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Ignition Power Management for SD-Routing Devices

What's new

This section outlines what's new in this release. This feature is designed to prevent vehicle battery drain and ensure the router operates seamlessly even when the vehicle is stationary, eliminating the need to reload the router each time the vehicle is restarted.

Table 1: What's New

Cisco IOS XE release	Feature name	Description	Supported platforms
Cisco IOS XE 17.18.1	Ignition power management	Configure and monitor the ignition power and sensing capabilities of IR1800 routers using Cisco SD-WAN Manager. This feature is designed to prevent vehicle battery drain and ensure the router operates seamlessly even when the vehicle is stationary, eliminating the need to reload the router each time the vehicle is restarted.	Cisco Catalyst IR1800 Rugged Series Routers

Ignition power management

Ignition power management is a specialized feature for rugged routers used in industrial or mobile environments where reliable connectivity is essential. In mobile deployments, these vehicle-mounted routers draw power from the vehicle's electrical system and enable site-wide connectivity across the fleet.

Ignition power management ensures that the router can be configured to automatically power on when the vehicle's engine is running. Once the ignition is turned off, the router will shut down after a user-defined delay. It is recommended to use this feature to prevent the router from being abruptly shut down by the vehicle's power supply. Each time the router loses power without a proper shutdown, there is a small risk of flash corruption. Using this feature helps protect the device's storage and ensures more reliable operation.

This feature is specifically designed for routers powered by a vehicle's electrical system that:

- **Maintains operational continuity:** This feature ensures that the router remains fully functional while the vehicle's engine is running and actively charging the battery. As a result, uninterrupted connectivity is maintained during vehicle operation, providing consistent performance without any disruptions.
- **Prevents battery drain:** When the vehicle's ignition is turned off, the system initiates a controlled shutdown of the router. This prevents unnecessary power consumption, conserving the vehicle's battery charge and avoiding the risk of battery depletion.
- **Provides configurable flexibility:** Users have the option to configure a specific time interval during which the router remains powered after the ignition is turned off. This delay ensures that the router continues to operate for a pre-defined period before automatically shutting down, offering added convenience and adaptability for various use cases.

Benefits for ignition power management

Enhances efficiency by protecting the vehicle's battery from power drain while ensuring uninterrupted router performance, eliminating the need for reloads every time the vehicle is stopped or restarted.

Restrictions for ignition power management

In the Cisco IOS XE 17.18.1 release, the **ignition-sense** command is supported exclusively for the Cisco Catalyst IR1800 Rugged Series Routers. However, the **no** form of this command is not supported on the IR1821, IR1831, or IR1833 devices.

Configure ignition power management using a Configuration Group

This section outlines the process for configuring ignition power management within Cisco Catalyst SD-WAN Manager, a feature for managing device power based on ignition status.

Step 1 On the Cisco Catalyst SD-WAN Manager, select **Configuration > Configuration Groups**. Select the solution type as **SD Routing**.

Step 2 Within the selected configuration group, create and configure an ignition power management feature as part of a **System Profile**.

- **Name:** Assign a unique name to your ignition power management configuration.
- **Description:** Provide a brief description for the ignition power management configuration to help identify its purpose or specific settings.
- **Enable:** Use this to either enable or disable the ignition power management feature.
- **Ignition Sense Enable:** Allows the router to detect the engine running state by measuring input voltage when enabled, or by using the signal on GPIO PIN #5 (accessory contact) when disabled.



Disabling ignition sense is currently supported only on IR 1835 routers.

Note

- **Battery Type:** Specify the type of battery voltage (12v or 24v) being used with the device.
- **Shutdown Timer:** Allows you to set a timer, in seconds, to delay the device shutdown after the ignition is turned off.
- **Under voltage Threshold:** Define the minimum voltage (in millivolts) required for the device to operate normally before triggering an undervoltage event. If the input voltage drops below this threshold and an undervoltage event is detected, the router will shut down immediately. This shutdown happens regardless of any timer settings configured because the under voltage condition is critical and requires immediate action to avoid hardware failure or data corruption.
- **Sense voltage Threshold:** Set the voltage threshold (in millivolts) that the device uses to sense and determine the ignition status.
 - a. If the input voltage is less than 2% below the sense voltage threshold, the engine is considered OFF.
 - b. If the input voltage is more than 2% above the sense voltage threshold, the engine is considered ON.
 - c. If the input voltage is within (plus or minus) 2% of the threshold, the engine state remains unchanged.

For example, if the threshold voltage is set to 13 V, the engine is considered OFF when the input voltage drops below 12.74 V (13 V minus 2%), and it is considered ON when the input voltage rises above 13.26 V (13 V plus 2%). If the input voltage remains between 12.74 V and 13.26 V (inclusive), the engine state does not change.

Step 3 Click **Save**.

Verify the ignition power management configuration

This section provides an overview of commands to verify and display ignition power management settings, ensuring optimal device operation under varying power conditions:

Use the **show running-config** command, filtering for ignition, to show the ignition power management configuration:

The following example is for a 12 V battery. Note that configuring the battery type as 12 V configures the sense-voltage threshold automatically to 13,000 mV.

```
Device# show running-config
ignition off-timer 300
ignition undervoltage threshold 9 000
ignition battery-type 12v
ignition sense-voltage threshold 13 000
ignition sense
ignition enable
```

The following example is for a 24 V battery. Note that configuring the battery type as 24 V configures the sense-voltage threshold automatically to 26,000 mV.

```
Device# show running-config | section ignition
ignition off-timer 300
ignition undervoltage threshold 9 000
ignition battery-type 24v
ignition sense-voltage threshold 26 000
ignition sense
ignition enable
show ignition
```

On the device, use the **show ignition** command to show ignition power management configuration information:

When the battery type is configured as 12V, the system automatically sets the sense-on value to 13.2 V and the sense-off value to 12.8 V, which are reflected in the **show ignition** command output. Similarly, configuring the battery type as 24V sets the sense-on value to 26.2 V and the sense-off value to 25.8 V, as displayed in the **show ignition** command output.

The following example is for a 12 V battery:

```
Device# show ignition
Status:
Ignition management: Disabled
Input voltage: 17.672 V
Ignition status: Power on
Ignition Sense: Disabled
Shutdown timer: 0.0 s to off [will begin power down at ~100 sec]
Config-ed battery: 12v
Thresholds:
Undervoltage: 9.000 V
Overvoltage: 37.000 V
Sense on: 13.200 V
Sense off: 12.800 V
Undervoltage timer: 20.0 s
Overvoltage timer: 1.0 s
Ignition-Off timer: 300.0 s
```

Monitor ignition power management

This section outlines how to monitor ignition power management for supported devices within the Cisco SD-WAN Manager.

- Step 1** From the Cisco SD-WAN Manager menu, choose **Monitor > Devices**.
- Step 2** Select a supported IR1800 device. Click **Real Time** in the left pane.
- Step 3** From the **Device Options** drop-down list, select **Ignition Power Management**.
- Step 4** You can view the Ignition power management settings and values.