

WHEN YOU NEED TO BE SURE



CyFlex® 6.3.24 and Above Installation and Update Instructions

Version 2

April 28, 2021

Developed by SGS North America, Inc.

Version History

Version	Date	Revision Description
1	04/20/2021	Initial publication for CyFlex 6.3.24 and above using yum as install method
2	04/28/2021	Removed reference to CYFLEX_SYNVER_SRC within the verify_testcell_config.sh as this is no longer needed for installing a cyflex version

Document Conventions

This document uses the following typographic and syntax conventions.

- Commands, command options, file names or any user-entered input appear in Courier type. Variables appear in Courier italic type.
Example: Select the `cmdapp-relVersion-buildVersion.zip` file....
- User interface elements, such as field names, button names, menus, menu commands, and items in clickable dropdown lists, appear in Arial bold type.
Example: **Type**: Click **Select Type** to display drop-down menu options.
- Cross-references are designated in Arial italics.
Example: Refer to *Figure 1*...

Related Documents

CyFlex documentation is available at <https://cyflex.com/>. View **Help & Docs** topics, **Release Info** topics or use the **Search** facility to find topics of interest.

For Cummins personnel, refer to the Cummins engineering wiki at:

<http://acizslpapp005.aciz.cummins.com:8005/display/glod/CyFlex+Documentation>.



Table of Contents

1	OVERVIEW	1
1.1	PURPOSE OF THIS DOCUMENT	1
1.2	WHERE TO FIND INSTALLATION SUPPORT	1
1.2.1	File to Install Scientific Linux and CyFlex	1
1.2.2	Installation Support Documents	2
2	INSTALLING CYFLEX FOR THE FIRST TIME	3
2.1	INSTALLATION REQUIREMENTS	3
2.2	INSTALLATION PROCEDURE STEPS.....	3
3	UPDATING CYFLEX	12
3.1	UPDATING THE CYFLEX VERSION	12
4	UPGRADING TO SL6.9 FROM A PREVIOUS VERSION	15

1 Overview

1.1 Purpose of this Document

This document describes how to:

- Install CyFlex for the first time
- Update individual CyFlex files
- Update to a newer CyFlex release
- Upgrade to SL6.9 from a previous SL version

1.2 Where to Find Installation Support

1.2.1 File to Install Scientific Linux and CyFlex

The installation file is available as follows:

- On the installation DVD (SL LiveDVD) or USB flash drive

@Note:

Although USB and USB2 are industry standards, there are variations between USB flash drives and not all work with all computers. If your SL flash drive fails to run the installation, contact SGS for the DVD. (Cummins customers can also install from the server named below.)

- For Cummins, at URL: <http://acdcslpapp1065.aciz.cummins.com/yum/>
 - Filename: `cyflex-sl69d31.iso`
 - Login (contact Site Admin for login credentials)

@Note:

The filename (above) is for SL 6.9 and installation version 31. The filename will change for subsequent versions of Scientific Linux and the installation, such as "sl610" and "d32".

- On Scientific Linux, you can use k3b software to burn the DVD

@Note:

`cyflex-sl69d31.iso` uses kernel-2.6.32-754-6.3 and the `acdc_repos` is installed

- For Cummins, using `rsync`:
 - `rsync -av rsync://acdcslpapp1065.aciz.cummins.com/sl69iso .`
 - After downloading the iso burn it to a DVD
 - On Scientific Linux, use k3b software to burn the DVD.

@Note:

`cyflex-sl69d31.iso` uses kernel-2.6.32-754-6.3 and the `acdc_repos` is installed

1.2.2 Installation Support Documents

This procedure, *CyFlex® 6.3.24 and Above Installation and Updates*, is available on the Cummins Engineering wiki at URL:

<http://acizslpapp005.aciz.cummins.com:8005/display/glod/CyFlex+6.3.24+and+Above+Installation+and+Updates>

The *SL6 Installation Procedure (DVD v31)* document is available with the installation DVD (SL LiveDVD) or USB flash drive, and at these locations:

- On the Cummins Engineering Wiki at URL:
<http://acizslpapp005.aciz.cummins.com:8005/pages/viewpage.action?pageId=907182091>
- At the URL mentioned [above](#) on page 1 where the `cyflex-sl69d31.iso` installation file is located

Note:

Accessing the Wiki and URL locations shown above require a Cummins account.

2 Installing CyFlex for the First Time

2.1 Installation Requirements

ⓘ Important:

Before installing CyFlex, confirm the machine is running a compatible Operating System (OS). Current CyFlex installations use Scientific Linux (SL) 6.9 or higher. CyFlex updates are available for SL6.9 or higher.

Determine the installed version of Scientific Linux:

1. Enter the following from a terminal window:

```
$ uname -r
```

2. View the output to determine the version of Scientific Linux installed on the system. Note the fourth number from the left, 754 in the output example below.

```
$ uname -r
```

```
2.6.32-754-6.3.el6.i686
```

- a. If the value of the fourth number returned is **not 754**, install Scientific Linux 6.9. Refer to *Section 4 Upgrading to SL6.9 from a Previous Version* on page 15.
- b. If the value of the fourth number returned is **754**, Scientific Linux 6.9 is installed. Proceed to execute the installation as described in *Section 2.2 Installation Procedure Steps* below.

Minimum requirements for CyFlex version 6.3 or higher are:

- Test cell computer with a Quad core processor
- 240 GB hard disk drive
- 8 GB RAM
- Network connection to the distribution server

2.2 Installation Procedure Steps

If setting up a new test cell, install Scientific Linux first. The SL installation steps are covered in a separate document titled, *SL6 Installation Procedure (DVD v31)*.

If an earlier version of CyFlex is already on the machine, update that version using the instructions in *Section 3 Updating CyFlex* on page 12.

ⓘ Important:

In the steps below that include a 3-digit CyFlex version number (6.3.x), enter the actual CyFlex version to be installed. Example: 6.3.24

Execute the following steps to install CyFlex version 6.3.24 and above:

1. Open a terminal window at the test cell.
2. Execute:

```
$ sudo yum clean all
```

```
$ sudo yum install cummins-cyflex.6.3.x
```

Example: `sudo yum install cummins-cyflex.6.3.24`

3. Set up the following directories:

- /cell
- /specs
- /data
- /esvd_data

@Note:

The directory /esvd_data is for emission test cells.

4. Perform either step a or step b.

If upgrading a test cell from ASSET to CyFlex or copying directories from another test cell, perform step a below.

Otherwise, perform step b.

- a. Copy the /cell, /specs, and /data directories from another test cell and create the same directories in the root directory.

ⓘ Important:

In the command lines below, replace the example test cell number, test cell (user) account and hostnames with the actual ones.

Below, `ctc-tc103` is the example hostname.

Enter the following:

```
$ sudo mkdir /cell
$ sudo mkdir /specs
$ sudo mkdir /data
$ sudo chown -R <testcell account>:users /cell
$ sudo chown -R <testcell account>:users /specs
$ sudo chown -R <testcell account>:users /data
$ sudo chmod -R g+rw /cell
$ sudo chmod -R g+rw /specs
$ sudo chmod -R g+rw /data
$ rsync -av --exclude '.svn' tc103@ctc-tc103:/cell/* /cell/.
$ rsync -av --exclude '.svn' tc103@ctc-tc103:/specs/* /specs/.
$ rsync -av --exclude '.svn' tc103@ctc-tc103:/data/* /data/.
$ sudo /cyflex/bin/mk_data_dirs_tc <testcell name or number>
```

Example: `$ sudo /cyflex/bin/mk_data_dirs_tc 305`

If the cell has an /esvd_data directory, enter the following:

```
$ sudo mkdir /esvd_data
$ sudo chown -R <testcell account>:users /esvd_data
$ sudo chmod -R g+rw /esvd_data
$ rsync -av --exclude '.svn' tc103@ctc-tc103:/esvd_data/* /esvd_data/.
```


@Note:

Distribution servers use the `rsync` transfer utility for updating an entire release which brings test cell (remote) and server (host) files into sync. `rsync` sends only the differences in files over the network, not the complete files thus speeding the update.

OR

- b. Install the `cell`, `/specs`, and `/data` directories. Enter the following:

```
$ sudo yum install cell.testcell
$ sudo yum install specs.testcell
$ sudo mkdir /data
$ sudo chmod a+rw /data
$ sudo /cyflex/bin/mk_data_dirs_tc <testcell name or number>
```

Example: `$ sudo /cyflex/bin/mk_data_dirs_tc 1`

- If step b was executed., copy the `/data/cell_map_location` file from your central server. You must know the login and IP address of your central server. Enter the following:

```
$ cd /data
$ sudo scp cslogin@cs_ipaddress:/data/cell_map_location .
```

where: `cslogin` is the central server login

`cs_ipaddress` is the central server IP address

- c. If the test cell is at CTC, copy these files to enable the Measurement and Testing Equipment (M&TE) feature for the electronic logbook: Otherwise skip this step. Enter the following:

```
$ cp /cyflex/specs.def/samples/mte.def /cell/mte.def
```

5. Set up version control of the `/cell` and `/specs` working directories on the test cell.

@Note:

The version control software (Subversion) operates using a server, which is configured separately by SGS-CyberMetrix.

- a. Identify the Subversion (SVN) server hostname for the test cell:

- i. At a terminal window, open the configuration script file. Enter the following:

```
$ sudo /usr/bin/nedit /etc/profile.d/cyflex.sh
```

- ii. Add a line at the start or end of the file for the SVN server.

- Add the following line for the OLY site:

```
$ export
SVN_SPEC_HOST="olyqnx6.ctgeng.engmfg.cummins.com/";
```

- Add the following line for all other sites:

```
$ export
SVN_SPEC_HOST="acdcs1papp1065.aciz.cummins.com:80/";
```

@Note:

This step is required before using the `specsbackup` script to backup files.

- b. Run the `specsbackup` script with the `init` argument Enter the following:

```
$ sudo /cyflex/cmds/specsbackup init
```

@ Important:

The `init` argument is required only the first time the script is run, such as for a new test cell or hard drive. When the `specsbackup` script is run with the `init` argument, the script creates a job in the `crontab` utility, scheduling a backup of the working directories to run nightly.

Usage for `specsbackup`:

version control specs and cell files

```
sudo specsbackup [ init | incr [ site cellname ] [ SVN server ] ] ]
```

Arguments:

- `init` is required first time it is run
- `incr` is required for incremental backup when site and cell name are specified
- `[site]` CTC, SEP, OLY, etc. is optional. The default is to read from `/cell/site_special`.
- `[cellname]` Test cell number is optional. The default is to read from `/cell/cell_name`.
- `[SVNserver]` Subversion server name or IP address is optional. The default is `$SVN_SPEC_HOST` as defined in the shell script `/etc/profile.d/cyflex.sh`.
- No argument: the backup is incremental.

The output displays the SVN server URL, site, cell, and user account name. A prompt asks, “**Do the above look correct?**”

- Select **Y** if the details in the output display are correct.
- Otherwise, select **N** and reenter the `specsbackup` command line with the necessary argument(s).

@Note:

If the `specsbackup` script does not start (is not found), it may have been inadvertently moved to another directory. Use the `which` command to find the script and then run the script again with the new path.

- c. Choose a Subversion action.

The `specsbackup` script invokes Subversion to check for an existing repository of the test cell on the server. If none exists, Subversion builds one. If a repository for that particular cell already exists, the script prompts for either of the following actions:

- i. Select **Y** to restore the `/cell` and `/specs` working directories from the SVN server repository.
For example, if the system worked perfectly when the repository was last updated, but since then the hard drive failed, restoring the directories is a viable option.
- OR
- ii. Select **N** to check all files (in the working directories) into Subversion.
The output lists the files in the SVN repository and gives their status – Subversion inserts a character at the start of each filename to indicate the following:
A indicates the file is added to the SVN repository.
M indicates a modified file in the SVN repository.
! indicates a file is not in the working directory (it was deleted, but not also deleted from the repository).
- d. Verify Subversion is set up on the test cell:
 - i. Enter the following to view the test cell “sandbox”. This is the current copy of all files on the SVN server.
Example:

```
$ cd /.cellspecs/CTC/204
```
 - ii. Display the status of working directories:
Enter the following to show only the files modified after they were last checked into Subversion:

```
$ svn status
```


Add the following argument to display file revision information:

```
$ svn status -v
```
- e. Add execution of the `specsbackup` file to the `crontab`.
 - i. Enter the following to back up the existing `/specs/usercron` file:

```
$ cp /specs/usercron /specs/usercron.bak
```
 - ii. Edit the `/specs/usercron` file to include the following line:

```
21 0 * * * /cyflex/cmds/specsbackup >>/dev/null  
2>>/dev/null
```
6. Verify the test cell is configured properly using the scripts below.
 - a. Run the script, `verify_testcell_config`:

```
$ verify_testcell_config.sh
```


The output shows the status of each setting: enabled (“Yes” or “No”) or not applicable (“N/A”).

Configuration	Comment(s)	Required or Optional
SRR module loaded	The Send Return Request software module contains routines used by CyFlex applications to communicate with each other.	Required
SRR RPM installed	Utility (Red-hat Package Manager) for installing, uninstalling, and managing the SRR software	Required
Cummins Mail RPM installed	RPM for Cummins email	Optional
ntpd RPM installed	RPM for the Network Time Protocol daemon, to synchronize date and time on the cell with the server(s)	Required
NVidia RPM loaded	RPM for the NVidia driver	Required if using NVidia
NVidia module loaded	NVidia video driver	Required if using NVidia
nouveau module removed	Nouveau video driver	Required if using Nouveau
Intel gfx module loaded	Intel video driver	Required if using the Intel graphics processor
CyFlex 6.3 upgrade RPM installed	RPM for CyFlex 6.3 and higher	Required
kernel-devel RPM installed	RPM for development kernel	Required
Rocketport driver RPM installed	RPM for RocketPort driver	Required if using RocketPort adapter
Rocketport module installed	Serial ports adapter driver	Required if using RocketPort adapter
Counter Timer module loaded	Provides low level periodic timer signals to the driver tasks and scheduler	Optional

Configuration	Comment(s)	Required or Optional
SVN_SPEC_HOST set	Indicates that the Subversion server hostname is identified in the shell script, cyflex.sh	Required
/cell/cell_name exists	Identifies the test cell name for SVN and other applications	Required
/cell/site_special exists	Identifies the test cell site for SVN and other applications	Required
SITE defined in /cell/site_special	The sys_start program reads this file to create site dependent string variables.	Required
/.cellspecs/<SITE>/<TEST_CELL> exists	Confirms the .cellspecs backup directory for directories under Subversion control is present on the test cell	Required
SVN_SPEC_HOST in /.cellspecs/"DAV"/<TEST_CELL>	Specifies the Subversion server hostname in the SVN backup directory	Required
All /data/ subdirs exist	Confirms needed subdirectories in the /data directory are present.	Required
All suid bits set correctly	Confirms that the suid bit is set for a setup programs. If you receive a NO for this, execute verify_testcell_config.sh with the -v argument for additional information about what executable does not have this set	Required
Qt 4 version installed	Version of Qt 4 installed on system	4.8.7
Qt 5 version installed	Version of Qt 5 installed on system	5.12.3

If the test cell should be configured differently, refer to the *SL6 Installation Procedure (DVD v31)* document or contact SGS CyberMetrix.

- b. If the test cell is configured to use MSU, run the checkMSUconfig script:

```
$ checkMSUconfig.sh
```

The output shows the status of each setting: enabled (“Yes” or “No”) or not applicable (“N/A”).

Configuration	Comment(s)	Required or Optional
/cell/site_special exists	File that includes information specific to the test cell site	Required
SITE defined in /cell/site_special	Identifies the test cell site for CyFlex applications	Required
/cell/cell_name exists	Identifies the test cell name	Required
/specs/extdatman.cummins.msu exists	This is a configuration file used by an application which transfers MSU data to the MSU database.	Required
SITE defined in /specs/extdatman.cummins.msu	Identifies the test cell site	Required
/data/utl/ready/<TEST_CELL> exists	Utilization data is stored in these directories before being transferred to the MSU Oracle database.	Required
Database connection made	Connection to the database is successful	Required
@STATE_CODES file found	Indicates where the @STATE_CODES are found per the file /data/cell_map_location	Required
@STATE_CODES host found	Identifies the server hostname in the file /data/cell_map_location	Required
@STATE_CODES file found	Identified the file location in the file /data/cell_map_location	Required
Unwanted directories present	The /data/utl/ready directory should only contain a subdirectory for the cell_name	Required
TestType variable valid	Valid if TestType variable contains a TestType string from the /data/test_type file Not valid if TestType variable is blank or a string not within the /data/test_type file	Required

Configuration	Comment(s)	Required or Optional
engine_group variable valid	Valid if engine_group variable contains an engine_group string from the /data/program_grp file Not valid if engine_group variable is blank or a string not within the /data/program_grp file	Required
VPI_milestone variable valid	Valid if VPI_milestone variable contains a vpi_phase string from the //data/vpi_phase file Not valid if VPI_milestone variable is blank or a string not within the /data/vpi_phase file	Required
EngineModel variable valid	Valid if EngineModel variable contains an engine model string from the /data/engine_model_list file Not valid if EngineModel variable is blank or a string not within the /data/engine_model_list file	Required

Refer to the Cummins wiki or contact SGS for help configuring MSU.

7. Start CyFlex. Enter:

```
go
```

This completes the CyFlex installation.

If you encounter issues starting CyFlex, run the following checks:

```
$ rpm -V cyflex-6.3-upgrade
```

These commands should not return anything. If they do and CyFlex will not start, contact SGS.

3 Updating CyFlex

3.1 Updating the CyFlex Version

Execute the following steps to upgrade an entire CyFlex version on the test cell to the most recent official release

1. Open a terminal window and enter the following to view the current CyFlex version on the test cell:

```
$ ver
```

Output similar to the following is displayed:

```
**** CYFLEX version of node tcnode10 ****
CYFLEX VERSION 6.2.9   2017-06-20  0:25:55
```

2. Capture new error logs:
 - a. Enter the following to exit applications (CyFlex, etc.) and terminate currently running processes:

```
$ slay_stuff
```

- b. Restart CyFlex. Enter:

```
go
```

- c. Enter the following to make backups of any error logs:

```
$ cd /data/errors/
```

```
$ cp error.log error.log.pre-up
```

```
$ mv cui.log.YYMMDD   cui.log.YYMMDD.pre-up
```

```
$ mv extdatman.msu.YYMMDD   extdatman.msu.YYMMDD.pre-up
```

Note:

Error logs can help determine whether any problems later resulted from upgrading the version. YYMMDD corresponds to the date of the latest `cui` and `extdatman` log files.

3. Enter the following to terminate CyFlex and running processes again:

```
$ slay_stuff
```

4. From a terminal window, enter the following to determine the version of Scientific Linux installed on the system:

```
$ uname -r
```

View the output to determine the version of Scientific Linux installed on the system. Note the fourth number from the left, 754 in the output example below.

```
$ uname -r
```

```
2.6.32-754-6.3.el6.i686
```

If the value of the fourth number returned is **not 754**, install Scientific Linux 6.9. Refer to Section 4 Upgrading to SL6.9 from a Previous Version on page 15.

- a. Restart CyFlex to verify everything is still working as intended after upgrading to SL6.9. Enter:

```
go
```

- b. Make backups of any error logs. Enter the following:

```
$ cd /data/errors/
```

```
$ cp error.log error.log.pre-up
```

```
$ mv cui.log.YYMMDD    cui.log.YYMMDD.pre-up
```

```
$ mv extdatman.msu.YYMMDD    extdatman.msu.YYMMDD.pre-up
```

Note:

Error logs can help determine whether any problems later resulted from upgrading the version or upgrading to SL6.9. YYMMDD corresponds to the date of the latest `cui` and `extdatman` log files.

- c. Terminate CyFlex and running processes again. Enter:

```
$ slay_stuff
```

- d. Compare error log files with previously captured error log files.

If the value of the fourth number returned is **754**, Scientific Linux 6.9 is installed, continue with the next steps.

5. Execute the following commands to install the latest version of `cyflex`:

Important:

In the step below that include a 3-digit CyFlex version number (6.3.x), enter the actual CyFlex version to be installed. Example: 6.3.24

```
$ sudo yum clean all
```

```
$ sudo yum install cummins-cyflex.6.3.x
```

Example:

```
$ sudo yum install cummins-cyflex.6.3.24
```

Note:

A cron job runs every 60 minutes to check for presence of the `msu_pnp` variable that indicates whether the MSU loading application is in use.

The `check_msu_loading.sh` file is installed in the `/etc/cron.hourly` directory.

The `check_msu_loading.sh` file checks to determine if the `ExternalDataManager` instance for MSU data loading is running. If not running, an instance of `ExternalDataManager` is started.

6. Type `y` in response to the `Is this ok [y/n]` prompt.

7. Enter the following to add the CyFlex menus:

```
$ /usr/local/bin/cyflex_setup_menus.sh
```

8. Reboot the system. Enter:

```
$ sudo reboot
```

9. Run the `mk_data_dirs_tc` program including the `testcell` name or number argument. Enter:

```
$ sudo /cyflex/bin/mk_data_dirs_tc <testcell name or number>
```

Example: `$ sudo /cyflex/bin/mk_data_dirs_tc 305`

10. If the test cell is at CTC, enter the following to copy these files to enable the M&TE feature for the electronic logbook:

```
$ cp /cyflex/specs.def/samples/mte.def /cell/mte.def
```

11. Verify the test cell is properly configured as described in step 4 on page 4 and step 5 on page 5 in *Section 2.2 Installation Procedure Steps*.

12. Start CyFlex to apply the update. Enter:

```
go
```

This completes the upgrade.

4 Upgrading to SL6.9 from a Previous Version

From a terminal window, execute the following steps to upgrade to SL6.9:

1. Enter the following to install:
 - a. `$ sudo yum install sl-local-69 acdc_repos`
 - b. Type `y` in response to the `Is this ok [y/n]` prompt.
 - c. `$ sudo yum --releasever=6.9 update sl-release`
 - d. Type `y` in response to the `Is this ok [y/n]` prompt.
 - e. `$ sudo rm /etc/yum.repos.d/sl.repo`
 - f. `$ sudo yum clean all`
 - g. `$ sudo yum install kernel-2.6.32-754.6.3* kernel-devel-2.6.32-754.6.3*`
 - h. Type `y` in response to the `Is this ok [y/n]` prompt.
2. Determine whether a Nvidia video card is installed. Enter the following:
`$ lspci | grep NVIDIA`
If a response is returned from the `lspci` command, the Nvidia card is installed.
 - a. Enter the following if a Nvidia card is installed and one or two monitors are in use:
`$ sudo yum install kmod-nvidia-340xx-340.106* nvidia-x11-drv-340xx*`
 - b. Enter the following if a Nvidia card is installed and three or four monitors are in use:
`$ sudo yum install kmod-nvidia-390xx nvidia-x11-drv-390xx`
3. Reboot the system. Enter:
`$ sudo reboot`
4. Enter the following to confirm that the 754 Kernel has been installed and is in use:
`$ uname -a`
The output of the above command should reflect kernel version 2.6.32-754.6.3. If the output does not reflect the correct version number for the kernel, make sure the `sudo yum install kernel-2.6.32-754.6.3* kernel-devel-2.6.32-754.6.3*` command was executed correctly.
5. Determine if the RocketPort RPM is installed. Enter the following:
`$ rpm -qa | grep rocketport-linux`
A returned response from the preceding command indicates the RocketPort is installed and should be updated for the new kernel version.
6. Update the RocketPort RPM for the new kernel. Enter the following:
`$ sudo yum update rocketport-linux`

If the `rocketport-linux` RPM is installed, there is no need to check for the RocketPort Infinity Express RPM. To check:

- a. Determine if the RocketPort Infinity Express RPM is installed. Enter the following:

```
$ rpm -qa | grep rp_infinity_express
```

A returned response from the preceding command indicates a RocketPort Infinity Express RPM is installed and should be updated for the new kernel version.

- b. Update the RocketPort Infinity Express RPM for the new kernel. Enter the following:

```
$ sudo yum reinstall rp_infinity_express
```

7. Enter the following if communicating with a PCAN adapter to ensure compatibility with the SL6.9 kernel:

```
$ sudo yum reinstall pcandriver
```

8. Enter the following if communicating with an EtherCAT device to ensure compatibility with the SL6.9 Kernel:

```
$ sudo yum install cyflex-ethercat
```

9. Reboot the system. Enter:

```
$ sudo reboot
```

10. Determine if the `cyflex-6.1-upgrade` RPM is installed, execute this command:

```
$ rpm -qa | grep cyflex-6.1-upgrade
```

If something is returned from the above command, the `cyflex-6.1-upgrade` RPM is installed.

- a. If the `cyflex-6.1-upgrade` RPM is installed, execute the following command to erase that RPM:

```
$ sudo yum erase cyflex-6.1-upgrade
```

11. Continue updating system files. Enter:

```
$ sudo yum --exclude=kernel* --exclude=cdk* update
```

12. Determine whether the correct version of `cdk` and `cdk-devel` is installed. Enter:

```
$ rpm -qa | grep cdk
```

If any of the `cdk` files listed have a version number of 5.0, enter the following:

```
$ sudo yum downgrade cdk cdk-devel
```