Troubleshoot software image expansion failure due to lack of bootflash space

Problem

When using the **controller-mode enable** command on a device to change to Controller mode, the command output indicates that there is insufficient space on the bootflash to expand the software file.

Conditions

This scenario can occur when changing a device to Controller mode in releases earlier than:

- Cisco IOS XE Catalyst SD-WAN Release 17.12.5a
- Cisco IOS XE Catalyst SD-WAN Release 17.15.2
- Cisco IOS XE Catalyst SD-WAN Release 17.16.1a

Possible causes

If the bootflash is storing previous software image files or other data requiring significant space, there may not be enough room to expand the latest software image .bin file.

Possible solutions

Step 1   Use these steps to determine whether the device has successfully expanded the software image file.

a)   Use the **show logging | include INSTALL-** command.

- If the device successfully expanded the software, the output shows "Started install commit PACKAGE".

- If the device has not successfully expanded the software, the output shows "Failed to expand package running" and indicates the amount of space required.

```
Router# show logging | include INSTALL-
*Jun 19 17:01:04.239: %INSTALL-5-OPERATION_START_INFO: R0/0: packtool: Started expand package
 running
*Jun 19 17:01:04.767: %INSTALL-3-OPERATION_ERROR_MESSAGE: R0/0: packtool: Failed to expand
package running, Error: bootflash: requires 693787 KB of free space, but only 664228 KB is
available
```

b)   Use the **show version** command.

- If the device successfully expanded the software, the output shows packages.conf in the output:

```
…
System image file is "bootflash:packages.conf"
…
```

- If the device has not successfully expanded the software, the output shows a software image filename. Here's an example:

```
…
System image file is "bootflash:isr4300-universalk9.17.06.05.SPA.bin"
…
```

c) Use the **show sdwan software** command to view the active software version.

  • If the device successfully expanded the software, the output shows the active software version.

```
VERSION           ACTIVE  DEFAULT  PREVIOUS  CONFIRMED  TIMESTAMP
17.16.01.35.199613  true    true     false     user       2024-05-23T15:13:34-00:00

Total Space:387M Used Space:187M Available Space:195M
```

  • If the device has not successfully expanded the software, the output shows that there is no active software version. Here's an example:

```
% No entries found.
Total Space:387M Used Space:136M Available Space:246M
```

Step 2   If the device was not successful, follow these steps.

a) Free up space on the bootflash, according to the amount shown in the **show logging** command output, or the software image size plus 100 MB.

b) Reload the device.

c) Return to the step of verifying that the software image was expanded successfully.

Step 3   If the device does not successfully expand the software image file after you have freed up space on the bootflash, contact Cisco support for assistance.