I, U	27 EE
6	update rhnsd	2020-06-16 09:45	Upgrade	1
5	remove nano	2020-06-16 09:37	Removed	1
4	install nano	2020-06-16 09:32	Install	1
3	-C -y --noplugins remove	2020-04-23 05:19	Removed	14 EE
2	-C -y --noplugins remove	2020-04-23 05:19	Removed	1
1		2020-04-23 05:12	Install	421 EE

```
[ec2-user@ip-172-31-45-199 ~]$
```

Other yum basic commands

- **yum update** – updates your CentOS system
- **yum grouplist** – lists all available software package groups
- **yum groupinstall/groupupdate/groupremove** *'your_group'* – installs/updates/removes selected software package group
- **yum clean all** – cleans all cached files from enabled repository