



Initial Installation of Connected Lighting

This chapter, which covers implementation details for the initial installation (Day 0) of the Cisco Digital Building Cree Solution, using UPOE switches for the deployment scenarios discussed in the *Cisco Digital Building Cree Design Guide*, includes the following major topics:

- [Initial Installation with Cisco Catalyst 3850 UPOE Switch, page 3-1](#)
- [Configuring Cisco Catalyst 3850 UPOE Switch for Initial Installation, page 3-2](#)
- [Initial Installation with Cisco Catalyst 4506-E UPOE Switch, page 3-3](#)
- [Light Fixture Provisioning for Initial Installation, page 3-4](#)

During the initial installation, the electrician will install the light fixture on wiring closet switches (Cisco Catalyst 3850 or Cisco Catalyst 4506-E) with the default factory configuration to verify the light fixture's operation.

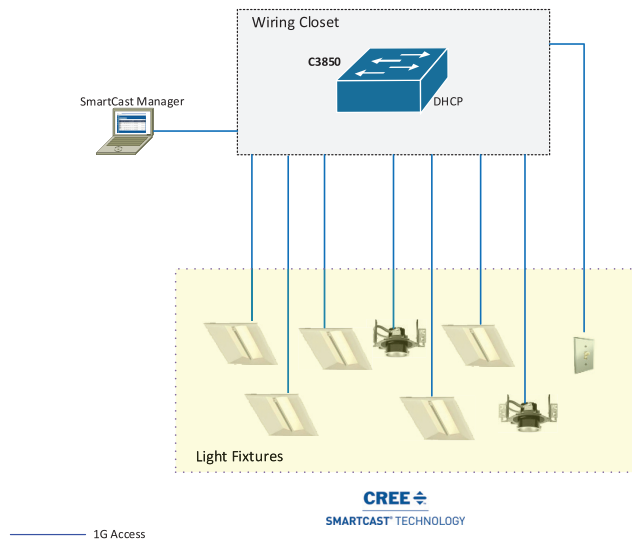
Initial Installation with Cisco Catalyst 3850 UPOE Switch

This section covers network topology and configuration required on Cisco Catalyst 3850 switches for the initial installation of light fixtures.

Network Topology

During the initial installation, light fixtures are connected to the wiring closet Cisco Catalyst 3850 UPOE access switch, as shown in the network topology depicted in [Figure 3-1](#).

Figure 3-1 Cisco Digital Building Cree Solution Initial Setup with Cisco Catalyst 3850 Switch



Configuring Cisco Catalyst 3850 UPOE Switch for Initial Installation

Cree Light Fixtures Installation

The initial installation of Cree light fixtures at installation site is generally done by an electrician along with an UPOE switch. The CREE installation, which involves low voltage wiring, does not require an electrical contractor.

When the light fixtures are connected to Cisco Catalyst 3850 UPOE switch ports, the light fixtures turn on with low brightness (~15W of switch port PoE power); this verifies light fixtures' hardware operation by the electrician.

Initial Network Setup

The initial installation of lighting network is generally done by an IT network engineer or the commissioning engineer. Perform the following configuration steps to prepare the lighting network.

Prerequisite for Initial Installation

Complete the following prerequisite step for initial lighting network setup:

- The Cisco Catalyst 3850 switch supports Perpetual and Fast PoE features (described in [Chapter 5, “Lighting Deployment without Campus Network Core”](#)) on 3.7.0 EX switch IOS software release. Hence, it is suggested to upgrade the switch IOS image to 3.7.0 EX before beginning lighting network installation.

- Step 1** Enable LLDP on the switch global configuration, as shown below. LLDP is required to be enabled on the switch for Cree lights fixtures' power negotiation. Additionally, static power configuration needs to be enabled per port.

```
3850-Switch(config)#lldp run
3850-Switch(config)#interface range gi 1/0/1-24
3850-Switch(config-if-range)# power inline static max 60000
```

- Step 2** Configure SVI for default VLAN 1:

```
interface vlan 1
 ip address 10.1.0.1 255.255.255.0
!
```

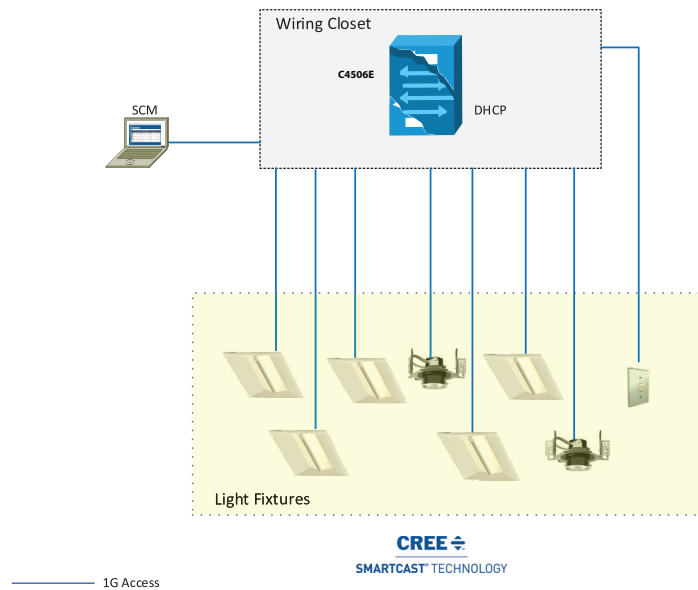
Initial Installation with Cisco Catalyst 4506-E UPOE Switch

This section covers the network topology and configuration required on a Cisco Catalyst 4506-E switch with UPOE line card for the initial installation of light fixtures.

Network Topology

During the initial installation, light fixtures are connected to wiring closet Cisco Catalyst 4506-E UPOE ports, as shown in [Figure 3-2](#).

Figure 3-2 Cisco Digital Building Cree Solution Initial Setup with Cisco Catalyst 4506E Switch



Configuring Cisco Catalyst 4506-E UPOE Switch for Initial Installation

Cree Light Fixtures Installation

The initial installation of Cree light fixtures at an installation site can be done by a low voltage or high voltage electrician. The Cree fixtures will be connected to the Cisco UPOE switch.

When the light fixtures are connected to Cisco Catalyst 4506-E switch UPOE ports, the light fixtures turn on with low brightness (~15W of switch port PoE power); this verifies the light fixtures' hardware operation and connection.

Initial Network Setup

- Step 1** Enable LLDP on the switch global configuration, as shown below. LLDP is required to be enabled on the switch for Cree lights fixtures' power negotiation and operation. Additionally, static power configuration is enabled per port connected to the light fixture.

```
4506E-Switch(config)#lldp run
4506E-Switch(config)#interface range gi 1/1-48
4506E-Switch(config-if-range)# power inline static max 60000
```

- Step 2** Configure SVI for default VLAN, as shown below:

```
!
interface Vlan 1
ip address 10.1.0.1 255.255.255.0
!
```

Light Fixture Provisioning for Initial Installation

This section covers IP addressing using DHCP server and initial commissioning of light fixtures using Cree SCM.

Configuring DHCP Server for Light Fixture IP Addressing

Commissioning the Cree light fixtures for the initial installation verifies the light fixture discovery, calibration, auto-grouping, and wall dimmer operation, using OneButton™ Setup on the Cree SCM application. Light fixtures require IP addresses assigned in the network to perform OneButton Setup for initial provisioning.

During the initial installation, the DHCP server IP addressing pool for light fixtures and wall dimmers is configured on a Cisco Catalyst 3850 or a Cisco Catalyst 4506-E switch to assign IP addresses to Cree endpoints.

[Table 3-1](#) shows an example DHCP pool range for Cree light fixtures.

Table 3-1 IPv4 DHCP Address Pool on Cisco Catalyst 3850/Cisco Catalyst 4506E

Pool Network	Excluded IP Range	Purpose
10.1.0.0/22	10.1.0.1-10.1.0.50	DHCP pool for Cree light fixtures in default VLAN 1

Configure the DHCP server on a Cisco Catalyst 3850 or a Cisco Catalyst 4506-E switch, where the light fixtures are connected. The following is an example:

```
3850-Switch (config)# ip dhcp pool Cree
                        network 10.1.0.0 255.255.252.0
                        default-router 10.1.0.1

3850-Switch (config)# ip dhcp excluded-address 10.1.0.1 10.1.0.50
!
```

Configuring SmartCast Manager for Light Fixture Provisioning

Complete the steps described in this section for installing and configuring Cree SmartCast Manager.

Installing Cree SCM

Refer to Section 3.1, “Installation Procedure” in *Cree SmartCast PoE User Manual v1.2.2* for installing Cree SCM.



Note

The SCM application connects to the wiring closet switch in the same VLAN as the light fixtures. The switch access port configurations for SCM are similar to light fixture switch port configurations that are discussed in this guide.

Commissioning Light Fixtures

Complete the following steps to provision light fixtures. Refer to Section 3.2, “Walkthrough of the Screens” in the *Cree SmartCast PoE User Manual v1.2.2* for detailed step-by-step instructions for provisioning the light fixtures. The following is a summary of the steps:

1. Connect the SCM to an access port on the switch.
2. Launch the SCM application.
3. In the network interface selection, choose the PoE network.
4. Click **Continue**.
5. Once the devices are listed on the SCM, perform OneButton Setup.
6. Click **All** to start OneButton Setup.
7. Once the OneButton Setup completes, click **Settings**. Verify that the Occupancy Group and Switch Group is created.
8. Once OneButton Setup is complete, click **All Devices** under the **Settings** tab to verify that all devices in the lighting network are assigned to Occupancy Groups and Switch Groups.

Verifying and Upgrading Light Fixture Firmware

The firmware version of the light fixture can be verified on SCM after it is discovered by SCM. Complete the following steps to check the firmware version of the light fixture on SCM:

-
- Step 1 Navigate to **Advanced > Firmware Versions**.
 - Step 2 Choose **Lighting Network** and then click **Show Versions**.

- Step 3** Verify the version of the Primary, Secondary Firmware, and Firmware Upgrade application. Versions should be Cree endpoints firmware versions contained in the SmartCast PoE v1.2.2 release package.
-

**Note**

Cree software release package SmartCast PoE v1.2.2 contains SCM v7.3.22, primary firmware v7.4.63, and secondary firmware v1.6.24, which are mapped to top level release packages.

If the light fixtures and wall dimmers are on different firmware versions than the SmartCast PoE v1.2.2 release, upgrading the endpoints to the v1.2.2 release firmware as suggested by Cree is required.

Refer to the Cree Firmware Update section in *Cree SmartCast PoE User Manual v1.2.2* for upgrading firmware on Cree endpoints. Also, verify the firmware version after the successful upgrade, by following Steps 1 to 3 above.