CyFlex® 6.3.x Installation and Update Instructions

Version 3

October 6, 2020

Developed by SGS North America, Inc.

Version History

Version	Date	Revision Description
1	8/31/2020	Initial publication for CyFlex 6.3.x
2	9/29/2020	Revised command string in Step 6 on page 20 in *Section 4, Upgrading to SL6.9 from a Previous Version*.
3	10/6/2020	Revise step 11-a on page 5 in *Section 2.2 Installation Procedure Steps* to add `exclude` option to `rsync` commands and added commands if an `/esvd_data` directory is present while performing an upgrade.

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 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.x Installation and Updates*, is available on the Cummins Engineering wiki at URL:

http://acizslpapp005.aciz.cummins.com:8005/display/glod/CyFlex+6.3.x+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 20.

   b. If the value of the forth 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 14.

ⓘ 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: 6.3.0

Execute the following steps to install CyFlex:

1. Open a terminal window at the test cell.

2. Remove any existing `cyflex` directory or symbolic links to the CyFlex version. Enter the following:

   ```
   $ cd /
   $ sudo rm cyflex
   ```

3. Make a directory for CyFlex version 6.3.x. Enter the following:
   ```
   $ sudo mkdir /cyflex.6.3.x
   ```

4. Change access permissions for the directory. Enter the following:
   ```
   $ sudo chmod a+rwx /cyflex.6.3.x
   ```

5. Create a symbolic link between the directories below. Enter the following:
   ```
   $ sudo ln -s /cyflex.6.3.x /cyflex
   ```

   The resulting output shows the created link:
   ```
   $ ls -l cyflex
   lrwxrwxrwx 1 root root 2015-02-21 14:13 cyflex -> cyflex.6.3.x
   ```

6. View the shell script `cyflex.sh` and edit it if necessary. Enter the following:
   ```
   $ cd /etc/profile.d/
   $ sudo nano cyflex.sh
   ```
   o To sync with the server (for example, `cmx-cyflex-dist`), the first line of the `cyflex.sh` file should include the IP address below:
      ```
      export CYFLEX_SYNCVER_SRC=143.222.168.98
      ```
   o To sync to a different server, use that server's IP address or hostname instead.

   ⓘ*Note:*

   > CyFlex.6.3.x versions are synced from the `cmx-cyflex-dist` (143.222.168.98) system. This is a different system from where previous version were sync'd.

7. Install CyFlex system files. Enter the following command:
   ```
   $ sudo yum install  cyflex-6.3-upgrade
   ```

8. Reboot the computer. Enter the following:
   ```
   $ sudo reboot
   ```

9. From a terminal window, synchronize the CyFlex version on the test cell with the version on the distribution server. Enter the following:
   ```
   $ sudo /usr/local/bin/syncver cyflex.6.3.x /cyflex.6.3.x
   ```
   where `cyflex.6.3.x` is the actual CyFlex version to be installed. Example: 6.3.0.

10. Set up the following directories:
    - `/cell`
    - `/specs`
    - `/data`
    - `/esvd_data`

    ⓘ*Note:*

    > The directory `/esvd_data` is for emission test cells.

11. 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
```

12. 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.

- o Add the following line for the OLY site:

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

- o Add the following line for all other sites:

```
$ export
SVN_SPEC_HOST="acdcslpapp1065.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
```

13. 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

Configuration	Comment(s)	Required or 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
`CYFLEX_SYNCVER_SRC` set	Identifies the IP address of the distribution server, for using the `syncver` command to upgrade CyFlex versions	Required
`SVN_SPEC_HOST` set	Indicates that the Subversion server hostname is identified in the shell script, cyflex.sh	Required

Configuration	Comment(s)	Required or Optional
`/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 `/spec/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 JAS - /data/cell_map_location file does not exist	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

Configuration	Comment(s)	Required or Optional
`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
`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` l variable is blank or a string not within the `/data/engine_model_list` file	Required

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

14. 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, run the install command again from step 5 on page 17 for the rpm that is not installed. After this, attempt to start CyFlex once more. If CyFlex still will not start, contact SGS CyberMetrix.

3 Updating CyFlex

3.1 Updating Individual CyFlex Files

Execute the following steps to upgrade only certain application or library files on the test cell computer. To update the entire release, refer to *Section 3.2 Updating the CyFlex Version* on page 16.

1. Open a terminal window and enter the following to determine which CyFlex files to update:

   ```
   $ showverlist
   ```

   This command compares CyFlex file versions between the test cell and distribution server, displaying the differences. Use the $-p$ argument to show Release Candidate (RC) versions (pre-releases):

   ```
   $ showverlist -p
   ```

   Example display:

   ```
   Verifying CyFlex version information with 143.222.77.3
   FileName                                LocalVersion  ServerVersion LastUpdatedDate
   *cf_scales                              E-6.0.2       6.0.2         2014-02-10
   *cf_scales.bu20140513                   E-6.0.2       6.0.0         2013-09-25
   *cf_scales.new                          E-6.0.2       6.0.0         2013-09-25
   *cf_scales.old                          6.0.2         6.0.0         2013-09-25
   *sys_start                              RC-6.0.4      6.0.2         2014-02-18
   Files marked with a * differ from those on the server, even if the version strings match.

   The following Pre-Release files are available and not installed:
   File                                    Version       Date
   arr_specs                               RC-6.0.1      04/16/14
   write_array_var                         RC-6.0.1      04/16/14
   arr_size                                RC-6.0.1      04/16/14
   restore_array_var                       RC-6.0.1      04/16/14
   sarr                                    RC-6.0.1      04/16/14
   garr                                    RC-6.0.1      04/16/14
   libplot_spreadsheet_plugin.so.6.0.0     RC-6.0.1      04/17/14
   libcyflexplugin.so.6.0.0                RC-6.0.2      04/17/14
   libasset.so.6.0.0                       RC-6.0.6      04/17/14
   state_mon                               RC-6.0.3      04/28/14
   cf_scales                               RC-6.0.3      05/14/14
   sys_start                               RC-6.0.5      05/27/14

   Finished verifying CyFlex version information
   ```

2. Copy files from the distribution server to the test cell, one file at a time:

   ```
   $ syncfile <filename> <version number>
   ```

   Example:

   ```
   $ syncfile gp_test 3.5.6
   ```

   This example creates a backup of the old file on the test cell, and then installs the newer version (3.5.6) on the test cell. The backup file is:
   ```
   /cyflex/backup/bin/gp_test-3.5.5.
   ```

   Enter the following to retrieve a previous version of a file:

```
$ syncfile <filename> <previous version>
```

Example:

```
$ syncfile gp_test 3.5.5
```

Enter the following to view usage for `syncfile`:

```
$ use syncfile
```

This completes the steps for updating individual files individually.

3.2 Updating the CyFlex Version

To update only certain application or library files, refer to *Section 3.1 Updating Individual CyFlex Files* on page 14.

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 20.

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. Install the latest RPMs necessary for CyFlex version 6.3.0 and higher:

First determine whether the cyflex-6.3-upgrade RPM is already installed. Enter:

```
rpm -qa | grep cyflex-6.3-upgrade
```

a. If a response is returned, the cyflex-6.3-upgrade RPM is installed and should be updated. Enter:

```
sudo yum clean all
sudo yum update cyflex-6.3-upgrade
```

b. If no response is returned, the cyflex-6.3-upgrade RPM is not installed. Enter:

```
sudo yum install cyflex-6.3-upgrade
```

ⓘ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
```

ⓘ *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: 6.3.0

9. Change to the root directory and create a directory for CyFlex version upgrade. Enter the following:

```
$ cd /
$ sudo mkdir /cyflex.6.3.x
```

10. Set permissions for the new directory, `/cyflex.6.3.x`. Enter:

```
$ sudo chmod a+rwx cyflex.6.3.x
```

11. Remove any symbolic links to `cyflex` in the root directory. Enter:

```
$ sudo rm /cyflex
```

12. Create a symbolic link between the directories below. Enter:

```
$ sudo ln -s /cyflex.6.3.x /cyflex
```

13. Determine whether symbolic links are present in the root directory. Enter the following:

```
$ ls –ltr /cyflex
```

In the following example, `cyflex` is a symbolic link to `/cyflex.6.3.x.`

```
lrwxrwxrwx 1 root root 2014-09-30 14:13 cyflex ->
cyflex.6.3.x
```

14. View the shell script cyflex.sh and edit it if necessary. Enter the following:

```
$ cd /etc/profile.d/
$ sudo nano cyflex.sh
```

   o   To sync with the server (for example, `cmx-cyflex-dist`), the first line of the cyflex.sh file should read:
       `export CYFLEX_SYNCVER_SRC=143.222.168.98`

   o   To sync to a different server, use that server's IP address or hostname instead.

   ⓘ*Note:*

   CyFlex.6.3.x versions are synced from the `cmx-cyflex-dist` (143.222.168.98) system. This is a different system from where previous version were sync'd.

15. Use the `syncver` command to upgrade the CyFlex version. This syncs the version on the test cell with the version on the distribution server Enter the following:

```
$ sudo /usr/local/bin/syncver cyflex.6.3.x /cyflex.6.3.x
```

Enter the following to view the usage for `syncver`:

```
$ use syncver
```

Example of `syncver` output:

```
Update cyflex.6.3.0 from [143.222.168.98]
Full update and backup
Minimal update (changes only) – with backup
Minimal update (changes only) – No backup
(F/U/N)?
```

`F` = Full update and backup. `U` = Update with backup. `N` = No backup with update

16. Update the shared library cache. Enter the following:

    ```
    $ sudo /sbin/ldconfig
    ```

17. 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`

18. 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
    ```

19. Verify the test cell is properly configured as described in step 11 on page 5 and step 12 on page 6 in *Section 2.2 Installation Procedure Steps*.

20. 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 an 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
```