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How the Internet routed around Cable Damage in the Baltic Sea

Internet event analysis with **RIPE Atlas**

Emile Aben | **RIPE 90: Lisbon, Portugal** | 15 May 2025

Preamble

This is an abridged version ahead of Friday's session

based on content published on RIPE Labs:

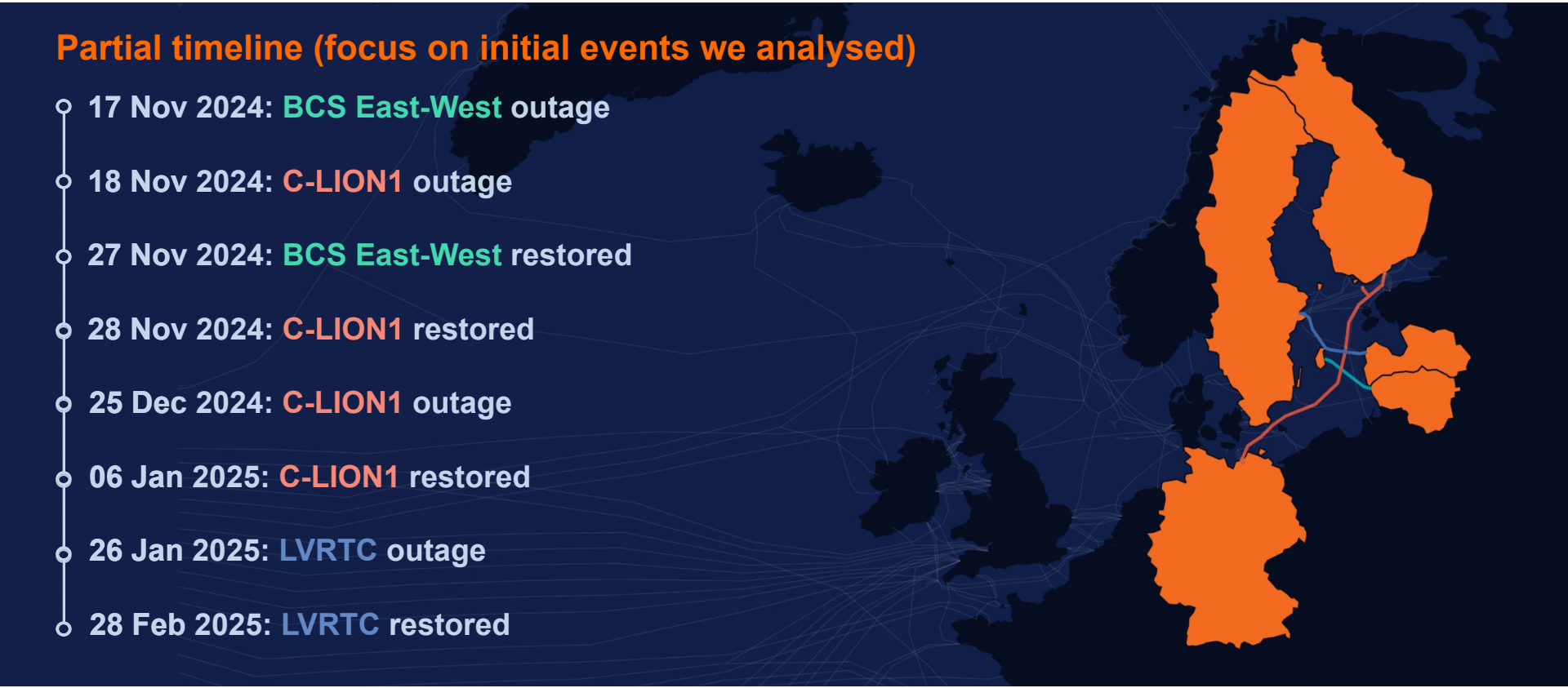
- https://labs.ripe.net/author/emileaben/does-the-internet-route-around-damage-baltic-sea-cable-cuts/
- https://labs.ripe.net/author/emileaben/a-deep-dive-into-the-baltic-sea-cable-cuts/

Collaborative work with Alun Davies, Anastasiya Pak, Jim Cowie and Joaquin Vaquero Ortiz

Baltic Sea cable damage

Partial timeline (focus on initial events we analysed)

- 17 Nov 2024: BCS East-West outage
- 18 Nov 2024: C-LION1 outage
- 27 Nov 2024: BCS East-West restored
- 28 Nov 2024: C-LION1 restored
- 25 Dec 2024: C-LION1 outage
- 06 Jan 2025: C-LION1 restored
- 26 Jan 2025: LVRTC outage
- 28 Feb 2025: LVRTC restored



Baltic Sea cable damage

Media coverage

Two Baltic Sea cables disrupted – is this 'hybrid warfare'?

By **Annie Turner** - 19 November 2024

European governments point finger at Russia over Baltic cable cuts

Investigations are underway into two subsea cable breaches in the Balt and European governments are starting to suggest that Russia is behin

Mary Lennighan
November 20, 2024

3 Min Read

Sweden opens inquiry into damaged undersea cable as Nato deploys ships

A vessel has been seized al optic line, probably due to

Damaged cables appear to be accident, Finland says

3 December 2024

Share Save

George Wright
BBC News

December 31, 2024

Christmas Day Cable Cuts in the Baltic Sea

Written by Alexander Lott

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Lithuania, Russia, an
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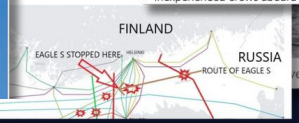


Sweden Investigates New Cable Break Under Baltic Sea

e authorities are looking into possible damage to an undersea
east of Gotland island. NATO has stepped up its surveillance
he region.

Baltic subsea cable damage was accidental, not sabotage - US and European officials

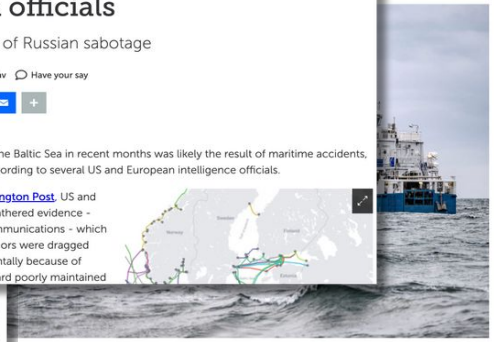
Refutes all claims of Russian sabotage

January 20, 2025 By: Niva Yadav Have your say

Subsea cable damage in the Baltic Sea in recent months was likely the result of maritime accidents, not Russian sabotage, according to several US and European intelligence officials.

As reported by The Washington Post, US and European officials have gathered evidence - including intercepted communications - which have concluded that anchors were dragged across the seabed accidentally because of inexperienced crews aboard poorly maintained

ll article



edish Coast Guard vessel in the Baltic Sea. Sweden also investigated the severing

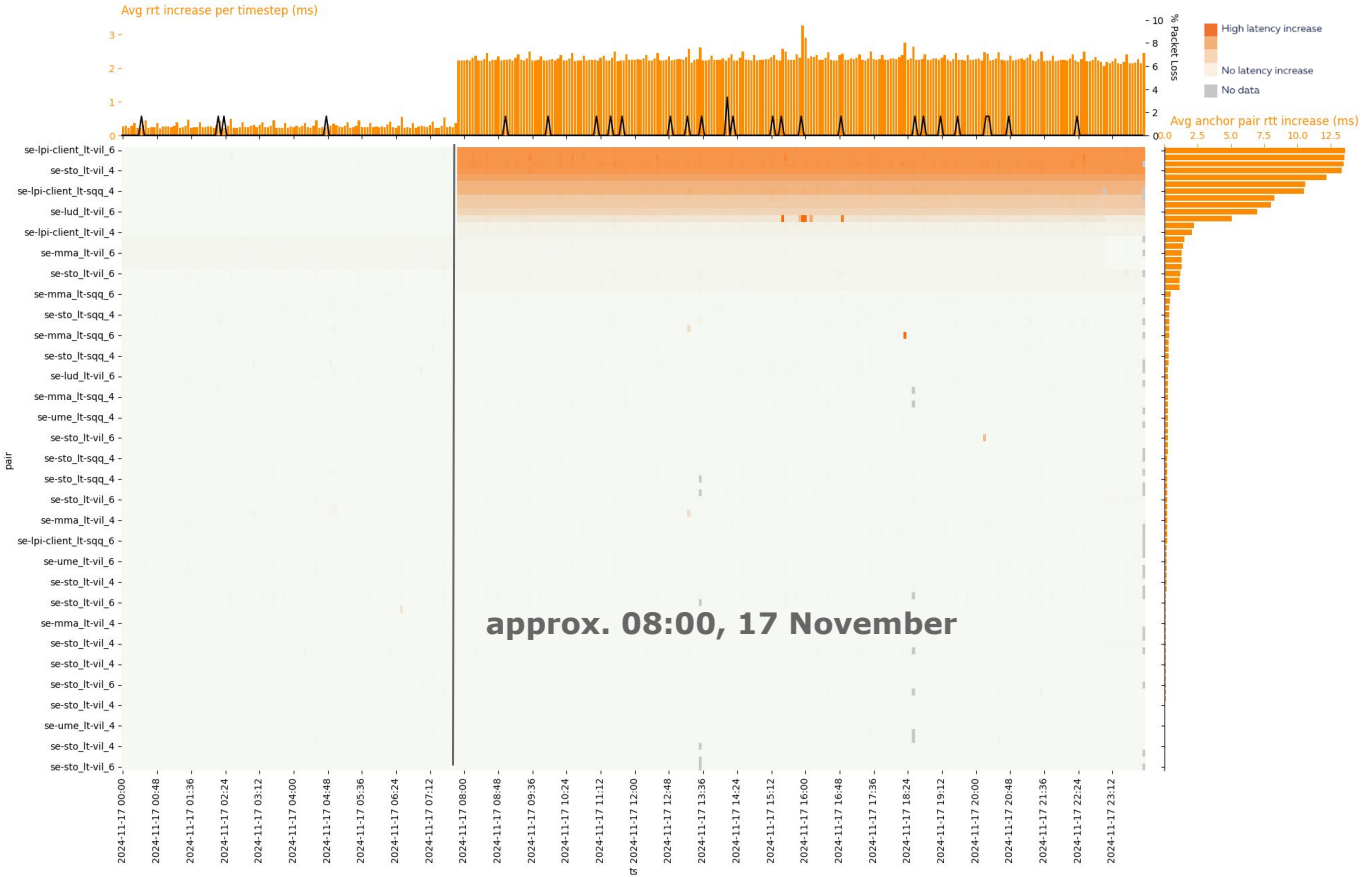
BCS East West

Latency shift

12 hour before/after time of event

Latency increase of approx 10-20 ms shortly before 08:00 UTC on 17 November

We subtract the minimum latency for a path during our observation period to make the latency jumps comparable



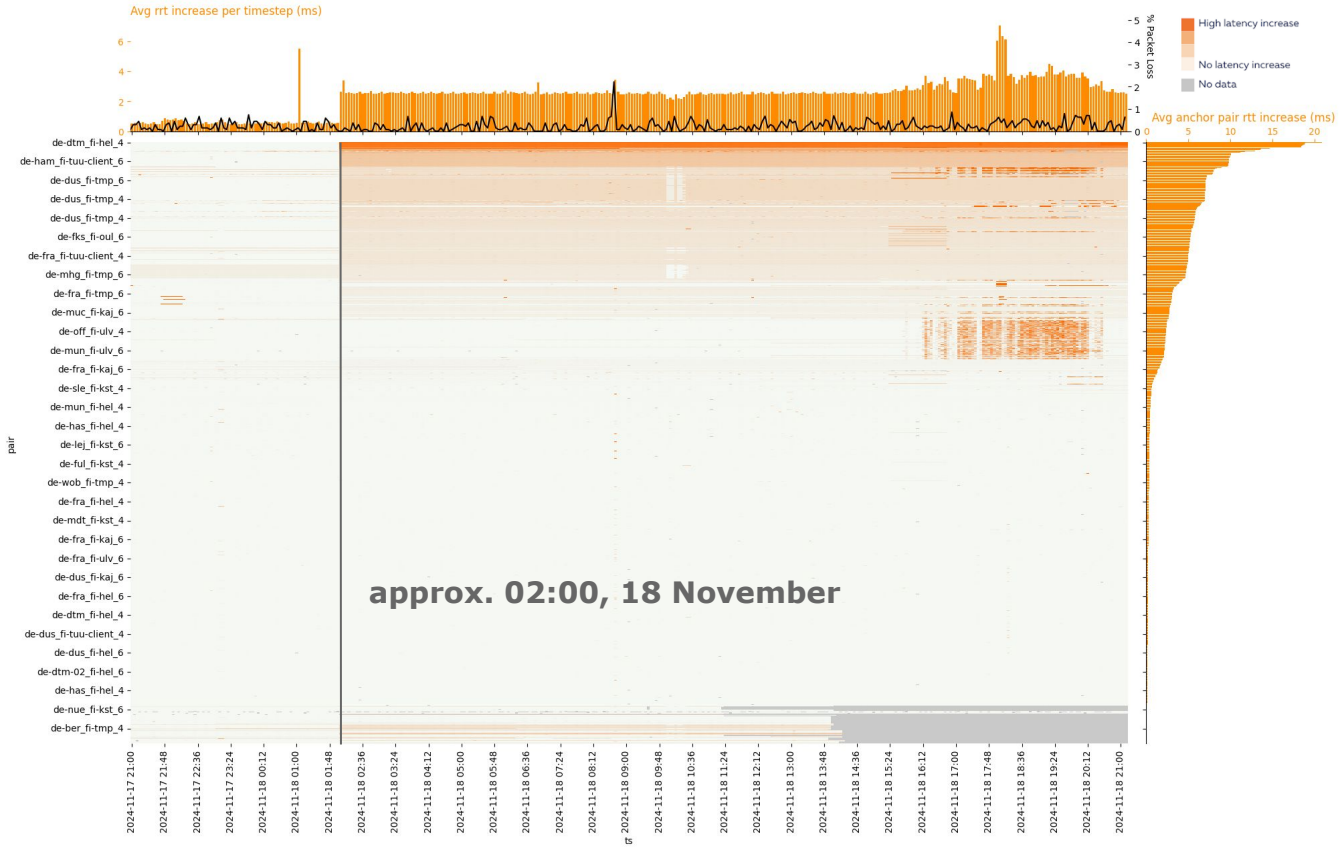
C-LION1

Latency shift

Latency increase of approx 5ms a little after 02:00 UTC on 18 November

Packet loss

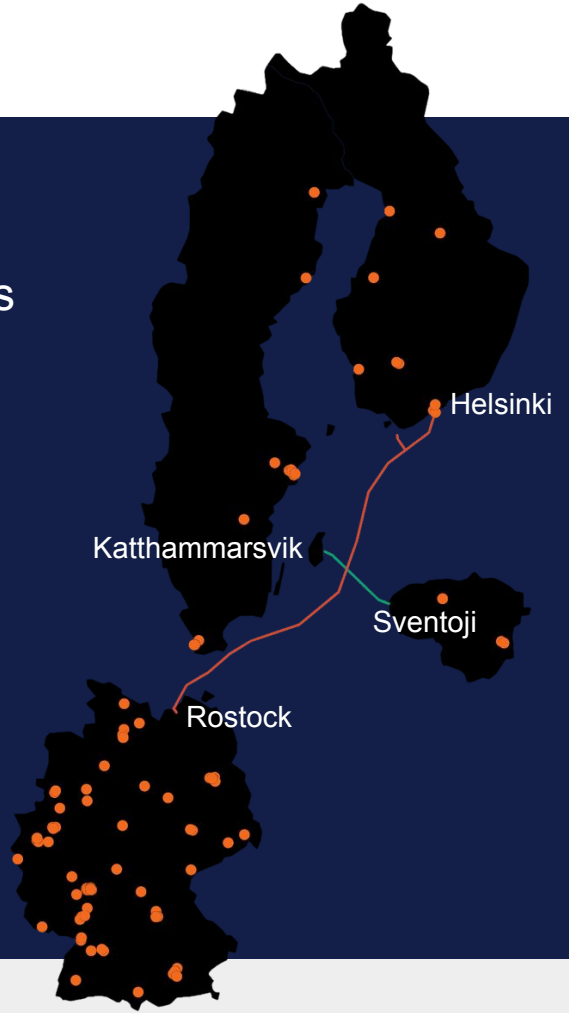
Again, no significant increase in packet loss at time of outage



Summing up

There was a relatively minor but visible shift in latency for around 20-30% of paths between observed anchors

But there was no concurrent increase in packet loss



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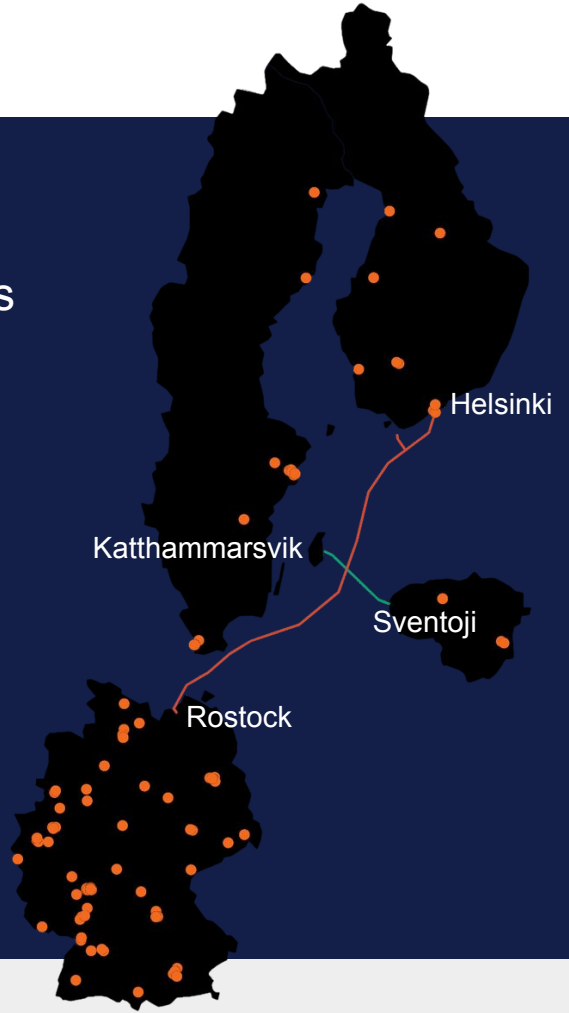
The Internet routed around damage!



Resilience is not guaranteed

Cable damage in Africa

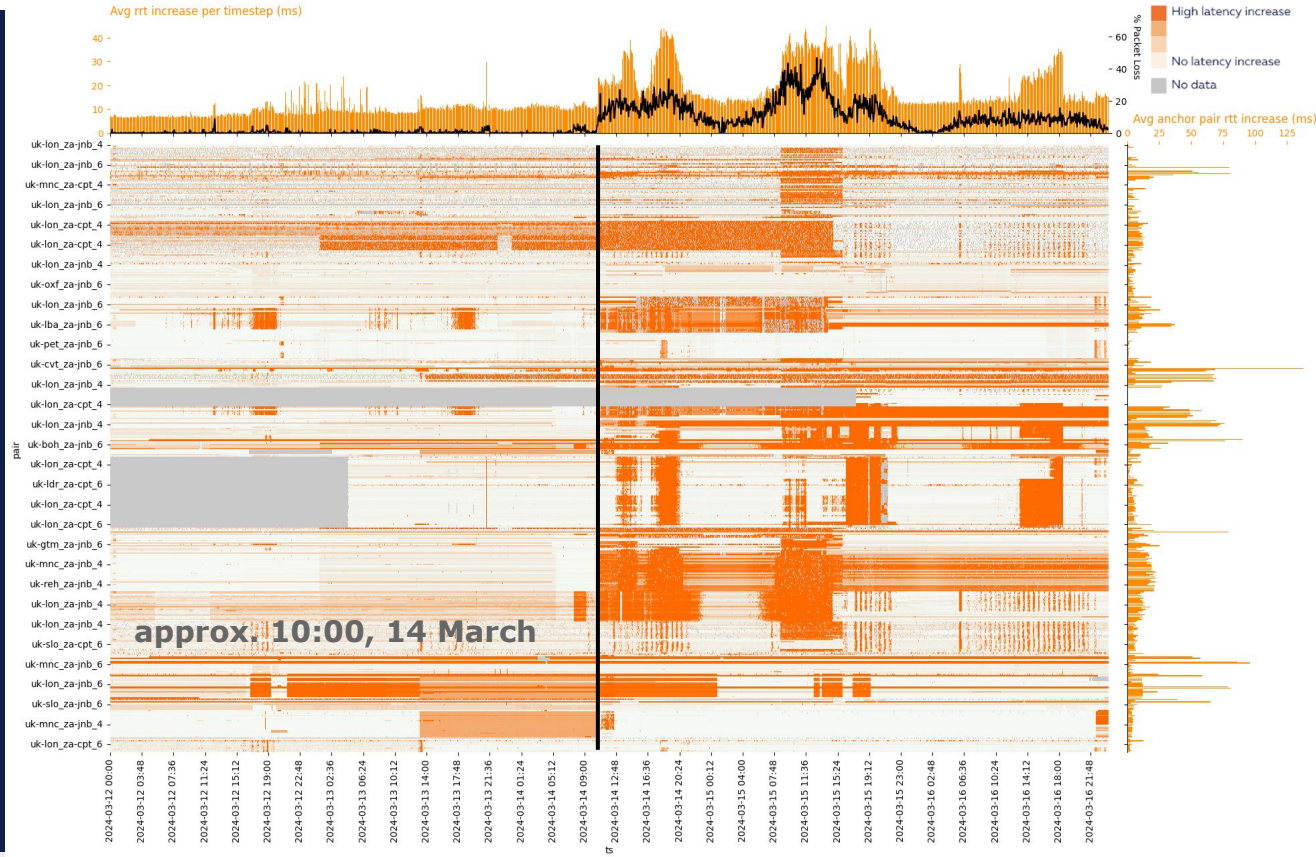
14 March 2024: Submarine landslide off coast of Cote d'Ivoire resulted in damage across multiple cables:

- ACE: Africa Coast to Europe
- MainOne
- SAT-3: Submarine Atlantic 3/West Africa Submarine Cable
- WACS: West Africa Cable System

Resilience is not guaranteed

Latency shift *with* packet loss

Latency increases of approx 20-30 ms accompanied by concurrent increase in packet loss



Conclusions

In the Baltic Sea:

- “The Internet routed around damage”
- Internet resilience depends on multiple levels of redundancy
    - Redundancy between networks
    - Redundancy within networks (circuit and routing)

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- “The Internet routed around damage”
- Internet resilience depends on multiple levels of redundancy
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But resilience is not guaranteed

We have to keep monitoring, measuring, understanding

Questions & Comments

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THANK YOU!