

PerimeterX Bot Defender™: Architected for Low-latency

PerimeterX Bot Defender is architected to minimize the impact on website performance by focusing on low-latency techniques. This document provides a breakdown of the user session flow within the different components of the PerimeterX platform powering the Bot Defender solution.

PerimeterX Platform Components

More than 50% of the traffic to websites overall comes from bots and they represent between 40% and 80% of login attempts. Automated traffic on your website includes both - bots that are considered beneficial, such as search engine crawlers, and unwanted malicious bots. The largest portion of the automated traffic comes from the malicious ones that continue to expand in number and keep evolving in sophistication. These bad bots try to take over your users' accounts, scrape your content and pricing, abuse your payment pages and manipulate your inventory. In addition to being security threats, they can also significantly affect operational costs and skew your traffic data.

PX Detector

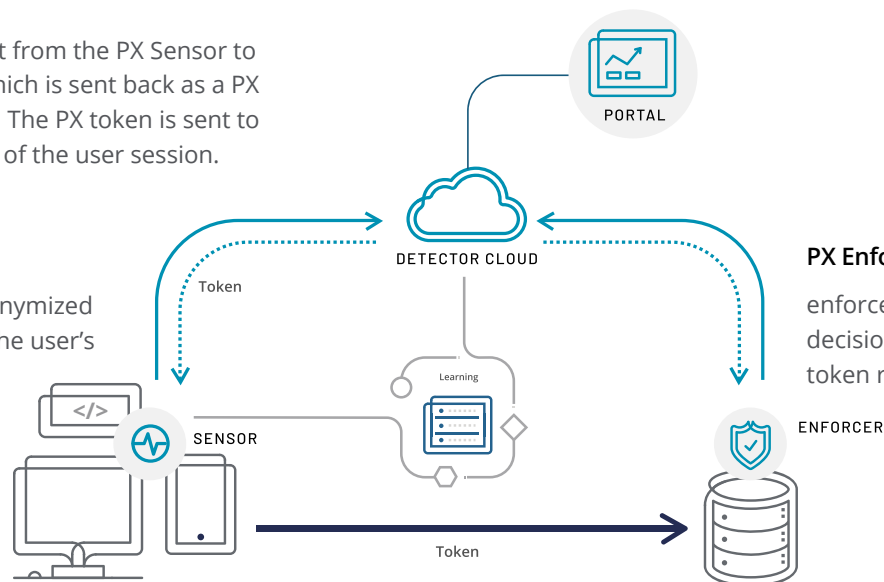
processes the data sent from the PX Sensor to produce a risk score which is sent back as a PX token to the PX Sensor. The PX token is sent to the PX Enforcer as part of the user session.

PX Sensor

collects and sends anonymized behavioral data from the user's device/browser.

PX Enforcer

enforces the PX Detector's decision embedded within the token received from the client.



PerimeterX platform integrates at the client (PX Sensor) and at the server (PX Enforcer) level. The architecture-agnostic PerimeterX platform deploys out-of-band meaning it integrates with the customer's current web technology stack and/or CDN and without the need for any additional tiers or layers.

The client-side component is a lightweight JavaScript for web (PX Web Sensor), and mobile SDK for native apps (PX Mobile Sensor for iOS and Android), where the PX token sent is a cookie for the web user and a header for the mobile user. For the server-side, PerimeterX has developed more than thirty platform-specific integrations to support different CDNs, load balancers, web servers, application tiers, as well as serverless implementations.

The PerimeterX Web Sensor is lightweight (~30 kb), cacheable and operates asynchronously to ensure minimal latency for the page load times. The PX Sensor executes after the DOM-ready event, and most of the PX Sensor actions are run only once per session to limit the performance impact, so the user experience on the website is not affected.

On the server-side, due to the out-of-band detection, most requests from legitimate users will come with a token (about 95 percent of them). The PerimeterX Enforcer typically completes the token validation within 2 milliseconds and will handle the request based on the action within the token. The out-of-band execution results in zero network overhead for 95 percent of the legitimate users. Almost all of the legitimate requests from a mobile SDK client come with a token and will not need the additional API call.

When a request has no token, the PX Enforcer makes a synchronous API call to the PerimeterX Detector that is globally replicated to ensure high-availability and low-latency. This API call has a 95th percentile value for response times within the range of 35 to 50 milliseconds. It is important to note that the API call is invoked in rare cases for traffic when the token expires, is invalid or missing. This mechanism also fails-open after a set timeout (configurable) in case the API calls fail to complete.

PX Web Sensor size

~30kb

Impact on user's request time

under 2ms for 95% of legitimate users requests

95th percentile of API request time

35-50ms

(impacting only 5% or less of legitimate users' requests)

Latency in Regions Outside of the US and EU

The latency for LATAM and Asia customers is within acceptable ranges. PerimeterX adds PoP for the PX Detector based on customer demand. Currently, the PerimeterX PoP for the PX Detector are located here:

Americas

us-east1 (South Carolina)
us-east4 (Northern Virginia)
us-central1 (Iowa)
us-west1 (Oregon)
us-west2 (California)

Europe

europa-west1 (Belgium)
europa-west3 (Frankfurt)

Asia

Asia-northeast1 (Tokyo)
Asia-south1 (Mumbai)

About Us

PerimeterX is the leading provider of application security solutions that keep your business safe in the digital world. Delivered as a service, the company's Bot Defender, Code Defender, and Page Defender solutions detect risks to your web applications and proactively manage them, freeing you to focus on growth and innovation. The world's largest and most reputable websites and mobile applications count on PerimeterX to safeguard their consumers' digital experience. PerimeterX is headquartered in San Mateo, California and at www.perimeterx.com.