Brand protection through the cloud

Brand manager fights counterfeiting with HP cloud solution; consumers authenticate genuine HP ink cartridges with mobile phones

Industry
Printer and imaging supplies

Objective
Provide consumers a convenient way to verify genuine HP ink cartridges prior to purchase; help HP Inkjet and Printing Solutions combat counterfeiters while protecting its brand, revenue and consumer relationships

Approach
Use a cloud solution to generate security labels for tracking and verifying genuine HP printer ink cartridges; enable consumers to easily verify a cartridge's authenticity with their mobile phone prior to purchase

IT matters
• Enables fast global deployments without requiring local data center build outs

• Flexible and scalable infrastructure handles hundreds of millions of cartridges and security labels

• Ensures integrity of security labels with encryption technique that counterfeiters can't copy or predict

Business matters
• Provides brand and anti-counterfeit managers intelligence on global counterfeit activity through real-time analytics

• Protects HP's brand and strengthens consumer loyalty

• Improves HP's revenue by increasing sales of genuine products

• Enables HP to cross-promote related products at time of product verification

> **"Every counterfeit that's identified turns into a selling opportunity for HP, and the consumer gets the value that they're paying for."**
>
> – Dave Kellar, brand protection engineer, HP Inkjet and Printing Solutions

HP thwarts counterfeiters

To combat the counterfeiting of its ink cartridges, HP uses the Global Product Authentication Service, a cloud solution that combines encrypted security labels and mobile product authentication technology.

Helping consumers identify counterfeits

Somewhere in the world, a consumer is about to buy an HP ink cartridge for an HP printer. The package looks legitimate and the seller says it's a genuine HP cartridge. But how can the consumer know it's real? Due to a sharp rise in counterfeiting, verifying a product's authenticity is harder than ever. In fact, the US Chamber of Commerce reports that 64% of counterfeit products are purchased in legitimate shops and retailers.[1]

HP's Inkjet Printing and Solutions business, which sells millions of ink cartridges globally each year, has seen increased counterfeiting of its cartridges in recent years. And while HP has made progress curtailing counterfeiting, it wasn't until it launched a cloud-based anti-counterfeit solution, that it really gained control of the problem.

"We've seen efforts to counterfeit HP cartridges increase significantly in the last 10 years," says David Kellar, brand protection engineer, HP Inkjet and Printing Solutions. "And while we made progress against counterfeiters using solutions like hologram labels, it wasn't until we combined the cloud and mobile technology that we really got ahead of the issue."

Counterfeiting: It's global and involves more than designer handbags
The proliferation of counterfeiting is impacting many industries, from printer and imaging supplies to pharmaceuticals, consumer electronics and food and beverages. In some industries, like pharmaceuticals, it can have deadly consequences. The International Policy Network reports that approximately 700,000 deaths per year are attributable to counterfeit malaria and tuberculosis drugs.[2]

Counterfeiting is taking its toll on businesses, too. It's estimated that $600 billion worth of world trade is attributed to counterfeit products each year.[3]

HP's counterfeiting challenge
In 2009, HP partnered with Brady Corporation, a leading provider of anti-counterfeit security labels, to create hologram labels for HP's ink cartridge packages. At the time, HP used a third-party platform to generate unique numeric codes for the hologram labels. However, HP realized that the numeric code platform wasn't powerful enough to generate codes at the speed and scale necessary for its cartridge business. Additionally, the platform

didn't ensure the level of security HP wanted.

HP also found that hologram labels, while adequate for some consumers, were too difficult to use for many. "If you know what to look for, there's great information in a hologram," Kellar says. "But for consumers who don't, they can be hard to read."

Producing security labels at scale
Realizing it needed a more powerful and secure numeric code generator, HP Inkjet and Printing Solutions (IPS) looked within and outside of HP. HP IPS found a solution through an affiliate business unit, HP Software Professional Services. Working in collaboration with HP Labs, HP Software Professional Services developed the underlying technology for what is now HP's Global Product Authentication Service (GPAS). What made HP's GPAS solution attractive is its numeric code encryption engine, which can quickly generate huge batches of numeric codes—a key capability for companies like HP that need to create millions of security labels each year. HP Inkjet and Printing Solutions went live with the HP GPAS in May 2012.

Brand managers get powerful tool to fight counterfeiting

For HP Inkjet and Printing Solutions' Kellar, the GPAS solution is an indispensable tool for fighting counterfeiters. The GPAS Web Portal shows the products that are being counterfeited, and the regions and cities where it's occurring. It also provides the business intelligence necessary to disrupt counterfeit activities. The GPAS Web Portal's real-time analytics include:

- Geographic locations of valid security label authentications
- Geographic locations of invalid security label authentications
- Products that are most at risk to counterfeiting
- Trends showing geographic location of potential counterfeiting

The GPAS Web Portal features heat maps that display where both valid and invalid security label authentications are taking place. A cluster of invalid labels indicates a hotspot of counterfeit activity. The heat maps allow HP Inkjet and Printing Solutions' brand manager to easily identify counterfeiting hotspots and act on them quickly.

1 Source Gallup Consulting and US Chamber of Commerce, USA Today, June, 2012.
2 Source "Keeping it Real," International Policy Network, May 2009.
3 Source "Estimating the global economic and social impacts of counterfeiting and piracy," Frontier Economics, February 2011.

GPAS security
label with QR code
and numeric code

Making product authentication easy for consumers

HP's Global Product Authentication Service enables consumers to easily authenticate genuine HP inkjet printer cartridges before making a purchase.

Imagine a consumer wondering if the HP ink cartridge she is about to purchase is authentic. Using her smart phone and any standard Quick Response (QR) code reader, she would simply scan the security label on the HP ink cartridge box. If she doesn't own a smart phone, she would text the numbers on the security label. In either scenario, the consumer would immediately receive a message verifying if the security label's code is valid. If it isn't, the cartridge is probably a counterfeit and the consumer will receive information on how to report it.

"Making the GPAS authentication technology so easy to use and accessible to consumers is a breakthrough," says Kellar.

Cloud architecture enables easy setup

Because the GPAS solution is hosted on HP's managed cloud environment, which scales rapidly, HP Inkjet and Printing Solutions launched the anti-counterfeit service quickly, without having to install any hardware or software. "Being a cloud solution, GPAS was easy to launch and caused no disruption to our business or supply chain," says Kellar. Thanks to GPAS's cloud architecture, it's entirely accessible through the Web.

What makes HP GPAS work

- GPAS Secure Code Encryption Engine—generates unique and encrypted numeric codes for security labels

- GPAS Secure Code Verification Database—receives consumers' QR code queries or SMS texts and verifies if a label has been validated

- GPAS Web Portal—for brand managers to access the anti-counterfeit solution; used for ordering codes for security labels, activating printers and viewing real-time analytics

- HP Converged Cloud Infrastructure—underpins HP's data center hosting service and provides mission-critical performance for HP GPAS

GPAS makes the most of cloud computing

Running on HP's Enterprise Cloud Services cloud platform and managed by HP experts, the Global Product Authentication Service features many benefits of cloud computing.

HP GPAS offers flexible pricing models, scale-up and scale down capacity, massive compute power, and on-demand access. GPAS' Web self-service functionality makes it easy for brand and anti-counterfeit managers to use the service. They simply log in to the GPAS Web Portal, and from there they can order secure codes or view a range of analytics reports.

Secure labeling for large manufacturers

While big brands have sought effective security labels for years, few solutions have generated unique security codes and labels fast enough. HP's Global Product Authentication Service addresses this. "Various security labeling solutions have

emerged over the years, but none of them had the compute power to meet our manufacturing output, nor could they easily plug into our supply chain," says Kellar. "The cloud changes this."

In HP Inkjet and Printing Solutions' case, Brady Corporation orders and downloads unique numeric codes from the GPAS Web portal and prints them on HP's ink cartridge security labels. Downloading the codes from the GPAS Web portal has accelerated Brady Corporation's label print preparation process.

"The ability to download codes from the Web has greatly reduced the amount of time it takes us to prepare for a print production run," said Scott Kogler, senior product engineer, Brand Protection Solutions, Brady Corporation. "What used to require hours, we can now accomplish in minutes."

The improvement in speed is attributed to GPAS's Secure Code Encryption Engine. It can produce extremely large sets of unique numeric codes quickly, which is critical for companies that manufacture hundreds of millions of products.

Unique numeric codes key to authentication

In the GPAS system, each security code has a unique, cryptographically secure number. The numbers can't be easily duplicated or changed in a predictable pattern, since that would allow counterfeiters to figure out the numeric codes and create fakes.

The GPAS algorithm also enables the security code verification process. When a consumer scans or texts the code with their mobile phone, the algorithm queries the system's database to make sure the code hasn't already been validated. If it has, then the code isn't valid and the product is likely a counterfeit. All of this happens entirely in the cloud.

With hundreds of millions of numbers in the GPAS Secure Code Verification database, speed is critical. The GPAS' cloud architecture allows consumers to verify a product's authenticity on the spot, whether they're shopping in a store in New York, Hong Kong or Rio de Janeiro.

Business benefits

The HP Global Product Authentication Service is helping HP Inkjet and Printing Solutions protect its brand and market share. Every time a consumer identifies a counterfeit and buys a legitimate cartridge, HP protects revenue it would otherwise lose. Consumers get the genuine, high-quality HP cartridges they expect. And HP builds trust and loyalty with consumers by engaging them in the product authentication process.

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