更改Catalyst 9800无线控制器上的安装模式

目录

简介

先决条件

- 要求
- 使用的组件

背景信息

- 安装模式
- 捆绑包模式
- 开始使用前

配置

- 从安装模式到捆绑包模式
  - CLIProcedure
  - GUI过程
- 从捆绑包到安装模式
  - CLI过程
  - GUI过程

验证

- 安装模式
- 捆绑包模式

故障排除

相关信息

简介

本文档介绍如何在Catalyst 9800无线控制器(WLC)上的不同安装模式之间进行更改。

先决条件

要求

Cisco 建议您了解以下主题：

- Catalyst 9800无线LAN控制器和接入点(AP)平台

- Catalyst 9800无线LAN控制器软件功能集

使用的组件

本文档中的信息基于以下软件和硬件版本：

- C9800-L版本17.15.5

本文档中的信息都是基于特定实验室环境中的设备编写的。本文档中使用的所有设备最初均采用原始（默认）配置。如果您的网络处于活动状态，请确保您了解所有命令的潜在影响。

背景信息

使用本文档了解如何通过命令行界面(CLI)在Catalyst 9800无线控制器(WLC)上转换不同类型的安装模式。

此过程也可用于升级9800 WLC。

在Catalyst 9800 WLC上，您可以在捆绑包和安装模式下运行Cisco IOS® XE。

安装模式

安装模式使用从二进制文件预提取的.pkg文件到闪存中，以启动控制器解锁捆绑模式下不可用的几个关键架构功能。控制器使用从packages.conf提取操作创建的文件作为引导变量。使用此模式，控制器比捆绑包模式启动时间更短，消耗的RAM更少。

提示：安装模式是运行WLC的推荐模式。软件维护升级(SMU)、接入点服务包(APSP)、AP设备包(APDP)补丁和服务中软件升级(ISSU)需要此模式。

捆绑包模式

如果控制器以二进制镜像(.bin)作为引导变量进行引导，则系统以捆绑模式运行。在此模式下，控制器将.bin文件提取到RAM中，并从其中运行。

此模式比安装模式使用更多的内存，因为从启动中提取的软件包被复制到RAM。

注意：在9800 WLC上配置高可用性(HA SSO)之前，请确保两台设备具有相同的安装模式。否则，可能会出现V-Mismatch错误：**%BOOT-3-BOOTTIME_INCOMPATIBLE_SW_DETECTED: R0/0: issu_stack: Incompatible software detected.**

开始使用前

验证9800 WLC的操作模式，以确定在模式之间转换时必须执行哪个过程。

运行命**show version | include Installation mode**令查看当前安装模式。

<#root>

```
WLC#

show version | include Installation mode


Installation mode is

INSTALL
```

配置

从安装模式到捆绑包模式

CLI过程

步骤1.确保闪存中有足够的空间以扩展新映像。

<#root>

```
WLC#

show bootflash:

...
277 42838080 Oct 08 2025 14:22:06.0000000000 +00:00 wlc9500C-rpboot.2025-10-05_08.14_prabhask.SSA.pkg
279 19921673 Dec 13 2025 19:27:45.0000000000 +00:00 system-report_20251213-192546-Pacific.tar.gz
```

```
235937792 bytes available (5746528256 bytes used)
```

步骤2.在空间不足时清理旧安装文件，以便丢弃旧添加的软件包。

<#root>

```
WLC#

install remove inactive


install_remove: START Mon Jun 08 22:31:01 Central 2026
install_remove: Removing IMG
Cleaning up unnecessary package files
No path specified, will use booted path /tmp/sw/isos/packages.conf

Cleaning /bootflash
Scanning boot directory for packages ... done.
Preparing packages list to delete ...
[RO]: /bootflash/C9800-L-universalk9_wlc.17.15.05.SPA.bin File is in use, will not delete.
[RO]: /bootflash/C9800-L-universalk9_wlc.17.15.05.SPA.conf File is in use, will not delete.

The following files will be deleted:
[RO]: /bootflash/packages.conf
[RO]: /bootflash/C9800-L-universalk9_wlc.17.12.04.Cisco bug ID CSCwn02956 .SPA.apsp.bin
[RO]: /bootflash/C9800-L-rommon.1612-3r.pkg
[RO]: /bootflash/C9800-L-universalk9_wlc.17.15.03.SPA.bin
[RO]: /bootflash/C9800-L-mono-universalk9_wlc.17.15.03.SPA.pkg
[RO]: /bootflash/C9800-L-universalk9_wlc.17.15.03.SPA.conf
[RO]: /bootflash/C9800-L-rpboot.17.15.03.SPA.pkg
[RO]: /bootflash/C9800-L-universalk9_wlc.17.09.06.SPA.bin
[RO]: /bootflash/C9800-L-mono-universalk9_wlc.17.09.06.SPA.pkg
[RO]: /bootflash/C9800-L-rpboot.17.09.06.SPA.pkg
[RO]: /bootflash/C9800-L-universalk9_wlc.17.09.06.SPA.conf
[RO]: /bootflash/C9800-L-universalk9_wlc.17.15.03.Cisco bug ID CSCwp18505 .SPA.apsp.bin
[RO]: /bootflash/C9800-L-mono-universalk9_wlc.17.12.04.SPA.pkg
[RO]: /bootflash/C9800-L-rpboot.17.12.04.SPA.pkg
[RO]: /bootflash/C9800-L-mono-universalk9_wlc.17.15.05.SPA.pkg
[RO]: /bootflash/C9800-L-rpboot.17.15.05.SPA.pkg

Do you want to remove the above files? [y/n]y

Deleting file /bootflash/packages.conf ... done.
Deleting file /bootflash/C9800-L-universalk9_wlc.17.12.04.Cisco bug ID CSCwn02956 .SPA.apsp.bin ... do
Deleting file /bootflash/C9800-L-rommon.1612-3r.pkg ... done.
Deleting file /bootflash/C9800-L-universalk9_wlc.17.15.03.SPA.bin ... done.
Deleting file /bootflash/C9800-L-mono-universalk9_wlc.17.15.03.SPA.pkg ... done.
Deleting file /bootflash/C9800-L-universalk9_wlc.17.15.03.SPA.conf ... done.
Deleting file /bootflash/C9800-L-rpboot.17.15.03.SPA.pkg ... done.
Deleting file /bootflash/C9800-L-universalk9_wlc.17.09.06.SPA.bin ... done.
Deleting file /bootflash/C9800-L-mono-universalk9_wlc.17.09.06.SPA.pkg ... done.
Deleting file /bootflash/C9800-L-rpboot.17.09.06.SPA.pkg ... done.
Deleting file /bootflash/C9800-L-universalk9_wlc.17.09.06.SPA.conf ... done.
Deleting file /bootflash/C9800-L-universalk9_wlc.17.15.03.Cisco bug ID CSCwp18505 .SPA.apsp.bin ... do
```

```
Deleting file /bootflash/C9800-L-mono-universalk9_wlc.17.12.04.SPA.pkg ... done.
Deleting file /bootflash/C9800-L-rpboot.17.12.04.SPA.pkg ... done.
Deleting file /bootflash/C9800-L-mono-universalk9_wlc.17.15.05.SPA.pkg ... done.
Deleting file /bootflash/C9800-L-rpboot.17.15.05.SPA.pkg ... done.
Deleting /flash/.images/17.15.02.0.4538.1732779336 ... /flash/.images/17.15.05.0.8370.1771573356 done.
Deleting /flash/.images/17.12.04.0.31.1732211533 ... /flash/.images/17.15.05.0.8370.1771573356 done.
Deleting /flash/.images/17.15.03.0.5635.1742971301 ... /flash/.images/17.15.05.0.8370.1771573356 done.
SUCCESS: Files deleted.

--- Starting Post_Remove_Cleanup ---
Performing REMOVE_POSTCHECK on all members
Finished Post_Remove_Cleanup
SUCCESS: install_remove Mon Jun 08 22:31:17 Central 2026

WLC#
```

dir bootflash: | i bytes

```
26458804224 bytes total
```

(18033250304 bytes free)

步骤3.将新映像复制到闪存。

<#root>

```
WLC#
```

copy tftp: bootflash:

```
Address or name of remote host []? 10.152.200.238
Source filename []? C9800-L-universalk9_wlc.17.15.05.SPA.bin
Destination filename [C9800-L-universalk9_wlc.17.15.05.SPA.bin]?
Accessing tftp://10.152.200.238/C9800-L-universalk9_wlc.17.15.05.SPA.bin...
Loading C9800-L-universalk9_wlc.17.15.05.SPA.bin from 10.152.200.238 (via Vlan210): !!!!!!!!!!!!!!!!!!
```

步骤4.确认映像已成功复制到闪存，并验证映像的完整性。

<#root>

```
WLC#
```

dir bootflash:*.bin

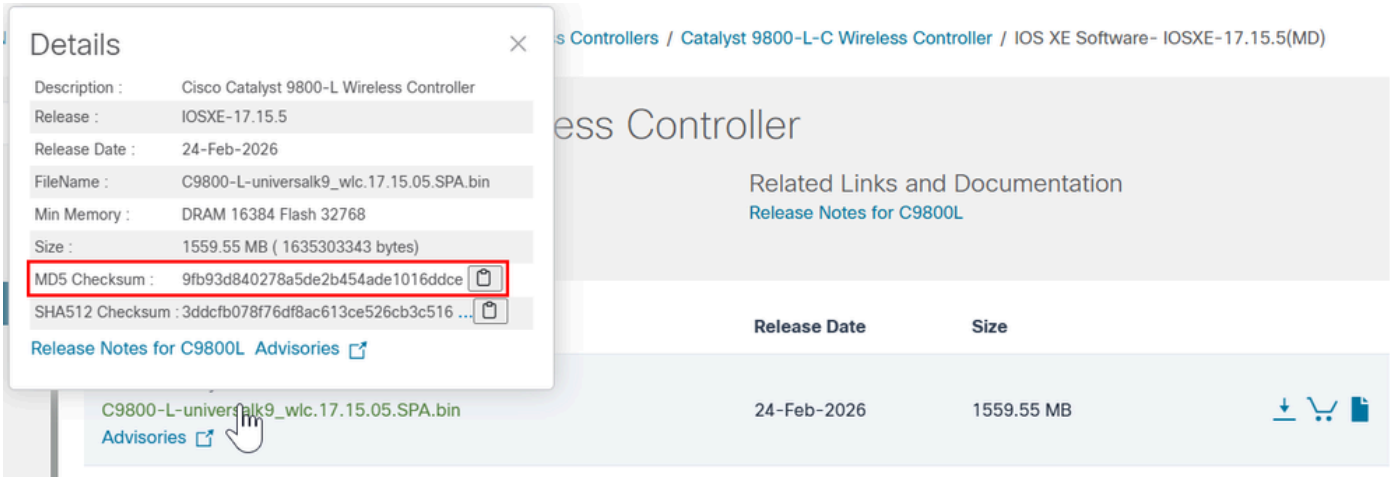
```
Directory of bootflash:/*.bin
Directory of bootflash:/
 95 -rw- 1635303343 Jun 5 2026 23:24:36 +00:00 C9800-L-universalk9_wlc.17.15.05.SPA.bin.SPA.bin
```

```
WLC#

verify /md5 bootflash:C9800-L-universalk9_wlc.17.15.05.SPA.bin

.....................................................................
.....................................................................
.....................................................................
.....................................................................Done!
verify /md5 (bootflash:C9800-L-universalk9_wlc.17.15.05.SPA.bin) = 9fb93d840278a5de2b454ade1016ddce
```

将此结果与思科软件下载站点上目标映像的版本详细信息中提供的MD5校验和相比较，值必须完全匹配。



步骤5.检查当前引导变量，如果该变量设置为packages.conf,则WLC当前正在安装模式下运行。要转换为捆绑包模式，请删除现有引导变量并将.bin映像设置为新的引导变量。更改后必须保存配置；否则，重新加载后，新的引导变量不会持续。

<#root>

```
WLC#

show bootvar


BOOT variable = bootflash:packages.conf,12;
CONFIG_FILE variable =
BOOTLDR variable does not exist
Configuration register is 0x2102
WLC#

conf t


WLC(config)#

no boot system
```

```
WLC(config)#
do write

WLC(config)#
boot system bootflash:C9800-L-universalk9_wlc.17.15.05.SPA.bin

WLC(config)#
do write
WLC(config)#
end
```

步骤6.运行此命令以验证引导变量是否设置为**bootflash:**

。

此时将显示输出 BOOT variable = bootflash:

.

<#root>

```
WLC#
show bootvar

BOOT variable = bootflash:C9800-L-universalk9_wlc.17.15.05.SPA.bin,12;
CONFIG_FILE variable does not exist
BOOTLDR variable does not exist
Configuration register is 0x102

Standby not ready to show bootvar
```

步骤7.重新加载控制器以在捆绑包模式下启动。

<#root>

```
WLC#
```

```
reload

Reload command is being issued on Active unit, this will reload the whole stack
Proceed with reload? [confirm]
```

步骤8.监控WLC初始化过程，以确认其以捆绑包模式启动。

```
<#root>

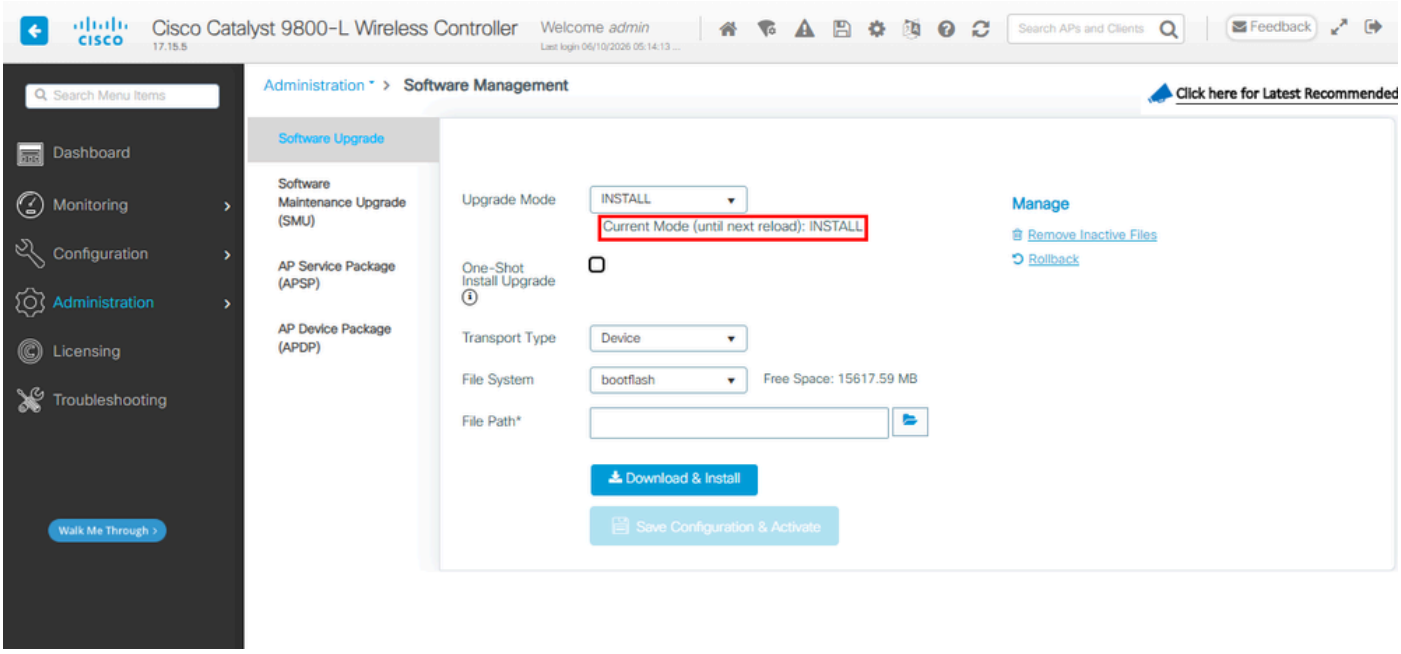
...
32768K bytes of non-volatile configuration memory.
16777216K bytes of physical memory.
26251263K bytes of eUSB flash at bootflash:.
0K bytes of Cloud S3 Storage at cloudfs:.

Base Ethernet MAC Address : FF:FF:FF:FF:FF:FF


Installation mode is BUNDLE
```

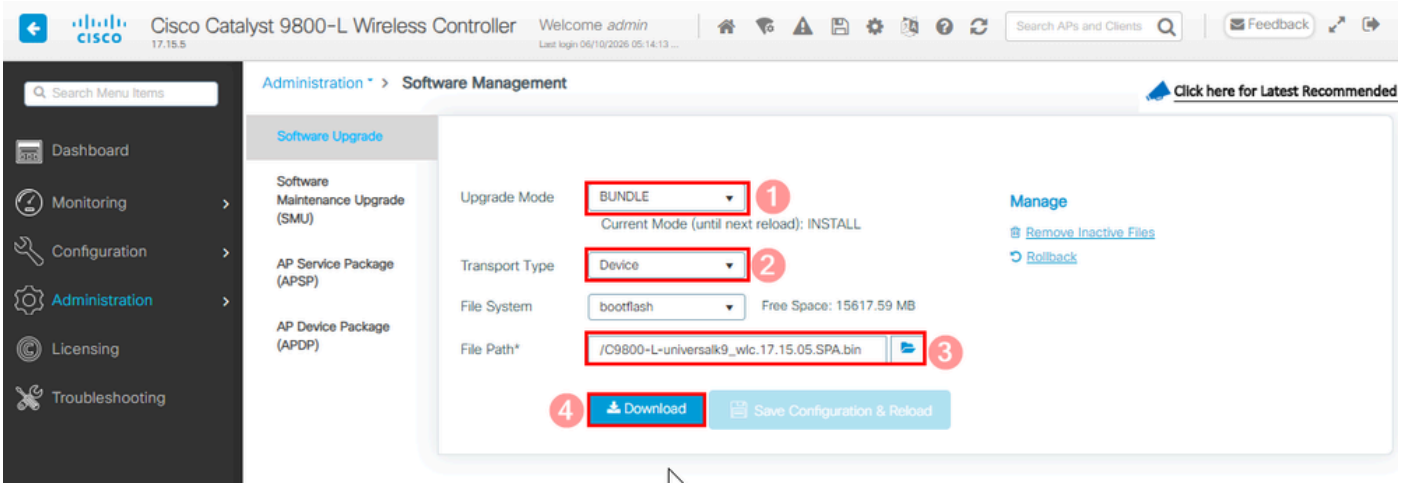
GUI过程

步骤1.检验当前模式。导航到管理>软件管理>软件升级，确认升级模式指示系统当前处于安装模式。

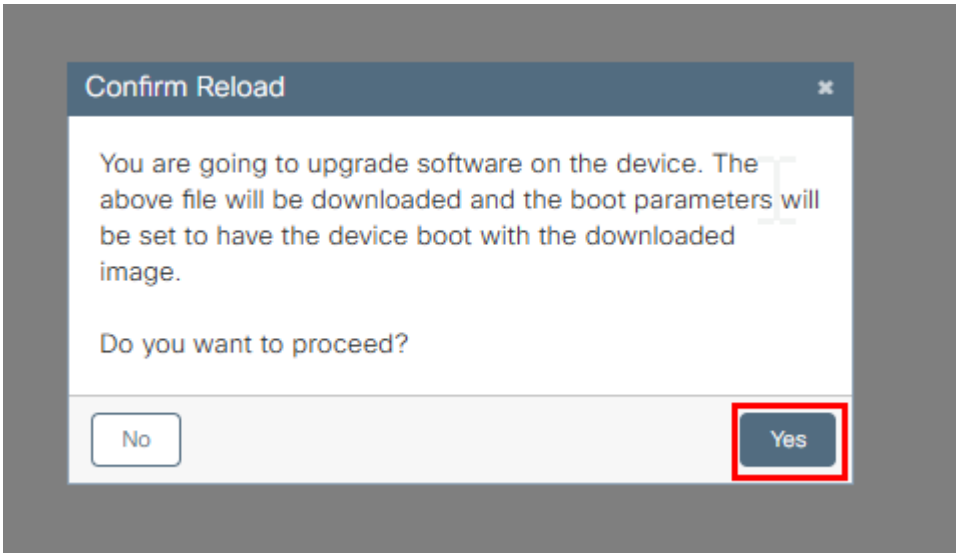


步骤2.点击升级模式中可用的下拉列表，然后选择捆绑包。然后选择Transport Type，然后选择

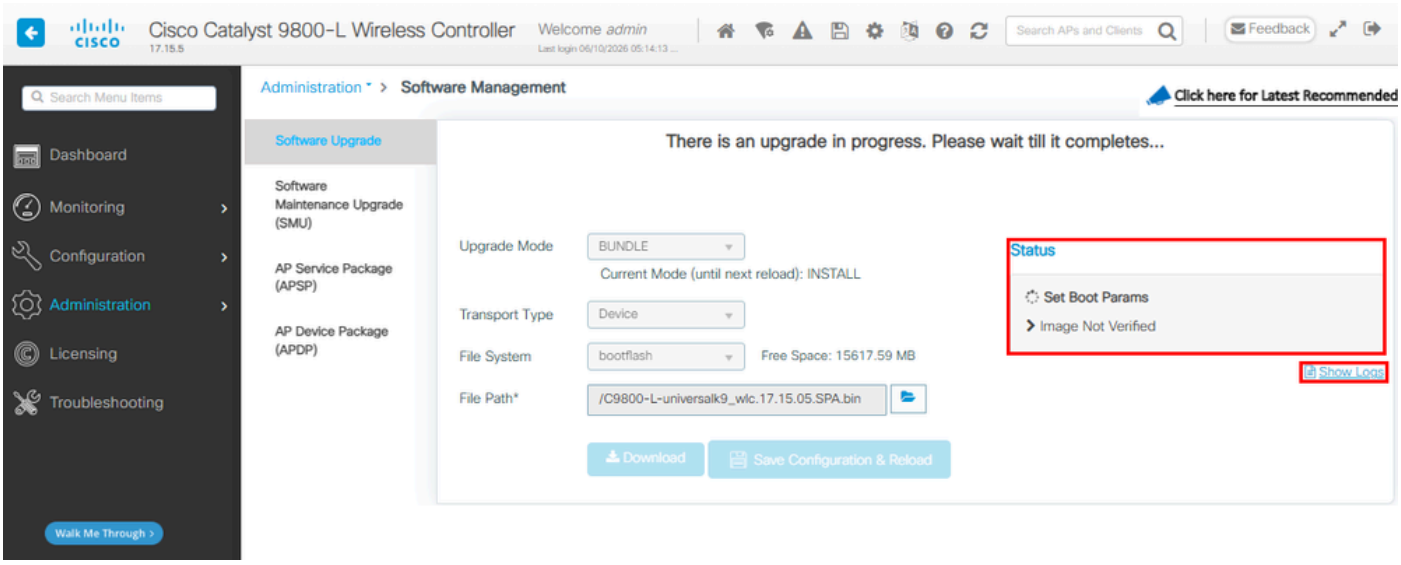
.bin文件的File Path，然后选择Download。

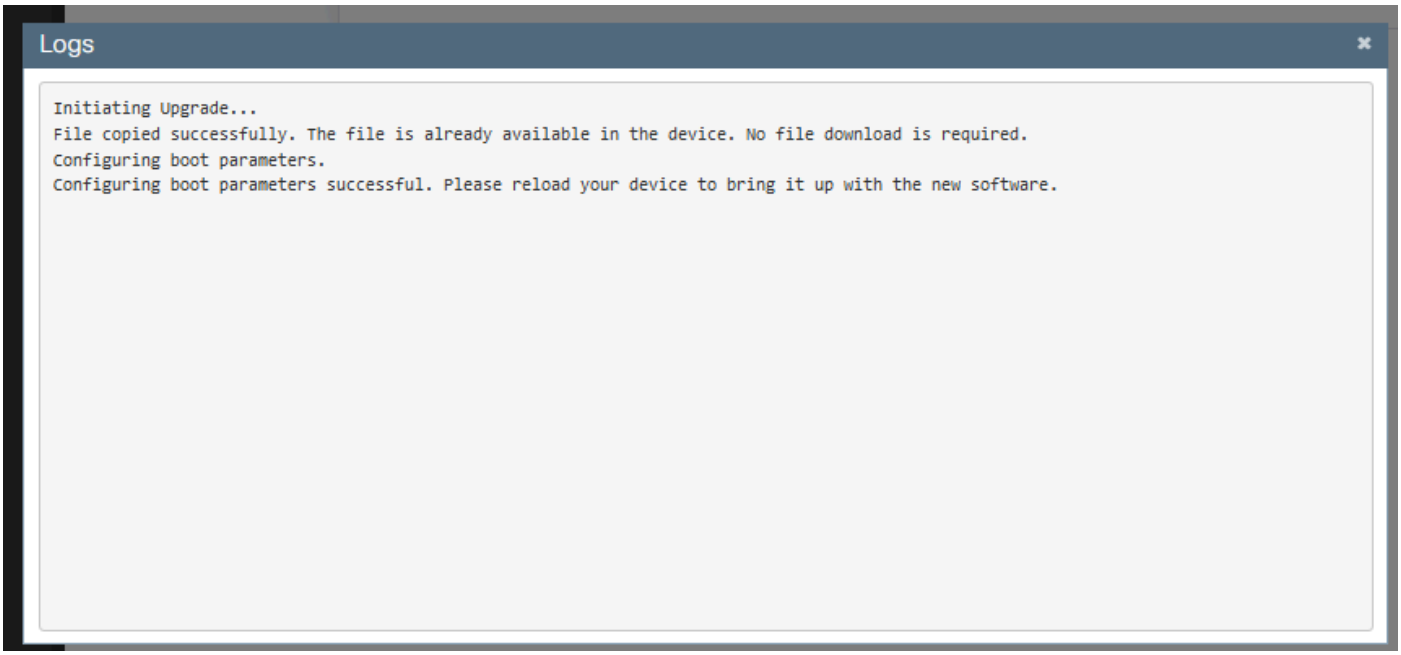


步骤3.确认系统重新加载许可。此时将开始转换为捆绑包模式。

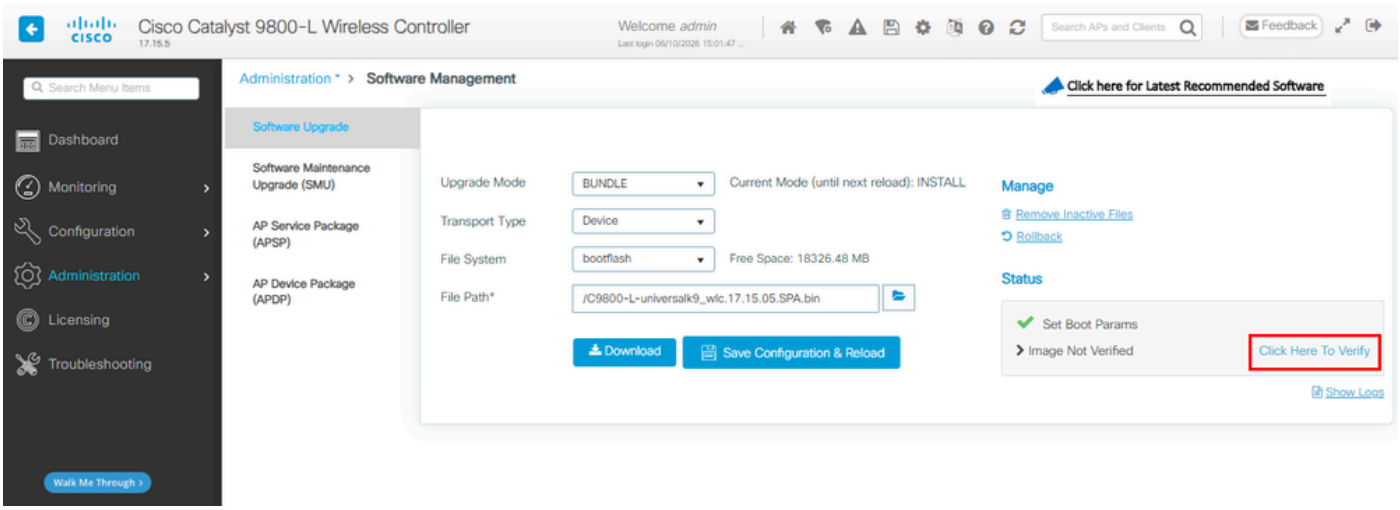


步骤4.在右侧的Status部分和Show Logs弹出窗口中监视升级。


Cisco Catalyst 9800-L Wireless Controller
17.15.5
Welcome admin
Search APs and Clients
Feedback
Search Menu Items
Dashboard
Monitoring
Configuration
Administration
Licensing
Troubleshooting
Walk Me Through
Administration > Software Management
Click here for Latest Recommended
Software Upgrade
Software Maintenance Upgrade (SMU)
AP Service Package (APSP)
AP Device Package (APDP)
There is an upgrade in progress. Please wait till it completes...
Upgrade Mode
BUNDLE
Current Mode (until next reload): INSTALL
Transport Type
Device
File System
bootflash
Free Space: 15617.59 MB
File Path*
/C9800-L-universalk9_wlc.17.15.05.SPA.bin
Download
Save Configuration & Reload
Status
Set Boot Params
Image Not Verified
Show Logs

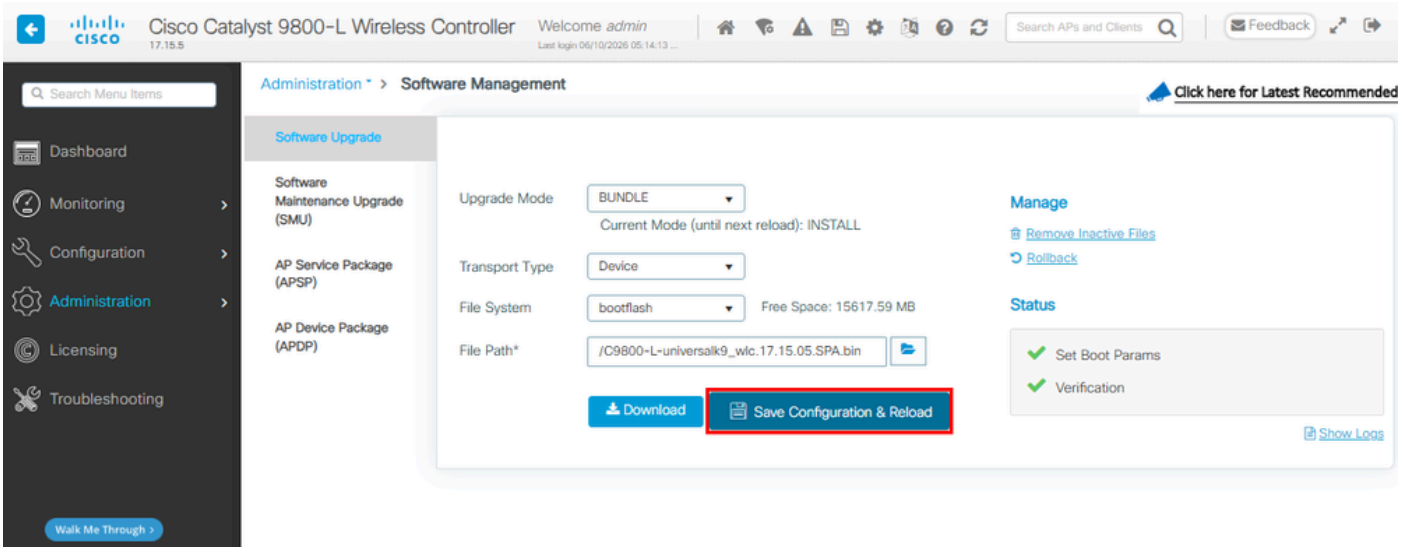

Logs
Initiating Upgrade...
File copied successfully. The file is already available in the device. No file download is required.
Configuring boot parameters.
Configuring boot parameters successful. Please reload your device to bring it up with the new software.

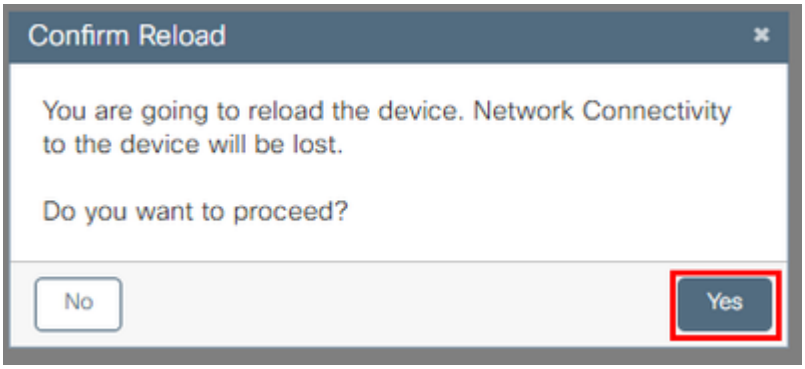
步骤5.检验映像。


Cisco Catalyst 9800-L Wireless Controller
17.15.5
Welcome admin
Search APs and Clients
Feedback
Search Menu Items
Dashboard
Monitoring
Configuration
Administration
Licensing
Troubleshooting
Walk Me Through
Administration > Software Management
Click here for Latest Recommended Software
Software Upgrade
Software Maintenance Upgrade (SMU)
AP Service Package (APSP)
AP Device Package (APDP)
Upgrade Mode
BUNDLE
Current Mode (until next reload): INSTALL
Transport Type
Device
File System
bootflash
Free Space: 18326.48 MB
File Path*
/C9800-L-universalk9_wlc.17.15.05.SPA.bin
Download
Save Configuration & Reload
Manage
Remove Inactive Files
Rollback
Status
Set Boot Params
Image Not Verified
Click Here To Verify
Show Logs

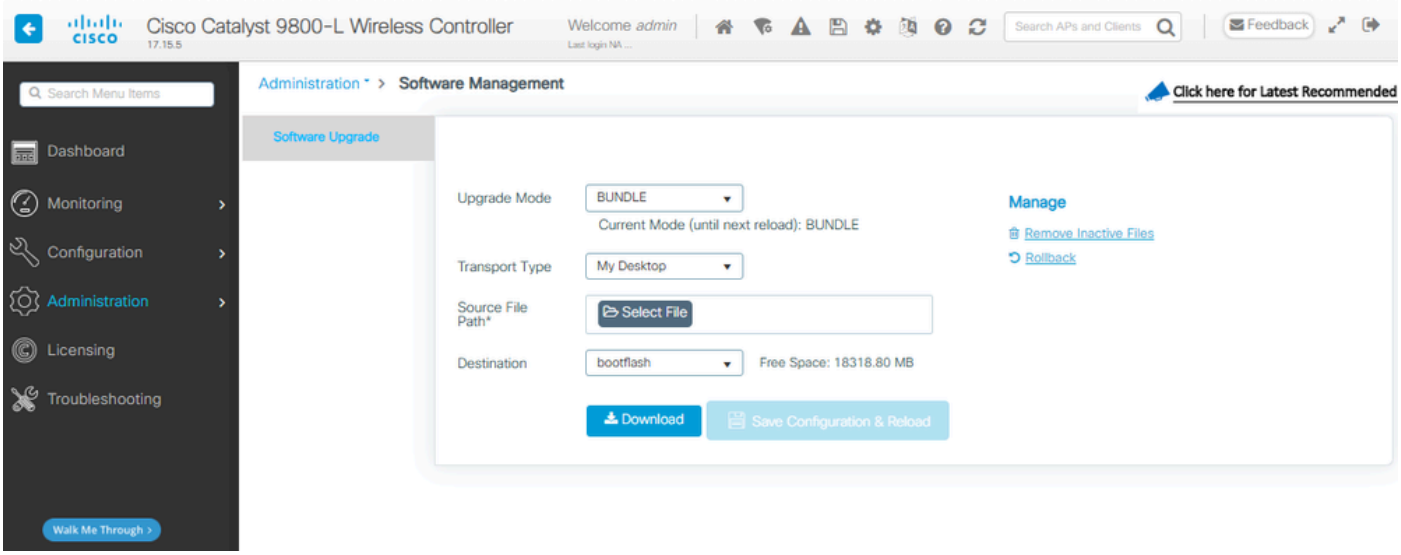


步骤6.保存配置并确认重新加载。





步骤7.监控WLC重新加载，一旦GUI可用，请导航到管理>软件管理>软件升级。请注意，Upgrade Mode指示系统当前以捆绑包模式运行。



从捆绑包到安装模式

CLI过程

步骤1.确保闪存中有足够的空间以扩展新映像。

```
<#root>

WLC#

dir bootflash: | i bytes free

26458804224 bytes total (9501368320 bytes free)
```

步骤2.在空间不足时清理旧安装文件，以便丢弃旧添加的软件包。

```
<#root>

WLC#

install remove inactive

install_remove: START Tue Jun 09 21:21:34 Central 2026
install_remove: Removing IMG
Cleaning up unnecessary package files
No path specified, will use booted path /tmp/sw/isos/packages.conf

Cleaning /bootflash
Scanning boot directory for packages ... done.
Preparing packages list to delete ...
```

```
[R0]: /bootflash/packages.conf File is in use, will not delete.
[R0]: /bootflash/C9800-L-universalk9_wlc.17.15.05.SPA.bin File is in use, will not delete.
[R0]: /bootflash/C9800-L-universalk9_wlc.17.15.05.SPA.conf File is in use, will not delete.

The following files will be deleted:
[R0]: /bootflash/C9800-L-mono-universalk9_wlc.17.15.05.SPA.pkg
[R0]: /bootflash/C9800-L-rpboot.17.15.05.SPA.pkg


Do you want to remove the above files? [y/n]y



Deleting file /bootflash/C9800-L-mono-universalk9_wlc.17.15.05.SPA.pkg ... done.
Deleting file /bootflash/C9800-L-rpboot.17.15.05.SPA.pkg ... done.
SUCCESS: Files deleted.

--- Starting Post_Remove_Cleanup ---
Performing REMOVE_POSTCHECK on all members
Finished Post_Remove_Cleanup
SUCCESS: install_remove Tue Jun 09 21:22:08 Central 2026

WLC#

dir bootflash: | i bytes free


26458804224 bytes total (19666468864 bytes free)
```

步骤3.将新映像复制到闪存。

```
<#root>

WLC#

copy tftp: flash:



Address or name of remote host []? 10.152.200.238
Source filename []? C9800-L-universalk9_wlc.17.15.05.SPA.bin
Destination filename [C9800-L-universalk9_wlc.17.15.05.SPA.bin]?
Accessing tftp://10.152.200.238/C9800-L-universalk9_wlc.17.15.05.SPA.bin...
Loading C9800-L-universalk9_wlc.17.15.05.SPA.bin from 10.152.200.238 (via Vlan210): !!!!!!!!!!!!!!!!!!!
```

步骤4.确认映像已成功复制到闪存，并验证映像的完整性。

```
<#root>

WLC#

dir bootflash:*.bin
```

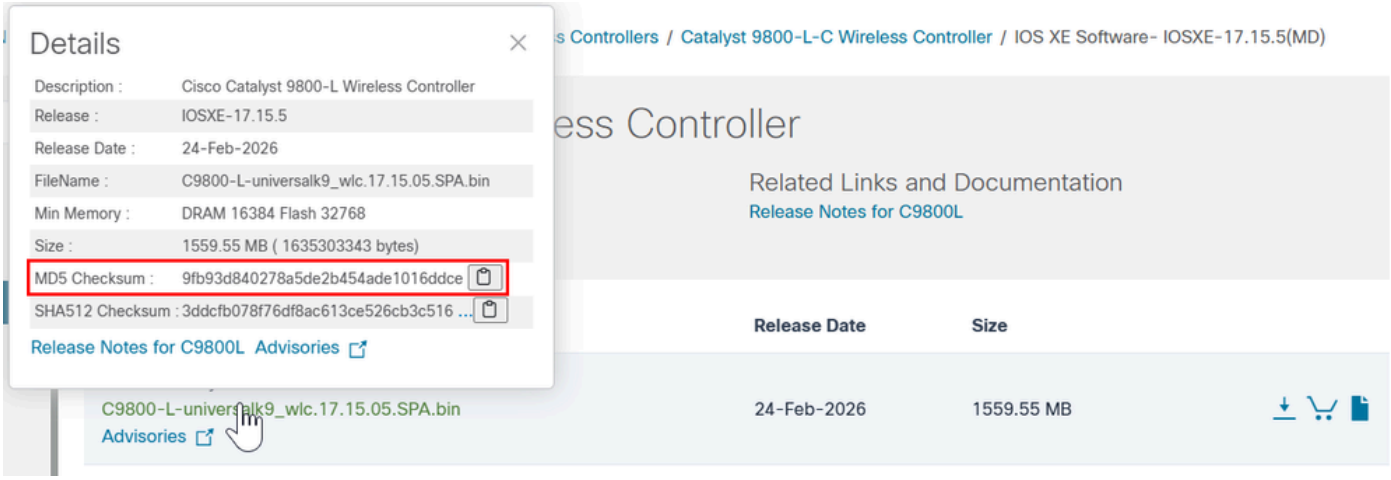
```
Directory of bootflash:/*.bin
Directory of bootflash:/
 95 -rw- 1635303343 Jun 5 2026 23:24:36 +00:00 C9800-L-universalk9_wlc.17.15.05.SPA.bin.SPA.bin

WLC#
```

verify /md5 bootflash:C9800-L-universalk9_wlc.17.15.05.SPA.bin

```
.....................................................................
.....................................................................
.....................................................................
.....................................................................Done!
verify /md5 (bootflash:C9800-L-universalk9_wlc.17.15.05.SPA.bin) = 9fb93d840278a5de2b454ade1016ddce
```

将此结果与思科软件下载站点上目标映像的版本详细信息中提供的MD5校验和相比较，值必须完全匹配。



步骤5.检查当前引导变量。如果变量指向.bin文件，则系统当前在捆绑包模式下运行。此步骤不需要手动配置引导变量；在升级过程中，安装过程会自动**bootflash:packages.conf**将其更新为。

<#root>

```
WLC#
```

show bootvar

```
BOOT variable = bootflash:C9800-L-universalk9_wlc.17.15.05.SPA.bin,12;
CONFIG_FILE variable does not exist
BOOTLDR variable does not exist
Configuration register is 0x102
Standby not ready to show bootvar
```

步骤6.将软件安装映像安装到闪存。**nstall add file bootflash:**

activate commit

对于捆绑包到安装模式的转换，请使用单点CLI i命令。

<#root>

WLC#

install add file bootflash:C9800-L-universalk9_wlc.17.15.05.SPA.bin activate commit

步骤7.键入y (yes)，表示系统重新加载同意。 安装完成后，控制器继续重新加载。

<#root>

```
install_add_activate_commit: START Mon Jun 08 22:53:20 Central 2026
install_add: START Mon Jun 08 22:53:20 Central 2026
install_add: Adding IMG
--- Starting initial file syncing ---
Copying bootflash:C9800-L-universalk9_wlc.17.15.05.SPA.bin from Chassis 1/R0 to Chassis 1/R0
Info: Finished copying to the selected Chassis
Finished initial file syncing

--- Starting Add ---
Performing Add on all members
Checking status of Add on [1/R0]
Add: Passed on [1/R0]
Image added. Version: 17.15.05.0.8370

Finished Add

install_activate: START Mon Jun 08 22:53:59 Central 2026
install_activate: Activating IMG
Following packages shall be activated:
/bootflash/C9800-L-mono-universalk9_wlc.17.15.05.SPA.pkg
/bootflash/C9800-L-rpboot.17.15.05.SPA.pkg


This operation may require a reload of the system. Do you want to proceed? [y/n]y



--- Starting Activate ---
Performing Activate on all members
[1] Activate package(s) on Chassis 1/R0
[1] Finished Activate on Chassis 1/R0
Checking status of Activate on [1/R0]
Activate: Passed on [1/R0]
Finished Activate

--- Starting Commit ---
Performing Commit on all members
[1] Commit package(s) on Chassis 1/R0
```

```
[1] Finished Commit on Chassis 1/R0
Checking status of Commit on [1/R0]
Commit: Passed on [1/R0]
Finished Commit operation

SUCCESS: install_add_activate_commit Mon Jun 08 22:55:34 Central 2026

Initializing Hardware ...
```

步骤8.监控WLC初始化过程以确认它在安装模式下启动。

```
<#root>

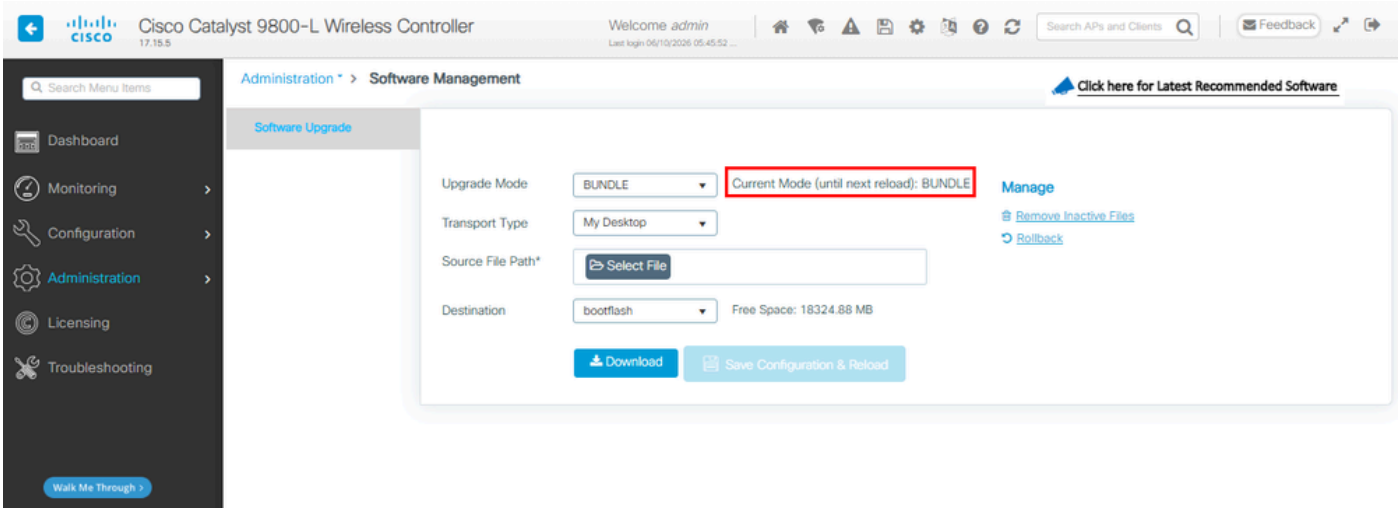
...
32768K bytes of non-volatile configuration memory.
16777216K bytes of physical memory.
26251263K bytes of eUSB flash at bootflash:.
0K bytes of Cloud S3 Storage at cloudfs:.

Base Ethernet MAC Address : FF:FF:FF:FF:FF:FF

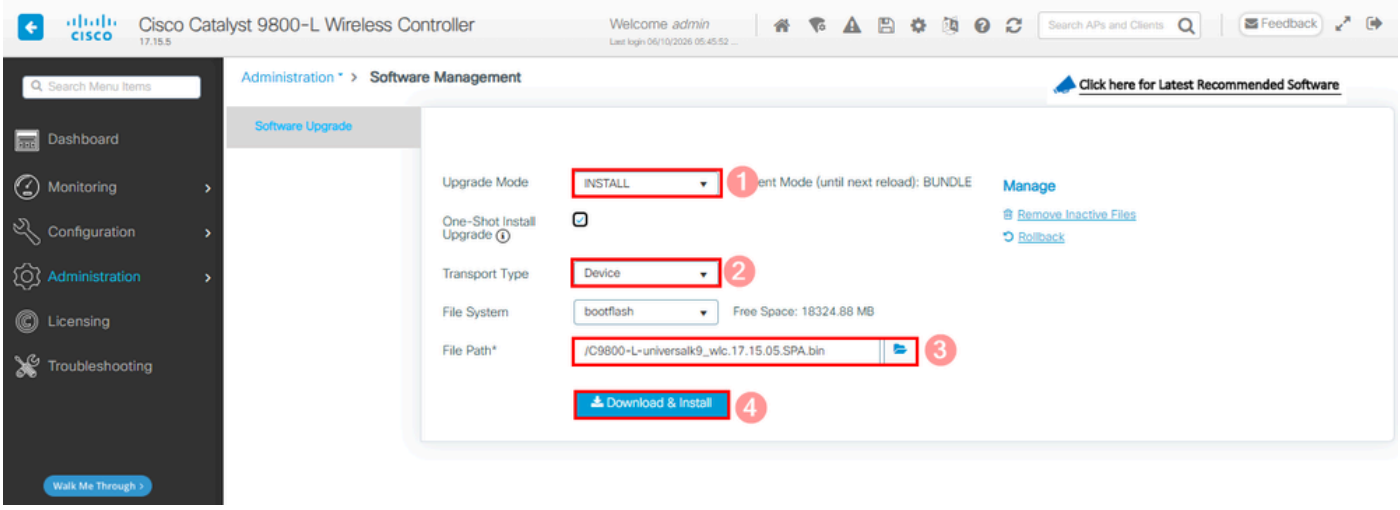

Installation mode is INSTALL
```

GUI过程

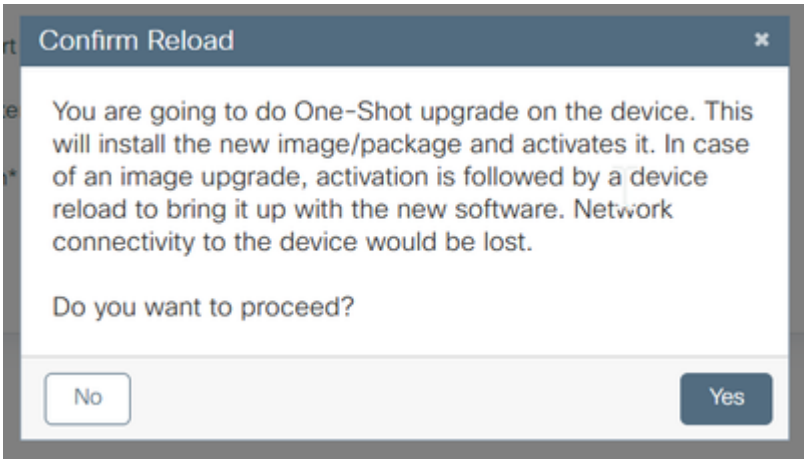
步骤1.检验当前模式。导航到管理>软件管理>软件升级，确认升级模式指示系统当前处于捆绑模式。



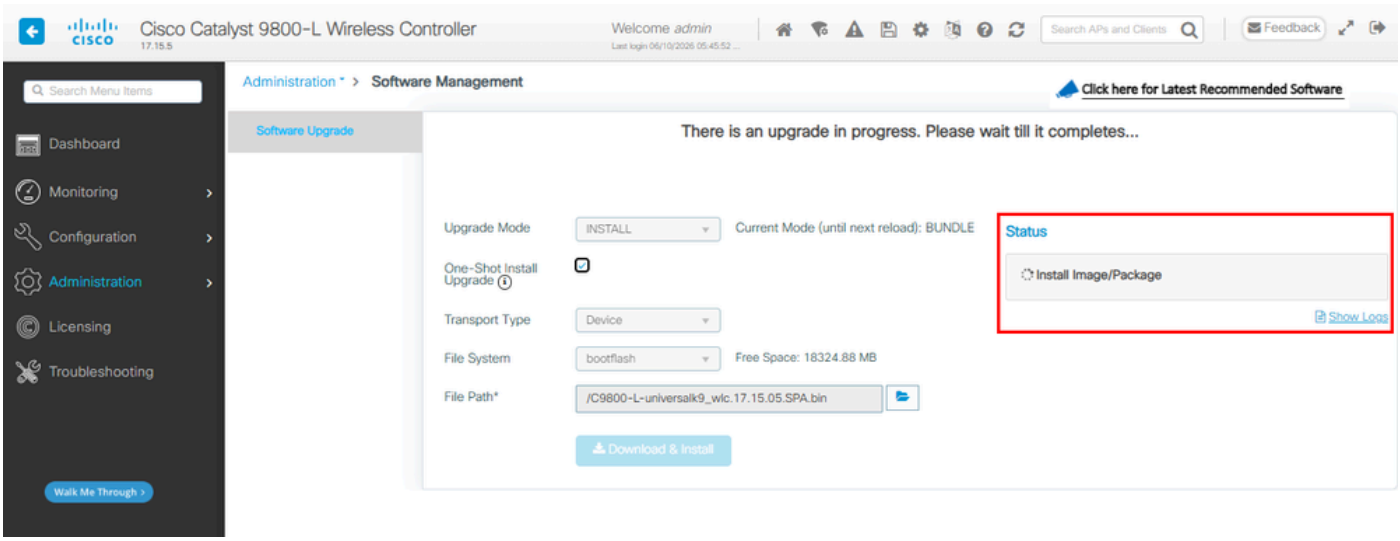
步骤2.点击升级模式中可用的下拉列表，然后选择安装。然后选择Transport Type，然后选择.bin文件的File Path，然后选择Download & Install。



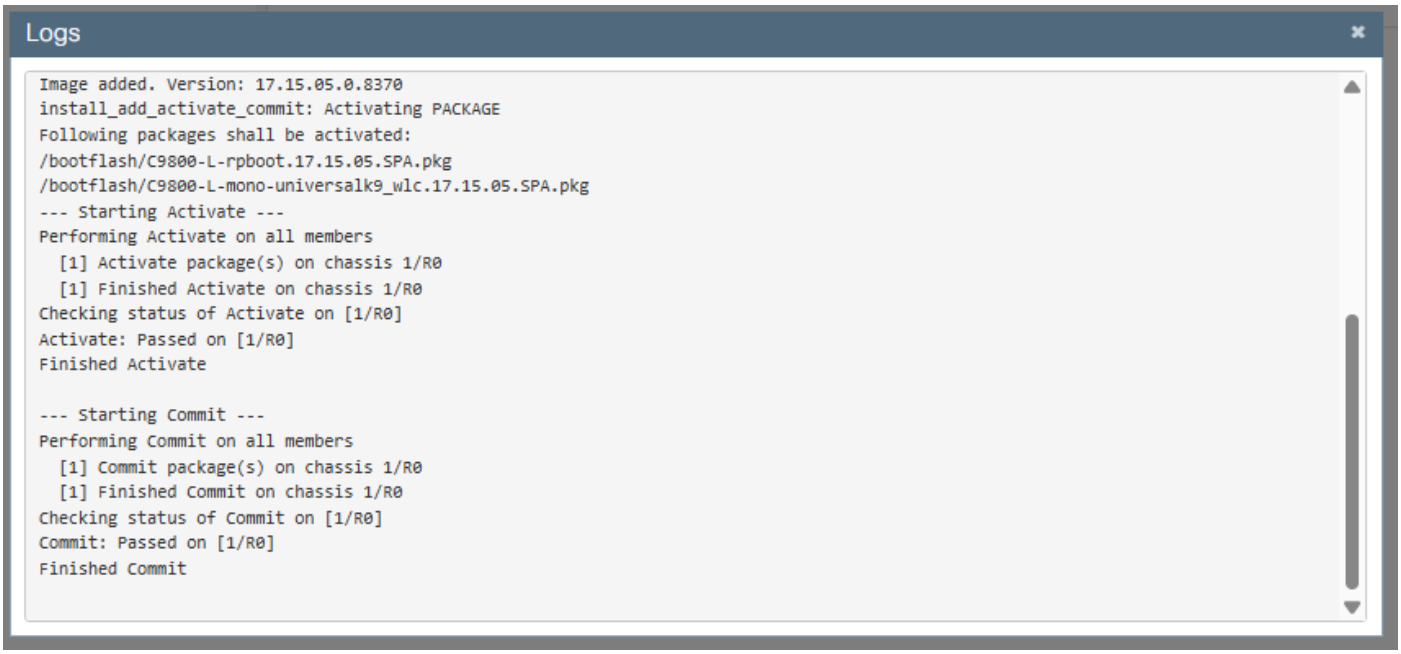
步骤3.确认系统重新加载许可。此时将开始转换到安装模式。



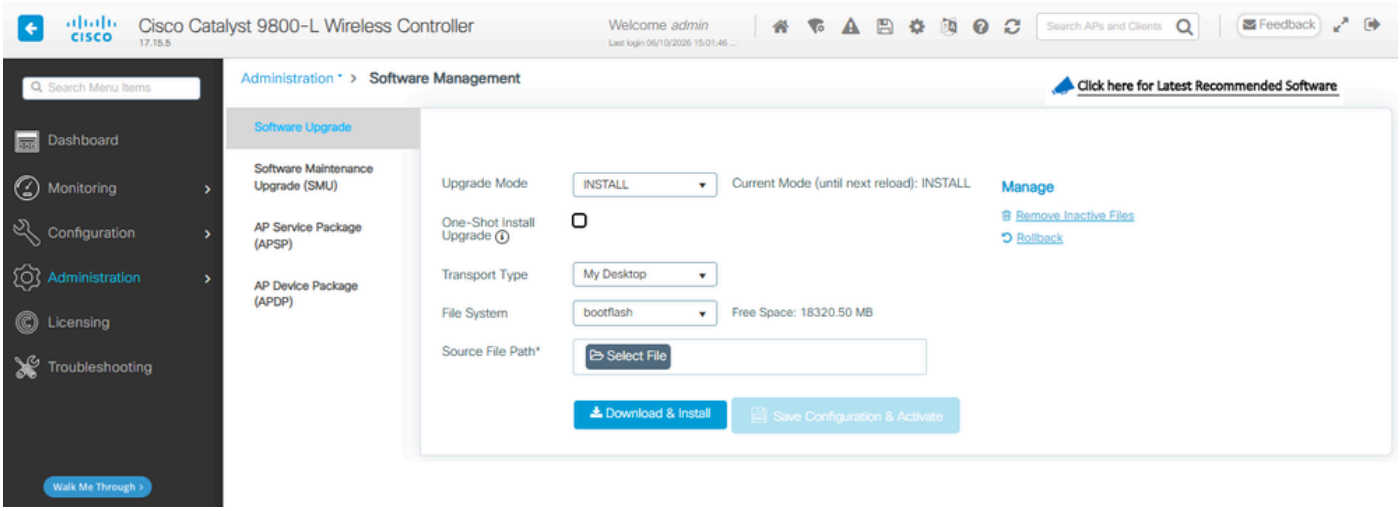
步骤4.在右侧的Status部分和Show Logs弹出窗口中监视升级。



系统作为提交更改的一部分重新加载。



步骤5.监控WLC重新加载，一旦GUI可用，请导航到管理>软件管理>软件升级。请注意，升级模式指示系统当前以安装模式运行。



验证

使用本部分可确认配置能否正常运行。

控制器重新启动后，您可以验证控制器的当前安装模式。运行**show version**命令以确认转换成功。

安装模式

<#root>

```
WLC#

show version | include System image|Installation mode|IOS XE Software


Cisco IOS XE Software, Version 17.15.05
System image file is "bootflash:packages.conf"
Installation mode is

INSTALL
```

捆绑包模式

<#root>

```
WLC#

show version | include System image|Installation mode|IOS XE Software


Cisco IOS XE Software, Version 17.15.05
System image file is "bootflash:/C9800-L-universalk9_wlc.17.15.05.SPA.bin"
Installation mode is

BUNDLE
```

故障排除

当前没有故障排除此配置的特定可用资料。

相关信息

- Cisco Catalyst 9800-CL云无线控制器安装指南
- 适用于无线LAN控制器的TAC推荐的IOS XE版本
- 最终用户指南
- 思科技术支持和下载

关于此翻译
思科采用人工翻译与机器翻译相结合的方式将此文档翻译成不同语言，希望全球的用户都能通过各自的语言得到支持性的内容。

请注意：即使是最好的机器翻译，其准确度也不及专业翻译人员的水平。

Cisco Systems, Inc. 对于翻译的准确性不承担任何责任，并建议您总是参考英文原始文档（已提供链接）。