

Troubleshoot BBU on CGR1240 that Runs CG-OS

Contents

[Introduction](#)

[Prerequisites](#)

[Requirements](#)

[Components Used](#)

[Troubleshoot](#)

[BBU Commands and Functions](#)

[LED Status and Meaning](#)

[Output of Show Environment Power](#)

[BBU State of Charge \(SOC\)](#)

[Low Power State](#)

[Temperature](#)

[Common Problems](#)

[BBU is Not Detected](#)

[BBU Does Not Get Charged](#)

[Related Information](#)

Introduction

This document describes how to troubleshoot and check status of Battery Backup Units (BBU) for Cisco Connected Grid Route (CGR1240) that runs CG-OS.

The CGR1240 supports up to three BBU units. If one battery is bad, then the entire stack of battery must be replaced. It is not recommended to mix and match different BBU hardware revision as it is not compatible with each other.

Prerequisites

Requirements

There are no specific requirements for this document.

Components Used

The information in this document is based on CGR1240.

The information in this document was created from the devices in a specific lab environment. All of the devices used in this document started with a cleared (default) configuration. If your network is live, make sure that you understand the potential impact of any command.

Troubleshoot

BBU Commands and Functions

BBU Command	Functions
backup-battery disable	Disconnect backup-battery operation from the system. This command is used when you are replacing battery.
backup-battery enable	Connect backup-battery operation to the system
backup-battery firmware	Firmware for the BBU. This command is used to upgrade the BBU firmware.
backup-battery hard-reset	Hard-reset backup-battery. This command reset battery statistics.
backup-battery inhibit	Disable function. This command inhibit discharging and charging of BBU for transporting.
backup-battery reset	Reset backup-battery. This command reset battery statistics.
backup-battery un-inhibit	Enable function. This command enable charging and discharging function of the BBU.

Backup-battery disable completely disconnect battery connection from the router. Once this command is issued, the battery can be replaced.

Backup-battery inhibit does not disconnect battery connection from router. This command only prevent the BBU to charge/discharge. If you replace the BBU with this command, it can cause the motherboard fuse to blow.

LED Status and Meaning

LED Status	Meaning
Green	Idle
Blinking Green	Charging
Blinking Yellow	Discharging
Solid Red	Fully Discharged
Blinking Red	Bootloader
No LED	BBU is not connected to system
Blinking Green/Red	Enumeration
Slow Blinking Yellow	Charge/Discharge disabled

Output of Show Environment Power

Backup Battery#:

BBU Temperature: 29.20 C [Operational support tempature -25C to 70C]

BBU Voltage: 11.75 V [If <3.5V, battery enters low-voltage lockout state, and BBU charging operational will be disabled.]

BBU Current: 0.00 A [If discharging via BBU, we observe current statistics]

BBU Relative State Of Charge: 91 % [Relative and Absolute are functions of each other, internally we have both functions equalized, so we might not see a noticeable difference . Either is okay for reference. Preferred is Absolute State of Charge.]

BBU Absolute State Of Charge: 91 %

BBU Remaining Capacity: 5.28 A-hr

BBU Full Charge Capacity: 5.74 A-hr
BBU RunTime To Empty: ffff (Not discharging) [Shows highest number if not active. Once battery starts discharging, the system would give more accurate number on run time]
BBU Average Time To Empty: 32768 min.
BBU Average Time To Full: 65535 min.
BBU Charge Current: 0.00 A
BBU Charging Voltage: 11.75 V
BBU Battery Status: 80
BBU Charging Status: 6010
BBU Charge Alarm Warning: 80
BBU Heater Temperature: 29.20 C [Specially useful at negative temperatures]
BBU Heater Status/Control: 0 [Under subzero conditions (At -15C) heater control for battery kicks-in, to heat up unit]
BBU Heater Ambient Temperature: 26.70 C [heater ambient temperature, more accurate]
BBU Unit Status: 4840
BBU Unit firmware version: 10261

BBU State of Charge (SOC)

- BBU is Fully Charged when SOC is at 85% or above.
- BBU is Empty when SOC is at 5% or below.
- It takes about 8 hours to fully charge a BBU.

Low Power State

- At 5% SOC, the BBU shuts down and goes into Low Power state.
- When CGR1240 is connected to AC power, Uninhibit Discharge State: The BBU should have enough capacity to last 30 days in Low Power state.
- When CGR1240 is connected to AC power, Inhibit Discharge State: The BBU should have a shelf life of less than 90 days.

Temperature

- The BBU will contain 2 temperature sensors, (0x40 and 0x43), the Read only signal for feedback control of pack temperature and BBU ambient temperature respectively. The ambient temperature sensor is outside the plastic housing. Temperature range of the sensor is between -40C to +100C.
- Heater Temperature set point is set for operation range between -10C to 25C.
- Battery charging temperature will be between 0°C to 50°C.
- Battery discharging temperature will be between -20°C to 60°C.
- Control Circuit operating temperature will be between -40°C to 85°C.
- Storage and shipping temperature will be between -40 to +70 °C.

Common Problems

BBU is Not Detected

- Check to see if backup-battery enable
- Check the cable connectivity. BBU require the cable harness connected as well as the BBU

Connect (orange wire cable) be connected.

BBU Does Not Get Charged

- Check BBU to see if voltage is 9.5V or above. If BBU does not get charged, wait for a few hours to see if voltage increase. If the voltage remains the same, the BBU contains bad cell and must be replaced.
- If temperature is under subzero condition, BBU will not charge.

Related Information

- Cisco CGR1240 BBU Troubleshooting Video
<https://supportforums.cisco.com/video/13223826/cgr1240-bbu-replacement>
- Installing Battery Backup
<http://www.cisco.com/c/en/us/td/docs/routers/connectedgrid/cgr1000/hardware/cgr1240/installation/bbu.pdf>
- [**Technical Support & Documentation - Cisco Systems**](#)