

# Troubleshoot ASR1k Power Supply

## Contents

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### [Introduction](#)

### [Prerequisites](#)

[Requirements](#)

[Components Used](#)

### [Procedure](#)

[Step 1. Check the Status of the PS](#)

[Step 2. Identify False Positive Alerts](#)

[Step 3. Identify Hardware Failures](#)

[Not Enough Power at the Input of the PS](#)

[Not Enough Power Provided by the PS](#)

[Additional Information](#)

### [Related Information](#)

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## Introduction

This document describes how to troubleshoot an ASR1k Power Supply (PS) and to avoid an unnecessary Return Material Authorization (RMA).

## Prerequisites

### Requirements

Cisco recommends that you have knowledge of these topics:

- Cisco IOS® XE
- ASR1k

### Components Used

The information in this document is based on the hardware and software version:

- ASR1002-X
- 03.10.04.S // 15.3(3)S4

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.

## Procedure

In order to troubleshoot PS on ASR1k, there are several steps that need to be taken.

### Step 1. Check the Status of the PS

In order to check the status, run the `show platformcommand`:

```
<#root>
Router#show platform
Chassis type: ASR1002-X

slot
  Type
  State
  Insert time (ago)
-----
P0
  ASR1002-X-PWR-AC
  ok
  5d12h
P1
  ASR1002-X-PWR-AC
  ps, fail
  5d12h
```

The `slot` field indicates if the PS is mounted on slot0 (P0) or slot1 (P1).

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 **Note:** P1 is displayed when the platform supports a secondary slot to install a redundant PS.

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The `state` field indicates two possible values:

- **ok** = The PS works correctly
- **ps, fail** = The PS has triggered the failure alarm

The `type` field indicates the PS part identifier (PID) and the `insert time` field indicates the amount of time passed since the PS was inserted into the chassis.

If the failure alarm triggers, run the `show environmentcommand`:

```
<#root>
Router#show environment
Sensor List: Environmental Monitoring

Sensor          Location
State
Reading
```

PEM Iout

P0

Normal

16 A

PEM Vout

P0

Normal

12 V DC

PEM Vin

P0

Normal

230 V AC

PEM Iout

P1

Normal

16 A

PEM Vout

P1

Normal

12 V DC

PEM Vin

P1

Normal


231 V AC

These fields are the most relevant:

- **Sensor** = Displays the power entry module (PEM) values
  - **Iout** = Electrical current output, measured on amperes (A)
  - **Vout** = Electrical voltage output, measured on direct current voltage (V DC)

- **Vin** = Electrical voltage input, measure in either alternate or direct voltage (V AC | V DV)

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 **Tip:** The **Vin** value changes from one PS model to other, you need to check the datasheet to confirm the correct value. The type identifies the last two characters of the PID, AC stands for alternate current and DC for direct current.

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- **Location** = Indicates the slot in which the PS is installed
- **Reading** = Displays the numerical values

The ASR1k PS delivers 12 or 5 V DC as the **PEM Vout**, it depends on the PS model. Any other value indicates a faulty **PEM Vout**.

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 **Note:** Check the status of the fan and temperature sensor in the PS, these values are displayed as *TEMP* when you run `show environment`, an alarm indicates a hardware error with the fan.

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## Step 2. Identify False Positive Alerts

A false positive alert is triggered when the **ps, fail** state is found in the `show platformCommand`, and the `show environment` command displays correct PEM values, for example:

```
<#root>
```

```
Router#show platform  
Chassis type: ASR1002-X
```

```
slot
```

```
  Type
```

```
State
```

```
  Insert time (ago)
```

```
-----  
P0
```

```
ASR1002-X-PWR-AC
```

```
ok
```

```
5d12h
```

```
P1
```

```
ASR1002-X-PWR-AC
```

```
ps, fail
```

```
5d12h
```

```
<#root>
```

```
Router#show environment  
Sensor List: Environmental Monitoring
```

Sensor                    Location

State

Reading

PEM Iout

P1

Normal

16 A

PEM Vout

P1

Normal

12 V DC


PEM Vin

P1

Normal

230 V AC

---

 **Caution:** If the `show platform` command displays an alarm and the `show environment` command displays a correct status then a cosmetic bug affects the device. Cisco bug ID [CSCvc16495](https://tools.cisco.com/bugcenter/bug/?bugID=CSCvc16495) documents this behavior for the ASR1K.

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## Step 3. Identify Hardware Failures

### Not Enough Power at the Input of the PS

In order to identify if the PS receives enough energy, run the `show environment` command:

<#root>

```
Router#show environment
```

```
Sensor List: Environmental Monitoring
```

Sensor	Location	State	Reading
PEM Iout	P0	Normal	16 A
PEM Vout	P0	Normal	12 V DC
PEM Vin	P0	Normal	209 V AC
PEM Iout	P1	Normal	1 A
PEM Vout	P1	Normal	1 V DC
PEM Vin	P1	Normal	5 V AC

Check the source of power provided to the PS and discard an environmental problem or a problem at the site.

If the power source is **ok** and works correctly with a different PS, replace the offended PS.

### Not Enough Power Provided by the PS

In order to identify if the PS provides enough energy, run the `show environment` command:

```
<#root>
```

```
Router#show environment
```

```
Sensor List: Environmental Monitoring
```

Sensor	Location	State	Reading
PEM Iout	P0	Normal	16 A
PEM Vout	P0	Normal	12 V DC
PEM Vin	P0	Normal	221 V AC
<b>PEM Iout</b>	<b>P1</b>	<b>Normal</b>	<b>0 A</b>
<b>PEM Vout</b>	<b>P1</b>	<b>Normal</b>	<b>0 V DC</b>
PEM Vin	P1	Normal	221 V AC

If the PS does not supply enough energy, replace the offended PS.

### Additional Information

In order to obtain additional information of the PS run the `show platform hardware slot <slot id> mcu status` command or the `show platform hardware slot <slot id> fan status` command.

```
<#root>
```

```
Router#show platform hardware slot P1 mcu status
```

```
Model ID: 2  
12V I: 12  
12V V: 12  
Temp: 35  
Input V: 214  
Fan speed: 65%
```

```
<#root>
```

```
Router#show platform hardware slot P1 fan status
```

```
Fan 0: Normal  
Fan 1: Normal  
Fan 2: Normal
```

## Related Information

- [Cisco Technical Support & Downloads](#)