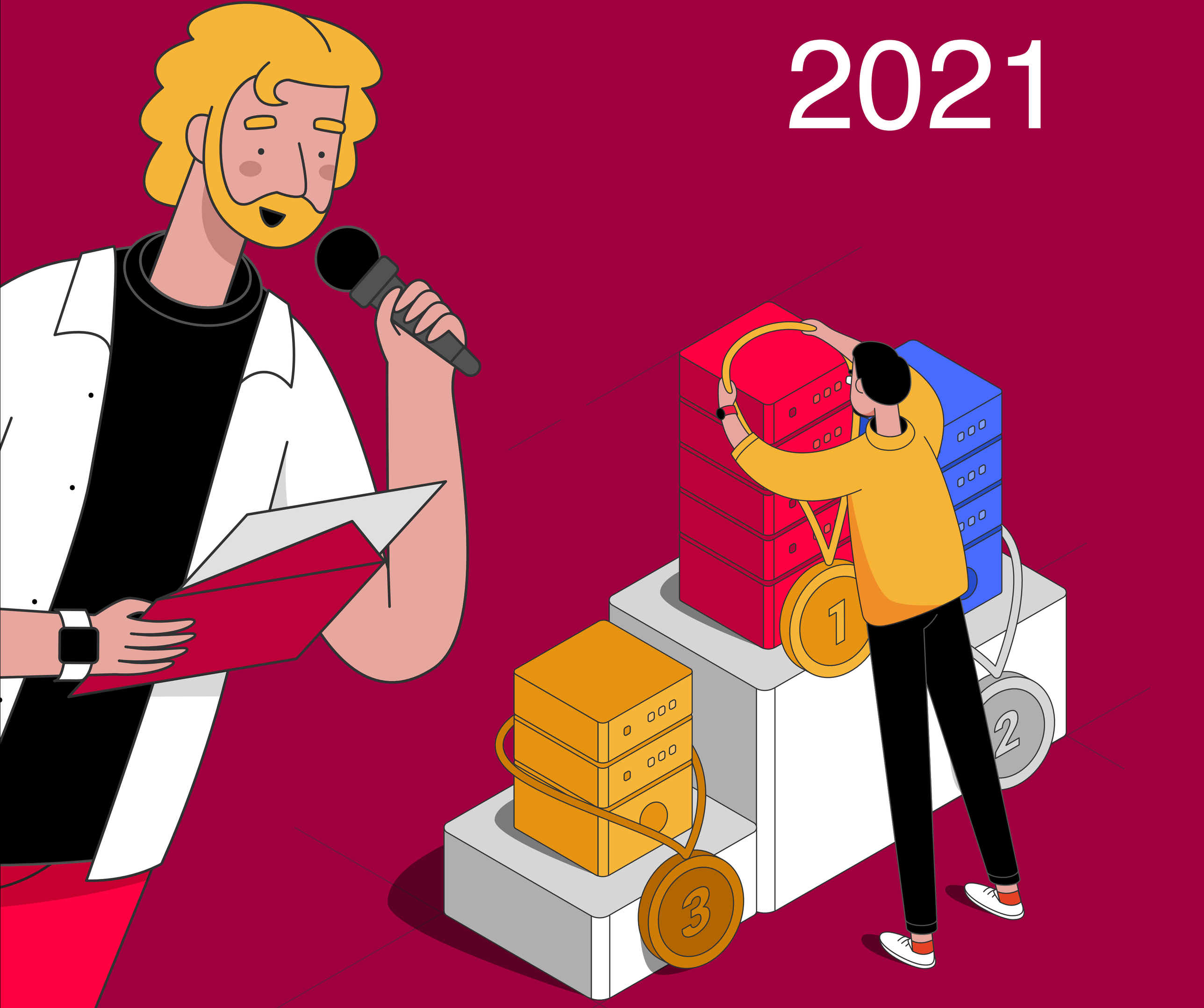
Proxy Market Research

2021



PROXYWAY

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Introduction

Proxy IP networks power thousands of businesses in various industries: search engine optimization, retail, travel and hospitality, to name a few. Yet more companies benefit from the data extracted with the help of proxies, whether in the form of keyword rankings, aggregated prices, or business leads. Proxy IP networks effectively fuel the whole data economy, satisfying its exploding need for information.

Yet, two years after our first market research, the proxy IP network market still lies in the dark. Very few sources cover its developments, and companies continue to avoid connections with proxies due to lingering associations with botnets and fraud. Despite best efforts from the leading proxy service providers, we still have a long way to go.

And so, Proxyway's Proxy Market Research remains the only large-scale investigation into proxy IP networks. Released annually, it tests and evaluates the largest residential proxy providers.

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This issue benchmarks the residential IP pools of eight leading companies, providing extensive data about their performance, features, and user experience. It includes not only information about success rates and response times, but also metrics that are nearly impossible to find anywhere else, such as the proxy IP server's stability over time.

The research targets current and future customers, aiming to provide them with a reliable resource about proxy IP services. We strive both to educate and help save resources normally expended in testing and evaluating the providers in-house.

Compared to the previous two editions, this year's Proxy Market Research takes the middle road. Instead of either providing raw data or giving highly opinionated advice, it describes the findings, suggests our own interpretation, but also leaves room for the reader to make an informed decision by themselves. Where we make assumptions, they are based on our experience, continuous communication with proxy-using businesses and providers themselves.

You will find the paper divided into three major sections. The first section outlines the main developments in the proxy server market that took place in 2020. The second section provides a comprehensive evaluation of eight largest residential proxy providers based on their features and performance data. The third section applies the findings to six major residential proxy IP verticals.

This research was a huge endeavor for us, spanning three months and over two million requests for each of the proxy providers involved. We hope you will find it useful.

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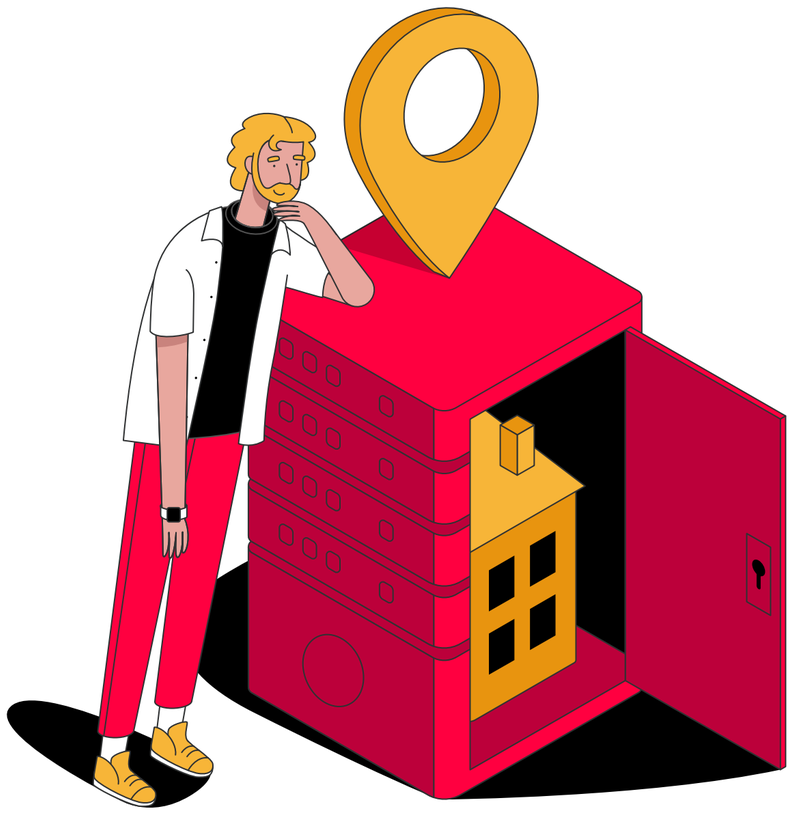
Classification of Proxy IP Services

A proxy generally means a "substitute". It is an intermediary between a user’s device and a target server that allows going online under a different IP address. Proxies have various purposes: from improving security to unlocking geo-blocked content to monitoring online activities.

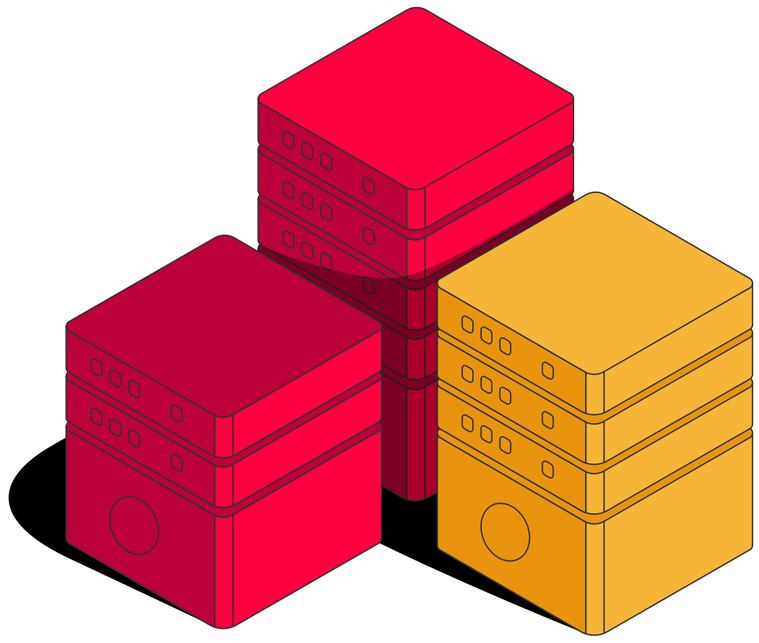
This research is mostly concerned with forward proxies. These are servers that reroute connections leaving a device, as opposed to reverse proxies that intercept them. The latter have different configurations and uses.

There are several major types of proxy IPs to be aware of.



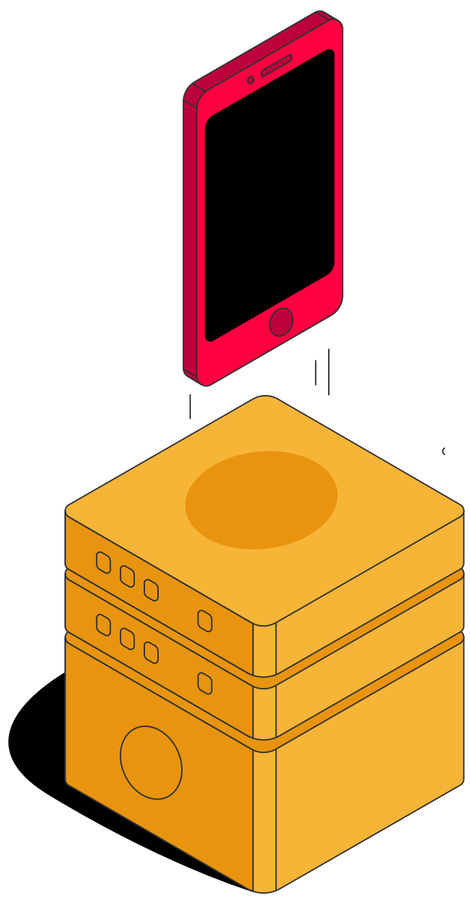
A residential proxy is an IP address provided by an Internet Service Provider (ISP) to a household. For this reason, residential proxy IPs are hard to detect by a website as proxies. Proxy providers usually control large numbers of residential IPs in many locations around the world. Their anonymity, comparatively high connection success rate, and broad geo-location targeting options make residential IPs the favored proxy type among businesses.

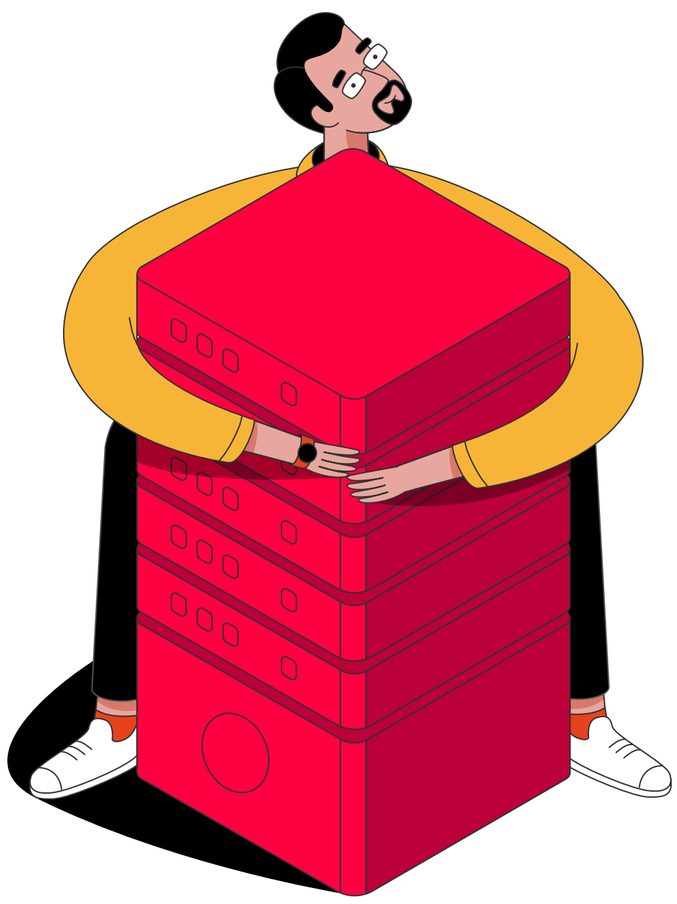
In contrast, **a datacenter proxy** originates from a server in a data center, which gives them fast and stable connections. However, datacenter IPs are not registered with internet service providers and only imitate a real internet connection. As a result, they are easy to identify and consequently block if the target website monitors its traffic.



A static residential proxy is an IP address that is registered under an internet service provider but does not involve end users. This proxy type attempts to combine the strengths of residential and datacenter IPs, with mixed results.

Finally, **a mobile proxy** is an IP address provided to clients of mobile carriers. They differ from residential proxies in that these proxies use 3G, 4G, and nowadays 5G connections instead of landline-based Wi-Fi. As mobile IPs are frequently shared among hundreds of mobile devices, these proxies are considered the most effective in overcoming restrictions.





Taking a step further, proxy IPs can be either **dedicated or shared.**

A dedicated proxy is used by only one person at a time or for specific domains. This kind of proxy, also known as a private proxy, provides a user with completely private IP authentication and anonymity. In exchange, they cost a premium compared to the other options.

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A **shared proxy** is under the control of several users at once. This can range from 2-3 people to hundreds of different users, depending on the provider’s configuration. IPs that only have several concurrent users are also called semi-dedicated proxies. Shared proxy IPs are often available online in free proxy lists; using them is not recommended to avoid malicious advertising or malware risks.

This research is concerned only with residential proxies. This is partly because they are the dominant IP type, and also to keep the scope of the investigation reasonable.

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Proxy IP Network Market Trends

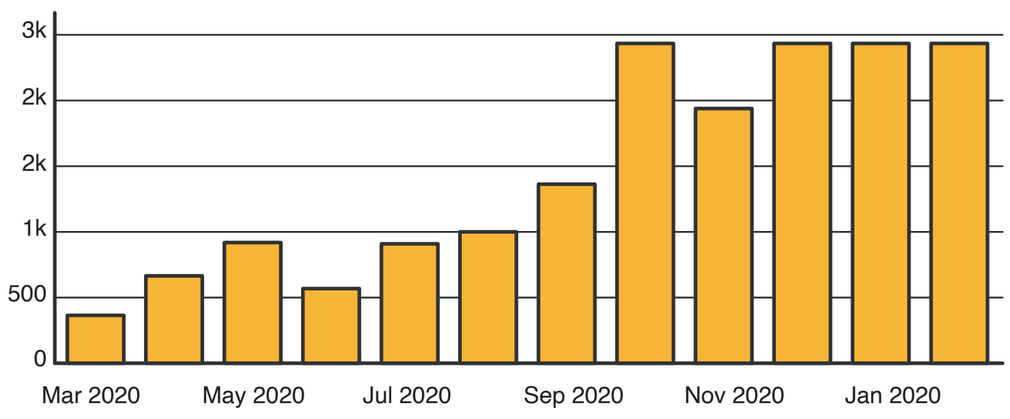
Throughout 2020, the proxy IP network market saw notable developments. In this paper, we identify three trends that caught our attention: 1) rise of static residential proxies; 2) increasing focus on ethical proxy IP sourcing and use; 3) transition to proxy-IP-powered products and services.

Rise of Static Residential Proxies

Static residential proxies, or proxy IP addresses that use ASNs of internet service providers without involving end users, have been around for a while. NetNut, the flagship provider of such IPs, started business in 2017. Bright Data (formerly Luminati Networks) and Oxylabs introduced them in the second part of 2019. GeoSurf soon followed.

But it wasn't until 2020 that static residential proxies really took off. We noticed this both in online discussions about proxies, questions from our readers, and statistical data. This proxy type has found particular success in the sneaker shopping industry, thanks to low response times and a non-traffic based pricing model. Google's search data paints a clear picture of their rising popularity in the sneaker niche, where static residential IPs go by the name of ISP proxies:

(+650% increase in the last 12 months)



We still have no strong opinion whether static residential proxies offer conclusive benefits over peer-to-peer IPs in other niches. But their increasing prevalence is hard to deny.

Increasing Focus on Ethical Proxy IP Sourcing and Use

As far as we can remember, proxy IP networks have always had a dubious reputation. In earlier days, it was reinforced by botnets and illegal or unethical use cases like carding or ad fraud. Recently, the spotlight has fallen on residential IP sourcing practices. Due to all the controversy and shadiness involved, businesses are reluctant to reveal their use of proxy IP networks – we encountered this clearly while preparing last year's research paper.

Mainstream residential proxy network providers have been trying hard to clean house for the whole market. Bright Data was among the first to open up about its SDK, tighten up the KYC processes and limit dubious use cases, especially after the **PR fallout** over Hola VPN. The company has also invested a great deal of PR effort into promoting ethical proxy IP use. In 2020, Oxylabs created **a whole framework** around residential IP acquisition and has been pushing toward legitimizing proxy IP networks in its own right.

It's interesting to observe how these campaigns have trickled over to other residential IP providers. For example, SOAX and Infatica, both relatively new companies, put a great emphasis on IP sourcing in their value propositions. Another provider Blazing SEO distinguishes trust and ethics in its recent website redesign. This would have hardly been a question of importance several years ago.

With proxy IP networks becoming more mainstream, we can expect the emphasis on ethical use to only increase. Topics like residential IP acquisition are still highly controversial, and their sourcing methods **need more scrutiny**, but the market is slowly moving toward legitimacy.

Transition to Proxy-IP-Powered Products and Services

Proxy IP networks as such are little more than raw materials – fuel for web scraping, automation, and other tools. A fragile one, to add. There are many breaking points, ranging from the proxy node to the provider's infrastructure, to domain countermeasures imposed against a particular IP or a range of addresses.

Considering this, it's no wonder that providers with extra resources scramble to create their own partially or fully managed tools. Doing so lets them conserve infrastructure, offer easier to use and more effective services – and have a healthier margin, all at once. For customers, the trade-offs are customizability and price.

In 2020, we saw two main directions – or rather degrees – of this push. The first one outfits the proxy IPs with additional capabilities to simplify data collection processes. This includes fingerprint management, automatic retries, data parsing, and similar features. Oxylabs released its Next-Gen Residential Proxies, Bright Data introduced Search Engine Crawler, Smartproxy rolled out Search Engine Proxies, and NetNut perfected its web scraping API.

The second direction attempts to remove the need for technical experience altogether. If we had to describe it, perhaps the most apt term would be no-code data collection. It allows extracting information from websites without writing scripts or having any programming experience. Two examples from 2020-early 2021 would be Zyte's Automatic Extraction and Bright Data's Data Collector extension.

While such tools and services might not push out proxy IPs altogether, providers are already funneling clients with particular needs toward them. For instance, Bright Data wanted us to test many of the websites using its Data Unblocker, and Oxylabs blocks Google domains for its residential IPs, directing clients to Real-Time Crawler instead.

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Legal Battles over Residential Proxy IP Technology

Aside from technological and operational developments, the year 2020 was also characterised by legal disputes among the largest proxy IP service providers. In particular, the ongoing cases between Bright Data v. Geosurf and Bright Data v. Oxylabs had important breakthroughs with potential implications for the whole industry.

Bright Data v. BiScience (GeoSurf)

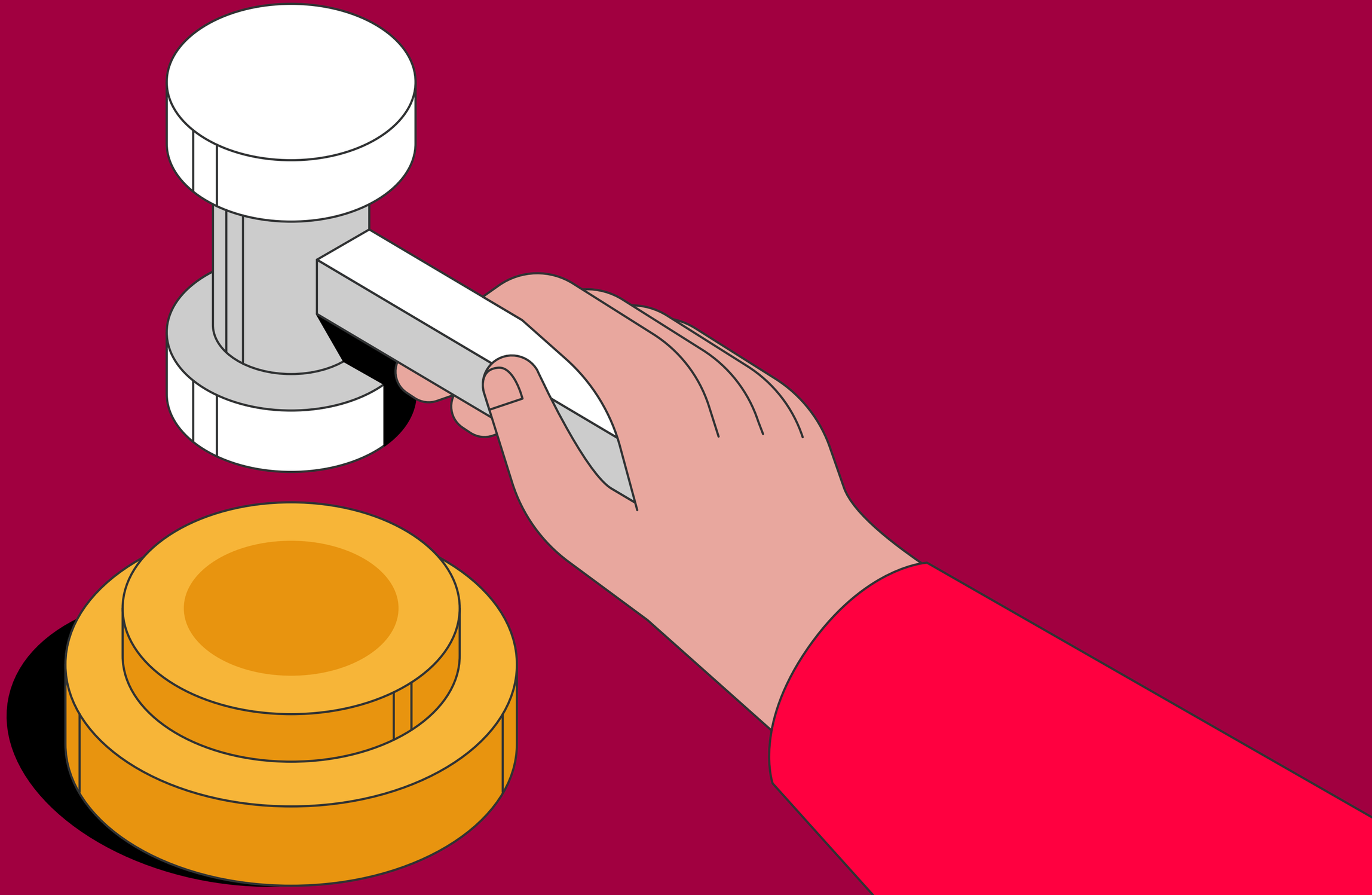
The case started at the very end of 2018, when Bright Data filed a lawsuit against BiScience over illegal use of its trade secrets and patent infringement. Bright Data claimed that its former employees, who moved to BiScience-owned GeoSurf, disclosed confidential information that helped the company launch its own residential IP services. The second part of the claim involved patent infringements concerning Bright Data's proxy tunneling technology.

The patent dispute was resolved in favor of Bright Data: in May 2020, **the company announced** that BiScience would be discontinuing its proxy IP business and transitioning clients to Bright Data. At this date, GeoSurf is still offering proxy IP network services to customers, so it's possible that the terms have changed or the dispute is continuing.

Bright Data v. Oxylabs

The dispute between Bright Data and Oxylabs actually started earlier than the first one but is still ongoing. Here again Bright Data challenged its competitor over use of residential proxy IP services. It first claimed infringement of two patents around content streaming from multiple servers, and later filed another claim about three new alleged patent infringements.

In February 2020, the parties resolved one of the cases. As a result, Bright Data agreed not to pursue further legal action over two of its patents. The second case is still in progress. In its own right, Oxylabs has filed an antitrust counterclaim, asserting monopolization attempts. The full timeline (from Oxylabs' point of view) can be found **here**.



What’s at Stake?

The final outcome of these two cases may have important implications for the whole proxy IP network market. It has the ability to determine if one company will have the power to quash competitors that are offering residential proxy IP services. So, these disputes are certainly something to follow in 2021.

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The Providers

Bright Data (Formerly Luminati)

Country: Israel
Founded: 2014
Proxy pool: 72M residential IPs

Recently rebranded from Luminati, Bright Data is the largest proxy IP provider today. It offers all-inclusive proxy services anywhere in the world. The provider targets business customers, positions itself as an ethical proxy service, and has built a strong ecosystem of data collection tools around its proxy IP network.

Oxylabs

Country: Lithuania
Founded: 2012
Proxy pool: 102M residential IPs

The contender for the first place, Oxylabs controls both the largest datacenter and residential IP networks today. Like Bright Data, it offers an arsenal of features and tools for extracting data from the web, some based on cutting edge AI & ML technology. Oxylabs targets mid-to-large businesses, wooing them with SLAs, insurance, and personalized support.

Smartproxy

Country: International
Founded: 2018
Proxy pool: 40M residential IPs

The third major player, Smartproxy, found its fame in the lower end of the market, offering a highly balanced rotating residential IP service. The provider emphasizes value and ease of use: it sacrifices fringe features to offer premium quality for a lower price. Smartproxy is famous for being an approachable provider with responsive customer service.

GeoSurf

Country: Israel
Founded: 2009
Proxy pool: 2.5M residential IPs

A subsidiary of ad intelligence company BiScience, GeoSurf is a market veteran known for its premium residential proxy IPs and a VPN service. Despite being small, the provider's pool of IPs covers over 1,000 locations. This has historically made GeoSurf a go-to place for ad intelligence and localization companies.

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NetNut

Country: Israel
Founded: 2017
Proxy pool: 10M residential IPs

The posterboy of static residential proxies, NetNut built its business by leasing IPs directly from internet service providers and selling them to companies with large e-commerce or search intelligence needs. Lately, the provider has been trying to expand its horizons by introducing new IP types and entry-level pricing plans.

Storm Proxies

Country: Unknown
Founded: 2016
Proxy pool: 200,000 residential IPs

The affordable service, Storm Proxies has been serving as a gateway to proxy IPs for quite a few years. This provider offers a small and barebones IP pool with limited targeting options. Nevertheless, it attracts many freelancers and small businesses by combining affordable pricing plans with no bandwidth limits.

PacketStream

Country: US
Founded: 2018
Proxy pool: 7M residential IPs

Last year, when we gave Packestream the Newbie-of-the-Year award, we thought this provider had the potential to disrupt the market. Its residential IPs worked well, had all the basic features, and cost absurdly low – $1/GB. Though PacketStream has made few visible improvements since then, it remains a strong budget option.

SOAX

Country: International
Founded: 2019
Proxy pool: 8.5M residential IPs

Another newcomer, SOAX sells residential and mobile IPs to small & medium businesses. The provider is still in the making, which leaves some unanswered questions about the company and its IP sourcing practices. However, it has already started differentiating itself with highly flexible IP rotation and location targeting options.

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Methodology

Testing Methodology

We first selected the residential proxy providers to include in this year's research. The selection was based on our industry knowledge, the market presence and pool size of providers. Having made the initial list, we reached out to 12 companies. All 12 responded: eight of them voluntarily gave access to their services, three withheld from the research claiming infrastructural or other issues, and one stopped replying to our messages during the conversation.

To evaluate the providers, we used both automated performance tests and manual analysis. The testing took place during February and March of 2021.

The performance tests ran on our own scraping script, which is **publicly available on GitHub**. Using the script, we designed three separate tests, having made necessary optimizations for each (such as adjusting the header logic, etc.).

1. Proxy pool test. This was our main test. It continuously rotated a provider's residential IP addresses against Cloudflare's server, making up to 100,000 connection requests per day for over 20 days. It measured a variety of metrics, including proxy IP pool, size, uniqueness, IP type, response time, and others. Overall, we made 1.7-2.2 million requests for each provider. The test's scale allows making rather confident assumptions about a provider's IP pool.

2. Target test. This test used the IPs to connect to a selection of real websites. Its purpose was to see how the proxies perform with major domains in multiple verticals. The target test was done on a significantly smaller scale than the proxy pool test. So, while it is a good tool for comparison, it should be mainly used for illustrative purposes.

3. Stress test. The final test put a provider's residential IP servers under load, making up to 500 connection requests every second. Its aim was to measure if the provider's infrastructure is able to sustain high-intensity web scraping.

The manual analysis involved collecting information from the providers by hand. We divided these data points into four groups:

1.Features.
Available rotation and targeting options, concurrency, authentication methods, connection protocols, and more.

2.User experience.
Dashboard functionality, help documentation, API.

3.Price.
Payment methods, price per gigabyte.

4.Customer service.
Support channels, languages, working hours.

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Evaluation Methodology

The evaluation is based on the proxy pool test, stress test, and manual analysis. It combines eight different aspects of a provider's service:

1. Proxy pool size
2. Proxy pool quality
3. Proxy pool performance
4. Proxy server stability
5. Features
6. User experience
7. Customer service
8. Price

Each aspect comprises smaller data points. For example, the pool quality aspect includes such criteria as percentage of unique C-class subnets and proxy type in IP databases. The performance aspect concerns itself with success rate, response time, and so on. We provide detailed data and discussion under each aspect.

To make this information easily digestible, we gave relevant data points coefficients and translated them into a simple alphabetical grade. In other words, we assigned each provider a letter based on their results: A+, A, B, and so on. The coefficients are based on our own experience, interactions with providers and proxy IP using businesses. When combined, the individual grades allow us to make an overall assessment of the providers.

Keep in mind that the aspects themselves are not weighted: proxy pool size is worth as much as user experience. Also, the ratios comprising the aspects are inevitably opinionated. If you disagree with our assessment or value certain criteria more, feel free to simply look at the provided data.

The full evaluation and grading scheme is in Appendices 1A and 1B.

Use Case Evaluation

The use case evaluation draws from the pool test, manual analysis, and target tests.

This evaluation describes six main verticals that rely on residential proxy IPs to run their businesses. It distinguishes one or more characteristics that we believe to be the most important for that use case. We derive this information from our experience, interactions with Proxyway's readers, and businesses that rely on proxy IPs in those verticals.

Acknowledging that each vertical caters to very different uses and needs, we withheld from drawing up a coefficient-based evaluation. Instead, we simply recommend the providers we believe fit the desired characteristics best. We then provide performance benchmarks for some of the main targets in those verticals, along with a brief commentary.

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General Evaluation

The section investigates eight different aspects to produce a general evaluation of the providers' residential IP services. We first give an alphabetical score and then go through the relevant data to substantiate it.

If you only want glanceable information, here are our evaluations for each of the aspects we discuss in detail below, along with our cumulative score:

	Bright Data	Oxylabs	Smart-proxy	GeoSurf	NetNut	Packet Stream	Storm Proxies	SOAX
Proxy pool size	A-	A+	A+	F	B+	F	F	D+
Proxy pool quality	A	A	A	A	C	A-	A	B+
Proxy pool performance	A	A+	A+	B+	B	B	D+	B+
Proxy server stability	A+	A+	A+	B	B	A-	C	A+
Features	A+	A+	A	B	A-	C	F	B
User experience	A	A	A+	A-	A-	C+	E	C+
Customer service	A	A+	A+	A+	C	F	F	A
Price	E	E+	C	F	D	A-	A	E
Overall score	A	A	A	C+	B	C	D	B

Proxy Pool Size

The number of IPs in a residential proxy pool is a very important criterion in evaluating a provider's service. First of all, a large pool ensures that the provider will have IPs in relevant locations at all times. Peer-to-peer residential proxies come and go, so their numbers constantly fluctuate. This is why you should treat the counts given by providers themselves monthly estimates at best. Secondly, a large pool will reduce the impact of sharing the IPs with others, simply because you will have a smaller chance of encountering abused addresses.

Proxy providers have different approaches to managing their IP pools. Some give clients access to their main network of IP addresses. Others grant access to a limited number of IPs and then

rotate them every select interval. Many segment their IP pools based on various criteria: type of node device, location, target domain, and more. For this and further similar tests, we asked the participants for access to their main, or at least global, IP pools.

Data and Discussion

Here is the raw data. Note that we base our calculations on the number of successful requests and not total requests:

Table 1.
Unique IPs in the providers' pools.

	Bright Data	Oxylabs	Smart-proxy	GeoSurf	NetNut	Packet Stream	Storm Proxies	SOAX
Advertised monthly IPs	72,000,000	100,000,000	40,000,000	2,500,000	10,000,000	7,000,000	200,000	8,500,000
Requests	2,121,022	2,114,372	1,924,216,00	1,730,247	1,801,243	1,799,668	1,454,335	2,105,126
Unique IPs	1,082,528	1,317,484	1,224,255	279,688	890,750	83,671	84,563	768,194
Unique IPs (%)	51.04%	62.31%	63.62%	16.17%	49.45%	4.65%	5.82%	36.49%

The table shows three clear outliers: Oxylabs, Smartproxy, and Bright Data. This causes little surprise considering their outlandish advertised IP pools. SOAX was another provider we can commend as generally sticking true to its claims.

The table also reveals a curious distinction between GeoSurf and NetNut. The former relies on peer-to-peer residential addresses, and during our testing, only a moderate percentage of the 2.5 million was available. NetNut, on the other hand, uses datacenter-like static residential proxies; they are always online, which is why almost every second request returned a unique IP address.

The clear underdogs in the pool size competition turned out to be Storm Proxies and PacketStream. Storm Proxies's results are largely consonant with its advertising claims. PacketStream, on the other hand, raises serious questions. We assume that we either received access to one of several IP pools or that the provider simply couldn't muster more during the testing period.

Evaluation

Based on the findings, we gave the providers the following grades:

For more information about our grading methodology, see Appendix 1.

Provider	Score
Bright Data	A-
Oxylabs	A+
Smartproxy	A+
GeoSurf	F
NetNut	B+
PacketStream	F
Storm Proxies	F
SOAX	D+

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Proxy Pool Quality

While important, IP pool size alone fails to answer how good those residential proxies are – or if they're residential at all. This second criterion provides context about the proxy IP addresses: the version of their IP protocol, perceived type in IP databases, and which device they likely belong to. We used MaxMind and IP2Location databases to extract the data.

As a rule, peer-to-peer residential IPs belong to real devices, registered under landline, mobile, or mixed internet service providers. Ideally, the proxies should use the IPv4 protocol, as websites are more reluctant to block such IPs than IPv6, and the protocol is compatible with all domains. IP location is another factor to consider because the most frequent proxy IP targets reside in so-called Tier 1 countries with large purchasing power. We decided against disclosing individual locations or IP ASNs to protect the providers' information.

Data and Discussion

And here is the data to substantiate the evaluation. First, let's have a look at the composition of the proxy pools in the eyes of IP databases.

Table 2.
Composition of proxy IP pools in the eyes of IP databases.

	Bright Data	Oxylabs	Smart-proxy	GeoSurf	NetNut	Packet Stream	Storm Proxies	SOAX
ISP (%)	40.06%	41.63%	41.71%	39.68%	34.47%	57.32%	31.63%	50.17%
ISP/MOB (%)	44.60%	42.60%	42.47%	42.84%	19.95%	30%	48.02%	30.99%
MOB (%)	7.89%	9.12%	9.15%	8.29%	4.23%	3.45%	2.29%	2.74%
DCH (%)	3.83%	2.38%	2.40%	3.99%	35.83%	2.27%	15.38%	3.29%
Others (%)	3.62%	4.27%	4.27%	5.20%	5.52%	7%	2.68%	12.81%
ISP and/or MOB	92.55%	93.35%	93.33%	90.81%	58.65%	91%	81.94%	83.90%

A quick explainer: ISP means that the issuer of the IP provider landline internet services to consumers; MOB means that the IP's issuer is a mobile carrier; ISP/MOB means that the ISP offers both kinds of services; DCH identifies the IP's issuer as a cloud hosting company; and Other IPs may come from commercial, educational, and governmental organizations.

A residential proxy IP network should contain ISP, MOB, or mixed IP addresses. Other types are less preferable. IPs from landline ISPs may indicate a better connection quality and longer uptime as they signal that the proxy node uses a computer instead of a phone or tablet. Mobile-only carriers have the best reputation in the eyes of websites but often worst performance.

From what we can see, most of the eight providers neatly meet our criteria. The two that do not are NetNut and Storm Proxies. The former can be excused considering that static residential IPs often come from small and regional internet service providers, but it seems that we received access to a mixed pool. We have no explanation for the latter. Excuses or not, having many datacenter IP addresses puts the user at a higher risk of blocks. The third provider, SOAX, had a different issue: an unusually large number of commercial IPs.

And here are the ratios between IPv4 and IPv6 addresses.

Table 3.
Percentage of IPv4 and IPv6 addresses in the proxy IP pools.

	Bright Data	Oxylabs	Smart-proxy	GeoSurf	NetNut	Packet Stream	Storm Proxies	SOAX
IPv4 (%)	99.90%	86.93%	86.98%	99.90%	99.90%	84.05%	98.38%	88.76%
IPv6 (%)	0.1%	13.07%	13.02%	0.1%	0.1%	15.95%	1.62%	11.24%

We seem to have an equal split. Half of the providers seem to be purists, trying to maintain the perfect 100% of IPv4 addresses; the other half is more friendly toward IPv6. In any case, the majority of addresses in every pool remains IPv4.

For curiosity, we also investigated how many unique C-class subnets the providers had.

Table 4.
Unique C-class subnets in the proxy IP pools.

	Bright Data	Oxylabs	Smart-proxy	GeoSurf	NetNut	Packet Stream	Storm Proxies	SOAX
Unique IPs	1,082,528	1,317,484	1,224,255	279,688	890,750	83,671	84,563	768,194
Unique C-class subnets	48,357	42,394	41,098	18,809	23,776	2,993	8,058	16,244
% of unique IPs	4.47%	3.22%	3.36%	6.73%	2.67%	3.58%	9.53%	2.12%

The table above shows what exactly residential proxy IP providers mean by claiming that their services have “no subnets”. For comparison, Oxylabs, the company with the largest datacenter proxy IP network that we know of, advertises to have 7,850 subnets in a 2M IP pool. Its residential IP service, on the other hand, had over 42,000 subnets in the 1.3M IPs we identified. A drastic difference.

In absolute terms, Bright Data, Oxylabs, and Smartproxy had by far the largest subnet variety. This is a testament to their large IP pools. The numbers look less impressive turned into percentages, but it is one of those cases that do not scale linearly as the values increase.

The last table for the proxy pool quality aspect reveals how many of the unique IPs belonged to Tier 1 countries. By Tier 1, we mean countries that fall within the highest income bracket according to the World Bank’s classification.

Table 5.
Percentage of IP addresses in Tier 1 countries.

	Bright Data	Oxylabs	Smart-proxy	GeoSurf	NetNut	Packet Stream	Storm Proxies	SOAX
IPs in Tier 1 countries	721672	551283	524205	117582	607207	35159	45318	45318
% of unique IPs	66.67%	41.84%	42.82%	42.04%	68.17%	42.02%	53.59%	17.56%

Bright Data and NetNut had the largest number of proxy IPs from Tier 1 locations. Oxylabs and Smartproxy also displayed good results, considering they had the most unique IPs out of all the providers we tested. PacketStream and Storm Proxies may look good percentage-wise, but they fail to impress in absolute terms. Still, a small proxy pool with desirable IPs is better than one filled with Tier 2 or 3 locations. SOAX had the worst results, meaning that the provider sources IPs primarily from developing countries.

A note of caution: we targeted global endpoints instead of particular country IP pools. Some providers avoid including their high-value IP addresses into such pools to save them for customers in need of those particular locations. For example, neither Bright Data, nor Oxylabs had many addresses in the US, even though both providers are known to have a strong presence there. As a result, we decided to exclude this metric from the evaluation.

Evaluation

Based on the findings, we gave the providers the following grades:

For more information about our grading methodology, see Appendix 1.

Provider	Score
Bright Data	A
Oxylabs	A
Smartproxy	A
GeoSurf	A
NetNut	C
PacketStream	A-
Storm Proxies	A
SOAX	B+

Proxy Pool Performance

The third crucial aspect in evaluating a proxy IP pool is performance. By performance, we mean both the robustness of a provider's infrastructure, and the connection quality of its IP addresses. If an IP address is slow or fails to connect altogether, this needlessly wastes time, resources, and complicates work with the proxy server.

To measure the performance of proxy IP networks, we used Cloudflare's IP resolver. It is very lightweight, stable, and has no protection against automated access, which makes the domain a perfect target for tests. While using it makes the conditions artificial, the success rate metric reveals the quality of the proxy server, and response time translates well into other domains.

Data and Discussion

First, let's look at the number of successful requests.

Table 6.
Number of successful requests made by each proxy IP pool.

	Bright Data	Oxylabs	Smart-proxy	GeoSurf	NetNut	Packet Stream	Storm Proxies	SOAX
Requests	2,131,844	2,130,483	1,938,500	1,927,854	2,137,071	1,891,617	2,135,263	2,137,114
Successful requests	2,121,022	2,114,372	1,924,216	1,730,247	1,801,243	1,799,668	1,454,335	2,105,126
Successful requests (%)	99.49%	99.24%	99.26%	89.75%	84.29%	95.14%	68.11%	98.50%

Once again, Bright Data, Oxylabs, and Smartproxy demonstrate the best results, proving that they have a great infrastructure. SOAX is one more provider to look out for, with PacketStream following close behind. GeoSurf and NetNut performed relatively well. Storm Proxies, sadly, disappointed: only 2 out of 3 requests we made managed to reach the target.

What caused the requests to fail? Here are the three most frequent errors each provider's proxy IP servers encountered.

Table 7.
Three most frequent errors made by each proxy IP server.

	Bright Data	Oxylabs	Smart-proxy	GeoSurf	NetNut	Packet Stream	Storm Proxies	SOAX
Error 1	SSL issues (0.3%)	Unknown (0.3%)	Unknown (0.31%)	Timeout (7.70%)	Timeout (11.11%)	Timeout (3.75%)	Unknown (13.75%)	Timeout (0.95%)
Error 2	Timeout (0.14%)	SSL issues (0.21%)	SSL issues (0.19%)	Unknown (1.22%)	503 (2.78%)	SSL issues (0.41%)	SSL issues (8.28%)	Unknown (0.30%)
Error 3	Unknown (0.05%)	Timeout (0.13%)	Timeout (0.13%)	502 (0.60%)	Unknown (1.05%)	502 (0.36%)	502 (7.53%)	SSL issues (0.23%)

It turns out that most of the issues were caused by timeouts – in other words, unresponsive nodes. We consider a request to time out when it fails to connect within 30 seconds. This is pretty harsh, but we don't want unresponsive IPs to obstruct our web scraping. Sometimes, we were unable to pinpoint the error's cause, and for some reason over 150,000 of Storm Proxies' requests were refused with 502 – bad gateway. It is likely that the server was unable to find any nodes to connect to.

Speaking of speed, let's see how responsive the residential proxy IPs were throughout our testing.

Table 8.
Average and median response times of the residential proxy IPs.

	Bright Data	Oxylabs	Smart-proxy	GeoSurf	NetNut	Packet Stream	Storm Proxies	SOAX
Response time (average, s)	1.18	0.98	0.97	2.61	1.4	1.9	2.66	3.69
Response time (median, s)	0.66	0.57	0.57	1.86	0.87	1.15	1.88	1.71

In this area, Oxylabs and Smartproxy are clear leaders – achieving a response time of less than 1 second is no small feat. This indicates that the providers have a robust infrastructure and proxy servers close to end users (the proxy nodes). Bright Data displayed great results as well, as did NetNut. SOAX was once again an outlier, but not a pleasant one: its residential proxy IPs were by far the slowest, trailing behind the leaders more than three times.

We should note that the target server was located in the US, so the location of the providers' connection routing infrastructure played some part in the results.

The final performance metric we checked was performance under load. It involved running 500 requests per second for 10 minutes. This resulted in around 250-300 thousands requests made to the server. Note that requests per second isn't quite the same as concurrent requests – to equate these two metrics, you would have to multiply the former by the response time. In other words, we were establishing significantly more connections that it'd seem at first sight.

Table 9.
Performance of the proxy IP servers under 500 requests per second.

	Bright Data	Oxylabs	Smart-proxy	GeoSurf	NetNut	Packet Stream	Storm Proxies	SOAX
Success rate	98.87%	95.71%	95.67%	83.44%	80.87%	85.04%	18.24%	99.07%
Response time	1.4	1.20	1.10	2.30	2.9	3.30	2.8	2.4

The first thing we can see is that a higher load (at least on this level) has little impact on the success rate. Storm Proxies seems to be an exception here – despite us lowering the connections to 400 per second, the server collapsed completely. PacketStream saw a 10% decrease, which is noticeable but nothing dramatic.

A more noticeable impact came in the form of speed. For example, NetNut slowed down from 1.4 to 2.9 seconds, PacketStream from 1.9 to 3.3 seconds. Even Bright Data was slightly affected by the increased load. Curiously, SOAX managed to shave off more than a second in the stress test, from 3.69 to 2.4 seconds. An impressive feat.

Overall, for most of the tested providers, this level of load is perfectly manageable. It shows that companies with large scale web-scraping needs today have multiple viable options to choose from.

Evaluation

Based on the findings, we gave the providers the following grades:

For more information about our grading methodology, see Appendix 1.

Provider	Score
Bright Data	A
Oxylabs	A+
Smartproxy	A+
GeoSurf	B+
NetNut	B
PacketStream	B
Storm Proxies	D+
SOAX	B+

Proxy Pool Stability

Stability is the last purely technical aspect in this evaluation. It is hard to calculate, and few bother doing that because it requires continuous monitoring of the proxy IP network. Stability reveals not only major outages but also general fluctuations in the performance of a provider’s infrastructure.

Calculating stability is pretty tricky; here’s how we did it step by step:

1. We grouped the data in 1 minute time units, plotted it, and randomly selected a 3-hour period with no visible fluctuations.
2. We then calculated the average success and standard deviation during that period.
3. Using the formula a = avg - 3std we calculated the lower threshold.
4. Finally, we calculated how many of the time units had a success rate above the lower threshold.

Data and Discussion

Table 10.
Stability of the providers throughout the testing period.

	Bright Data	Oxylabs	Smart-proxy	GeoSurf	NetNut	Packet Stream	Storm Proxies	SOAX
Standard deviation (%)	0.62%	0.96%	1.02%	4.31%	4.97%	2.98%	6.00%	0.94%
Stability (%)	97.01%	97.55%	98.48%	89.10%	99.09%	96.94%	97.73%	95.85%

The table reveals some interesting results. Notice how nearly all of the providers – with a small exception of GeoSurf – are remarkably stable. Even Storm Proxies, the performance of which we have otherwise found unremarkable. However, this tells only one part of the story.

The second part is told by something called standard deviation. It shows how much the success rate of a proxy server normally fluctuates during everyday use. So, even when the stability percentage is high, if the standard deviation is also high, that only means the proxy IP server is stable in its instability.

Out of the eight providers tested, we can see that Bright Data has the lowest standard deviation percentage, along with very high stability numbers. Oxylabs, Smartproxy, and SOAX also manage to sustain remarkable predictability. The others are worse off, especially Storm Proxies.

Evaluation

Based on the findings, we gave the providers the following grades:

For more information about our grading methodology, see Appendix 1.

Provider	Score
Bright Data	A+
Oxylabs	A+
Smartproxy	A+
GeoSurf	B
NetNut	B
PacketStream	A-
Storm Proxies	C
SOAX	A+

Features

A provider’s features determine how well the proxy IP network can adapt to particular needs of the user. If an IP pool includes addresses from Italy, but provides no method to target them, this will make it impossible to reliably track keywords or test an application in that location. If the proxy IPs have inconvenient rotation options, it will require extra development effort to customize them as needed. You get the drift.

By features, we primarily mean location coverage and targeting options, IP rotation settings, authentication methods (including sub-users), and the number of parallel connections allowed via the proxy IP network.

Data and Discussion

Let’s begin with location coverage and targeting options.

	Bright Data	Oxylabs	Smart-proxy	GeoSurf	NetNut	Packet Stream	Storm Proxies	SOAX
Locations	Global	Global	Global	100+	Global	100+	EU, US, global mix	100+
Global targeting	+	+	+	+	+	+	+	+
Country targeting	+	+	+	+	+	+	-	+
City targeting	Paid extra	+	8 cities	Paid extra	US only	-	-	+
ASN targeting	Paid extra	Extra	-	Paid extra	-	-	-	+

Table 11.
Available locations and their targeting options.

Half of the tested providers offer IPs in many locations. This is expected of residential proxy networks, which tout location coverage as of their strengths. Storm Proxies only offers IP pools that combine addresses in EU and US countries. NetNut’s static residential proxies include merely around 30 locations. However, the provider recently introduced a peer-to-peer residential proxy IP network; that product has over 150 advertised locations – par for the course.

Most providers allow accessing a pool of IP from all around the world, and most of them support country targeting. City-level and ASN targeting are a different matter. Half of the proxy services offer the former without reservations, while Smartproxy and NetNut provide limited access. ASN targeting is scarcer still: only the market leaders, Bright Data and Oxylabs, support it, with the unusual addition of SOAX. ASN targeting is a less used feature than, say, country targeting, so it’s understandable that relatively few providers choose to implement it.

Let’s talk IP rotation next.

	Bright Data	Oxylabs	Smart-proxy	GeoSurf	NetNut	Packet Stream	Storm Proxies	SOAX
Every request	+	+	+	+	+	+	+	-
Sticky	+	+	+	+	+	+	+	+
Intervals	Highly customizable	10, 30 mins	1, 10, 30 mins	1, 10, 30 mins	As long as available	As long as available	3, 15 mins	90-600 s, as long as available

Table 12.
Available IP rotation options.

All but one of the eight providers offer IP rotation every request, which makes using them for web scraping a simple affair. The outlier, SOAX, can also have this feature available; but it’s locked by default, with the shortest rotation interval being 90 seconds. Quicker rotation comes as a paid add-on.

All of the providers without fail have some kind of mechanism to keep the same IP address. Some, like PacketStream and NetNut, choose to allow keeping the same node until it becomes unavailable. This works best with proxy IPs from desktop or laptop devices. Others, like Oxylabs and GeoSurf, have fixed intervals after which the IP address rotates – provided the node stays

connected that long. Yet others, like Bright Data or SOAX, have highly flexible rotation options which can be configured via the dashboard or specialized software.

Overall, none of these proxy IP networks should leave their users lacking when it comes to IP rotation.

Now, let's discuss authorization options and sub-users.

Table 13.
Available proxy IP server authorization options.

	Bright Data	Oxylabs	Smart-proxy	GeoSurf	NetNut	Packet Stream	Storm Proxies	SOAX
User:pass	+	+	+	+	+	+	-	+
IP whitelisting	+	+	+	+	+	-	+	+
Sub-users	Yes	Yes	Yes	No	Resellers	Resellers	No	Yes
Sub-user limit	500+	3 (unlimited for resellers)	5 (unlimited for resellers)	-	Unlimited	Unlimited	-	2 (more cost extra)

Having both authorization options available is often a convenience, sometimes a necessity. There are ways to go around the limitations: for example, if you have a dynamic IP address and the provider supports only IP whitelisting; but ideally, there should be no need to do so.

As we can see, all but two providers allow authenticating in two ways. Storm Proxies fails to support user:pass authorization, while PacketStream does not allow whitelisting IP addresses.

Sub-users can be considered as one more form of authentication. Their purpose is to help separate different projects, enable teams to work with one subscription, but often to simply facilitate reselling. Sub-users have their own credentials and traffic allowance; they can be controlled via the dashboard or API.

All but two of the eight proxy IP providers have some kind of support for sub-users. Bright Data allows creating them in the form of Zones, up to 500 for no extra charge. Oxylabs, Smartproxy, and SOAX impose limits for regular users, which can be removed by paying extra or buying separate plans. NetNut and PacketStream offer sub-users as extra functionality for resellers.

The final feature to cover is the number of concurrent requests users are allowed to make.

Table 14.
Allowed concurrent connection requests by provider.

	Bright Data	Oxylabs	Smart-proxy	GeoSurf	NetNut	Packet Stream	Storm Proxies	SOAX
No. of requests	Unlimited	Unlimited	Unlimited	Unlimited	Unlimited	Unlimited	10-400 threads	300-1,000 ports

Six of the eight providers have no limits on how many concurrent requests their users can make. This is the standard practice with residential IP addresses, and it allows potentially unlimited scaling, as long as the hardware can sustain it.

As we have seen, Storm Proxies does not really have the best infrastructure, and it targets small businesses, so limiting the number of threads based on pricing plans makes sense. SOAX limits ports (concurrent connections) based on plans as well; but the provider's decision seems to be strictly business-based, as it evidently experienced no performance issues under load.

Evaluation

Based on the findings, we gave the providers the following grades:

For more information about our grading methodology, see Appendix 1.

Provider	Score
Bright Data	A+
Oxylabs	A+
Smartproxy	A
GeoSurf	B
NetNut	A-
PacketStream	C
Storm Proxies	F
SOAX	B

User Experience

If the previous aspects investigated how the proxy IPs work and what features they offer, this part describes interaction with the whole service. Touchpoints between the user and the product make an important part of the whole experience. Having a well-developed dashboard or robust API can determine the choice between several proxy IP providers, while other users might be repelled by an invasive or non-instant onboarding process.

Accordingly, this part goes over the providers' dashboards, APIs (if any), documentation, setup process, and proxy-IP-based tools.

Results and Discussion

Let's begin the analysis by looking at the providers' onboarding procedures.

Table 15.
Onboarding with the eight proxy IP providers.

	Bright Data	Oxylabs	Smart-proxy	GeoSurf	NetNut	Packet Stream	Storm Proxies	SOAX
Setup difficulty	Hard	Moderate	Easy	Moderate	Hard	Easy	Moderate	Moderate
Self-service	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes
KYC	Yes	Yes	Basic	Yes	Yes	No	No	Yes

Most of the evaluated companies allow their customers to onboard without any human interaction, which we consider a good thing. GeoSurf and NetNut are the only providers that require speaking with a customer service representative: GeoSurf to register at all, and NetNut to receive credentials for proxy access.

Nearly all of the providers require some kind of verification of identity or intent. The most lenient in this regard are Storm Proxies and PacketStream. Smartproxy seems to take a non-intrusive approach that prompts a KYC check after tripping their alert mechanisms. On the other end, Bright Data is notorious for a very intrusive verification procedure that requires not only an ID but also a picture or even a video call.

The setup difficulty data point is somewhat subjective. It was considered easy if the provider had widgets in the dashboard to help set up the IPs. Moderately hard setup flows had obstacles: for example, Oxylabs guides the user to documentation, and SOAX's flow is confusing despite the friendly setup wizard. The hardest setup flows overwhelm with many options and custom nomenclature (e.g. Bright Data) or leave the user to fend for themselves after providing scarce instructions (NetNut).

Moving on, here is the dashboard functionality of each proxy IP service.

Table 16.
Dashboard functionality by provider.

	Bright Data	Oxylabs	Smart-proxy	GeoSurf	NetNut	Packet Stream	Storm Proxies	SOAX
Usage stats	+	+	+	+	+	+	-	+
Proxy setup	+	-	+	+	-	+	+	+
Billing and balance	+	+	+	+	+	+	+	+
Support access	+	+	+	-	-	-	+	+

Looking from a bird's-eye-view, most of the providers have their dashboards in order: they allow buying and upgrading plans, setting up the proxy IP servers, and tracking expended traffic. This is the bare minimum to expect. Fewer offer direct access to customer service or creating and managing sub-users. Oxylabs and NetNut are the only providers that require additional sources to configure the proxy IPs: the former leads to documentation, while the latter omits key information, such as how to specify rotation intervals or target particular cities. That is why we decided to classify NetNut's dashboard as not having proxy setup functionality, even though basic instructions are available.

On a closer look, differences start revealing themselves. For example, there is a stark difference in how providers like NetNut and SOAX display usage statistics. The former has an elaborate setup, where you can filter not only dates but also domains and even response codes. The latter offers barely any customization at all. Others lie in-between the two extremes. What we want to say by this is that you should act on these data as a starting point for a closer investigation.

What about those that want to access the proxy IP networks programmatically? Here's a cheat sheet on the providers' API functionality.

Table 17.
API functionality by provider.

	Bright Data	Oxylabs	Smart-proxy	GeoSurf	NetNut	Packet Stream	Storm Proxies	SOAX
Availability	Public	Public	Public	Public	Resellers	Resellers	-	Extra feature
User administration	Add/disable/ remove zones	Create/ update/delete	Create/update/ delete, manage whitelisted IPs	Whitelist/ remove IPs	Create/ update/delete	Create/ view/remove	-	Whitelist/ remove IPs
Traffic monitoring	All or set zones by date	Subusers by date	Subusers by date	Whitelisted IPs by date	+	-	-	-
Balance information	Total or by zones	Traffic commitment by sub-user	Allocated traffic by sub-user	Balance, payments	+	Balance by sub-user, transaction history	-	-
IP numbers, locations	Available IPs, locations, nodes	-	Available endpoints	Available locations, daily IPs	+	-	-	Regions, cities, carriers, ISPs

Half of the tested providers offer a publicly available API. Out of the other half, three impose limitations on access, and Storm Proxies has no API at all. As can be expected, the APIs revolve around configuring and controlling the actions of sub-users. Most providers, save for SOAX and Storm Proxies, seem to do an adequate job at this task.

Out of all the services, Bright Data has the most functional API which allows very granular control over the use of its proxy IP servers. It is also by far the most complex.

Aside from residential IPs, some of the tested providers offer additional tools that build upon their proxy IP server technology. As they are not the object of this research, we only cover them in passing.

Table 18.
Extra tools by provider.

	Bright Data	Oxylabs	Smart-proxy	GeoSurf	NetNut	Packet Stream	Storm Proxies	SOAX
Browser extension	Chrome	Chrome	Chrome, Firefox	Chrome, Firefox	Chrome	-	-	-
Web scraping tools	Unblocker, Search Engine Crawler, Data Collector	Real-Time Crawler, Next-Gen Residential Proxies	Search Engine Proxies	Direct Connect API	NetNut API	-	-	-
Other tools	Proxy Manager	-	X-Browser, Proxy Address Generator	-	-	-	-	-

The difference is stark: some providers have built a variety of tools, while others have none at all. Perhaps it is a difference in priorities, but more like a question of resources. In any case, we can identify Bright Data, Oxylabs, and Smartproxy as the three companies with the most proxy-IP-based tools.

Most of the eight providers offer a browser extension or some kind of web scraping tool. Extensions offer an easy way to access proxies via a web browser. While there are stellar non-branded alternatives like FoxyProxy and SwitchyOmega, having an in-house extension can simplify tasks like ad verification or localization testing. The web scraping tools here mostly are APIs to help ensure successful data retrieval. Bright Data's Collector is an exception in that it allows extracting data without any coding experience.

The other tools worth mentioning are Bright Data's Proxy Manager and Smartproxy's X-Browser. The manager is open source and includes useful features like header management or IP filtering; the X-Browser allows creating multiple fingerprint profiles for tasks that require different identities.

Evaluation

Based on the findings, we gave the providers the following grades:

For more information about our grading methodology, see Appendix

Provider	Score
Bright Data	A
Oxylabs	A
Smartproxy	A+
GeoSurf	A-
NetNut	A-
PacketStream	C+
Storm Proxies	E
SOAX	C+

Customer Service

The best customer support is no support at all, but that really does not apply to this industry. Proxy IP servers are very complex and surprisingly fragile, so sooner or later things inevitably break. Either the server goes down, the IPs get blocked out, the nodes all disconnect in the country you need most. Heck, the problem may not even be technical: maybe you need certain configuration instructions, code samples, or simply general advice. This is where customer support comes in.

We consider customer service to be both non-interactive – that is, manuals and other kinds of documentation – as well as direct contact with human staff. The former should be comprehensive enough to minimize needless interactions. The latter should ideally be on call at all times, especially if your business depends on working proxy IPs. Anything less is sub-standard.

Results and Discussion

Let's begin with documentation. By documentation, we mean integration instructions, code samples, and general information about using the proxy IP server. Our measurement in this case is rather subjective and reflects our impressions using the service.

Table 19.
Quality of documentation by provider.

	Bright Data	Oxylabs	Smart-proxy	GeoSurf	NetNut	Packet Stream	Storm Proxies	SOAX
Documentation	Extensive	Extensive	Extensive	Extensive	Basic	Basic	Basic	Basic

To our minds, the best documentation is served by four providers. Three of them cater to premium customers, so they understandably want to polish the experience at all touchpoints. The fourth, Smartproxy, never ceases to surprise us with its devotion to customers: not only is there a comprehensive FAQ, a separate documentation portal, but Smartproxy covers all of the main tools that are used with proxy IPs.

On the other side, we have NetNut, PacketStream, Storm Proxies, and SOAX. PacketStream, SOAX, and Storm Proxies actually do an okay job documenting their services, but the trio still misses information, especially integration instructions. NetNut is an especially egregious case of hide-and-seek – it somehow fails to provide even basic information about its services, such as rotation intervals or the fact that the provider offers a scraping API.

Moving on, here is the main info about the customer service clients of each provider can expect.

Table 20.
Customer service by provider.

	Bright Data	Oxylabs	Smart-proxy	GeoSurf	NetNut	Packet Stream	Storm Proxies	SOAX
24/7	+	+	+	+	+	-	-	+
Response time	25 mins via chat	2 mins via chat	Instant via chat	15 mins via email	80 mins via email	12 hours via email	4 hours via email	5 mins via chat
Channels	Phone, WhatsApp, Skype, Chat, Email	Live chat, email, dedicated account	Live chat, email	Email, Skype, Contact form	Email, Skype, Contact form, dedicated	Email	Live chat, email	Live chat, email, Telegram
Languages	English, Chinese, Russian, Arabic, Hebrew, Japanese	English, Lithuanian, Russian, Chinese	English, Chinese	English, Hebrew, Spanish	English	English, Japanese, Korean, Chinese	English	English, Russian, Ukrainian, Belarussian, Polish, German, Arabic

Six of the eight participants are ready to offer assistance all day round. This is a very valuable feature for anyone that does serious work with proxy IPs. Clients of premium services usually have direct access to an account manager and/or tech team during daytime; after working hours, the support staff takes over by live chat or email.

Unsurprisingly, PacketStream and Storm Proxies have the fewest contact methods, together with the longest response times. Perhaps this is a way of cutting costs, or maybe the customer baskets are too small to make more involved support worthwhile. In any case, you should not rely on it too much. Smartproxy once again proves how highly it values customer service with nearly instant response times.

Most of the providers indicated speaking at least two languages, which makes it convenient for international customers. The question is: how many of those languages are actually available on call. English is our only safe bet. People around the office may be able to help but they can hardly be called proper support agents.

Evaluation

Based on the findings, we gave the providers the following grades:

For more information about our grading methodology, see Appendix 1.

Provider	Score
Bright Data	A
Oxylabs	A+
Smartproxy	A+
GeoSurf	A+
NetNut	C
PacketStream	F
Storm Proxies	F
SOAX	A

Price

The last aspect, price, is one that often makes or breaks a deal, no matter how good or convenient the service is. At the same time, price is a sensitive topic that depends largely on the expectations and needs of the customer. Some prefer buying in low quantities for a higher price per unit, even if they would pay several times less at scale. Others value certain features at a premium, even while sacrificing others.

Considering this, we will try to be as broad as possible and cover the providers' pricing at multiple levels of the ladder.

Results and Discussion

And now for the data. First, let's overview the pricing models of the providers.

Table 21.
Pricing models by provider.

	Bright Data	Oxylabs	Smart-proxy	GeoSurf	NetNut	Packet Stream	Storm Proxies	SOAX
Structure	$/GB	$/GB	$/GB	$/GB	$/GB	$/GB	$/port	$/GB
Add-ons / unlockables	City/ASN targeting, exclusive IPs	Dedicated account manager	Sub-users, whitelisted IPs	-	City/state selection, API, account manager	-	Whitelisted IPs	Whitelisted IPs, node access, ports, API
Period	Monthly, credit	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly	Monthly
Auto top-up/ renewal	Yes	Yes	Yes	Yes	Yes	Yes	No	No
Payment methods	Credit card, PayPal, Payoneer, wire, AliPay	Credit card, PayPal, Stripe, wire, AliPay	Credit card, PayPal, Bitcoin	Credit card, PayPal, Wire	Credit card, PayPal	Credit card, Paypal, Crypto	Credit card, PayPal, Webmoney	Credit card, PayPal, AmazonPay
Trial/refund	Both	Both	Refund	Demo	Trial	No	Refund	Paid trial

Six out of the eight providers use a monthly, traffic-based pricing model, with full access to the proxy IP pool. This is the industry standard. Out of the other two, Storm Proxies charges by ports and imposes no traffic limits, while PacketStream foregoes monthly commitment with pay-as-you go access. Bright Data has a credit-based model as well for those that fail to reach the minimum commitment for cheaper monthly plans. Some providers, namely Smartproxy and Oxylabs, offer recurring plans and buying extra traffic, which is a noteworthy feature for its convenience.

Sadly, the majority of the providers have taken up the habit of locking functionality for entry users. NetNut is perhaps the most extreme example: you lose not only city selection and API access, but are also left with email support only. Bright Data and SOAX offer advanced features in the form of paid add-ons, such as direct access to proxy nodes, which effectively turns the IPs into dedicated ones. Quite painfully, enabling city or ASN access for Bright Data doubles the price.

Most of the companies have some kind of trial or refund policy for testing their proxy IP networks. Bright Data and Oxylabs are the most generous in this regard, though individual customers can only request the money-back option. GeoSurf is the stingiest, with only a demo session available.

Moving on, here is a table of the providers' pricing plans at different levels. It focuses on general, not reseller plans, and does not include paid add-ons. Storm Proxies uses a different pricing model based on threads instead of bandwidth, so we had to place it in another table.

Table 22.
Price per gigabyte comparison by provider.

	Bright Data	Oxylabs	Smart-proxy	GeoSurf	NetNut	Packet Stream	SOAX
5GB	$17.5/GB	-	$15/GB	-	$18/GB	-	$15/GB
20 GB	$15/GB	$15/GB	$10/GB	-	$15/GB	-	-
50 GB	$12.50/GB	$12/GB	$8/GB	$11.88/GB	$12/GB	$1/GB	$11/GB
100 GB	$10/GB	$9/GB	$7/GB	$10/GB	$8/GB	$1/GB	$7/GB
250 GB	$10/GB	-	$6/GB	$8/GB	$6.5/GB	$1/GB	-
500 GB	$8.5/GB	-	$5/GB	Custom	$5/GB	$1/GB	-
1,000 GB	$6/GB	$5/GB	$4/GB	Custom	$4/GB	$1/GB	Custom

The tables clearly distinguish two groups. The affordable providers offer low-cost entry plans and charge less for traffic usage. PacketStream, and Storm Proxies fall square into this category. The premium providers require a larger commitment and sustain a more expensive price for traffic until a very large scale. Bright Data, Oxylabs, GeoSurf, and NetNut are perfect examples of a premium provider.

Smartproxy and SOAX are two companies that fall somewhere in-between. If SOAX still leans more toward premium services, Smartproxy starts from as low as 5 GBs (the $75 plan) and continues to undercut the competition up until the 1 TB price level. All things considered, it's a pretty good deal.

Evaluation

Based on the findings, we gave the providers the following grades:

For more information about our grading methodology, see Appendix 1.

Provider	Score
Bright Data	E
Oxylabs	E+
Smartproxy	C
GeoSurf	F
NetNut	D
PacketStream	A-
Storm Proxies	A
SOAX	E

Use Case Evaluation

The evaluation of residential proxy IP use cases involves two parts. The first part presents our brief investigation to find the main verticals as perceived by the proxy IP network providers. The second part goes through seven major use cases. It distinguishes the desired characteristics of residential IPs for the task, recommends services that fit them best, and presents the results of our technical tests with several major domains for that vertical.

The Most Popular Verticals

We wanted to investigate which verticals residential proxy IPs providers consider the most important. To do so, we first visited the websites of 11 major providers and noted the use cases they advertise. This quick analysis involved only the homepage, product page, and relevant use case landing pages; it did not delve into blog posts which often focus on SEO content. We then asked the providers themselves to share which use cases they consider the most relevant for them. Here are the results by frequency:

Websites:

1. E-commerce (price intelligence, comparison, product trends)
2. Ad verification
3. SEO Monitoring
4. Social media marketing
5. Brand protection

Providers:

1. E-commerce (price intelligence, comparison, product trends)
2. Ad verification
3. Social media management
4. Web scraping
5. SEO Monitoring

Overall, the results look very similar. Curiously, neither list includes sneaker shopping – this use case is both popular and lucrative, and most of the providers are happy to cater to it. Still, maybe it does not fit within their idea of how these companies would like to be perceived, hence the omission. Some premium providers have also started displacing use cases like social media management from their websites, giving favor to more corporate verticals like brand protection. The smaller proxy IP sellers do not shy away from stating things as they are.

It is also curious that travel aggregation failed to meet the cut – this is one of the major use cases for residential proxy IPs, or at least it used to be. We can only assume that the clients have concentrated with a few of the providers, or that the ongoing Covid-19 crisis has impacted the responses.

Another vertical that hasn't fully caught on but shows big promise is insurance and fintech. The largest proxy IP providers have been showing it much attention lately, especially through the lens of alternative data.

Taking the above, our experience, and interactions with proxy-IP-using businesses into account, we have distinguished the following verticals for further analysis:

1. E-commerce
2. SEO Monitoring
3. Travel aggregation
4. Ad verification
5. Social media management
6. Sneaker shopping

We will now go through each individually.

E-Commerce

The e-commerce vertical is broad, and it's constantly expanding as companies start to base more and more decisions on data. We can distinguish several large branches among many. Some businesses use proxy IPs to monitor and compare prices – either for internal purposes or providing aggregation services. Other companies follow product demand and trends via data points like top products or customer reviews. Yet others perform keyword research, as large e-commerce stores have become search engines in themselves. Amazon agencies would be an example of the latter use.

Residential IPs are not the only proxy type used in e-commerce. Datacenter proxies are a popular choice as well due to their raw power and lower price. Still, businesses choose residential IPs to access more locations, reduce the possibility of blocks or data poisoning.

In any case, the main desired characteristic for proxy IPs used in e-commerce is speed. Companies need to scrape huge amounts of data quickly, ranging from thousands to millions of product pages. So, the proxy IPs should ideally have a low response time or at least tolerate high loads, ideally both. Stability is another important factor, especially when the data needs to be fresh at all times.

Considering the above requirements and our performance tests, we can recommend the following residential proxy IP providers:

- Oxylabs
- Smartproxy
- Bright Data
- NetNut

E-commerce Performance Data

The group of targets consists of Amazon, AliExpress, Craigslist, and Walmart.

	Bright Data	Oxylabs	Smart-proxy	GeoSurf	NetNut	Packet Stream	Storm Proxies	SOAX
Req. per target	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000
Success rate	95.39%	93.16%	94.72%	84.10%	75.70%	87.28%	51.91%	92.37%
Response time	3.27	3.3	3.32	5.73	4.89	4.6	5.35	6.69

Table 23. Performance test, all e-commerce targets.

Amazon

Amazon is characterised by very large HTML sizes (over 1MB) and sneaky CAPTCHAs that are embedded in the response. Most providers had some issues accessing it, or maybe that was our web scraper. Smartproxy, Bright Data, and Oxylabs performed the best.

	Bright Data	Oxylabs	Smart-proxy	GeoSurf	NetNut	Packet Stream	Storm Proxies	SOAX
Success rate	88.74%	84.19%	89.97%	78.41%	73.87%	79.40%	37.35%	78.07%
Response time	3.63	3.43	3.47	5.93	5.23	4.70	4.67	6.43
Target success	89.92%	85.53%	89.28%	86.71%	89.91%	85.19%	55.06%	79.69%
Connection success	98.68%	98.43%	98.54%	90.73%	82.13%	93.20%	67.79%	97.96%

Table 24. Performance test, Amazon.

AliExpress

With some exceptions, AliExpress caused fewer issues than Amazon. The response times were slow all over the board. Bright Data, Smartproxy, Oxylabs, and SOAX had the best results.

	Bright Data	Oxylabs	Smart-proxy	GeoSurf	NetNut	Packet Stream	Storm Proxies	SOAX
Success rate	98.11%	96.84%	96.92%	82.62%	63.39%	85.26%	47.04%	97.28%
Response time	4.80	4.53	4.5	7.73	6.30	6.37	7.33	8.47
Target success	99.97%	99.93%	100.00%	100.00%	100.00%	99.90%	100.00%	99.93%
Connection success	98.14%	96.91%	96.92%	82.66%	63.39%	85.34%	47.04%	97.35%

Table 25. Performance test, AliExpress.

Craigslist

Craigslist was generally not a hard target to access. Most providers, save for Storm Proxies, did a good job.

	Bright Data	Oxylabs	Smart-proxy	GeoSurf	NetNut	Packet Stream	Storm Proxies	SOAX
Success rate	97.72%	95.33%	95.82%	88.61%	83.57%	92.41%	62.01%	92.47%
Response time	1.95	2.43	2.48	4.18	3.61	3.37	4.14	5.91
Target success	98.23%	96.06%	96.45%	95.84%	98.20%	97.71%	89.20%	93.27%
Connection success	99.49%	99.24%	99.34%	92.45%	85.10%	94.57%	69.55%	99.14%

Table 26. Performance test, Craigslist.

Walmart

At this scale, Walmart caused few issues.

	Bright Data	Oxylabs	Smart-proxy	GeoSurf	NetNut	Packet Stream	Storm Proxies	SOAX
Success rate	97.00%	96.29%	96.16%	86.77%	81.97%	92.04%	61.26%	96.58%
Response time	2.70	2.80	2.83	5.07	4.43	3.97	5.27	5.93
Target success	97.62%	97.35%	97.32%	96.97%	98.96%	98.91%	98.98%	97.86%
Connection success	99.36%	98.91%	98.81%	89.48%	82.83%	93.05%	61.90%	98.70%

Table 27. Performance test, Walmart.

SEO Monitoring

Search engine optimization and marketing companies extract huge amounts of information from the largest search engines, dominated of course by Google. SEO tools like Ahrefs build and periodically run multi-level crawlers through billions of search pages to collect keyword data, SERP positions, and the linking relations of the web. SEO agencies perform keyword research, do content and technical audits which require scraping their client websites. The main role of proxy IP servers in this ecosystem is to enable large-scale and accurate data retrieval from localized search pages.

To achieve this, companies use datacenter or residential proxy IPs, sometimes a combination of both. Residential proxies are a more expensive but also more effective choice. They have a higher IP reputation which reduces the number of CAPTCHAs prompts. And they support more locations for localized search queries.

SEO is another data-hungry use case. However, it does not always need real-time data, so speed carries less weight. Instead, considering how popular a target Google is, the main requirement is a large pool of quality proxy IPs – addresses coming from landline or mobile ISPs. Another crucial feature is location coverage and ability to choose those locations. It enables accurate data collection from local search pages.

Considering the above requirements and our performance tests, we can recommend the following residential proxy IP providers:

- Oxylabs
- Smartproxy
- Bright Data
- SOAX
- NetNut

SEO Monitoring Performance Data

The group of targets consists of Amazon, AliExpress, Craigslist, and eBay.

	Bright Data	Oxylabs	Smart-proxy	GeoSurf	NetNut	Packet Stream	Storm Proxies	SOAX
Req. per target	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000
Success rate	98.17%	98.48%	98.37%	79.64%	83.79%	82.77%	37.48%	94.73%
Response time	2.98	2.63	2.56	4.19	4.01	4.03	4.35	6.20

Table 28. Performance test, all SEO monitoring targets.

Google

Bright Data and Oxylabs are missing – they do not allow using residential IPs with Google directly. Storm Proxies seems to struggle especially hard – a combination of popular target, small IP pool, and unlimited bandwidth? Smartproxy is a head and shoulders above others.

	Smart-proxy	GeoSurf	NetNut	Packet Stream	Storm Proxies	SOAX
Requests	6,000	6,000	6,000	6,000	4,000	6,000
Success rate	97.79%	81.75%	77.48%	73.40%	9.56%	92.12%
Response time	2.3	4.4	3.7	3.77	4.95	5.97
Target success	98.68%	96.82%	95.39%	81.70%	19.43%	95.72%
Connection success	99.33%	84.45%	81.17%	89.69%	49.33%	96.25%

Table 29. Performance test, Google.

Using specialized APIs. Speed and price become the only concerns.

	Smartproxy Search Engine Proxies	Oxylabs Real-Time Crawler	Bright Data SERP Zone	NetNut Scraping API
Req. per target	4,752	4,670	4,999	4,992
Success rate	100%	100%	100%	100%
Response time	5.87	5.64	3.04	11.65

Table 30. Performance test, Google APIs.

Yahoo

An easy target for all but Storm Proxies.

	Bright Data	Oxylabs	Smart-proxy	GeoSurf	NetNut	Packet Stream	Storm Proxies	SOAX
Requests	6,000	6,000	6,000	6,000	6,000	6,000	4,000	6,000
Success rate	97.24%	98.10%	98.31%	82.62%	72.18%	86.13%	34.01%	96.77%
Response time	4.03	3.47	3.53	5.07	5.23	4.73	4.60	6.00
Target success	100%	100%	99.98%	99.98%	99.68%	99.81%	61.00%	100%
Connection success	97.34%	98.13%	98.32%	82.65%	72.41%	86.29%	55.71%	96.79%

Table 31. Performance test, Yahoo.

Yandex

Little difference from Yahoo.

	Bright Data	Oxylabs	Smart-proxy	GeoSurf	NetNut	Packet Stream	Storm Proxies	SOAX
Requests	6,000	6,000	6,000	6,000	6,000	6,000	4,000	6,000
Success rate	98.10%	98.65%	98.44%	82.56%	82.23%	80.91%	39.84%	94.23%
Response time	2.60	2.20	2.23	4.03	3.43	3.77	5.35	6.73
Target success	99.36%	99.73%	99.55%	98.09%	99.76%	89.44%	67.53%	97.91%
Connection success	98.73%	98.92%	99%	84.20%	82.43%	90.49%	59.07%	96.25%

Table 32. Performance test, Yandex.

Bing

Bing was a non-issue, even for Storm Proxies.

	Bright Data	Oxylabs	Smart-proxy	GeoSurf	NetNut	Packet Stream	Storm Proxies	SOAX
Requests	6,000	6,000	6,000	6,000	6,000	6,000	4,000	6,000
Success rate	99.18%	98.70%	98.93%	85.21%	82.39%	90.64%	66.52%	95.81%
Response time	2.30	2.20	2.17	4.40	3.70	3.83	4.35	6.10
Target success	99.98%	99.88%	99.93%	100%	99.98%	99.95%	100%	99.97%
Connection success	99.20%	98.82%	99.00%	85.21%	82.41%	90.69%	66.52%	95.84%

Table 33. Performance test, Bing.

Travel Aggregation

Travel aggregators collect and compare information about flight prices, hotels, and car rentals. They constantly scrape dozens of sources – including other aggregators – to present visitors with the best deals in the market. Similarly to the e-commerce vertical, this process is massive and requires a constant stream of fresh data, so proxy IP servers are crucial for its smooth functioning.

Travel fare aggregators rely on residential proxy IPs for several reasons. Source websites present different data to customers based on location, so there is a need to cover as many countries as possible. Furthermore, comparison websites may lose traffic or even sales in case of an unfavorable comparison, so they tend to protect their data from web scraping. Residential proxy IPs are the best options for overcoming both obstacles.

In terms of desired characteristics, travel fare aggregation stands somewhere between e-commerce and SEO. It needs to be fast – sometimes near real-time, – scale well, but also allow choosing from a large number of locales.

Considering the above requirements and our performance tests, we can recommend the following residential proxy IP providers:

- Oxylabs
- Bright Data
- Smartproxy
- NetNut
- GeoSurf
- PacketStream

Travel Aggregation Performance Data

The group of targets consists of Wayfair, Booking, and TripAdvisor.

	Bright Data	Oxylabs	Smart-proxy	GeoSurf	NetNut	Packet Stream	Storm Proxies	SOAX
Req. per target	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000
Success rate	81.33%	80.19%	80.68%	73.98%	68.81%	75.38%	51.71%	76.59%
Response time	3.88	3.95	3.96	6.65	5.68	5.47	6.85	7.52

Table 34. Performance test, all travel aggregation targets.

Wayfair

Wayfair was rough. We blame our web scraper setup, though it is a hard target on its own.

	Bright Data	Oxylabs	Smart-proxy	GeoSurf	NetNut	Packet Stream	Storm Proxies	SOAX
Success rate	63.88%	59.94%	62.01%	57.01%	55.96%	57.00%	32.94%	51.54%
Response time	3.03	3.00	3.10	5.93	4.97	4.47	6.33	6.60
Target success	64.51%	63.99%	66.16%	64.81%	70.79%	62.35%	62.35%	52.51%
Connection success	99.03%	93.64%	93.71%	88.00%	79.07%	91.42%	52.76%	98.18%

Table 35. Performance test, Wayfair.

Booking

Conversely, none of the providers found Booking a challenge.

	Bright Data	Oxylabs	Smart-proxy	GeoSurf	NetNut	Packet Stream	Storm Proxies	SOAX
Success rate	98.38%	98.50%	98.08%	90.47%	82.72%	93.36%	68.12%	97.24%
Response time	4.4	4.53	4.40	6.9	6.03	6.07	7.23	8.13
Target success	99.95%	99.92%	99.91%	99.98%	100.00%	99.96%	99.95%	99.98%
Connection success	98.43%	98.59%	98.17%	90.48%	82.72%	93.39%	68.15%	97.26%

Table 36. Performance test, Booking.

TripAdvisor

TripAdvisor was a mixed bag. Oxylabs, Smartproxy, Bright Data suffered small losses; others had more issues. SOAX did surprisingly well but was very slow.

	Bright Data	Oxylabs	Smart-proxy	GeoSurf	NetNut	Packet Stream	Storm Proxies	SOAX
Success rate	81.72%	82.14%	81.94%	74.46%	67.76%	75.78%	54.07%	80.98%
Response time	4.2	4.33	4.37	7.13	6.03	5.87	6.97	7.83
Target success	83.36%	83.48%	83.63%	83.32%	83.40%	82.45%	82.45%	83.31%
Connection success	98.03%	98.41%	97.98%	89.37%	81.26%	91.90%	65.58%	97.21%

Table 37. Performance test, TripAdvisor.

Ad Verification

According to Statista, in 2020 ad fraud caused $35 billion worth of damage worldwide. That is a huge amount of waste. Ad fraud basically means that digital advertisements become misplaced, accidentally or deliberately. Or, that even if placed properly, they never reach the eyeballs of real people due bot-induced click and impression fraud. Ad verification companies use proxy IP servers to prevent ads from misplacement (for example, appearing in pornographic or objectionable contexts), check their redirection paths, and test how the ads appear in localized contexts.

A wide location coverage is not the only criterion for ad verification proxies. Ad fraudsters have an incentive to hide from verification companies. They block access or show intended content to known IP ranges. A wide variety of locations for localized testing and the anonymity of residential IP addresses make them the most sensible choice for verifying ads.

Consequently, the ability to target a variety of locations is the most important characteristic for ad verification proxies. Proxy pool quality and price are secondary yet still relevant concerns.

Considering the above requirements and our performance tests, we can recommend the following residential proxy IP providers:

- SOAX
- Oxylabs
- Bright Data
- Smartproxy
- GeoSurf
- PacketStream

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Social Media Management

The ethics of using proxy IP servers for social media are ambiguous. On the one hand, marketing companies can use them to maintain a global presence via multiple accounts, gauge social sentiment, automatically engage with followers, research content topics or potential influencers. On the other hand, proxies also play a role in generating fake engagement and spam. It does not help that most social media networks forbid automated activity, especially while logged in. And yet, despite being such a sensitive topic, social media remains among the most popular proxy IP use cases.

The main type of proxy IPs used for social media are either residential or mobile. Both facilitate unrestricted access to the platforms by effectively disguising a scraper or bot as a real user. From then on, more factors come into play in the form of passive and active fingerprinting.

Accordingly, the main desired characteristic for social media proxies is IP quality. Price is another relevant concern, as browsing content-rich pages requires significant traffic. Other requirements are ability to hold a sticky session (the longer, the better), and location targeting on a country level.

Considering the above requirements and our performance tests, we can recommend the following residential proxy IP providers:

- Oxylabs
- Smartproxy
- Bright Data
- GeoSurf
- PacketStream
- SOAX

Social Media Performance Data

The group of targets consists of Facebook and Instagram.

	Bright Data	Oxylabs	Smart-proxy	GeoSurf	NetNut	Packet Stream	Storm Proxies	SOAX
Req. per target	6,000	6,000	6,000	6,000	6,000	6,000	6,000	6,000
Success rate	98.80%	97.70%	97.88%	87.93%	80.69%	91.33%	45.93%	98.35%
Response time	2.73	2.53	2.53	5.00	4.38	3.58	5.40	5.57

Table 38. Performance test, all social media targets.

Facebook

The numbers suggest that all providers have very good IPs for Facebook (unlikely) or that the platform relies on fingerprinting, and relying on success rate metrics only is pointless (more likely).

	Bright Data	Oxylabs	Smart-proxy	GeoSurf	NetNut	Packet Stream	Storm Proxies	SOAX
Success rate	98.19%	96.55%	97.13%	84.61%	76.88%	89.69%	48.31%	97.70%
Response time	2.70	2.53	2.53	5.27	4.63	3.93	5.27	5.70
Target success	99.12%	98.77%	99.23%	98.83%	98.91%	98.61%	98.62%	97.76%
Connection success	99.06%	97.75%	97.88%	85.61%	77.72%	90.96%	48.99%	99.09%

Table 39. Performance test, Facebook.

Instagram

Instagram pretty much confirms our suspicions in Facebook tests.

	Bright Data	Oxylabs	Smart-proxy	GeoSurf	NetNut	Packet Stream	Storm Proxies	SOAX
Success rate	99.42%	98.86%	98.62%	90.18%	84.50%	92.96%	43.54%	99.00%
Response time	2.77	2.53	2.53	4.73	4.13	3.23	5.53	5.43
Target success	99.95%	99.92%	99.87%	99.74%	99.98%	99.41%	90.99%	99.98%
Connection success	99.47%	98.94%	98.74%	90.41%	84.52%	93.52%	47.84%	99.02%

Table 40. Performance test, Instagram.

Sneaker Shopping

Anyone outside of the bubble might find it hard to believe, but the sneaker resale market is huge. According to **Cowen**, it stood at $8 billion in 2019 and has even been classified as an emerging alternative asset class. Go figure. The resale market is largely impacted by limited shoe resales who, in turn, are largely impacted by automated sneaker bots. Depending on the viewpoint, bots can be either a problem to eradicate or a solution for artificially restricted demand; the fight between security companies and bot creators is a sight to behold. In any case, the reseller market relies on proxy IPs to power through shoe releases.

Because online shoe stores have become a showcase of the latest bot protection technologies, resellers turn to residential proxy IPs. By choosing quality proxy addresses near the locations of physical store servers, they are able to nab dozens of shoe pairs from one release. These events last for a limited time, so the huge influx of users emburdens both the store and the proxy IP network, which must be able to sustain the load.

Sneaker stores tend to turn on their defences during releases and disable them afterwards, so measuring their quality via standard means is a fool’s errand. That said, response time remains a relevant factor. IP type and appearance in blacklist databases should also be taken into account.

Considering the above requirements and our performance tests, we can recommend the following residential IP providers. Note that some companies, such as NetNut, have special plans optimized for sneakers. We did not have the opportunity to test them, which might have impacted our recommendations:

- Smartproxy
- Bright Data
- Oxylabs
- PacketStream
- NetNut

Sneaker Shopping Performance Data

For reasons mentioned above, web scraping sneaker websites fails to accurately reflect a provider's performance. Instead, we decided to run some IPs through an IP database, to check if they have been identified as proxy addresses there.

The scale is small, so we did not expect much, but the results are pretty telling.

	Bright Data	Oxylabs	Smart-proxy	GeoSurf	NetNut	Packet Stream	Storm Proxies	SOAX
IPs checked	989	953	999	1,259	992	968	917	996
Proxy	3	4	10	48	1	44	681	0
Percentage	0.30%	0.42%	1.00%	3.81%	0.10%	4.55%	74.26%	0%

Table 41. Flagged IPs in a database, sneakers.

Conclusions

We have reached the end of this research, and it is time to wrap things up. The research has truly been ambitious, but most importantly, it has revealed some interesting findings.

First of all, it is amazing how robust the market leaders have become. Today, the proxy networks of Bright Data, Oxylabs, and Smartproxy rarely ever fail, are fast and stable. The difference is small enough that any of these three providers will ensure very similar technical experiences, so they differentiate in other areas like features, user experience, and customer support. As it stands, Bright Data and Oxylabs fight for the big fish, and Smartproxy positions to net smaller clients, though lately there has been an increasing overlap.

Behind them are the other providers – none perfect, but most of them good enough to meet the needs of most customers. GeoSurf has a small but strong IP pool, even though it has somewhat fallen behind in performance. NetNut's infrastructure today is only average, and the user experience is really hurting; but the provider has the ambitions and resources to push through, as its recent expansion indicates.

The budget providers, Storm Proxies and PacketStream, are mixed bags. Storm Proxies was unremarkable in nearly every way, save for the price. But to be fair, we were pitting it against the very best. PacketStream once again demonstrates a good performance, but the size of its IP pool and lack of improvements throughout the year cause concern.

There was one pleasant surprise, and it was SOAX. This provider is well-featured and has an infrastructure to rival the leaders – excluding the response time, of course, which was simply sluggish. SOAX is also yet to prove itself as a company, as there is little information about where it gets IPs or who stands behind it.

Some of the more curious findings involve PacketStream's bandwidth calculation and the relationship between Oxylabs and Smartproxy. We are not quite sure how PacketStream counts its traffic, but it disappeared much faster compared to the other providers. A technical mishap or deliberate practice? – the issue merits more investigation. As for Smartproxy, its results were remarkably similar to Oxylabs; it seems like these providers have overlapping IP sourcing channels or Smartproxy might be, to some extent, reselling Oxylabs. Which is not a bad thing on its own, just something to be noted.

Finally, it is interesting to see how the "synthetic" Cloudflare benchmarks translate to real targets. The changes are few, and the hierarchy remains more or less the same. Naturally, a lot depends on the web scraper. But assuming that the IP pool is large enough, a large impact in success rates comes from the residential proxy server itself.

We hope that you have found this research useful, whether you are a proxy-IP-using business, a provider, or just someone interested in the topic. Thank you for reading.

About Proxyway

Proxyway is a community blog dedicated to the research and testing of proxy providers. We're committed to delivering comprehensive reviews, detailed guides and other high-quality content explaining the "hows" and "whys" of current proxy technology. Our mission is to inform and educate our readers – both regular people and tech geeks.

Proxyway was started in 2018, when two tech-enthusiasts, Adam Dubois and Chris Becker, met on Stack Overflow. Soon after, an idea was born to create a review-focused website to help others find their way in the murky waters of the proxy world.

Acknow-ledge-ments

We would like to thank our readers for their time, curiosity, and experiences. All the proxy-IP-using companies for helping us better understand their concerns and needs. And the proxy providers that participated in this research for cooperation and access to their services.

Appendices

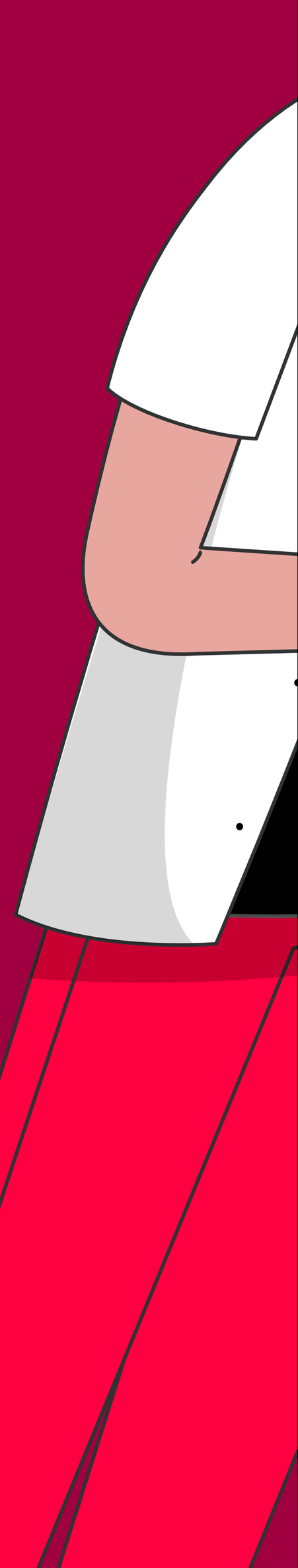
Appendix 1A. General evaluation coefficients.

Aspect	Data point	Calc	Ratio
Proxy pool size	Unique IPs	(Unique IPs per million / highest value per million) x 10	1
Proxy pool quality	IP type in databases	ISP and/or MOB (%) / 10	0.7
	Percentage of IPv4	IPv4 (%) / 10	0.2
	Unique C-class subnets	C-class subnets (%) / highest value (%)	0.1
Proxy pool performance	Successful requests	Successful requests (%) / 10	0.4
	Response time	(Lowest value / response time (s)) * 10	0.3
	Stress test	(Stress success rate (%) / success rate (%) - 1) + (stress response time / response time - 1)	0.3
Proxy pool stability	Stability over testing period	((10 - standard deviation) + (stability (%) / 10)) / 2	1
Features	Location targeting	Country (150+ = 0.3; .15, city = 0.1 (limited = 0.5), ASN = 0.1)	0.5
	IP rotation	Every request = 0.1; sessions = 0.1	0.2
	Authorization options	U:P = 0.05; IP = 0.05; sub-users = 0.1 (locked = 0.05)	0.2
	Concurrent connections	Unlimited = 0.2; else = 0	0.1
User experience	Dashboard	Available = 0.1; Each feature = 0.05	0.3
	API	Available = 0.1 (limited = 0.05); Each feature = 0.05	0.3
	Setup	Easy = 0.1; moderate = 0.05; hard = 0	0.1
	Self-service	Available = 0.1; not available = 0	0.1
	Tools	Extension = 0.1; other tools = 0.1	0.2
Customer support	24/7 working hours	Yes = 0.3; no = 0	0.3
	Response time	<= 15 minutes = 0.3; <= 60 minutes = 0.2; >60 minutes = 0.1	0.3
	Channels	2 or more = 0.1; less = 0	0.1
	Languages	2 or more = 0.1; less = 0	0.1
	Help documentation	Extensive = 0.2; basic = 0.1	0.2

Price	Price at 100 GB	10 - ((price - lowest value) / (highest - lowest value) * 10)	0.6
	Trial / refund	Yes = 0.2, limited = 0.1, no = 0	0.2
	Auto top-up	Available = 0.1; not available = 0	0.1
	Payment methods	Card & paypal = 0.08; more = 0.02	0.1

Appendix 1B. Grading scheme.

A+	93-100%
A	85-92%
A-	80-84%
B+	75-79%
B	70-74%
C+	65-69%
C	60-64%
D+	55-59%
D	50-54%
E+	45-49%
E	40-44%
F	<40%



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