



**EXECUTIVE
SUMMARY**

—
ICT PROVIDERS
SURVEY

2020

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Executive Summary

ICT Providers 2020

The ICT Providers Survey aims to generate information on technological aspects and characteristics of the market for providing Internet access in Brazil. The survey interviewed enterprises with a multimedia communication service (SCM)¹ license and that offered Internet access service during the data collection period. With national coverage, the data of the fourth edition of the survey, collected between June 2020 and January 2021, provides details on the main characteristics of the enterprises that make up the Internet service provider (ISP) market and identify the sector's needs and potentials. It is hoped that the evidence gathered by the survey can strengthen the development of public policies aimed at expanding connectivity in the country and support the technological maturity of the sector.

Characteristics of enterprises

The ICT Providers 2020 survey estimated that there were 12,826 enterprises providing Internet access in Brazil. Most Brazilian ISP enterprises (61%) began providing Internet services in the last ten years, between 2011 and 2020. Just over half (54%) initiated their activities between 2014 and 2020, which

coincides with the recent period of regulatory changes aimed at facilitating the entry of enterprises into the sector. About one-third of providers (33%) started providing Internet services between 2000 and 2010. Most enterprises operated in markets restricted to few locations: 43% served only one municipality and 44% served two to five. Among providers with less than 100 connections and 100 to 300

connections, most operated in one municipality. For the most part, those that recorded 301 connections operated in at least two municipalities.

In terms of size, there were more microenterprises (48%) than small enterprises (43%), except for the Southeast region, where there were more small enterprises. Considering only providers with connection records, there was an increase in the proportion of microenterprises between 2017 (38%) and 2020

(48%), which indicates that, to a large extent, the increase in the total number of providers in the country in recent years was due to the entry of these enterprises into the market (Chart 1).

Services and technologies

In Brazil, the main activity carried out by the ISP enterprises was providing Internet access. Next came IP transit (43%) and transport

ABOUT 2,442 PROVIDERS WITH CONNECTION RECORDS SAID THEY PARTICIPATED IN INTERNET EXCHANGE POINTS (IXP OR IX.br), AN INCREASE OF 89% OVER 2017

¹ According to Anatel, an SCM is "a fixed telecommunication service of collective interest provided at the national and international levels under a private system, which offers subscribers within a service provision area the capacity for transmission, emission and reception of multimedia information, using any media." Available at: <https://informacoes.anatel.gov.br/legislacao/glossario?faqid=964>

(41%). In comparison with the previous edition of the survey, among providers with connection records, there was a reduction in the proportion of those that offered email (from 26% in 2017 to 16% in 2020); hosting or co-location (from 24% to 19%); and IP-based telephone service (from 23% to 19%) (Chart 2).

Fiber optics was the most common connection technology offered by providers with connection records. Nine out of ten enterprises (91%) said they offered fiber optic connections to customers – an increase of 13 percentage points over the previous edition of the survey. Other technologies, such as radio connection (73%) and UTP cable connection (46%), showed a reduction of 11 and 5 percentage points, respectively, compared to the last edition of the survey. Considering regional differences, UTP cable connection was offered by 73% of providers in the Northeast, a much higher proportion than the other regions (Chart 3).

Online presence

In 2020, most ISP enterprises (84%) had websites, with emphasis on those operating in the Southeast (90%) and South (87%). Among providers of all ranges of connections considered in the survey, most had websites, although a lower proportion was observed among providers with less than 100 connections (70%). The proportion of enterprises with websites was higher among those with the highest number of connections, reaching 100% of large ISPs (with more than 45,000 connections).

Just over two-thirds (69%) of providers said they sold products and services over the Internet. Instant messaging applications also proved important among providers, as

60% mentioned selling products and services through these channels. The most commonly used payment method was bank slips; however, payment on delivery was noteworthy among smaller ISP enterprises (Table 1).

Regarding another important aspect of online presence, 51% of ISP enterprises said they paid for Internet advertisements, and this proportion grew with the number of connections, reaching 100% of large ISPs.

Participation in IX.br and IPv6 activation

Of the total number of providers that declared connection records, 2,442 (35%) participated in Internet exchange points (IXP or IX.br), with higher proportions in the Southeast (46%) and South (39%) than in the Northeast (25%), North (26%) and Center-West (22%). Among enterprises with connection records, the increase in the number of providers that participated in Internet exchange initiatives was 89% in comparison with 2017. A relevant proportion of small providers stated that they were not at any Internet exchange point because the company offering the connection was already present in a IXP or IX.br. Therefore, despite an increase in the number of ISP enterprises in traffic exchange points or IX.br, there is still room for growth in the participation of smaller ISP

enterprises in these initiatives. Providers with the highest number of connections stood out: Of those that had 5,001 to 45,000 connections, 72% participated in an IXP or IX.br, a proportion that reached 100% of providers with more than 45,000 connections (Figure 1).

THE USE OF IPv6 GREW IN THE PERIOD BETWEEN 2017 AND 2020: THE PREVIOUS EDITION OF THE SURVEY SHOWED THAT IPv6 WAS USED BY ABOUT 922 PROVIDERS, A FIGURE THAT INCREASED TO 3,102 PROVIDERS WITH CONNECTION RECORDS

CHART 1
ISP ENTERPRISES, BY SIZE AND REGION (2020)
Total number of ISP with connection records (%)

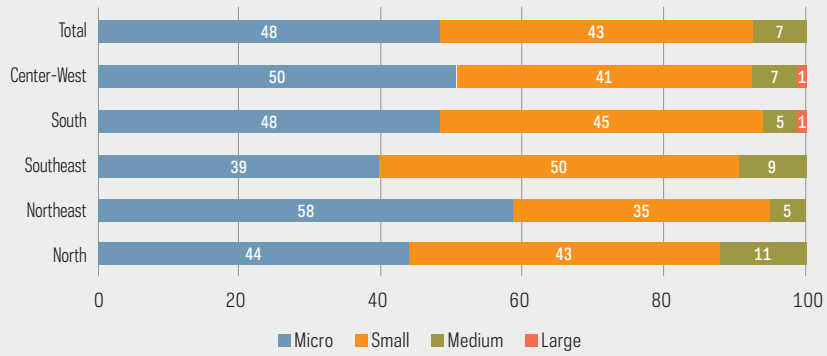


CHART 2
ISP ENTERPRISES, BY SERVICE OFFERED (2020)
Total number of ISP with connection records (%)

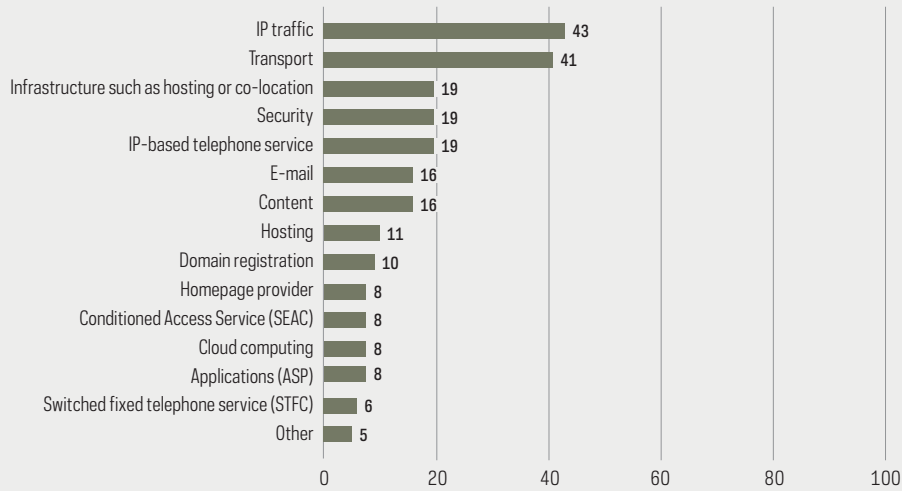
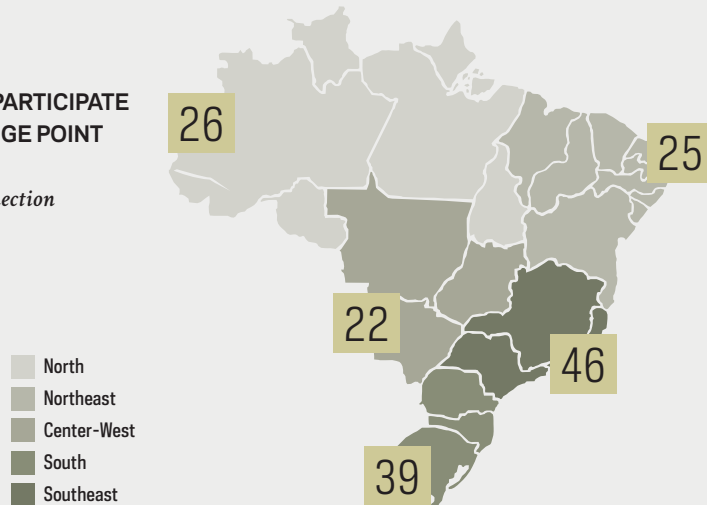


FIGURE 1
ISP ENTERPRISES THAT PARTICIPATE IN AN INTERNET EXCHANGE POINT (IXP OR IX.br)
Total number of ISP with connection records (%)



New indicators in the fourth edition of ICT Providers

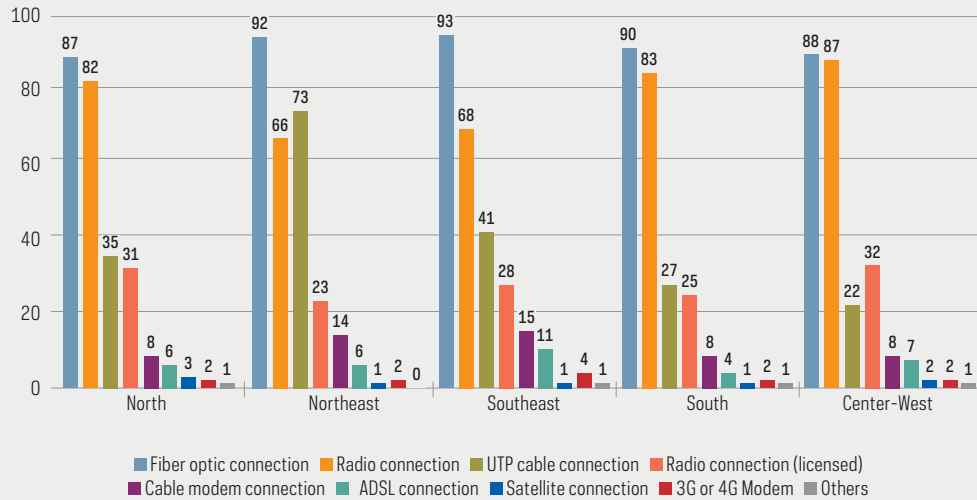
In 2020, 26% of providers said they experienced denial-of-service attacks, with a higher incidence among larger providers. Among the ISP enterprises that suffered denial-of-service attacks, the most frequently implemented measure to prevent, detect, or treat such attacks was the use of routing techniques to implement blackholes or sinkholes, mentioned by 84% of companies, regardless of size. Regarding the consequences generated by denial-of-service attacks, 51% of providers said they kept operating, with longer delays for customers, and 35% quit a service completely. These two types of impact were the most reported by ISPs of all sizes, which demonstrates that attacks are factors that affect the network resilience of all enterprises. The fact that most providers that suffered impacts experienced slowdowns in their networks points to the need to assess the reputational damage caused by denial-of-service attacks. This can be aggravated in the context of the pandemic, in which greater use of telework and remote learning require more stable and higher-quality connections.

Among the total number of Brazilian providers with connection records, the most commonly used modality of Internet delivery services in 2020 was NAT IPv4 (81%), at a similar level to IPv4 (81%). Although less prevalent, the use of IPv6 grew between 2017 and 2020: The previous edition estimated that IPv6 was used by 922 providers, a number that increased to 3,102 providers with connection records in 2020. This corresponds to 44% of ISPs using the latest version of the Internet Protocol. The use of IPv6 grows according to the ISP enterprise size.

Survey methodology and data access

The ICT Providers survey, conducted since 2011, provides information on the performance of the ISP sector in Brazil. In its fourth edition, data was collected between June 2020 and January 2021, with a total of 2,315 enterprises interviewed across Brazil. The information was gathered via computer-assisted telephone interviewing using structured questionnaires. The results, including tables for proportions, totals and margins of error, are available on the website (<http://www.cetic.br>) and in Cetic.br's website (<http://www.cetic.br>) and data visualization portal (<http://data.cetic.br/cetic>). The methodological report and the data collection report are available both in book format and on the website.

CHART 3

ISP ENTERPRISES, BY TECHNOLOGY OFFERED TO CUSTOMERS AND REGION (2020)*Total number of ISP with connection records (%)*

Estimate of
12,826
ISP operating
in the country

Approximately
2,242
ISP are present
in any IXP or IX.br

About
3,102
ISP deliver IPv6 to
their customers

TABLE 1

ISP ENTERPRISES THAT SOLD ON THE INTERNET BY TYPE OF PAYMENT AND NUMBER OF CONNECTIONS (2020)*Total number of ISP with connection records that sold on the Internet (%)*

| | Bank slip | Payment on delivery | Online debit or bank transfer | Online payment service such as PagSeguro, PayPal, or Google Checkout | Credit card required on the website at the time of purchase |
|-----------------------------|-----------|---------------------|-------------------------------|--|---|
| Total | 90 | 66 | 63 | 30 | 25 |
| Less than 100 connections | 87 | 74 | 70 | 28 | 23 |
| 100 to 300 connections | 93 | 68 | 63 | 38 | 28 |
| 301 to 1,000 connections | 88 | 70 | 63 | 34 | 23 |
| 1,001 to 5,000 connections | 93 | 56 | 55 | 22 | 26 |
| 5,001 to 45,000 connections | 90 | 52 | 67 | 19 | 26 |
| More than 45,000 | 100 | 0 | 64 | 16 | 60 |

ABOUT CETIC.br

cetic.br

The Regional Center for Studies on the Development of the Information Society, a department of NIC.br, is responsible for producing indicators and statistics on the access and use of the Internet in Brazil, disseminating analyzes and periodic information on the Internet development in the country. Cetic.br is a Regional Study Center, under the auspices of UNESCO. More information at <http://www.cetic.br/>.

ABOUT NIC.br

nic.br

The Brazilian Network Information Center – NIC.br (<http://www.nic.br/>) is a non-profit civil entity, which in addition to implementing the decisions and projects of the Brazilian Internet Steering Committee, has among its attributions: coordinate the registration of domain names – Registro.br (<http://www.registro.br/>), study, address and handle security incidents in Brazil – CERT.br (<http://www.cert.br/>), study and research network technologies and operations – CEPTRO.br (<http://www.ceptro.br/>), produce indicators on information and communication technologies – Cetic.br (<http://www.cetic.br/>), implement and operate Internet Exchange Points – IX.br (<http://ix.br/>), enable the participation of the Brazilian community in the global development of the Web and support the formulation of public policies – Ceweb.br (<http://www.ceweb.br/>), and host the Brazilian W3C office (<http://www.w3c.br/>).

ABOUT CGI.br

cgi.br

The Brazilian Internet Steering Committee, responsible for establishing strategic guidelines related to the use and development of the Internet in Brazil, coordinates and integrates all Internet service initiatives in the country, promoting technical quality, innovation and dissemination of the services offered. Based on the principles of multistakeholderism and transparency, CGI.br represents a democratic Internet governance model, internationally praised, in which all sectors of society participate equitable in the decision-making. One of its formulations is the 10 Principles for the Governance and Use of the Internet in Brazil (<http://www.cgi.br/principios>). More information at <http://www.cgi.br/>.



Access complete data from the survey

The full publication and survey results are available on the **Cetic.br** website, including the tables of proportions, totals and margins of error.

