



Installing the Software

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Installing the Software

Installing software on the router involves installing a consolidated package (bootable image). This consists of a bundle of subpackages (modular software units), with each subpackage controlling a different set of functions.

It is better to upgrade software in a planned period of maintenance when an interruption in service is acceptable. The router needs to be rebooted for a software upgrade to take effect.

Cisco Software Licensing

Cisco software licensing consists of processes and components to activate Cisco IOS software feature sets by obtaining and validating Cisco software licenses.

The IR8340 uses Enhanced Smart Licensing, which is discussed in detail in [Smart Licensing Using Policy \(SLP\)](#).

Consolidated Packages

To obtain software images for the router, go to: <https://software.cisco.com/download/home/286200112>



Note All of the IOS-XE feature set may not apply to the IR8340. Some features may not have been implemented yet, or are not appropriate for this platform.

An image-based license is used to help bring up all the subsystems that correspond to a license. This license is enforced only at boot time.

One of the following image-based licenses can be pre-installed on the IR8340 router:

- Network-Essentials
- Network-Advantage
- HSEC license



Note Details of the Network-Essentials and Network-Advantage contents can be found in the IR8340 product data sheet.

Network-Essentials

The **Network-Essentials** technology package includes the baseline features. It also supports security features.

The **Network-Essentials_npe** technology package (npe = No Payload Encryption) includes all the features in the Network-Essentials technology package without the payload encryption functionality. This is to fulfill export restriction requirements. The Network-Essentials_npe is available only in the Network-Essentials_npe image. The difference in features between the Network-Essentials package and the Network-Essentials_npe package is therefore the set of payload encryption features such as IPsec and Secure VPN.

Network-Advantage

The **Network-Advantage** technology package includes all crypto features.

The **Network-Advantage_npe** package (npe = No Payload Encryption) includes all the features in the **Network-Advantage** technology package without the payload-encryption functionality. This is to fulfill export restriction requirements. The **Network-Advantage_npe** package is available only in the **Network-Advantage_npe** image. The difference in features between the **Network-Advantage** package and the **Network-Advantage_npe** package is therefore the set of payload-encryption-enabling features such as IPsec and Secure VPN.

Related Documentation

For further information on software licenses, see the Smart Licensing chapter.

Installing the Cisco IOS XE Release

When the device boots up with Cisco IOS XE image for the first time, the device checks the installed version of the ROMMON, and upgrades if the system is running an older version. During the upgrade, do not power cycle the device. The system automatically power cycles the device after the new ROMMON is installed. After the installation, the system will boot up with the Cisco IOS XE image as normal.



Note When the device boots up for first time and if the device requires an upgrade, the entire boot process may take several minutes. This process will be longer than a normal boot due to the ROMMON upgrade.

The following example illustrates the boot process of a consolidated package:

```
Router# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#

Router#show running-config | i license
no license feature hseck9
license udi pid IR8340-K9 sn FDO2523J6N1
license boot level network-advantage
Router#

Router#reload
System configuration has been modified. Save? [yes/no]: yes
Building configuration...
[OK]
Proceed with reload? [confirm]
Sep 8 10:28:36.135: %PMAN-5-EXITACTION: R0/0: pvp: Process manager is exiting: process exit
with reload chassis code

Initializing Hardware ...
Disable swap drive feature. Skip swap drive checking !!

System Bootstrap, Version v0.33, DEVELOPMENT SOFTWARE
Copyright (c) 1994-2021 by cisco Systems, Inc.
Compiled Mon Jul 12 22:57:23 2021 by gilchen

Current image running : Boot ROM1

Last reset cause (0x00000002): LocalSoft
IR8340-K9 platform with 8388608 Kbytes of main memory

.....
```

ROMMON Images

A ROMMON image is a software package used by ROM Monitor (ROMMON) software on a router. The software package is separate from the consolidated package normally used to boot the router.

An independent ROMMON image (software package) may occasionally be released and the router can be upgraded with the new ROMMON software. For detailed instructions, see the documentation that accompanies the ROMMON image.



Note A new version of the ROMMON image is not necessarily released at the same time as a consolidated package for a router.

File Systems

The following table provides a list of file systems that can be seen on the Cisco IR8340 router.

Table 1: Router File Systems

File System	Description
bootflash:	Boot flash memory file system.
cns:	Cisco Networking Services file directory.
crashinfo:	Directory or Filename
flash:	Alias to the boot flash memory file system above.
null:	Directory or Filename
nvrnram:	Router NVRAM. You can copy the startup configuration to NVRAM or from NVRAM.
sdcard:	SD card file system.
system:	System memory file system, which includes the running configuration.
tar:	Archive file system.
tmpsys:	Temporary system files file system.
usb:	USB file system.
webui:	Web UI file system.

Use the ? help option if you find a file system that is not listed in the table above.

Option to Enable or Disable USB Access

USB flash drives offer inexpensive and easy storage space for the routers to store the images, configuration files and other files.



Note The IR8340 does not support ext3, ext4, and above for USB flash drives.

The IR8340 supports hot plug/unplug of USB flash drives. To access the USB flash drive, insert the device into router's USB interface.

While hot plug/unplug of a USB flash drive is supported, the functionality comes with security vulnerabilities. To prevent users from copying sensitive information to the USB flash drive, USB enable/disable functionality has been added.

By default, the USB flash drive is enabled. If you want to disable USB, use the following disable command:

```
Router#config terminal
Router(config)#platform usb disable
Router(config)#end
```

Once the USB flash drive has been disabled, the file system is not shown on the device and syslog messages will not be displayed when the USB is inserted. You will not be able to access the contents of the USB.

The USB is enabled by issuing a 'no' with the disable command:

```
Router#config terminal
Router(config)#no platform usb disable
Router(config)#end
```

The USB status can be displayed using the following command:

```
Router#show platform usb status
USB enabled
Router#
```

Autogenerated File Directories and Files

This section discusses the autogenerated files and directories that can be created, and how the files in these directories can be managed.

Table 2: Autogenerated Files

File or Directory	Description
crashinfo files	Crashinfo files may appear in the bootflash: file system. These files provide descriptive information of a crash and may be useful for tuning or troubleshooting purposes. However, the files are not part of router operations, and can be erased without impacting the functioning of the router.
core directory	The storage area for .core files. If this directory is erased, it will automatically regenerate itself at bootup. The .core files in this directory can be erased without impacting any router functionality, but the directory itself should not be erased.
managed directory	This directory is created on bootup if a system check is performed. Its appearance is completely normal and does not indicate any issues with the router.
tracelogs directory	The storage area for trace files. Trace files are useful for troubleshooting. If the Cisco IOS process fails, for instance, users or troubleshooting personnel can access trace files using diagnostic mode to gather information related to the Cisco IOS failure. Trace files, however, are not a part of router operations, and can be erased without impacting the router's performance.

Important Notes About Autogenerated Directories

Important information about autogenerated directories include:

- Autogenerated files on the bootflash: directory should not be deleted, renamed, moved, or altered in any way unless directed by Cisco customer support.



Note Altering autogenerated files on the bootflash: may have unpredictable consequences for system performance.

- Crashinfo files and files in the core and tracelogs directory can be deleted.

Flash Storage

Subpackages are installed to local media storage, such as flash. For flash storage, use the **dir bootflash:** command to list the file names.



Note Flash storage is required for successful operation of a router.

Related Documentation

For further information on software licenses, see [Smart Licensing Using Policy \(SLP\)](#).

For further information on obtaining and installing feature licenses, see [Configuring the Cisco IOS Software Activation Feature](#).