

Internet Monitoring Action Project

# iMAP Timor-Leste 2023 Internet Censorship Report

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## **About iMAP**

The Internet Monitoring Action Project (iMAP) aims to establish regional and in-country networks that monitor network interference and restrictions to the freedom of expression online in 10 countries: Myanmar, Cambodia, Hong Kong, India, Indonesia, Malaysia, Philippines, Thailand, Timor-Leste and Vietnam. Sinar Project is currently working with national digital rights partners in these 10 countries. The project is done via Open Observatory Network Interference (OONI) detection and reporting systems, and it involves the maintenance of test lists as well as the collection and analysis of measurements.

More information is available at [imap.sinarproject.org](https://imap.sinarproject.org). Any enquiries and suggestions about this report can be directed to [team@sinarproject.org](mailto:team@sinarproject.org).

## **About Timorese Association for Progressive Media and Technology**

The Timorese Association for Progressive Media and Technology is a local NGO based in Timor-Leste that works to promote research, training, development, and advocacy on internet freedom, media and digital literacy, open-source, Linux-based, and internet-community networks and governance. This association consists of journalists, IT professionals, bloggers, environmentalists, community organisers, activists, scholars, and intellectuals working in various fields in Timor-Leste. Our aim is to promote ICT sectors as open and common sources, serving democratic governance in which the digital space is designed and managed by and for the benefit of people and the planet.

## **About Sinar Project**

Sinar Project is a civic tech initiative that uses open technology, open data, and policy analysis to systematically make important information public and more accessible to the Malaysian people. It aims to improve governance and encourage greater citizen involvement in the public affairs of the nation by making the Parliament and the Malaysian Government more open, transparent and accountable. More information is available at <https://sinarproject.org>.

## **How to Use This Report**

Recommendations to audience:

- Supporting evidence of internet freedom in Timor-Leste and uncensorship
- Understanding what is the latest development of internet censorship in the country
- Policy advocacy and call for action to safeguard internet freedom and digital rights
- Using the Timorese experience as a lesson and inspiration to the democratic struggle for internet freedom as citizens rights.

This report is not meant to provide comparison of measurements across countries or measurements among different website categories.

## Abbreviations

ALDR	Alcohol & Drugs
ANON	Anonymization and circumvention tools
ASN	Autonomous System Number
COMT	Communication Tools
CTRL	Control content
CULTR	Culture
DNS	Domain Name System
COMM	E-commerce
ECON	Economics
ENV	Environment
FILE	File-sharing
GMB	Gambling
GAME	Gaming
GOVT	Government
HACK	Hacking Tools
HATE	Hate Speech
HOST	Hosting and Blogging Platforms
HUMR	Human Rights Issues
HTTP	Hypertext Transfer Protocol
IGO	Intergovernmental Organisations
ICCPR	International Covenant on Civil and Political Rights
iMAP	Internet Monitoring Action Project
IP	Internet Protocol
ISP	Internet Service Provider
MMED	Media sharing
MISC	Miscellaneous content
NEWS	News Media
DATE	Online Dating
OONI	Open Observatory Network Interference
POLR	Political Criticism
PORN	Pornography
PROV	Provocative Attire

ALDR	Alcohol & Drugs
PUBH	Public Health
REL	Religion
SRCH	Search Engines
XED	Sex Education
GRP	Social Networking
MILX	Terrorism and Militants
TCP	Transmission Control Protocol
TLS	Transport Layer Security

## Table of Contents

<b>About iMAP</b>	<b>2</b>
<b>About Timorese Association for Progressive Media and Technology</b>	<b>2</b>
<b>About Sinar Project</b>	<b>2</b>
<b>How to Use This Report</b>	<b>3</b>
<b>Abbreviations</b>	<b>4</b>
<b>Table of Contents</b>	<b>6</b>
<b>Key Findings</b>	<b>7</b>
<b>Introduction</b>	<b>7</b>
<b>Background</b>	<b>8</b>
<b>Social, Political, and Economic Landscape</b>	<b>9</b>
Legal Environment	10
Reported Cases of Internet Censorship	12
Network Landscape	13
<b>Findings of internet Censorship in Timor-Leste</b>	<b>14</b>
Blocking of Websites	15
Blocking of Instant Messaging Apps	18
<b>Blocking of Circumvention Tools</b>	<b>19</b>
<b>Acknowledgement of Limitations</b>	<b>19</b>
<b>Conclusion: Lessons on the Status of Freedom</b>	<b>21</b>
Contribute to the study	22
<b>Acknowledgements</b>	<b>23</b>
<b>Annex I: List of ISPs</b>	<b>24</b>
<b>Annex II: Glossary</b>	<b>25</b>
<b>Annex III: Methodology</b>	<b>27</b>
Data	27
Coverage	27
How are the network measurements gathered?	27
How are the network measurements analysed?	27
Country code	28
Autonomous System Number (ASN)	28
Date and time of measurements	28
Categories	28
IP addresses and other information	30
Network measurements	31
Confirmed vs. Heuristics	33

## Key Findings

- Based on the OONI measurements collected, Timor-Leste seems to be free of government-sanctioned censorship on websites.
- Even if the government proposes new laws and bills, such as the Criminal Defamation Law and the Cybercrime Bill, the state remains committed to democratic rule of law and respect for press and internet freedom.

While advancing the Criminal Defamation and Cybercrime Law, Timor-Leste remains free of government blocking and censorship of digital space.

## Introduction

Timor-Leste is a newly independent country that regained independence in 2002 after a long struggle against foreign occupation. Despite its position as a newly sovereign state, Timor-Leste has displayed substantial political achievements in terms of civil-political rights the press, and internet freedom. According to many reports and measurements, compared to the surrounding authoritarian, military, and populist-run the states, Timor-Leste is considered as the most democratic country in Southeast Asia. In 2022, Timor-Leste scored 81.89 and ranked 17th out of 180 countries for press freedom, according to Reporters Sans Frontireres. In 2023, it progressed and moved up to the 10th position out of 180 countries. The RSF report found that, until this date, there has been no imprisonment, prosecution, or violence against journalists. However, there have been some attempts to prosecute journalists according to their publication. In a report issued by The Freedom of the House, Timor-Leste ranked 72nd out of 100 countries in the world as free of political and civil liberties. However, in 2022, the state of internet freedom is under threat since the government has proposed the Criminal Defamation Law and Cybercrime Bill, which have been challenged by the civil society and student movements (Asia Center 2023).

During the past five years, Timor-Leste has faced a significant number of challenges. It is facing an economic and political impasse; at the same time, Timor-Leste is recovering from the impact of COVID-19 and Tropical Cyclone Seroja that hit Timor-Leste in April 2021, causing serious devastating consequences to the people's wellbeing and further jeopardising the economy. The economy has been shrinking and has entered into recession, reinforcing inequality, poverty, and maldevelopment. In response, people have been protesting the government from many sides, from urban to rural and from offline to online spaces, against the way the national government is managing the impact of the COVID-19 crisis, climate disaster, and economic recession. Online content has been fueled by hate speech and anti-government discontentment.

In this context, the government has increasingly become more authoritarian, with the power increasingly concentrated into various and small cabinets of executive bodies. In response to people's discontentment and protests, the government is tightening security measures to discipline the people. Similarly, the creation of new laws, bills, and working groups is aimed at regulating not only the public space and activities but also the online space. Therefore, the government-proposed Criminal Defamation Law and Cybercrime Bill are being proposed

after the COVID-19 pandemic, climate-induced disaster, and political impasse hit the country's economy.

This report aimed to portray the state of internet censorship in Timor-Leste, arising from the increasing rise of authoritarianism in the internet space. This report covers the OONI measurements from May 2023 to August 2023 in Timor-Leste. This report covered the period after which, the government of Timor-Leste has proposed various laws, bills, strategic plans, and working groups that deal with policies and regulations in the digital and internet spaces.

## Background

In 2022, Timor-Leste had a population of 1,340,434, comprising 679,087 males and 662,347 females. People under the age of 35 comprise 75% of its population. This implies an average annual growth rate of the population of 1.8% during the last 7 years, making it the highest annual growth rate compared to all other Southeast Asian countries. With an area of 14.954 square kilometres, Timor-Leste has a population of 90 per square kilometre. Dili, as the capital city and major town in Timor-Leste, is the most densely populated and highly urbanised area in Timor-Leste with 1.425 persons per square kilometre.<sup>1</sup>

It is estimated that 80% of Timorese people use agriculture as a source of livelihood. The agricultural land comprises 25.6%, while the arable land is 13%, and female landowners consist of only 2.3%. This creates inequality as 26.9% of the workforce is in agriculture, fisheries, and forestry, but women make up 31% of the workforce while men only make up 24.2% of the workforce. The rural population is 70% or 847,682 and people living in urban areas are 30.6% or 492,752.<sup>2</sup>

<b>Population</b>	1.3 million
<b>Internet penetration (% of population using the internet)</b>	49.6%
<b>Mobile subscriptions (per 100 inhabitants)</b>	104.9
<b>Freedom on the Net ranking (2023)</b>	10/180
<b>Religion (%)</b>	Catholicism: 98.00%, Protestant: 1.20%, Muslim: 0.30%
<b>ICCPR Ratification</b>	Yes

Table 1: A summary of the demographics of Timor-Leste

In 2023, with the rapid expansion of mobile smartphones in Timor-Leste, there were 670 thousand internet users with a penetration of 49.6%. From this, 50% of its population remained offline at the beginning of this year. Between 2022 to 2023, the number of internet users increased to 47000 or 7.5% according to Kepios analysis (Kepios). In addition, there

<sup>1</sup> Timor-Leste National Institute of Statistics (2023). *Timor-Leste Population and Housing Census 2022 Main Report*. Dili: Timor-Leste National Institute of Statistic

<sup>2</sup> Government of Timor-Leste (2022). *Timor-Leste Labour Force Survey 2021 Report*. Dili: Government of Timor-Leste.



are 354,600 social media users in 2023, equating to 26.2% of the current population. The connections are dominated by mobile-broadband with 1.44 million mobile active cellular connections, accounting for 106.6% compared to its population (Dataportal 2023). However, according to Cable.co.uk, the average price of internet in Timor-Leste is \$107.33, which ranks it at 197th and makes it the most expensive internet in Asia excluding the Near East, together with Hong Kong (USD 80.51) and Bhutan (USD 120.38), against countries like Iran (USD 9.35) and India (USD 10.11).<sup>3</sup> According to the International Telecommunication Union, the average Timorese person spent USD 36.10 for internet per month in 2021. Even so, the internet speed remains slow.

## Social, Political, and Economic Landscape

Despite being democratically free, the politics of Timor-Leste remain controlled by the minority elders, a generation of freedom fighters. Regional disparity, rural-urban contradictions, and growing economic inequality are evident. Thousands of young people, who could potentially form the workforce, are forced to migrate and work in Europe, Australia, and South Korea for jobs. The World Bank recorded that the unemployment rate in 2022 is 4.9%, declining from 5% in 2021. According to the World Food Program, 53% of boys and 47% of girls are stunted, 8.6% are suffering acute malnutrition, and 23% of women in reproductive age are anaemic, which are mostly women in rural areas. Again, 47% of children under five years of age are stunted, which is the highest of all countries in Southeast Asia (WFP 2023).<sup>4</sup> By 2023, 42% of people are expected to live under the poverty line.

Over the past five years (2017-2022), the Timor-Leste government has implemented neoliberal austerity measures such as cutting public budgets on productive sectors such as education, health, and agriculture and increasing the consumption taxes, that in turn, further drains the national economy. Hence, it has in fact jeopardised social wellbeing and deepened political deterioration, shrinking the civic space. This period is known to many Timorese and academics as social-political impasse. From 2017 until 2022, Timor has been confronted with political deadlock, social irruption, and economic recession. The COVID-19 crises and climate change-related disasters have reinforced these issues. As a result, the state has become more authoritarian by passing many laws, policies, regulations and institutional initiatives that are aimed at controlling the people's growing resentment.

As mentioned earlier and in the next section, the government has proposed several laws and policies initiatives such as the Criminal Defamation Law and the Cybercrime Bill with the aim of controlling and regulating the internet space. However, Timor-Leste has recently inaugurated its new IX Constitutional government, which was sworn to power in June 2023. The previous VIII Constitutional Government (2017-2022) consisted of PLP, Khunto, and FRETILIN. The new IX government consists of a coalition between CNRT and the

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<sup>3</sup> <https://www.cable.co.uk/broadband/pricing/worldwide-comparison/>

<sup>4</sup> WFP, 'WFP Timor-Leste Country Brief,' July 2023. Access 2 August 2023: (<https://www.wfp.org/countries/timor-leste>)

Democratic Party (PD). The new government had promised to settle all issues such as impasse and recession and improve internet services for the Timorese people.

This research involving OONI measurements was carried out during this period of changes in government mandate and coalitional politics. We collected measurements from June 2023, which was the end period of the VIII Constitutional Government, to July 2023, when the IX Constitutional Government was sworn to power. Since the beginning of the year, internet speeds have declined and costs of accessing the internet have increased. Many people have blamed the VIII Government for this failure to ensure the internet services provided by private-commercial ISP companies in the country.

## Legal Environment

Timor-Leste has various comprehensive legal platforms to promote, protect, and regulate internet freedom and digital rights. The Timorese government has a strong legalistic culture in many ways. Several laws have been proposed and approved during the last period of the five years mandate of VIII Government (2018-2023). However, in addition to the law, various institutions and working groups in the field of digital and internet space also have been created and promoted.

Press freedom and digital rights are embedded within the constitution of the country. The Timorese constitution has firmly grasped the commitment to protect the freedom of expression, information, and digital rights. Timor-Leste also adheres to many international covenants and human rights mechanisms that protect the freedom of expression, free press, and internet rights. There are many important laws and regulations aimed at promoting and protecting but also regulating and controlling the freedom of expression and digital rights, especially with regards to content published on digital platforms such as websites, blogs etc. Existing laws that are really critical to country democratic life, or civil and political liberties, specially on internet freedom and digital rights included the Constitution; Covenant and International Human Rights mechanism such as Universal Periodic Review; Civil and Penal Code; and the Media Law.

Recently, from 2020-2022, the government has proposed a draft law to amend Article 187 of the Penal Code to reinstate defamation in terms of defamation against the honour, good name, and reputation. This was followed with other drafted laws such as the Cybercrime Law in 2021 and the Data Privacy and Protection Law. Despite this, these laws contain a huge amount of contradiction and paradox on country commitment to protect and promote internet freedom. These developments are a potential threat to internet freedom in Timor-Leste, and this development of laws was designed to silence the public criticism against the government, particularly criticism against the public officials in Timor-Leste (Asia Center 2023). The proposed law was developed during the period of impasse, recession, growing discontent by the people in the political party, and the so-called increasing “authoritarianism” of the state.

On an institutional initiative and level, Timor-Leste has created several public institutions and directives of the cabinets dealing with ICT, internet freedom, and rights. The government of Timor-Leste has always maintained the ministerial portfolio and government programs on

ICT and press and internet freedom. In 2012, after the liberalisation, the Timorese government established the National Communications Authority (ANC) through the Telecommunications Decree-law No. 15/2012 of 28 March 2012; its main responsibility is to regulate telecommunications, radio-communications, broadcasting, and the internet (see ANC 2023). Five years later, the Timorese government established the National Policy of Timor Information Communication (TIC) in 2017 with the aim of ‘facilitating the use of ICT’ in the government services with a focus on citizen involvement, then to help stimulate economic diversification and secure the ICT ecosystem and the wellbeing of the citizens.<sup>5</sup> Recently, the government has set up the Inter-Ministerial Working Group on Timor-Leste’s Cyber Crime, comprising members of the government, state enterprises, and public institution and led by the prime minister of Timor-Leste. This group aims to secure the administration and assume the role of a technical coordinator for various governmental departments, indirect public administrative entities, and the elaboration of national strategy policies for cybersecurity in Timor-Leste. The establishment of several public institutions, such as the National Press Council, are required by the Media Law and Ombudsman for Human Rights and Justice. As mandated by the constitution, these are also critical to protect and safeguard the internet and press freedom in Timor-Leste.

From 2000 to 2022, the government of Timor-Leste created several long-term national strategic plans, from Vision 2020 and Timor-Leste Strategic Development Plan 2011-2030 to and the recent Strategic Development Plan Readjusted 2023-2038. All these important documents emphasise the importance and critical role of ICT and the need to safeguard and promote internet freedom, digital rights, and press freedom. The SDP 2011-2030 targets three objectives by 2020: (1) all citizens will have access to reliable, affordable, and high-speed Internet; (2) all students and health professionals will have portable Internet access devices; and (3) Timor-Leste will be part of the technology-enabled world (see SDP 2011-2030).

Before the end of their mandate in 2023, the VIII Government adopted and approved Timor Digital 2022-2032, a ten-year strategic plan that resulted from VIII Government’s program on Public Administration Reform, with the aim of applying ICT and digital tools in critical areas that contribute to and impact people’s wellbeing and economic development, such as e-governance, inclusive economy, health, education, and agriculture. This manifests the country’s commitment toward science, technology and digital in the making of country development and progress.

This shows that the drafted law, policies initiative, and institutional creation was proposed as part of the country’s reforming process to modernise the state, government, public services and the economy. Particularly, the government is committed to the electronic governance and digital economy of the country.

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<sup>5</sup> GovTL, Resolução do Governo N.º 9/2017 de 15 de Fevereiro Política Nacional para as Tecnologias de Informação e Comunicações (TIC) (2017 a 2019), *Jornal da República*, Série I , N.º 7 A, Quarta-Feira, 15 de Fevereiro de 2017.

## Reported Cases of Internet Censorship

Until 2023, there were no reported cases of websites being blocked by the government or censorship and surveillance of internet space and online content of the Timorese citizens. The 2022 Human Rights Report indicated no government actions to restrict or disrupt access to the internet or censor online content. The report also mentioned that there are no credible reports, including the news or any research investigation, that show how the Timorese government monitored private online communications in Timor-Leste. In another instance, out of severe intimidation, threats, and a culture of fear due to political repression from the powerful ruling power, several journalists and media exercised 'self-censorship' in reporting the case of former bishop and laureate peace prize Dom Carlos Filipe Ximenes Belo, who was 'disciplined by the Vatican' in 2019 after he was found to have sexually abused male children in the 1990s. At least, the Human Rights Report from 2020 until 2022 consistently found no censorship, blocking, and surveillance of the private communication and internet space of the Timorese citizens.

The FONGTIL, an umbrella organisation for all the Timorese civil society organisations has provided their submission to the Third Quarter of Universal Periodic Review in 2021, stating that operators are filtering and censoring the information and news regarding West Papua from online space. According to their submission, this violates the rights of the Timorese people to access information and prevents solidarity among Timorese citizens.<sup>6</sup> No further investigation and news covered this issue, and the Universal Periodic Review in 2022 didn't mention it. There may be a lack of systematic and investigative reports on this issue.<sup>7</sup>

Ironically, the research report done by Love Frankie, Asia Foundation, and Oxfam in 2022 shows that the citizens, particularly the youths, see government intervention in setting up rules and regulations in online interaction and content as necessary and acceptable. In fact, they are calling for not only more regulation but also for more government action to discipline the online crimes, immoral and harms. The report shows that youth are in agreement with government surveillance and control to combat false information and negative online content. Apart from journalists, the Asia Foundation report shows that self-censorship was also utilised by the Timorese online users to protect themselves from online risks, false information, hate speech, and dangerous personalities in online space.

In addition, self-censorship by the online users also occurred in regards to their online content and information, particularly local activists or conscious citizens who work either in government, public, or international agencies. They are reluctant to express their opinions freely and promote online content that opposes the government or powerful elites because they are afraid of being red-tagged. Hence, self-censorship practices are rampant despite the absence of concrete systematic surveillance, censorship, and blocking from the government.

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<sup>6</sup> FONGTIL, <https://fongtil.org.tl/wp-content/uploads/2021/10/FONGTIL-SUBMISAUN-UPR-2021-FINAL-TETUN.pdf>

<sup>7</sup> Universal Periodic Review, <https://documents-dds-ny.un.org/doc/UNDOC/GEN/G21/320/29/PDF/G2132029.pdf?OpenElement>

## Network Landscape

After the country restored its independence in 2002, Timor-Leste had only one telecommunication operator, Timor Telecom (TT). This telco-ISP company had a monopoly over the telecommunication market in Timor-Leste until the liberalisation took place in 2012. Now, Timor-Leste has many internet service providers, both local and international, but mainly three telecom companies dominate the market: TELIN Timor-Leste S.A. also known as Telkomcel, Viettel Timor-Leste Unipessoal Lda or Telemor, and Timor Telecom. Telkomcel was an Indonesian state-owned telco enterprise, Telemor is a Vietnamese state-owned company, and Timor Telecom was owned jointly by the Timorese government with the majority of the stake held by the Brazil' Oi company. The three telecommunication companies are the local monopolies for not only mobile internet but also the fixed broadband market in Timor-Leste.

Timor Telecom is the first ISP operator to provide 4G internet services beginning in 2017. Now, 45% of the population has access to 4G connections. Modern 5G is yet to be available until now, and the government hasn't shown any signs of auctioning the 5G licences for Timor-Leste. However, considering access to the internet through satellite and microwave radio is expensive and slow, Timor-Leste has already developed the project implementation to install undersea fibre optic cables from Australia to Timor-Leste. The Government of Timor-Leste has announced the tender in 2021, and in 2022, the contract was signed with the Australia Alcatel Submarine Network.<sup>8</sup>

Fibre optic cables from Australia provided an option for the Timorese government to diversify its telecommunication infrastructure and to oust its dependency on expensive satellites; telco companies in Timor-Leste spend \$12 million each year for the purchase of internet access through satellites.<sup>9</sup> However, despite helping to develop a crucial piece of infrastructure for the nation, the project served the Australian geopolitical interest of heading-off Chinese presence in Timor-Leste. The Australian-funded submarine fibre-optic cable to Papua New Guinea and Solomon Island has the same values, that is to safeguard the vitality of Australia's strategic interest in Asia Pacific.<sup>10</sup>

During the past year, internet shutdowns by these three companies are rampant and often triggered public discontent. It seems like citizens are regularly expressing their complaints and discontent in social media. In consequence, it affects not only the citizens' customers but the entire public economy, government services, and key infrastructure in the country.

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<sup>8</sup> Tatoli

<https://en.tatoli.tl/2022/05/31/govt-and-asn-sign-agreement-for-tls-south-submarine-cable-project-implementation/15/>

<sup>9</sup> Macau Business

<https://www.macaubusiness.com/east-timor-government-launches-tender-for-fibre-optic-subsea-cable-to-australia/>

<sup>10</sup> Sydney Morning Herald

<https://www.smh.com.au/world/asia/australia-to-support-fibre-optic-cable-lifeline-to-east-timor-20190829-p52m5u.html>

Since the beginning of 2023, internet shutdown has affected the banking services and other public services such as electricity bills<sup>11</sup>, both of which are strategic service sectors of the country. It also had an impact on the immigration office and the Technical Secretariat of Election Administration during the election period.<sup>12</sup>

There were several attempts to promote community-owned and managed internet networks instead of state- and private-capital-owned top-down internet services. Previously, several local NGOs, such as FONGTIL, have attempted to promote the community internet network since the early years of independence. There is an ongoing RedEsperansa project that aims to connect schools, universities, communities, and unions with public wifi, open governance of the internet, and open source tools. This project covers the three municipalities with the highest number of populations such as Dili, Ermera, and Baucau.

Despite the current monopoly of the market by the three companies, new service providers are likely to reduce the high cost of internet services. However, until this happens, slow internet speeds and high costs are likely to prevail. Essentially, the internet is considered scarce because ‘there is, but there isn’t’ internet (Diligente 2023).<sup>13</sup>

## **Findings of internet Censorship in Timor-Leste**

The OONI measurements were collected during a period when internet shutdown often occurred since the beginning of 2023, and the end mandate of VIII Constitutional Government, and the new IX Constitutional Government was sworn in power in June 2023. On 20 May 2023, there was a general parliamentary election in Timor-Leste, and the CNRT and PD claimed the victory and formed the IX Constitutional Government. The measurements began during this country's critical period of electoral politics. Furthermore, during this election period, social media played an exciting and key role in the election outcome.

All of the findings are based on data collected through OONI from 1 May 2023 to 31 August 2023. We analysed the measurements with the aim of identifying the government-sanctioned blockings, censorship, and surveillance on digital space and private communications in Timor-Leste.

We tested the list of websites from three foreign telecommunication companies that dominate the ISP market and services in Timor-Leste. In addition, we added the local telecommunication companies that are less dominant in terms of providing internet services

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<sup>11</sup> Tatoli

<https://tatoli.tl/2023/03/29/edtle-p-sistema-sosa-pulsa-eletrika-lentu-tanba-instabilida-de-rede-internet/>

<sup>12</sup> Timor Post

<https://timorpost.com/elpar/tp-36029/internet-falla-perturba-stae-munisipiu/>

<sup>13</sup> Eduardo Soares, “Há, mas não tem”: as dificuldades no acesso à Internet em Timor-Leste, *Diligente*, 22 de Março, 2023.

<https://www.diligenteonline.com/ha-mas-nao-tem-as-dificuldades-no-acesso-a-internet-em-timor-leste/>

connections in Timor-Leste. The reason behind this is to map out the foreign-owned , joint-venture, and Timorese-owned private telecommunication companies that operate in Timor-Leste. So far we have tested the Indonesia-owned Telkomsel, Vietnamese-owned Telemor, Timor Telecom that is owned by both Brazil's Oi and Timorese Government, and also the Gardamor that is owned by a local Timorese business.

## Blocking of Websites

Throughout the period, 30,892 measurements from 1,964 websites were tested on OONI. As of 31 August 2023 , the test list contained 1,654 websites in the Global Test List and 23 websites in the Timor-Leste Test List. Based on OONI measurements, the following terms are used in this report:

- **Measured or Measurement Counts:** Refers to the total number of measurements collected through the OONI Probe.
- **Blocked:** Refers to “Confirmed Blocked” in OONI measurements. These are measurements from websites that are automatically confirmed to be blocked (e.g., a block page was served).
- **Likely Blocked:** Refers to “Anomaly” and “Failure” in OONI measurements. Anomalies are measurements that show signs of potential blocking; however, false positives can occur. Failures refer to failed experiments in OONI testing, although they can sometimes be symptomatic of censorship. In the case of Timor-Leste, it was found that likely blocked measurements are false positives as a result of poor internet connectivity in the country. Furthermore, no block pages were detected based on the heuristics mentioned in Annex IV.

	May - Dec 2022	Jan - Aug 2023	Total
Measured	1,546	11,149	33,495
Blocked	0	0	0
Block rate	0.00%	0.00%	0.00%
Input	852	1,817	1,964
ASNs	3	4	4

Table 1: Summary of OONI web connectivity measurements for Timor-Leste from 1 May – 31 August 2023.

Category	Category description	OONI Probe Measurements	Number of blocked and likely blocked measurements	Percentage of blocked and likely blocked measurements
ALDR	Alcohol & Drugs	86	3	3.5%
ANON	Anonymization and circumvention tools	3,698	323	8.7%
COMM	E-commerce	55	3	5.5%
COMT	Communication Tools	2,465	124	5.0%
CTRL	Control content	53	0	0.0%
CULTR	Culture	235	80	34.0%
DATE	Online Dating	44	0	0.0%
ECON	Economics	78	5	6.4%
ENV	Environment	320	14	4.4%
FILE	File-sharing	230	64	27.8%
GAME	Gaming	45	1	2.2%
GMB	Gambling	79	8	10.1%
GOVT	Government	101	54	53.5%
GRP	Social Networking	7,550	581	7.7%
HACK	Hacking Tools	75	5	6.7%
HATE	Hate Speech	20	0	0.0%
HOST	Hosting and Blogging Platforms	1,412	125	8.9%
HUMR	Human Rights Issues	3,886	218	5.6%
IGO	Intergovernmental Organisations	56	14	25.0%
LGBT	LGBT	2,297	121	5.3%
MILX	Terrorism and Militants	8	0	0.0%
MMED	Media sharing	1,320	93	7.0%
NEWS	News Media	3,232	168	5.2%
POLR	Political Criticism	775	72	9.3%
PORN	Pornography	51	1	2.0%
PROV	Provocative Attire	39	2	5.1%



Category	Category description	OONI Probe Measurements	Number of blocked and likely blocked measurements	Percentage of blocked and likely blocked measurements
PUBH	Public Health	703	32	4.6%
REL	Religion	405	30	7.4%
SRCH	Search Engines	499	41	8.2%
XED	Sex Education	308	19	6.2%

Table 2: Summary of OONI web connectivity measurements for Timor-Leste from 1 May 2023 to 31 August 2023 by category

Although there is a high likely block rate in a few categories, particularly Culture, File sharing, Gambling, Government, and Intergovernmental Organization websites. These are most likely false positives which is a result of poor internet connectivity in the country. The number of measurements were also relatively low to conclude any signs of censorship.

#### By ISP Operators

ASN	OONI Probe Measurements	Number of blocked and likely blocked measurements	Percentage of blocked and likely blocked measurements
AS38077 (Timor Telecom)	18,720	993	5.3%
AS58731 (Telkomsel)	14,585	1,900	13.0%
AS133606 (Telemor)	4	0	0.0%
AS136920 (Gardamor)	185	23	12.4%

Table 3: Summary of OONI web connectivity measurements for Timor-Leste from 1 May – 31 August 2023 by ASN

We found a slight difference in the results from the four telecommunication companies. Although the likely blocked measurements were not showing signs of censorship, the rates differ by the ISP. When we tested the results from the Indonesian Telkomsel (AS58731) and Gardamor (AS136920) owned by Timorese businessmen, they show higher rate of anomalies and failures as compared to Vietnamese-owned Telemor (AS133606) and government-private-owned the Timor Telecom (AS38077). However, the testing was not

consistent across ISPs, and more measurements are needed to conclude any possibility of censorship.

### Websites of non-governmental organisations

The likely blocked measurements also showed different results in terms of categories. The results show high anomalies for testing on the civil society websites. The tests from Telkomsel and Gardamor shows more anomalies and failure results than the other two telco operators, i.e., Timor Telecom and Telemor.

ASN	OONI Probe Measurements	Number of blocked and likely blocked measurements	Percentage of blocked and likely blocked measurements
AS38077 (Timor Telecom)	4,961	99	3.9%
AS58731 (Telkomsel)	2,916	151	9.0%
AS136920 (Gardamor)	16	3	18.8%

When analysed more closely, the likely blocked measurements in Telkomsel and Gardamor mostly occurred during the testing on 16-17 August 2023 due to various errors such as DNS, HTTP, and TCP blockings, which can be signs of censorship. However, there were too few measurements from the other two ISPs during the same period to confirm any blocking done by Telkomsel or Gardamor.

## Blocking of Instant Messaging Apps

	Facebook Messenger	Signal	Telegram	Whatsapp
Total Measurements	396	193	393	393
Percentage of blocked and likely blocked	5.8%	14.5%	6.9%	6.1%

Table 4: Summary of OONI instant messaging measurements for Timor-Leste from 1 May to 31 August 2023 by Country Row.

There does not seem to be any blocking of instant messaging apps in the country. However there is a high likely blocked rate on Signal, which needs to be investigated further.

*Note: Failed measurements as well as Signal measurements from 4-30 May 2023 are discarded from this table. As the updates on these apps are beyond OONI's control, the OONI probe may experience issues in testing due to the changes that happened from time to time. Hence, failed measurements or anomalies that had been identified as false positives were discarded from the table.*

## Blocking of Circumvention Tools

	Psiphon	Tor	Tor Snowflake	Vanilla Tor
Total Measurements	396	374	285	273
Percentage of blocked and likely blocked	4.0%	5.6%	23.9%	0.0%

Table 5: Summary of OONI circumvention measurements for Timor-Leste from 13 May to 31 August 2023.

*Note: Failed measurements are discarded from this table.*

There is no sign of censorship for the circumvention tools tested. There is a high likely block rate on Tor Snowflake; however, as this has also occurred in a few other countries where censorship is unlikely, it may indicate issues with this tool in these countries.

With all these findings and 0.00% rate of internet blocking, Timor-Leste is free from blocking and censorship of websites. This includes the non-existing filtering and throttling of websites, instant messaging tools, and circumvention tools in Timor-Leste.

## Acknowledgement of Limitations

- **Period of study**  
This study's findings are limited to network measurements that were collected from 1 May 2023 to 31 August 2023 in order to examine the most recent censorship trends and events.

Note that this period of study for Timor-Leste is longer than the other iMAP 2023 country reports (which covered 1 July 2022 to 30 June 2023) to cover more measurements as iMAP only started officially in this country in May 2023.

- Vantage points

Although the network measurements were collected from four vantage points in Timor-Leste, the rOONI software testing was not run consistently across all networks.

- Use of input/URL as unit of measurement of websites

In general, URL (or in OONI's terms – input) and domain are interchangeable terms used to refer to a website. In the OONI test list, full URLs are input in the probe to be tested for censorship, similar to an URL starting with “https” or “http” in a browser. The censorship can involve tampering of DNS or HTTP or other types of censorship. Depending on the method, the blocking can either be at the URL or domain level. However when analysing results on OONI, the reader needs to note that there are differences in the numbers with respect to the specific input or domain.

In the 2022 report, domain was used as a unit of measurement of a website so as to reduce duplicates when measuring the number of websites blocked. For this 2023 report, however, input is used instead as it may give more context as to why the web page is blocked and would be categorised more accurately according to the CitizenLab test lists, which are in URL format. To better understand the findings on the state of censorship, we used %age of blocked or likely blocked instead of actual counts based on OONI test results.

- Differences in numbers with OONI data

The findings in this report have been further processed from OONI's data whereby more confirmed blockings were obtained and false ones eliminated through additional heuristics and manual verification by iMAP researchers based on country or local context. While these heuristics will eventually be added into OONI's fingerprints, OONI will only process them for future testing.

Additionally, iMAP researchers have categorised blocked websites that were not part of the CitizenLab test lists but were tested on OONI via custom test lists. Hence, the figures in this report may differ to results on the OONI Explorer.

- Testing of instant messaging apps and circumvention tools

The instant messaging apps and circumvention tools are only limited to those tested on OONI. Therefore, they may not reflect the state of censorship of apps more commonly used in Timor-Leste.

- Poor connectivity in Timor-Leste resulting in low measurements

The researchers faced continuous internet issues due to low and poor internet connectivity, which led to many failed results – including failed tests that were unfortunately not uploaded to OONI. While the findings have not concluded any possibility of internet censorship in the country, there may be censorship detected if there are more successful tests.

## **Conclusion: Lessons on the Status of Freedom**

The OONI global and country test shows that Timor-Leste is still a free country in terms of blocking, censorship, and surveillance in the internet space and personal communications such as web connectivity, instant messaging, and circumvention, with a 0.00% rate in the middle of 2023.

Here are four main lessons that we need to further discuss and investigate regarding the status of freedom in Timor Leste:

1. This report shows that Timor-Leste, again, champions democratic progress. The government truly safeguards internet freedom and hasn't taken any comprehensive actions to block, censor, and surveil the internet and personal communications. However, in the past years, there is a tendency towards more regulations and legislations of the law in the internet space. As confirmed in many reports, when governments propose and promote regulations and legislations regarding the internet, it evokes serious reactions. To define freedom in this manner and context, it is not freedom but a controlled and regulated freedom. We wish that current conditions will lead toward a liberating internet rather than a regulated and legislated one that reinforces more controlled democracies and freedom. Hence, internet freedom is not only about regulation and legislation, but it is also a dimension of liberation.
2. Many tests, including the OONI Probe on internet performance in Timor-Leste, indicate slow and poor internet performance, even though Timorese people have to pay expensive charges to access the internet. The denial to access the internet is not only manifested in the censorship, surveillance, and blocking but also the denial to experiencing and receiving the advanced, quality internet service. This digital inequality and injustice needs to be addressed. Even though Timorese society is free from blocking, censorship, and surveillance, an expensive and scarce internet equally means no internet freedom. Hence, the internet access is not only about freedom but also about fairness and justice.
3. Until this period, freedom of discussion on the internet was widening in Timor-Leste. People use the internet to organise themselves in protests, critics, and debates, while some people use it to propagate racism and hate speech and organise violence and disinformation campaigns. Country polarisation reflects everyday relations in social media. Even though the government may not have unsophisticated cyber security capacity nor there a pervasive block, censorship, and surveillance in Timor-Leste, that doesn't mean that the Timorese government lacks a capacity to block images, videos, texts, or online content from the global-country website and digital platforms such as Facebook, Telegram, and Signal. However, we noted the government has a comprehensive capacity in terms of shutting down the internet or

blocking websites on a national scale or in some specific areas in Timor-Leste. That means the government can also throttle, filter, monitor, censor, block, and even launch cyber attack operations on Timorese citizens and digital space. Hence, further investigation on the capacity of the Timorese government and corporate on censorship, blocking and surveillance is necessary. Also, to understand the method of internet censorship, blocking and surveillance from both government and private internet service providers in Timor-Leste are important to enrich the OONI measurements, anticipating the future changes. The internet freedom of today is not a given, it may be replaced with internet tyranny and oppression in the future.

4. Several events and incidents show that the Timorese government is concerned with internet freedom, even though the government hasn't applied censorship and blocking openly until this day. However, a climate of fear for intimidation and repression by the elites has led some journalists, bloggers, and internet users to practise self-censorship and self-discipline by silencing oneself to critics. Even though Timor-Leste is considered as the most democratic country in Southeast Asia according to many measurements, it is necessary to keep monitoring government actions and the private telecommunication companies in regards to internet freedom and digital rights. Therefore, the use of OONI measurements in Timor-Leste means a lot in securing the democratic, mass participation in terms of monitoring the government actions regarding the regulation, surveillance, censorship, and blockings over the internet. Any citizen can use the OONI apps to control the government actions and to hold the private companies accountable that can further promote transparency. With the OONI Probe in hand, we can hold the government and corporations accountable and transparency.

As this report suggests, that's what we expect from Timor-Leste and what the struggle in the region needs to consider in the promotion of internet freedom, free from blocking, censorship, and surveillance toward an internet that is based on transparency, accountability, justice, fairness, and liberation.

## Contribute to the study

If you would like to contribute to the OONI measurements, there are several ways to get involved:

- Testing: You may test on [various platforms](#), both on Mobile (iOS and Android) and Desktop, including on the CLI on Linux platforms. The domains you test can be either randomly selected from the [Citizenlab Test Lists](#) or custom test lists specific to your needs.
- Contribute to the test lists: You can contribute to the test lists on GitHub or on [OONI](#).
- Translation: Translate the OONI Probe to your local language [here](#).
- Participation: Participate in community discussions on the [OONI's Slack channel](#).

## **Acknowledgements**

We would like to extend our gratitude to the local team and assistants who helped by running the global and country test lists and for their assistance in setting up meetings to explain about the OONI test and iMaP project. We are also thankful for their continuous support and fruitful discussion.

## Annex I: List of ISPs

ASN	ASN Name	ASN Ownership/Description	ASN Registration Country	Measurement Count
AS58731	Telekomunikasi Indonesia International S.A/Telkomsel (T.L.)	Indonesia	TL	13,340
AS136920	Gardamor, Lda	Timorese	TL	519
AS38077	Timor Telecom, S.A	Brazil's Oi and Timorese Government	TL	17,265
AS133606	Viettel Timor-Leste/Telemor	Vietnamese Government	TL	4



## Annex II: Glossary

DNS	<p>DNS stands for “Domain Name System” and it maps domain names to IP addresses.</p> <p>A domain is a name that is commonly attributed to websites when they’re created, so that they can be more easily accessed and remembered. For example, twitter.com is the domain of the Twitter website.</p> <p>However, computers can’t connect to internet services through domain names. They do so through IP addresses: the digital address of each service on the internet. Similarly, in the physical world, you would need the address of a house (rather than the name of the house itself) in order to visit it.</p> <p>The Domain Name System (DNS) is responsible for transforming a human- readable domain name (such as ooni.org) into its numerical IP address counterpart (in this case:104.198.14.52), thus allowing your computer to access the intended website.</p>
HTTP	<p>The Hypertext Transfer Protocol (HTTP) is the underlying protocol used by the World Wide Web to transfer or exchange data across the internet.</p> <p>The HTTP protocol allows communication between a client and a server. It does so by handling a client’s request to connect to a server, and the server’s response to the client’s request.</p> <p>All websites include an HTTP (or HTTPS) prefix (such as http://example.com/) so that your computer (the client) can request and receive the content of a website (hosted on a server).</p> <p>The transmission of data over the HTTP protocol is unencrypted.</p>
Heuristics	<p>Heuristics obtain further confirmed blockings other than those which are detected based on OONI blocking fingerprints. More details can be found <a href="#">here</a>.</p>
ISP	<p>An Internet Service Provider (ISP) is an organisation that provides services for accessing and using the internet.</p> <p>ISPs can be state-owned, commercial, community-owned, non-profit, or otherwise privately owned.</p> <p>Vodafone, AT&amp;T, Airtel, and MTN are examples of ISPs.</p>
Middle boxes	<p>A middlebox is a computer networking device that transforms, inspects, filters, or otherwise manipulates traffic for purposes other than packet forwarding.</p>

	<p>Many Internet Service Providers (ISPs) around the world use middleboxes to improve network performance, provide users with faster access to websites, and for a number of other networking purposes.</p> <p>Middleboxes are also sometimes used to implement internet censorship and/or surveillance.</p> <p>The OONI Probe app includes two tests designed to measure networks with the aim of identifying the presence of middleboxes.</p>
TCP	<p>The Transmission Control Protocol (TCP) is one of the main protocols on the internet.</p> <p>To connect to a website, your computer needs to establish a TCP connection to the address of that website.</p> <p>TCP works on top of the Internet Protocol (IP), which defines how to address computers on the internet.</p> <p>When speaking to a machine over the TCP protocol, you use an IP and port pair, which looks something like this: 10.20.1.1:8080.</p> <p>The main difference between TCP and (another very popular protocol called) UDP is that TCP has the notion of a “connection”, making it a reliable transport protocol.</p>
TLS	<p>Transport Layer Security (TLS) – also referred to as SSL – is a cryptographic protocol that allows you to maintain a secure, encrypted connection between your computer and an internet service.</p> <p>When you connect to a website through TLS, the address of the website will begin with HTTPS (such as <a href="https://www.facebook.com/">https://www.facebook.com/</a>), instead of HTTP.</p>

A comprehensive glossary related to OONI can be accessed here:

<https://ooni.org/support/glossary/>.

## **Annex III: Methodology**

### **Data**

Data computed based on the heuristics for this report can be downloaded here: <https://github.com/Sinar/imap-data>, whereas aggregated data can be downloaded from [OONI Explorer](#).

### **Coverage**

The iMAP State of Internet Censorship Country Report covers the findings of network measurements collected through the Open Observatory of Network Interference (OONI) [OONI Probe App](#) that measures the blocking of websites, instant messaging apps, circumvention tools, and network tampering. The findings highlight the websites, instant messaging apps, and circumvention tools confirmed to be blocked, as well as the ASNs with censorship detected and the methods of network interference applied. The report also provides background context on the network landscape combined with the latest legal, social, and political issues and events, which might have affected the implementation of internet censorship in the country.

In terms of timeline, this iMAP report covers measurements obtained from 1 May 2023 to 31 August 2023 in Timor-Leste.

### **How are the network measurements gathered?**

Network measurements are gathered through the use of the [OONI Probe app](#), a free software tool developed by the [Open Observatory of Network Interference \(OONI\)](#). To learn more about how the OONI Probe test works, please visit <https://ooni.org/nettest/>.

iMAP Country Researchers and anonymous volunteers run the OONI Probe app to examine the accessibility of websites included in the [Citizen Lab test lists](#). iMAP Country Researchers actively review the country-specific test lists to ensure up-to-date websites are included and context-relevant websites are properly categorised, in consultation with local communities and digital rights network partners. We adopt the [approach taken by Netalitica](#) in reviewing country-specific test lists.

It is important to note that the findings are only applicable to the websites that were examined and do not fully reflect all instances of censorship that might have occurred during the testing period.

### **How are the network measurements analysed?**

OONI processes the following types of data through its [data pipeline](#):

## Country code

By default, OONI collects the code corresponding to the country from which the user is running OONI Probe tests from. It does so by automatically searching for it based on the user's IP address through their [ASN database](#) and the [MaxMind GeolIP database](#).

## Autonomous System Number (ASN)

By default, OONI collects the Autonomous System Number (ASN) of the network used to run the OONI Probe app, thereby revealing the network provider of a user.

## Date and time of measurements

By default, OONI collects the time and date of when tests were run to evaluate when network interferences occur and to allow comparison across time. The time and date data uses UTC as the standard time zone. In addition, the charts generated on OONI MAT exclude measurements on the last day by default.

## Categories

The 32 website categories are based on the Citizenlab test lists: <https://github.com/citizenlab/test-lists>. As not all websites tested on OONI are on these test lists, some websites would have unclassified categories.

No.	Category Description	Code	Description
1	Alcohol & Drugs	ALDR	Sites devoted to the use, paraphernalia, and sale of drugs and alcohol irrespective of the local legality.
2	Religion	REL	Sites devoted to discussion of religious issues, both supportive and critical, as well as discussion of minority religious groups.
3	Pornography	PORN	Hard-core and soft-core pornography.
4	Provocative Attire	PROV	Websites which show provocative attire and portray women in a sexual manner, wearing minimal clothing.
5	Political Criticism	POLR	Content that offers critical political viewpoints. Includes critical authors and bloggers, as well as oppositional political organisations. Includes pro-democracy content, anti-corruption content as well as content calling for changes in leadership, governance issues, legal reform, etc.

No.	Category Description	Code	Description
6	Human Rights Issues	HUMR	Sites dedicated to discussing human rights issues in various forms. Includes women's rights and rights of minority ethnic groups.
7	Environment	ENV	Pollution, international environmental treaties, deforestation, environmental justice, disasters, etc.
8	Terrorism and Militants	MILX	Sites promoting terrorism, violent militant or separatist movements.
9	Hate Speech	HATE	Content that disparages particular groups or persons based on race, sex, sexuality or other characteristics.
10	News Media	NEWS	This category includes major news outlets (BBC, CNN, etc.) as well as regional news outlets and independent media.
11	Sex Education	XED	Includes contraception, abstinence, STDs, healthy sexuality, teen pregnancy, rape prevention, abortion, sexual rights, and sexual health services.
12	Public Health	PUBH	HIV, SARS, bird flu, centres for disease control, World Health Organization, etc
13	Gambling	GMB	Online gambling sites. Includes casino games, sports betting, etc.
14	Anonymization and circumvention tools	ANON	Sites that provide tools used for anonymization, circumvention, proxy-services and encryption.
15	Online Dating	DATE	Online dating services which can be used to meet people, post profiles, chat, etc.
16	Social Networking	GRP	Social networking tools and platforms.
17	LGBT	LGBT	A range of gay-lesbian-bisexual-transgender queer issues (excluding pornography).
18	File-sharing	FILE	Sites and tools used to share files, including cloud-based file storage, torrents and P2P file-sharing tools.
19	Hacking Tools	HACK	Sites dedicated to computer security, including news and tools. Includes malicious and non-malicious content.
20	Communication Tools	COMT	Sites and tools for individual and group communications. Includes webmail, VoIP,

No.	Category Description	Code	Description
			instant messaging, chat and mobile messaging applications.
21	Media sharing	MMED	Video, audio or photo sharing platforms.
22	Hosting and Blogging Platforms	HOST	Web hosting services, blogging and other online publishing platforms.
23	Search Engines	SRCH	Search engines and portals.
24	Gaming	GAME	Online games and gaming platforms, excluding gambling sites.
25	Culture	CULTR	Content relating to entertainment, history, literature, music, film, books, satire and humour.
26	Economics	ECON	General economic development and poverty related topics, agencies and funding opportunities
27	Government	GOVT	Government-run websites, including military sites.
28	E-commerce	COMM	Websites of commercial services and products.
29	Control content	CTRL	Benign or innocuous content used as a control.
30	Intergovernmental Organizations	IGO	Websites of intergovernmental organisations such as the United Nations.
31	Miscellaneous content	MISC	Sites that don't fit in any category (XXX Things in here should be categorised)

### IP addresses and other information

OONI does not collect or store users' IP addresses deliberately. To protect its users from potential risks, OONI takes measures to remove them from the collected measurements. However, there may be instances where users' IP addresses and other potentially personally-identifiable information are unintentionally collected, if such information is included in the HTTP headers or other metadata of measurements. For example, this can occur if the tested websites include tracking technologies or custom content based on a user's network location.

## Network measurements

The types of network measurements that OONI collects depend on the types of tests that are run. Specifications about each OONI test can be viewed through its [git repository](#), and details about what collected network measurements entail can be viewed through [OOONI Explorer](#) or through [OOONI's measurement API](#).

In order to derive meaning from the measurements collected, OONI processes the data types mentioned above to answer the following questions:

- Which types of OONI tests were run?
- In which countries were those tests run?
- On which networks were those tests run?
- When were the tests run?
- What types of network interference occurred?
- In which countries did network interference occur?
- In which networks did network interference occur?
- When did network interference occur?
- How did network interference occur?

To answer such questions, OONI's pipeline is designed to answer such questions by processing network measurement data to enable the following:

- Attributing measurements to a specific country.
- Attributing measurements to a specific network within a country.
- Distinguishing measurements based on the specific tests that were run for their collection.
- Distinguishing between “normal” and “anomalous” measurements (the latter indicating that a form of network tampering is likely present).
- Identifying the type of network interference based on a set of heuristics for DNS tampering, TCP/IP blocking, and HTTP blocking.
- Identifying block pages based on a set of heuristics for HTTP blocking.
- Identifying the presence of “middle boxes” within tested networks.

According to OONI, false positives may occur within the processed data due to a number of reasons. DNS resolvers (operated by Google or a local ISP) often provide users with IP addresses that are closest to them geographically. While this may appear to be a case of DNS tampering, it is actually done with the intention of providing users with faster access to websites. Similarly, false positives may emerge when tested websites serve different content depending on the country that the user is connecting from or when websites return failures even though they are not tampered with.

Furthermore, measurements indicating HTTP or TCP/IP blocking might actually be due to temporary HTTP or TCP/IP failures; they may not conclusively be a sign of network interference. It is therefore important to test the same sets of websites across time and to cross-correlate data before reaching a conclusion on whether websites are in fact being blocked.

Since block pages differ from country to country and sometimes even from network to network, it is quite challenging to accurately identify them. OONI uses a series of heuristics to try to guess if the page in question differs from the expected control, but these heuristics can often result in false positives. For this reason, OONI only confirms an instance of blocking when a block page is detected.

Upon the collection of more network measurements, OONI continues to develop its data analysis heuristics, based on which it attempts to accurately identify censorship events.



## Confirmed vs. Heuristics

Confirmed blocked OONI measurements were based on fingerprints recorded here <https://github.com/ooni/blocking-fingerprints>. These fingerprints are based on either DNS or HTTP blocking. The fingerprints recorded as confirmed blockings are either those implemented nationally or by ISPs.

Hence, heuristics as below were run on raw measurements on all countries under iMAP to further confirm blockings.

Firstly, IP addresses with more than 10 domains were identified. Then, each IP address was checked for the following:

Does the IP in question point to a government blockpage?				
Yes	No, page timed out or shows Content Delivery Network (CDN) page.			
↓	↓			
<b>Confirmed blocking</b>	What information can we get about the IP by doing a whois lookup?			
	Local ISP	CDN / Private IP		
	↓	↓		
	<b>Confirmed blocking</b>	Do we get a valid TLS certificate for one of the domains in question when doing a TLS handshake and specifying the SNI		
		Yes	No, there were blocking fingerprints found.	No, timed out
		↓	↓	↓
		<b>False positive</b>	<b>Confirmed blocking</b>	Sampled measurement is analysed on OONI Explorer.

When blocking is determined, any domain redirected to these IP addresses would be marked as “dns.confirmed”.

Secondly, HTTP titles and bodies were analysed to determine blockpages. This example shows that the HTTP returns the text 'The URL has been blocked as per the instructions of the DoT in compliance to the orders of Court of Law'. Any domain redirected to these HTTP titles and bodies would be marked as 'http.confirmed'.

As a result, false positives are eliminated and more confirmed blockings are obtained.

In the 2022 report, only confirmed blockings based on OONI or new fingerprints were reported.

For this round of reporting in 2023, we further identified confirmed blockings by verifying blockings shown in news reports with OONI measurements. This is because there were blockings that could not be identified using the DNS or HTTP fingerprints. Typically, these websites were redirected to an unknown or bogon IP address, or they had other unknown errors that were ambiguous as to whether they are true or false positives of censorship. Hence, based on the news reports where the blocked websites were cited, confirmed blockings were further found by comparing available measurements on OONI. For this study, we marked them as confirmed blockings if there were more than 30 measurements and an anomaly rate of more than 1% throughout the one-year period of study. In addition, we manually checked the OONI measurements by cross-checking across networks, countries, and time periods.