# Using the SD Flash Memory Module

This section describes the Secure Digital (SD) flash memory module (or SD card) used with the Cisco 1240 Connected Grid Router (CGR 1240 or router), and includes instructions for installing and removing the SD card.

These topics are discussed:

## SD Flash Memory Module

The router features an SD card connector, which supports a single Cisco SD flash memory module (SD card). The SD card stores router data and software, including:

- Router operating software

- Running configurations

- Network management software configuration

- Network registration data

- Router firmware

The topics in this section include:

## SD Card File System

The SD card uses a Linux-based EXT2/3 file system. The router configuration is stored in a binary file in an invisible partition on the card.

## Supported SD Cards

lists the SD cards that can be used with the router.

**Table 26      Supported SD Flash Modules**

| Size |
| --- |
| 2-GB flash memory module |

# Accessing the SD Card

The SD card and SD card LED are accessed from the router exterior, though the router SD card port, shown in .

**Caution:** Do not remove the SD card from the router; removing the SD card causes the router to stop operating.

The topics in this section include:

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## Accessing the SD Card on a Router with a Mounting Bracket

When the Cisco mounting bracket is attached to the router, the bracket blocks access to the SD card port slot on the router exterior. To access the SD card slot without removing the router from the bracket or any mounting installation that uses the bracket, refer to the instructions in .

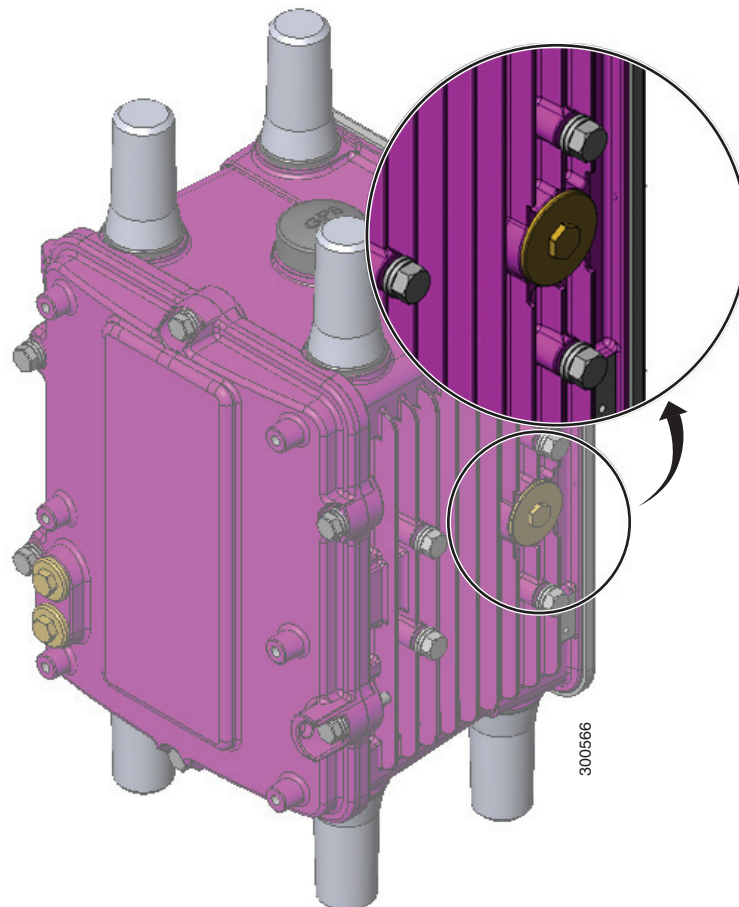**Figure 84    SD Card Port Location on Router Exterior**
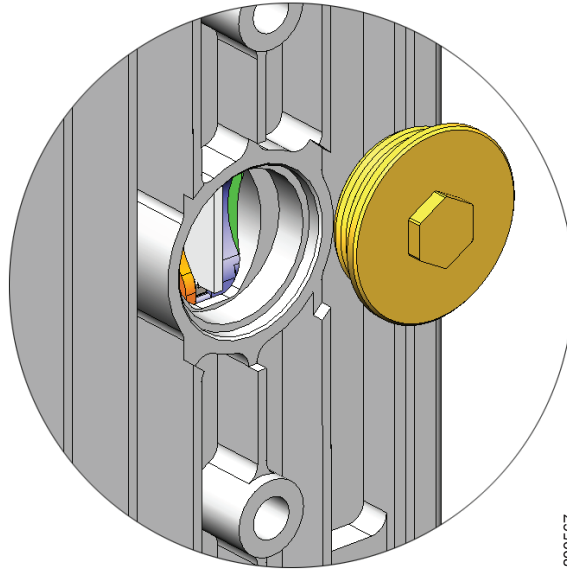
**Figure 85    SD Card Slot with SD Card Inserted**



# SD Card Status

■    SD Card LED, page 135

## SD Card LED

The SD card LED is located directly next to the SD card slot, and is visible when the SD card slot seal is removed. This section describes the LED states and descriptions.
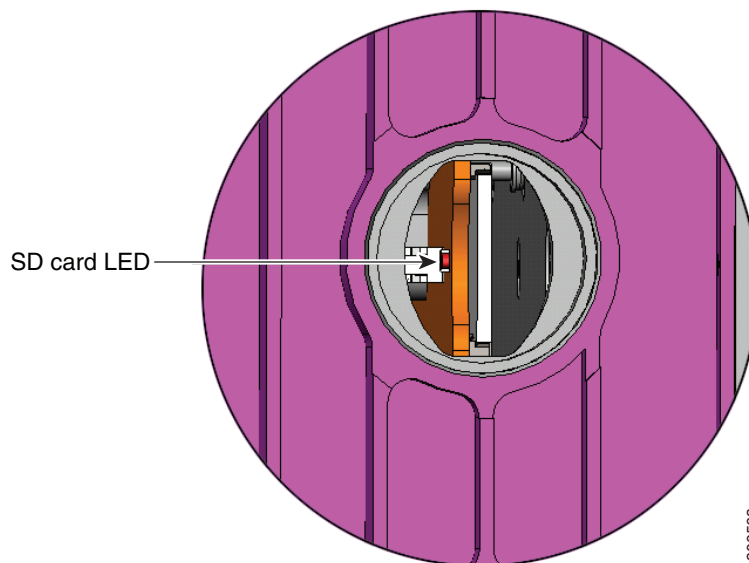
**Figure 86    SD Card LED Location**



SD card LED

**Table 27      SD Flash Memory Module LED States**

| Description | Color and State | Description |
|---|---|---|
| SD card status | Green solid | SD flash card is installed and operating normally.<br><br>**Note:** If the SD Card is removed, the SD flash memory module LED remains green solid until the router reboots. |
| | Green blinking | A data transfer between the router and the SD card is in progress. |
| | Amber solid | ■  An error occurred when the router accessed the SD flash card.<br><br>■  The router could not find a system software image. |
| | Amber blinking | An unsupported SD card is installed in the slot. |

# Securing the SD Card with a Password

**Note:** The CLI cited in this section work for both the CG-OS and Cisco IOS operating systems.

The SD card contents can be secured with a password. Once a password is set, the password must be supplied before data can be accessed on the SD card.

The SD card password must be set during system initialization, and you will be notified that the system must be rebooted for the new password to take effect. The password can be set at the CLI or through the CG-NMS.

To set and remove SD card passwords and display their status, see:

■  Setting and Removing an SD Card Password, page 136

■  Displaying the SD Card Password Status, page 136

## Setting and Removing an SD Card Password

To set a password for the SD-card, use the **sd-card password** *password* command in global configuration mode to set the password. Use the **no sd-card password** command in global configuration mode to remove the password.

## Displaying the SD Card Password Status

The SD Card password status can be:

■  Unlocked

■  Locked

■  Password set/reset, reboot pending

To determine the status of the SD card password, you can use the **show sd-card password status** command in user EXEC mode.

```
cgr1240# show sd-card password status

SD-card lock status: [Locked, reboot required to apply.]
```

The command output indicates that the SD card is password secured but the router must be rebooted for the password to apply.

The status of an SD card fully secured by a password the status is [Locked], and an SD card unsecured by a password has [Unlocked] status.

# Related Commands

**Note:** The commands in this section work on routers running the Cisco CG-OS or Cisco IOS operating systems.

- copy running-config startup-config, page 137
- sd-card password, page 137
- no sd-card password, page 137
- show sd-card password status, page 137

## copy running-config startup-config

To save the router current software configuration to the SD card, use the **copy running-config startup-config** command in user EXEC mode:

```
cgr1240# copy running-config startup-config
[#####################################] 100%
Copy complete, now saving to disk (please wait)...
```

## sd-card password

To set a password for the SD card, use the **sd-card password** *password* command in global configuration mode.

```
cgr1240(config)# sd-card password password
```

## no sd-card password

To remove the SD card password, use the **no sd-card password** command in global configuration mode.

```
cgr1240(config)# no sd-card password
```

## show sd-card password status

To determine the status of the SD card password, use the **show sd-card password status** command in user EXEC mode.

```
cgr1240# show sd-card password status
```

# Field Replacement of the SD Card

The SD card can contain either the IOS operating system or the CGIOS operating system. There are different procedures for replacing each version.

## SD Card Replacement with the IOS Operating System

1. If your router is using a battery backup system, you will need to disable it before powering down the device.

   ```
   CGR1000# battery charge-discharge disable
   ```

2. Unplug the power cord from the router.

3. Once the router has powered off, remove the old SD card from the SD card slot.

4. Insert the new SD card into the SD card slot.

5. Connect the power cord to the router.

6. If there is no change in the binary version of the OS, the router will autoboot correctly.

   a. Once the router completely boots up and is running, skip to step 13.

7. If there is a difference in the binary version of the OS, the router will stop at the rommon-1 prompt

8. .From the rommon-1 prompt, confirm the availability of hypervisor and the IOS image using the following commands:

```
rommon-1> dir
flash: cgr1000-universalk9-mz.SPA.156-3.M2
bootstrap: bootstrap:cgr1000-hv.srp.SPA.2.0.12
```

9. Set the hypervisor boot string using the following command:

```
rommon-1> set BOOT_HV=bootstrap:cgr1000-hv.srp.SPA.2.0.12
```

10. Set the IOS boot string using the following command:

```
rommon-1> set BOOT=flash:cgr1000-universalk9-mz.SPA.156-3.M2
```

11. Reload the router:

```
rommon-1> reboot
```

12. Once the router has reloaded and comes back up, it is ready to use.

13. If your router is using a battery backup system, you will need to re-enable it.

```
CGR1000# battery charge-discharge enable
```

# SD Card Replacement with the CGOS Operating System

The procedure for replacing the SD card running CGOS is more complex because the CGOS stores all the configuration and encrypted private keys and certificates in different SD card partitions. IOS stores all of these in the NVRAM of the CGR1000 router mainboard.

Prior to replacing the SD card, make sure that the running configuration on the SD card is backed up to a tftp server. For example:

```
CGR1000# copy running-config tftp://192.168.0.1/original-config
```

After backing up the running configuration, replace the SD card using the following steps:

1. If your router is using a battery backup system, you will need to disable it before powering down the device.

```
CGR1000# backup-battery inhibit discharge
```

2. Unplug the power cord from the router.

3. Once the router has powered off, remove the old SD card from the SD card slot.

4. Insert the new SD card into the SD card slot.

5. Connect the power cord to the router.

6. If there is no change in the binary version of the CG-OS kickstart and system images, the router will autoboot correctly.   Once the router completely boots up, go to step 11.

7. If there is a difference in the binary version of the CG-OS kickstart and system images, the router will stop at the **loader>** prompt.

8. From the prompt, confirm the availability of kickstart and the system images using the following commands:

```
loader> dir
bootflash:
  cgr1000-uk9-kickstart.5.2.1.CG4.5.SPA.bin
  cgr1000-uk9.5.2.1.CG4.5.SPA.bin
```

9. Boot the kickstart image:

```
loader> boot bootflash:cgr1000-uk9-kickstart.5.2.1.CG4.5.SPA.bin
```

10. Once the kickstart image has finished booting, load the system image:

```
CGR1000(boot)# load bootflash:cgr1000-uk9.5.2.1.CG4.5.SPA.bin
```

11. When the system image finishes loading, the **System Admin Account Setup** dialog will be shown.

12. Enter a password for the **admin** account when the prompt **Enter the password for admin:** is shown.

13. Skip the **Basic configuration** dialog by entering **no**.

14. Log into the router using **admin** and password that you entered in the step 12.

15. Configure the IP address for an Ethernet interface (e.g. Ethernet 2/1) and use tftp to copy the configuration file you obtained from the original SD card to the bootflash. For example:

```
cgr1000# copy tftp://192.168.0.1/original-config bootflash:original-config
```

16. Restore the original configuration.

```
cgr1000# copy bootflash:original-config running-config
```

17. Set the CG-GOS boot kickstart and system variables:

```
cgr1000(config)# boot kickstart bootflash:/cgr1000-uk9-kickstart.5.2.1.CG4.5.SPA.bin
cgr1000(config)# boot system bootflash:/cgr1000-uk9.5.2.1.CG4.5.SPA.bin
```

18. Save the running-config to the startup-config, and reload the router:

```
cgr1000# copy running-config startup-config
cgr1000# reload
```

19. Once the router has reloaded and comes back up, it is ready to use.

20. If the router has any certificate trustpoint in the original configuration, its certificate and CA certificate must be re-acquired for the trust-point via SCEP or manual certificate import.

21. If your router is using a battery backup system, you will need to re-enable it:

```
CGR1000# backup-battery un-inhibit discharge
```