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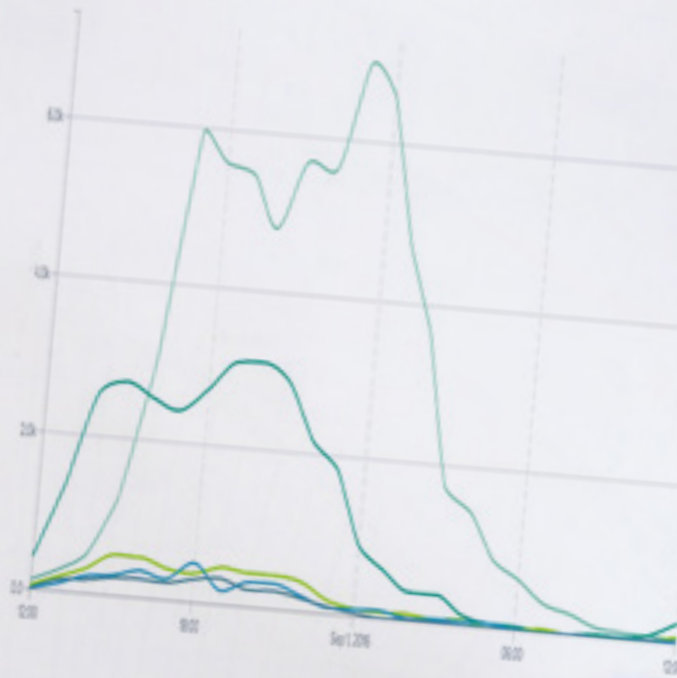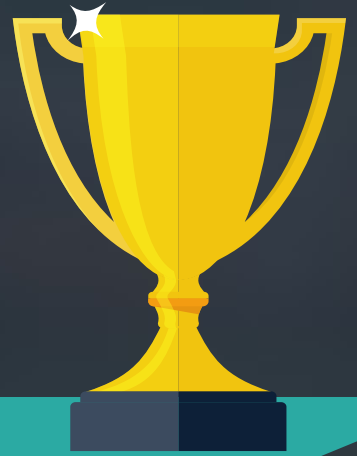# Selecting the Right CDN the First Time

Using Cedexis Radar Data to Evaluate CDN Performance

Part of the Cedexis CDN Maturity Series

YOU ARE WINNING!

The application you launched is growing in popularity.

Traffic is increasing, and the success is slowing down your site and consuming resources.

NOW WHAT?

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THE TROUBLE WITH SUCCESS

When your website first starts to attract heavy traffic, finding the right solution to handle the growing demand can be frustrating.

Time and time again, digital businesses have proven that success hinges on the user experience. You want speed. You need a different approach depending on the type of traffic.

Overloaded web servers and bandwidth saturation can be quickly addressed by offloading digital asset delivery to a content distribution network (CDN). However, there are dozens of CDNs offering a variety of benefits and services. How can you make an informed decision when selecting your first CDN?

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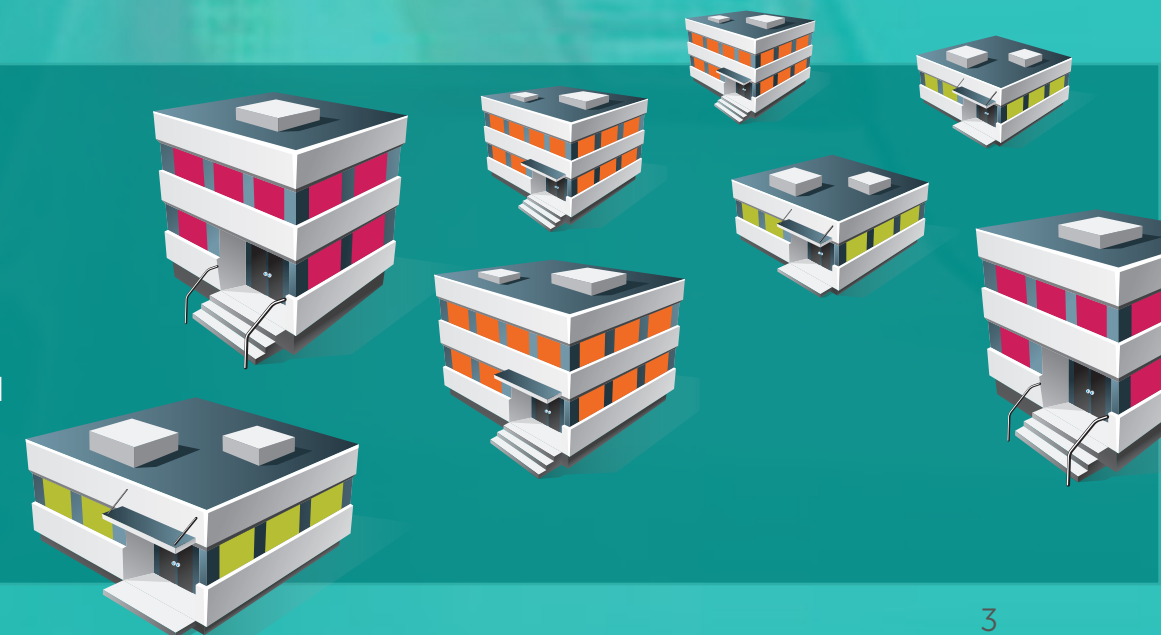
WHY DO YOU NEED A CDN?

A CDN can help reduce the burden of traffic on your website resources and even other parts of the enterprise. It can reduce server load by offloading the delivery of static and infrequently changed dynamic assets. It can also dramatically reduce bandwidth requirements for any origin servers or data centers. Offloading bandwidth and server needs can reduce costs, particularly if bandwidth pricing from the CDN is competitive.

In addition to saving your data center from melting to slag because of overloading, a CDN can boost page load times substantially. CDNs deliver digital assets from network points-of-presence (POPs) closer to the end user. This is where the main difficulty arises when choosing an initial CDN. How do you figure out which one will offer the best possible content delivery for your user base?

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KNOWING YOUR AUDIENCE

To select the best possible CDN for delivering your website's assets, you need to know something about your customers.

In particular, where are they located? Tools such as the Cedexis Portal can help you narrow down the geographic locations that contain most of your customers. It could also be that your web business, for example, targets customers geographically. If you are selling "I Heart Alaska" sweaters, most of your customers are probably not in Arizona.

Many websites will have trouble narrowing their customer base to one geography. In this case, it can be handy to remember the Pareto principle, or 80-20 rule. In the context of a website, this means that it's possible that 80 percent of your traffic may come from 20 percent of the available geography.

USING THE CEDEXIS PORTAL

To start using the Cedexis Portal, head to https://portal.cedexis.com in your web browser and sign up for a free account.

Measuring Performance with Cedexis Radar

Before you can use the Cedexis Portal reports to learn more about your website performance and audience, you will need to add a Cedexis Radar tag to your website. To find your Cedexis Radar tag, follow the steps below.

Log in to the Cedexis Portal at https://portal.cedexis.com/.
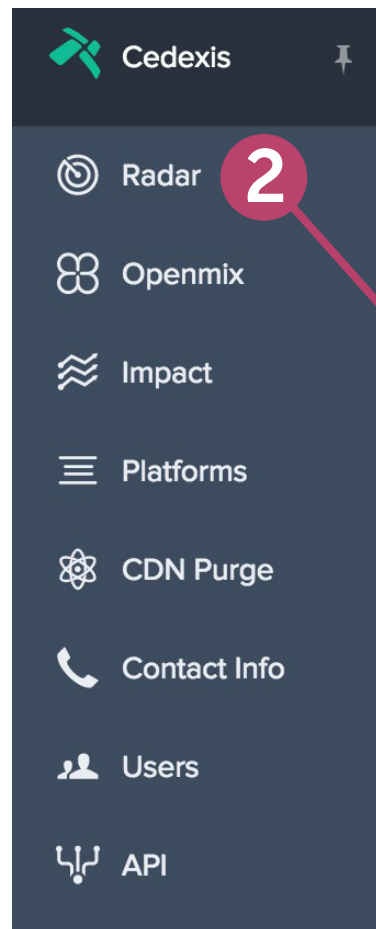
Click **Radar** in the left column.

Click **JavaScript Tag**.

Follow the directions on the screen to add the Radar tag to your website.

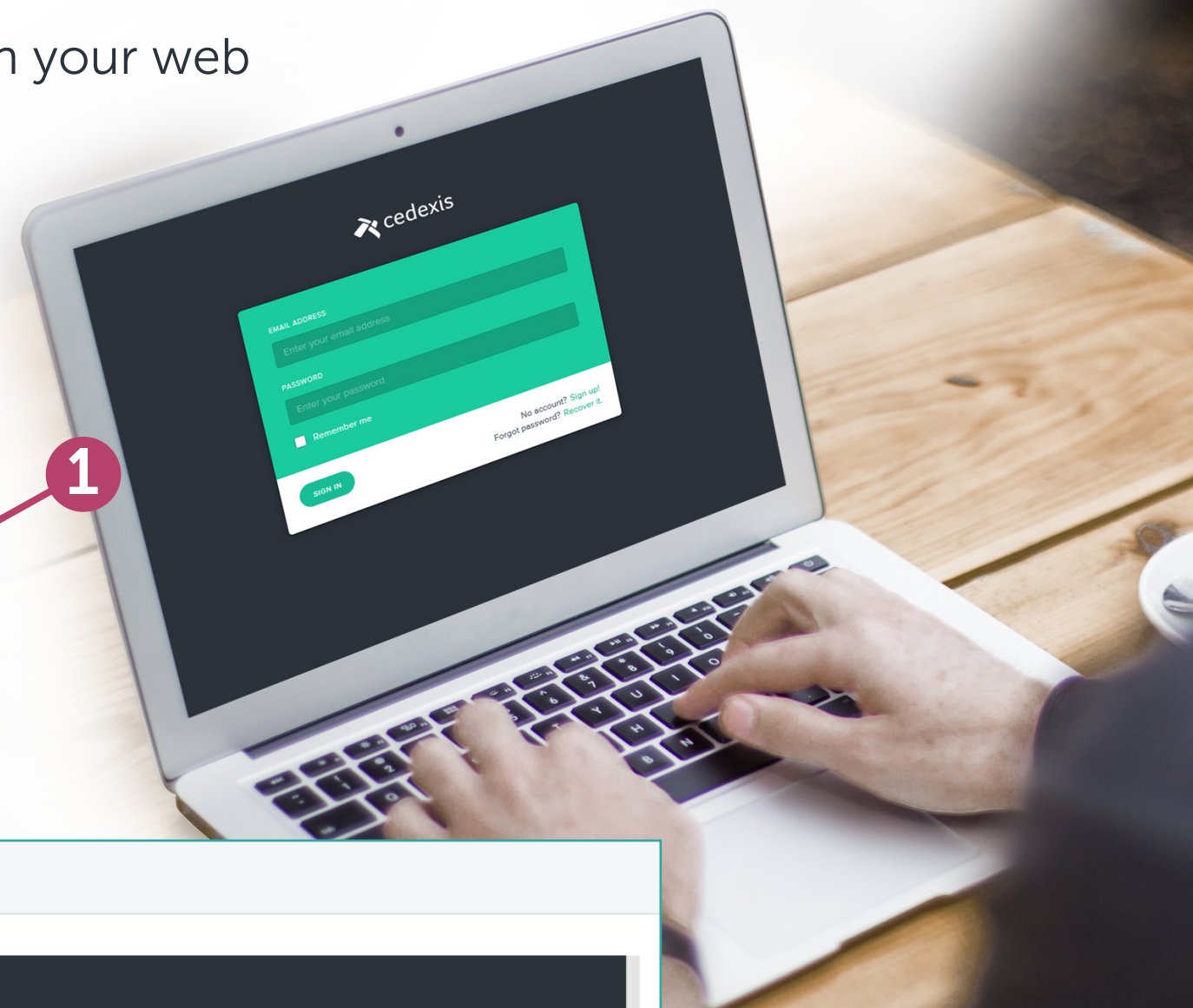**The Radar tag helps the Cedexis Portal provide up-to-the-minute accurate reports on website traffic.**

WHAT IS CEDEXIS RADAR?

Cedexis Radar is a massively crowdsourced collection of real user measurements (RUM)

from **thousands** of different websites

across **tens of thousands** of ISPs and long-haul networks

from **hundreds of millions** of end users every day.

Radar processes billions of RUM metrics every day, creating a realistic worldwide map of internet health. It measures the health, reachability, latency, and throughput of every CDN in the world from every location, network, and ISP in the world.

Cedexis tools use Radar data to make intelligent routing decisions among multiple origins, CDNs, and data centers. Cedexis also makes Radar data available via the Cedexis Portal, a free online tool with powerful report-generating features. With the knowledge of where your customers are located and what assets you need to offload to a CDN, the Cedexis Portal can provide you with the information you need to make the right choice.

What Is RUM?

Real user measurements (RUM) are measurements taken at the end-user device. The significance of RUM is that it provides an accurate picture of internet health, covering the entirety of the user experience, including the last mile of connectivity between the ISP and the end user.

RUM differs from synthetic measurements in that the latter are artificially generated. Synthetic measurements attempt to measure application and internet health, but without accommodating real-user experience, they are a crude approximation.

To learn more about RUM and how it compares to synthetic measurements, download the free O'Reilly ebook Real User Measurements: Why the Last Mile Is the Relevant Mile.
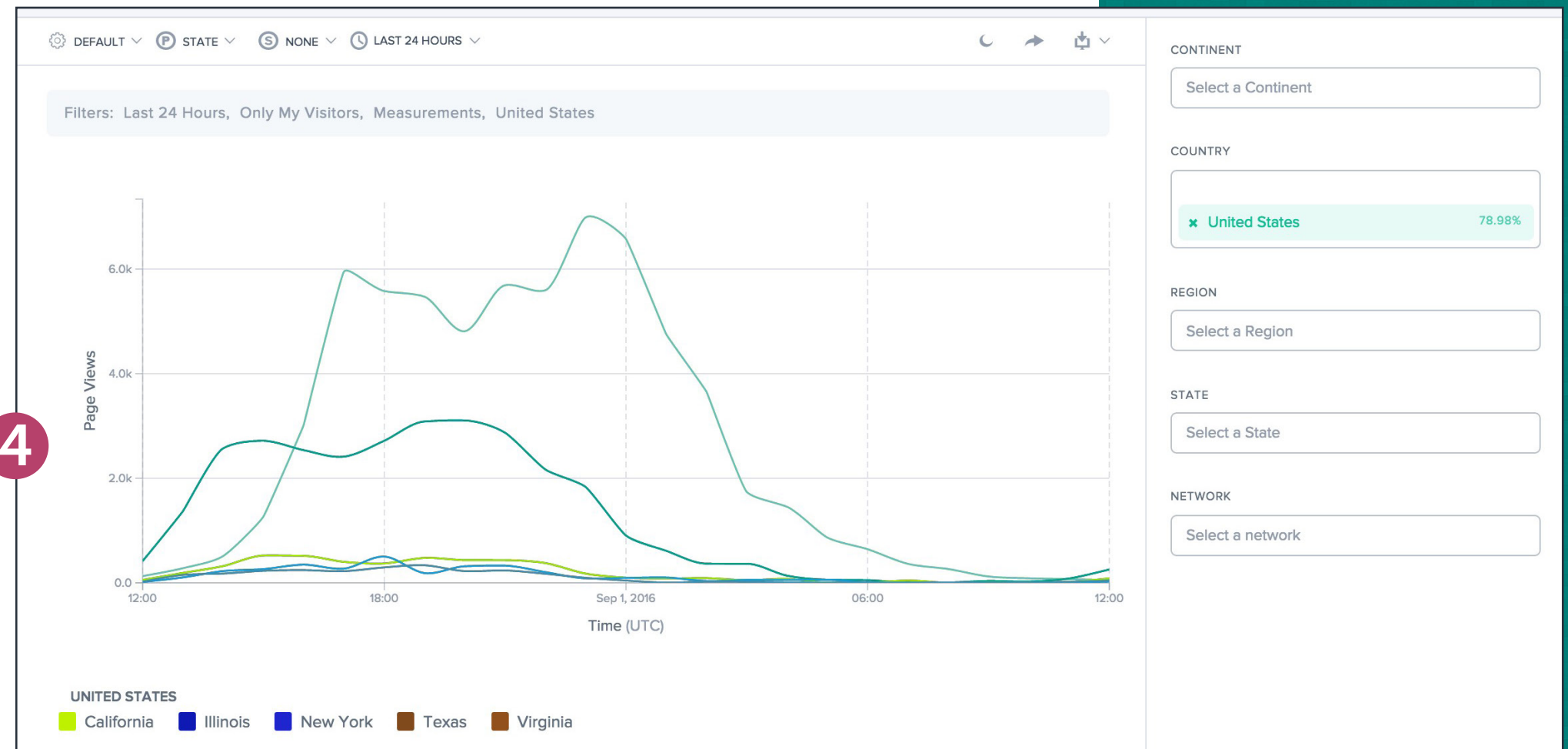
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USING CEDEXIS PORTAL TO KNOW YOUR AUDIENCE

Once the Cedexis Radar tag is added to your website, demographic information gives you all the information you need to know your audience. Follow these directions to use the Cedexis Portal to learn more about where your audience is located geographically.

1 Log in to the Cedexis Portal at https://portal.cedexis.com/.

2 Click **Radar** in the left column.

3 Click **My Page Views Geo Location Report**.

Use the interface to focus on geographic locations for more information.
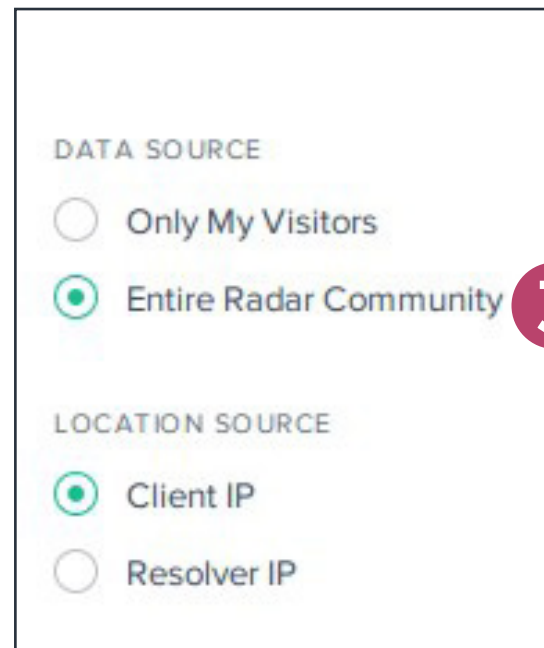
4

The Cedexis Portal interface can tell you exactly where your website users are located. Radar reports can also tell you which ISPs and networks carry your users traffic, allowing fine-grained decision-making when selecting your first CDN.

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INTELLIGENT CONTENT DELIVERY

CDN providers tend to specialize in specific locales, demographics, content types, or device types. The quality of service that each CDN can provide to a geographic area depends on its POPs within that area's internet topology. Simply put, different CDNs do a better job in different geographic areas. Once you know the geographic areas and ISPs that contain most of your users, you are one step closer to finding the best CDN to serve them web content fastest.

Using the Cedexis Portal to Learn Which CDNs Best Serve Your Website Users

DATA SOURCE

◯ Only My Visitors

◉ Entire Radar Community

LOCATION SOURCE

◉ Client IP

◯ Resolver IP

In the lower right-hand corner of the Performance Report screen, make sure Entire Radar Community is checked.

1 Log in to the Cedexis Portal at https://portal.cedexis.com/.

2 Click **Radar** then **Performance Report**.

3 On the "Performance Report" screen, scroll down the right-hand side and make sure **Entire Radar Community** is selected in the **DATA SOURCE** section.

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SELECTING CDN PLATFORMS

Some market research will be necessary to make the wisest choice.

Without full knowledge of specific performance metrics, narrowing the field will involve factors such as budget and technical requirements. Try to find a selection of CDNs that seem promising.

Once you have selected several CDNs that you'd like to analyze using the Cedexis Portal, input them into the **PLATFORM** box on the **Performance Report** screen.
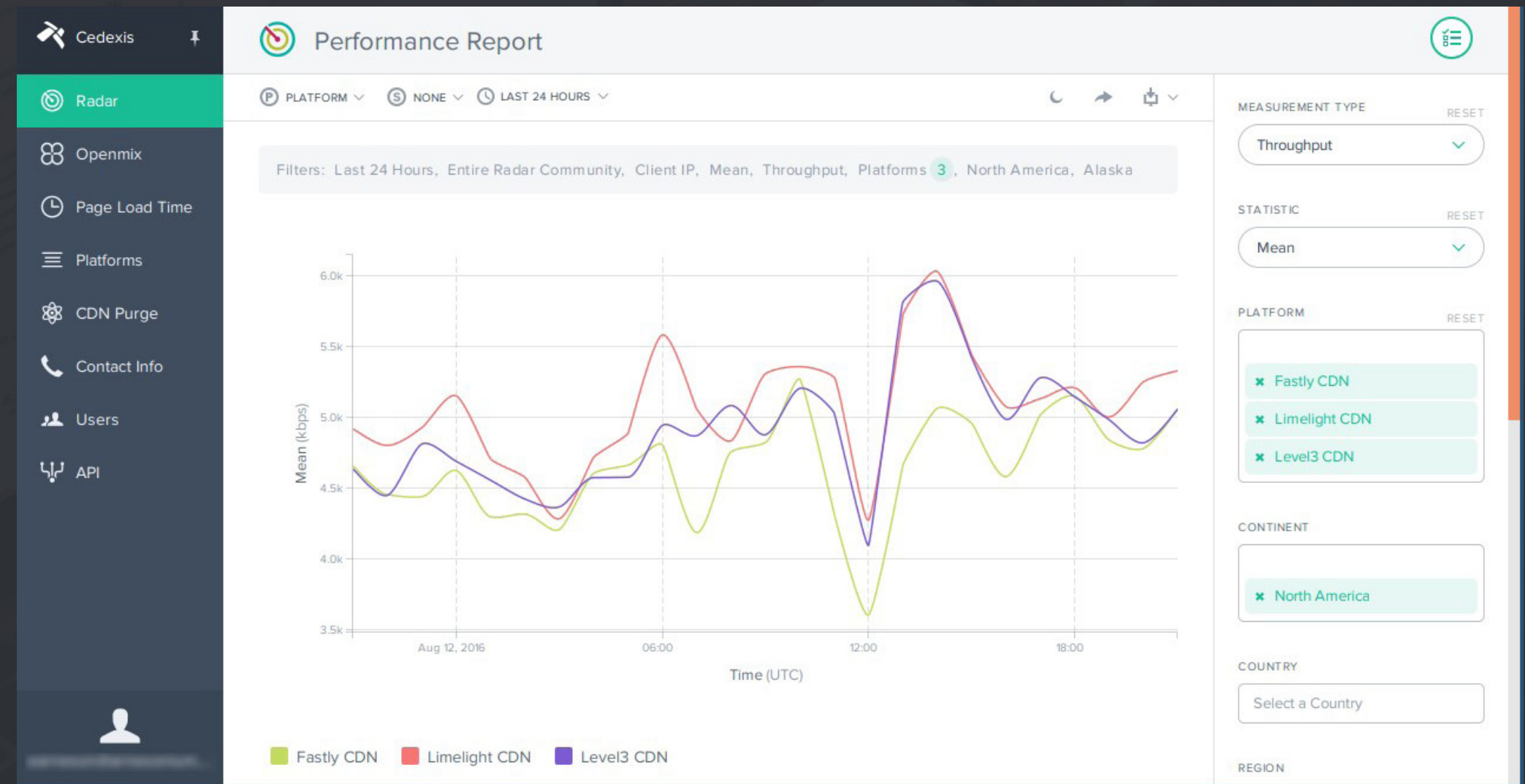
In this example, three different CDNs have been selected for comparison: Fastly, Limelight, and Level3.

NARROWING TO GEOGRAPHIC REGIONS
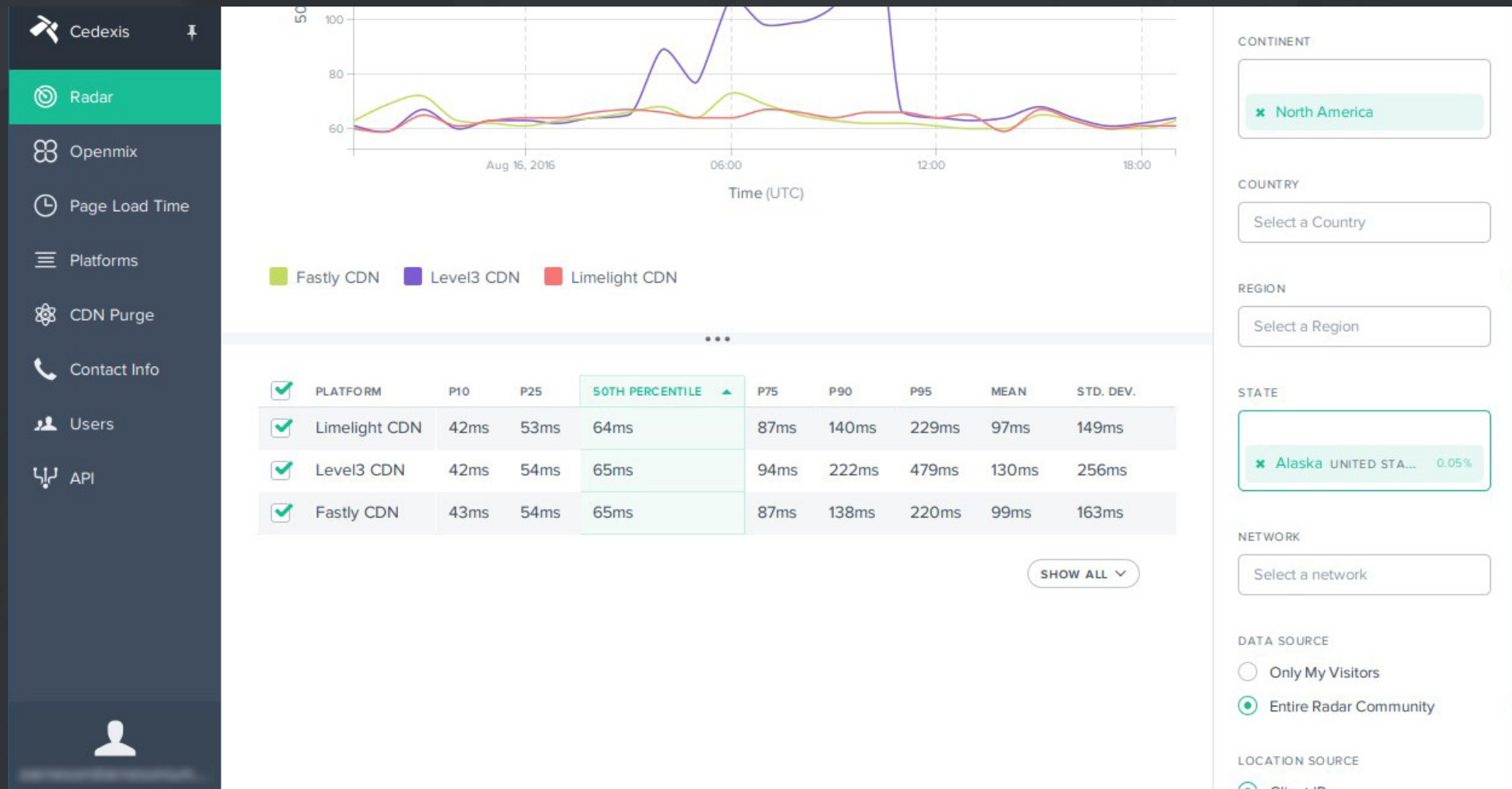
In this example, the report is narrowed down to the state of Alaska.

Earlier, you spent time thinking about where your end users are located.

Cedexis Radar allows you to narrow the scope of reports, so they just have to deal with content delivery to specific geographic regions.

These results can differ widely for different CDNs because of the unpredictable variance between network topology and geographic distance.

Using the region boxes on the **Performance Report** screen, find the geographic region that best fits the customers you're trying to serve. Narrow down your choices by selecting a continent in the **CONTINENT** box.

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INTERPRETING RESULTS

After you have selected CDN platforms and geographic regions, some interesting graphs and numbers are available. Now it's time to figure out what they are telling you.

> How about a screen grab here of the Measurement Type box with the dropdown menu open?

The **MEASUREMENT TYPE** box in the upper right corner of the interface determines which metric the report displays. For throughput and availability, higher numbers are more desirable. For response time, however, lower numbers are better.

Each of these metrics has a different impact on website performance. We look at each and why better performance in that category is better for certain websites.

Response Time—Lots of Small Objects

Response time measures the amount of time it takes for the CDN to begin sending data after a web request is received. Each digital asset on a web page can generate its own response, so when response time is high, it compounds into a serious performance problem.

Fast response times are crucial for websites with lots of smaller digital assets, such as multiple CSS and JavaScript files or lots of smaller images.

Throughput—Serving Big Objects

Websites delivering fewer, larger objects such as video, audio, or PDF documents will see more benefit from high throughput. In this situation, it is expected that there will be fewer individual network connections between the web browser and the website, so a higher response time won't have a chance to compound. High throughput will contribute to a better user experience as larger digital objects reach the client faster.

Availability—For Everything

No matter the numbers for throughput and response time, if availability is low, the user's experience will be bad. Availability defines the percentage of requests successfully completed by a CDN, and when this starts to drop, website problems become painfully noticeable.

Weed out the CDNs with lower availability in your target region first and then look at the other metrics.

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MULTIPLE CDNS—PLANNING FOR THE FUTURE

As your website traffic continues to grow, it will eventually become apparent that one CDN specifically chosen for one limited target geography is not going to be enough.

You can use the same tools and methods to select additional CDNs to expand your website's performance across future markets, but you can also use additional techniques to maximize the benefit of additional CDNs.

This is where other Cedexis tools come into play.

Cedexis Openmix is an intelligent, performance-based load balancer that uses Radar's RUM data to route traffic.

Cedexis Impact ties the end-user experience to key performance indicators that matter the most to your business.

To learn more about how to plan for your website's continued growth, visit these links for more information and tutorials.

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Founded in 2009, Cedexis optimizes Web performance across data centers, content delivery networks (CDNs) and clouds, for companies that want to ensure 100% availability and extend their reach to new global markets.

Portland, Oregon
421 SW 6th Ave, Suite 700
Portland, OR 97204
+1 855 CEDEXIS (233-3947)

Paris, France
27 rue Raymond Lefebvre
94250 Gentilly, France
+33 (0)1 79 755 253