Calculate Total Power Consumption on Catalyst 9300

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Introduction

This document describes how to calculate the actual power consumption on a Catalyst 9300 switch stack.

Prerequisites

Requirements

Cisco recommends that you have knowledge of these topics:

- Understanding of Cisco Catalyst 9300 series switch hardware architecture and stacking capabilities
- Cisco IOS XE command-line interface (CLI)
- Knowledge of power management concepts for LAN switching, including Power over Ethernet(PoE) budgeting

Components Used

The information in this document is based on these software and hardware versions:

- Cisco Catalyst 9300 Series.
- Stacked switch topology.
- Software Version: Cisco IOS XE 17.12.4.

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, ensure that you understand the potential impact of any command.

Background Information

Cisco Catalyst 9300 switches support stacking, allowing multiple physical switches to operate as a single

logical unit. Effective power management in stack environments is critical, particularly when using features like Power over Ethernet (PoE) to supply power to connected devices such as IP phones, wireless access points, and cameras. Power consumption monitoring enables network engineers to ensure that the stack operates within safe and efficient power budgets. It also helps in planning for redundancy and additional PoE endpoints. The Catalyst 9300 provides built-in CLI commands to display detailed power usage and allocation per stack and per switch member.

Problem

The objective is to identify the total power consumption by a Cisco Catalyst 9300 switch stack. Network engineers are required to obtain accurate, real-time data on how much power (in watts or milliwatts) is being used by the system as a whole, as well as by individual stack members, including both system and PoE loads.

Solution

Method 1: Access the Stack Power Budgeting Information

Use this command to display detailed power data for the stack, including total power, reserved power, allocated power, and available power for each stack and member.

<#root>

Device#

show stack-power budgeting

```
    Power Stack                    Stack   Stack    Total   Rsvd    Alloc   Sw_Avail Num  Num
    Name                           Mode    Topolgy  Pwr(W)  Pwr(W)  Pwr(W)   Pwr(W)  SW   PS
    ---------------------          ------  -------  ------  ------  ------  ------  ----- -----
    Powerstack-1                   SP-PS   Ring     2145    30      729     1386      3    3
    Powerstack-2                   SP-PS   Stndaln  715     0       333     382       1    1

    Power Stack                    PS-A   PS-B   Power     Alloc     Poe_Avail   Consumd Pwr
SW  Name                           (W)    (W)    Budgt(W)  Power(W)    Pwr(W)    Sys/PoE(W)
--  ---------------------          -----  -----  --------  --------   --------  ------------
1   Powerstack-1                   0      715    693       243.0      450.0     74.1/0.0
2   Powerstack-2                   0      715    715       333.0      382.0     74.4/33.6
3   Powerstack-1                   0      715    712       243.0      469.0     68.9/0.0
4   Powerstack-1                   0      715    710       243.0      467.0     68.9/0.0
--  ---------------------          -----  -----  --------  --------   --------  ------------
```

Totals:

1062.0 1768.0

286.4/33.6

<<< The sum of these 2 values is the total power consumed

This output shows the total system power consumption: The total power used by the system (286.4W) and PoE devices (33.6W).

Summing these values provides the actual power consumption of all switches in the stack plus the PoE devices.

In this case, **320 W**.

Method 2: Access Environmental Power Output Details

Run this command to view the output power for each Power Supply Unit(PSU) in the stack.

<#root>

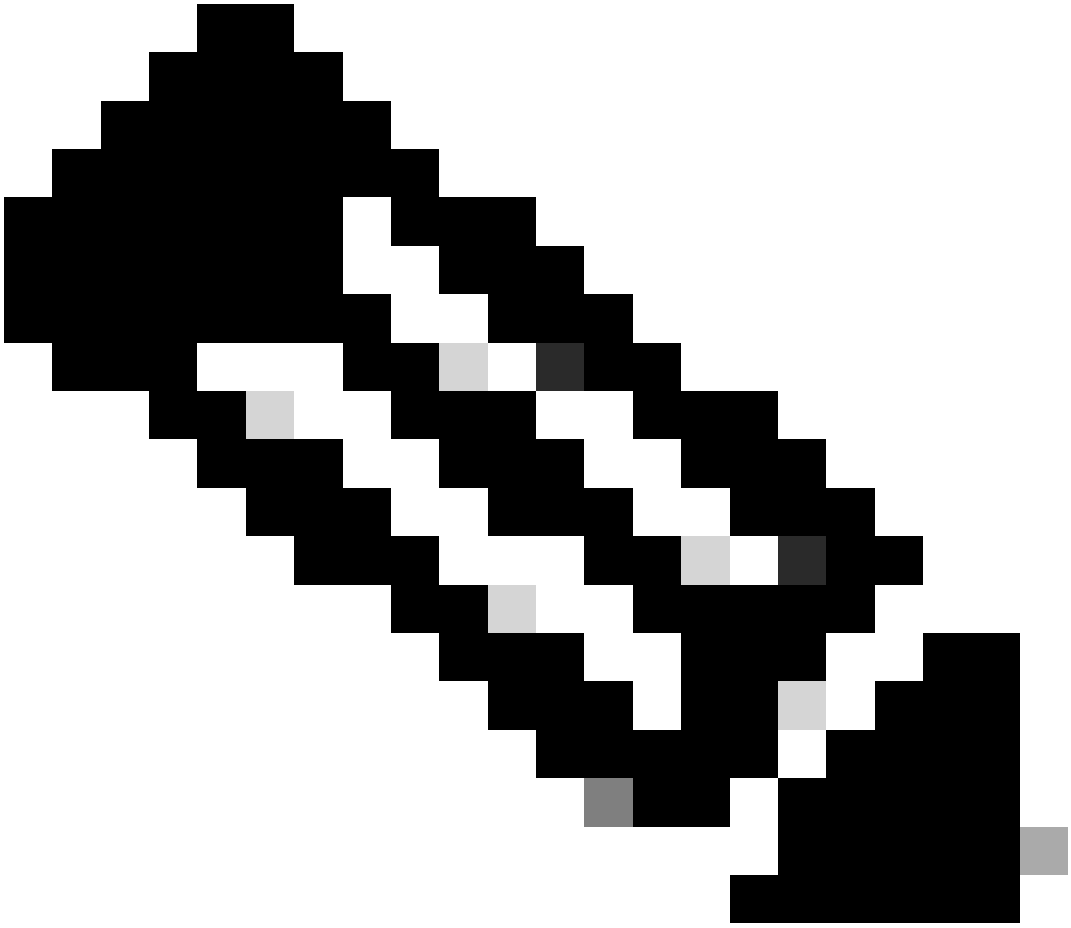
```
Device#
```

```
show environment all | include POWout
```

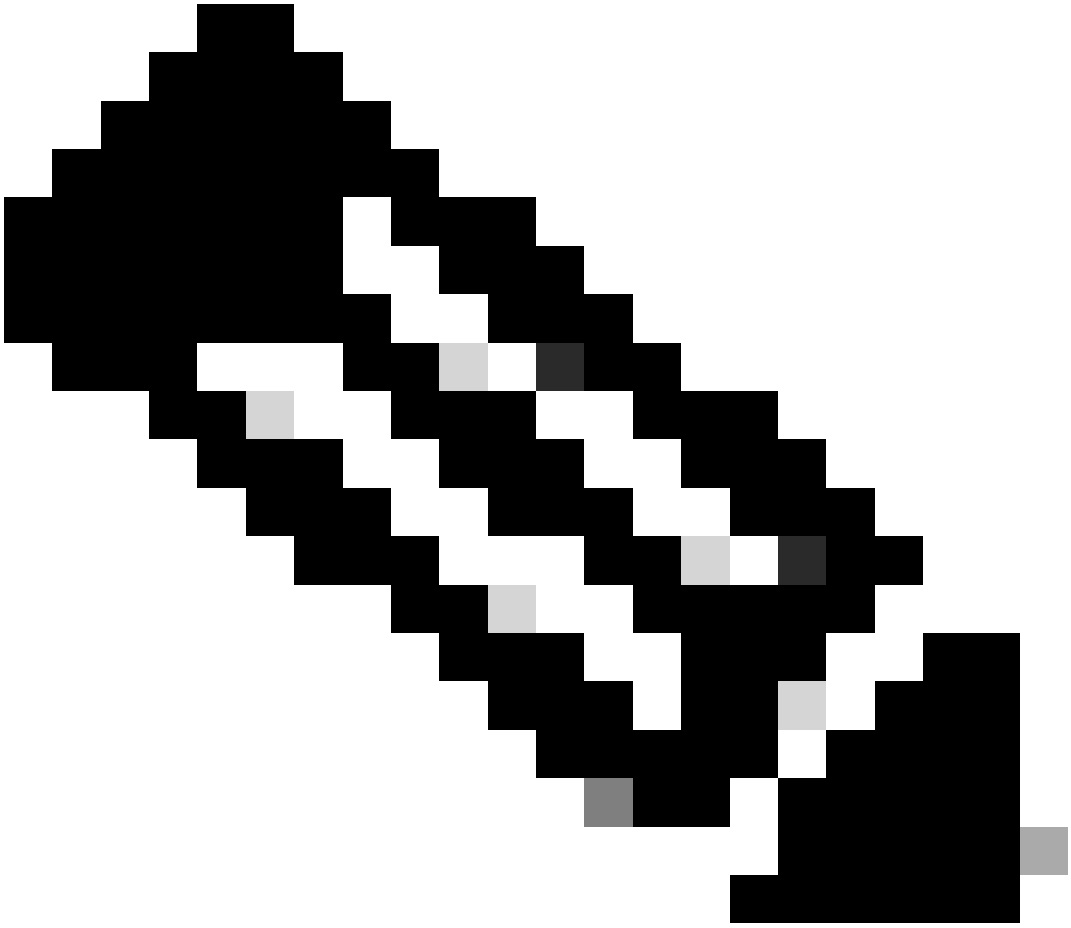
```
 PS2 POWout      1               GOOD               84000 mW          na
 PS2 POWout      2               GOOD              108000 mW          na
 PS2 POWout      3               GOOD               62000 mW          na
 PS2 POWout      4               GOOD               66000 mW          na
```

This output lists the direct current power output (in milliwatts) for each detected power supply. Summing these values provides the actual power consumption across all power supplies in the stack.

In this case, **320000 mW** or **320 W**.



Note: The values shown in this article are measured after the current is converted from alternating to direct. So all the values show direct current power consumption. If you are measuring the power consumption before the conversion, the value is different.



Note: These 2 methods use real time data to get power consumption. If you want to use both, you can get different output depending on if you run the commands at different times.

Related Information

- Cisco Technical Support & Downloads