

# Successful Visualization and Control of Bad Bots Threatening an Online Shopping Mall



## An Online Shopping Mall Confronting Bad Bots

In 1997, Rakuten launched the "Rakuten Ichiba" online shopping mall. After that, they began to offer other services including travel, communication, e-books, banking, securities, credit cards, electronic money, and professional sports. The company is improving user satisfaction with its business model based on the "Rakuten Ecosystem" concept. More recently it is becoming a household name, for example by becoming the main sponsor of European soccer club FC Barcelona.

In the past few years, Rakuten has noticed an increase in suspicious traffic on its Rakuten Ichiba site. "When we investigated, we found that when certain products were listed, they were immediately bought up by bots," says Yuki Ushiba, the engineer responsible for Rakuten Ichiba's servers and networks. "Bot" is a general term for any software program that runs automated tasks over the Internet, but depending on how they are used, many bots can be harmful to businesses.

Upon closer investigation, Rakuten found that as well as bots buying up products, the site was frequently being accessed by price-scraping and inventory-scraping bots. Rakuten is constantly improving its servers and systems to prevent user experience problems and system crashes. The return on investment (ROI) from improvements to systems and infrastructure made necessary by bot access, which does not lead to purchases, has become an issue.

"At Rakuten, particularly for startup services, we operate systems with limited resources, so it was hard to deal with large amounts of access by bots," recalls Naoki Hashizume, the engineer in charge of infrastructure for startup services including "Rakuten Brand Avenue." There was also a large workload for operators who had to work around the clock in order to maintain the service.

The company tried to detect and deal with the bots internally, but this involved changing settings each time the bad bots grew more sophisticated, for example by using tricks like fake HTTP User-Agent headers. Rakuten soon realized there was a limit to how much could be handled manually. There was also a risk of increasing unsold stock if bots designed to buy up products were restricted across the board. The company found it a challenge to fine-tune access restrictions to meet the company's subtle needs.

## Bot Manager Successfully Controls Bots that Make Up 70% of Traffic

That's when Rakuten turned to Akamai's Bot Manager. "We were already using Akamai's web performance solutions to accelerate delivery and make our sites reliable. Akamai looked at Rakuten's traffic patterns and the trouble we were having with bots, and proposed a new solution," explains Ryoko Uemura, manager of the group in charge of infrastructure for Rakuten Ichiba.

The process of adding Bot Manager to the existing web delivery environment was completed very smoothly; all that was required was to enable the standard functions. At first it was operated in monitoring mode, performing detection only, to confirm that it would not erroneously flag real users as bots. Akamai's security engineers previewed the monitoring results from this trial period, and set up processes such as blocking.

"Introducing Bot Manager allowed us to accurately distinguish between the three types of access and respond to each of them properly: legitimate access by users, 'good bots' like Googlebot, and 'bad bots' scraping prices and inventory and buying up products," says Mr. Hashizume.

For example, if a bad bot frequently scrapes product inventories and prices, rather than simply blocking it by denying access, Bot Manager responds by redirecting the bot to cached content, or to a different server than the one used for legitimate users. By continuing to respond to bots in this way, Rakuten succeeded in dramatically reducing the load on its systems such as origin servers and databases that now only handle access by legitimate users.



### Company

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### Industry

Internet Services, E-Commerce

### Solution

Akamai Bot Manager

### Key Impacts

- Access by "legitimate users," "good bots," and "bad bots" can now be distinguished
- Bad price-scraping and inventory-grabbing bots, which accounted for around 70% of traffic, have been successfully brought under control
- The cost of investment in systems and infrastructure wasted on bad bots has been reduced
- Excess workload responding to bots has been eliminated, allowing staff to focus on their core business work



Yuki Ushiba (Left), Naoki Hashizume (Center), and Ryoko Uemura (Right)

## Rakuten, Inc.

As a result, by controlling bot access, the company was able to control the influence of bots on one of Rakuten's sites where they were responsible for 70% of the total web traffic. "I thought it would require fine-tuning and customized rules, but I was surprised how effective it was just with the standard functions of Bot Manager," says Mr. Ushiba. "The effect is obvious just by looking at the access logs and system resource consumption of the origin server. We are no longer bothered by alerts about insufficient resources," adds Mr. Hashizume.

The ability to identify bad bots has also reduced the costs invested in system resources. "In the past, when we improved the system, we added more origin servers with the same spec. By controlling with the Bot Manager, a low-spec server is sufficient to respond to bad bots, and the costs can be optimized," says Ms. Uemura, explaining that the total cost reduction was enormous.

### Controlling Bots Flexibly Based on Service Characteristics

Introducing Bot Manager has enabled Rakuten to detect bad bots and take the most appropriate action to deal with them. Various responses are available in Bot Manager, and which action is the most appropriate depends on the characteristics of the site. "We still regularly review the results and change actions. The ability to make changes without too much work is another advantage,"

adds Ms. Uemura. Regular and random reviews of the settings are also made before sale campaigns.

Mr. Hashizume, who is in charge of startup services, says that there has been a huge reduction in the administrative workload. "Since we introduced Bot Manager, the number of alerts has decreased dramatically, so I have less work now," he adds, with a broad smile on his face. "This also means staff on the application side can concentrate on their core work: development."

Going forward, Ms. Uemura has high hopes for Bot Manager 2.0. "I am particularly looking forward to a new function called Conditional Action. Previously, actions could only be defined by the type of bots detected, but the new function will allow us to define flexible actions for different URLs, so we will be able to control traffic in more detail. For example, we would be able to control the purchase of products by bots more flexibly, which would help us avoid inventory risk. We look forward to making use of this feature when it's released."

Mr. Ushiba concludes by contemplating the future of Rakuten Ichiba. "We want to be able to deliver new content to users more quickly. We also want to increase the time spent thinking about how to create new systems, what kind of configurations to use, and what attractive features we can provide, which we can do by using Bot Manager to minimize the 'unproductive time' spent troubleshooting."



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