Appendix A – Upgrade Cisco IR1101 with IOS XE SD-WAN Image

1. Use the console port to connect to the router. Check available space in bootflash; a minimum of 1.5 GB space is needed for the image. Delete old files if necessary, using the **delete** command.

```
Router#delete /force /recursive tracelogs
```

2. Download the Cisco IOS XE SD-WAN software image from the Cisco site.

3. Upload the Cisco IOS XE SD-WAN software image from the file server to the router bootflash. In this case the image is loaded on a USB flash drive and copied to the device.

```
Router#copy usbflash0:ir1101-ucmk9.16.12.1d.SPA.bin bootflash:
```

4. If using bootstrap method, copy the configuration file to bootflash

```
Router#copy usbflash0:ciscosdwan.cfg bootflash:
```

5. If using bootstrap method and the enterprise root certificate, copy the certificate to bootflash

```
Router#copy usbflash0:certificate bootflash:
```

6. Remove all existing boot statements and save the configuration. You can check for existing statements using the command show run | i boot. If there is any statement, go to configuration mode and delete it using the no boot system command.

```
Router#config t
Enter configuration commands, one per line. End with CNTL/Z. Router(config)#no boot system flash
bootflash:IR1101-universalk9.16.03.07.SPA.bin
```

7. Add a boot variable that points to the Cisco IOS XE SD-WAN image:

```
Router# (config)# boot system flash bootflash:SDWAN-image
```

8. Write the configuration to memory

```
Router# wr mem
```

9. Verify that the BOOT variable shows only the IOS XE SD-WAN image:

```
Router# show bootvar
BOOT variable = bootflash:ir1101-ucmk9.16.12.1d.SPA.bin,1;
CONFIG_FILE variable does not exist
BOOTLDR variable does not exist
Configuration register is 0x2102
```

10. Remove all existing configuration from the router:

```
Router# write erase
```

11. Set the config-register to 0x2102:

```
Router# config t
```

```
Router(config)# config-register 0x2102
Router(config)# end
```

12. Reload the router

```
Router# reload
```

13. The router reboots with the IOS XE SD-WAN image. If the initial configuration dialog is presented, enter **No**. When prompted to terminate auto install, enter **yes**.

```
System configuration has been modified. Save? [yes/no]:
% Please answer 'yes' or 'no'.

System configuration has been modified. Save? [yes/no]: no
Proceed with reload? [confirm]
```

14. The router will finish booting. You may either get a router prompt or Username/Password prompt. If you get the Router> prompt, enter the **enable** command. If you get the Username/Password prompt, log in with the default username, which is admin, and the default password, which is admin. You should then get a Router prompt. If not already in enable mode, enter **enable**.

15. Stop PnP and allow the Cisco IOS XE SD-WAN packages to install:

```
Router# pnpa service discovery stop
```

16. Wait until the router has completed expanding the SD-WAN package. You should see the following line on the console.

```
Jan 17 22:33:33.900: %INSTALL-5-OPERATION_COMPLETED_INFO: R0/0: packtool: Completed expand package
running
```

17. Activate the SD-WAN image on the router using the **request platform software sdwan software reset** command. The router automatically reboots after the SD-WAN package has been activated. The activation can take a little over 2 minutes to complete while the reboot can take roughly between 4 and 4.5 minutes.

```
Router#request platform software sdwan software reset

*Jan 17 20:00:04.302: %INSTALL-5-INSTALL_START_INFO: R0/0: install_engine: Started install activate
bootflash:ir1101-ucmk9.16.12.1d.SPA.bin
*Jan 17 20:00:18.139: %SYS-7-NV_BLOCK_INIT: Initialized the geometry of nvram
Router#
```

18. The router will either start the PNP process or boot with bootstrap configuration if the file was copied on to the device.

19. If using bootstrap method and If using a certificate signed by your enterprise root certificate authority (CA), install the certificate. When using PnP this step is not required.

```
Router# request platform software sdwan root-cert-chain install bootflash: certificate
```

20. To verify that the control connections are up and the device is validated, enter the following command at the system prompt:

```
Device# show sdwan control connections
```