

# Sin Luz, Sin Internet

An Internet perspective on the April 28 power outage in Spain & Portugal

David Belson Head of Data Insight @dbelson / dbelson@cloudflare.com

May 15, 2025



## An Internet perspective

How the power outage impacted...

- Traffic
- Connection quality
- Routing (announced IP address space)

...as seen through Cloudflare Radar



(The Routing section on Cloudflare Radar uses RIPE RIS data from RIPE NCC and University of Oregon's RouteViews data.)



# **Internet traffic: Spain**



## **DNS queries time series for Spain** Normalized guery volume to the 1.1.1.1 DNS resolver over time — Spain ■ Previous: 04/21/2025 → 04/22/2025 May Mon, Apr 28, 00:00 Mon, Apr 28, 12:00 Tue, Apr 29, 00:00 Tue, Apr 29, 12:00 Cloudflare Radar Apr 28, 2025, 00:00 UTC → Apr 29, 2025, 23:45 UTC

#### In the first 30 minutes:

#### ↓ Overall traffic dropped 66%

↓ Resolver traffic fell 57%

 $\downarrow$  Overall traffic down as much as 75% below the previous week

https://radar.cloudflare.com/explorer?dataSet=dns&dt=2025-04-28\_2025-04-29&loc=ES&timeCompare=2025-04-21



## **Internet traffic: Spain**

#### Telefonica de España



#### Orange España

#### Network traffic time series for AS12479



#### Network traffic time series for AS12430



Network traffic time series for AS57269

Network traffic (NetFlows) over time

DIGI



#### MásMóvil



In the first 30 minutes, traffic dropped between 51% (AS12430, Vodafone) and 85% (AS57269, DIGI).

Vodafone España



## **Internet traffic: Portugal**





#### *In the first 30 minutes:*

#### ↓ Overall traffic dropped 60%

↓ Resolver traffic fell 46%

 $\downarrow$  Overall traffic down as much as 93% below the previous week

https://radar.cloudflare.com/explorer?dataSet=dns&dt=2025-04-28\_2025-04-29&loc=PT&timeCompare=2025-04-21



# Internet traffic: Portugal



#### odafone

#### Network traffic time series for AS12353



#### Network traffic time series for AS42863



Network traffic (NetFlows) over time — AS42863 ••• Previous: 04/21/2025 → 04/22/:



#### **MEO** Residential



#### In the first 30 minutes:

- Traffic increased 133% on AS42863 (MEO Mobile), but started falling in the following hour.
- Fell 92% on AS3243 (MEO Residential).
- Fell 62-91% on other ASNs

NOWO (DIGI)

Network traffic time series for AS13156

**MEO Mobile** 

https://radar.cloudflare.com/explorer?dataSet=netflows&dt=2025-04-28\_2025-04-29&loc=as{AS Number}&timeCompare=2025-04-21



## **Network quality: Spain**



## Median download speeds fell from ~35 Mbps to ~19 Mbps



# Median latency grew from ~22 ms to as much as 40 ms



## **Network quality: Portugal**



### Median download speeds fell from ~40 Mbps to ~15 Mbps



# Median latency grew from ~20 ms to as much as 50 ms



## Announced IP address space: Spain



## IPv4 fell from 133,617 /24s to a low of 121,552 /24s (-9%)



### IPv6 fell from 112,386,540 /48s to a low of 59,145,919 /48s (-47%)

Initial IPv4 drop closer to 5%, and IPv6 closer to 18%. The IPv4 drop @ 19:30 UTC and the IPv6 drop seen @ 17:50 UTC appear to be due to AS3352 (Telefonica de España).



## **Announced IP address space: Portugal**



## IPv4 fell from 25,590 /24s to a low of 23,528 /24s (-8%)



### IPv6 fell from 17,928,551 /48s to a low of 14,487,820 /48s (-19%)

The large drops seen on both graphs appear to be due to losses seen across multiple ASNs.



## The Cloudflare network



# 330

cities in 125+ countries, including mainland China

# 13,000

networks directly connect to Cloudflare, including every major ISP, cloud provider, and enterprise

# **388 Tbps**

global network edge capacity, consisting of transit connections, peering, and PNI

~50 ms

from 95% of the world's Internet-connected population

![](_page_11_Picture_0.jpeg)

# Thank you