How protective software is kept safe from compromise

2021

Securing your security

kaspersky

Can Your Security Software Get Hacked?

All commercial software will have some vulnerabilities which can be exploited as a means of introducing malware. The nature of today's sophisticated software, and the sheer quantity of code involved, means that it is effectively impossible to guarantee that a software application of any significant level of complexity does not include vulnerabilities.

The word 'vulnerability' has a specific meaning in this context – it is any weakness in the software code which can be exploited by a threat actor in order to introduce malware into the system running that software, or otherwise put it under threat. Finding these weaknesses in commercial software is an underworld business in itself – specific details of vulnerabilities in popular applications and operating systems are purchased by malefactors on the dark web for considerable sums. The other arm of this criminal industry is the manufacture of 'exploits' – pieces of code designed to exploit these individual vulnerabilities and use them to inject malware into your systems.

Exploiting vulnerabilities in commercial software is how the vast majority of corporate cyber-attacks, even the most complex and sophisticated, originate.

The most exploited vulnerabilities

Vulnerabilities in Microsoft Office remain the most exploited of all software. Among the most targeted are the four vulnerabilities CVE-2017-11882, CVE-2018-0802, CVE-2017-8570 and CVE-2017-0199 - for all of which patches have long been available from the vendor.

Securelist, Kaspersky Security Bulletin 2020. Statistics

From the moment a new version of a popular application, or operating system, is launched, its originators are in a race with the cybercriminals to see who can find its vulnerabilities first. Once a vulnerability is identified, the original manufacturer will create a new fragment of code eliminating the vulnerability, which is delivered to the end user within an updated version of the software, or in a 'update' or 'patch'. This, when installed, eradicates the vulnerability. This is why it's important to keep your computer software updated

That's all very well with a single computer. But constantly patching all the software used in a corporate IT environment is a big job. In fact, it's an almost impossible one, in view of the number of updates an IT department may receive each week, and the difficulty of applying them all without significant disruption to the business.

Some security software vendors offer solutions to this issue. Organizations using Kaspersky Endpoint Security Advanced or Kaspersky Total Security for Business, for example, benefit from vulnerability & patch management functionality, which helps identify which software requires patching, and what updates are most urgent and critical. Automated patching can be set to apply the prioritized patches at the most appropriate and convenient times – making IT administrators' lives much easier.

So – all good. Your security software ensures that vulnerabilities in the software you use are patched in a timely and efficient manner.

Hold on though....

If all commercial software inevitably contains vulnerabilities, does that include the security software itself?

Unfortunately, it does.

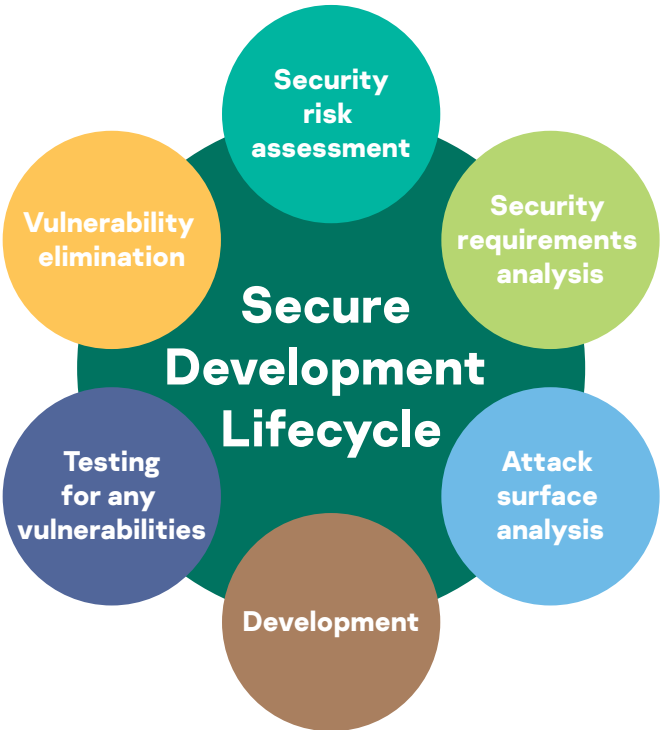
Most software manufacturers make serious efforts to integrate Secure Development Lifecycle (SDL) practices into their R&D processes, in order to ensure that their products are secure. And security systems manufacturers, by definition, do this better than most. But no software vendor can ever claim 'It's impossible for cybercriminals to detect any weaknesses in our products '. The best we can do is to get as close to that ideal as is possible. The alternative – no vendor launching any new software until they can 100% guarantee that it contains not a single weakness that could be exploited by attackers – would mean in practice that no software would ever get launched at all.

The Road to Making Products Secure

How can we make our products as secure as possible? By bringing together a number of approaches.

Security from the ground up

A secure product architecture, and a development process which incorporates risk assessment and analysis at the earliest stages, both go a long way towards minimizing the potential for vulnerabilities in the finished software, right from the start. Testing and elimination during the latter stages of development, and ongoing post-development vulnerability identification and eradication, involve R&D, Product Management and Support all working together to complete the security cycle. At Kaspersky our SDL is further supported by our Product Security Champions and input from our Anti-Malware Research team.



Eliminating vulnerabilities

At Kaspersky, we have a number of ways of finding those elusive vulnerabilities which somehow manage to survive our SDL processes, so that we can close them off.

These include:

- Our internal security audits, which include actually attempting to hijack our own applications and trying to penetrate our own systems.
- The HackerOne platform. Here, independent researchers, including 'white hat' hackers, can earn a 'bug bounty' by providing data about any vulnerability they can find in our products.
- Our dedicated vulnerability-reporting mailbox and web page - some reporters may prefer to use these to alert us to possible vulnerabilities.

White hat hackers

These are highly skilled free-lance security researchers who enjoy the excitement and challenge of tracking down software vulnerabilities, but who work ethically to protect users, rather than marketing their findings on the dark web. We pay a bug bounty for any genuine vulnerability in our software that white hat hackers can find and report to us.

Sources of vulnerability intelligence

Responding to vulnerability reports is a whole separate process, Our Product Security Team (PST) works to confirm any vulnerability and to assess its severity, while product teams work to fix the vulnerability within rigorous timescales, correcting the code that allowed it to exist in the first place . If, as happens, the vulnerability turns out to be a weak spot inside an operating system rather than in one of our own products, we take a different approach – alerting the OS vendor and working with them to resolve the issue.

Safe from the inside

While exploiting vulnerabilities is by the far the most common way to attack any system, there are other ways in which attacks can be launched via popular applications – and that includes security solutions.

There have, for example, been cases where 'weaponized' packages of commercially available security software, adapted by cybercriminals to enable an attack on the user, have been offered as downloads. These have generally originated from dubious download sites, so can easily be avoided by downloading only from the vendor's own resources. An attacker could perhaps manage to corrupt the stored version on the actual vendor's site – but this would involve using fake or stolen certificates that would not allow such operations to last for long.

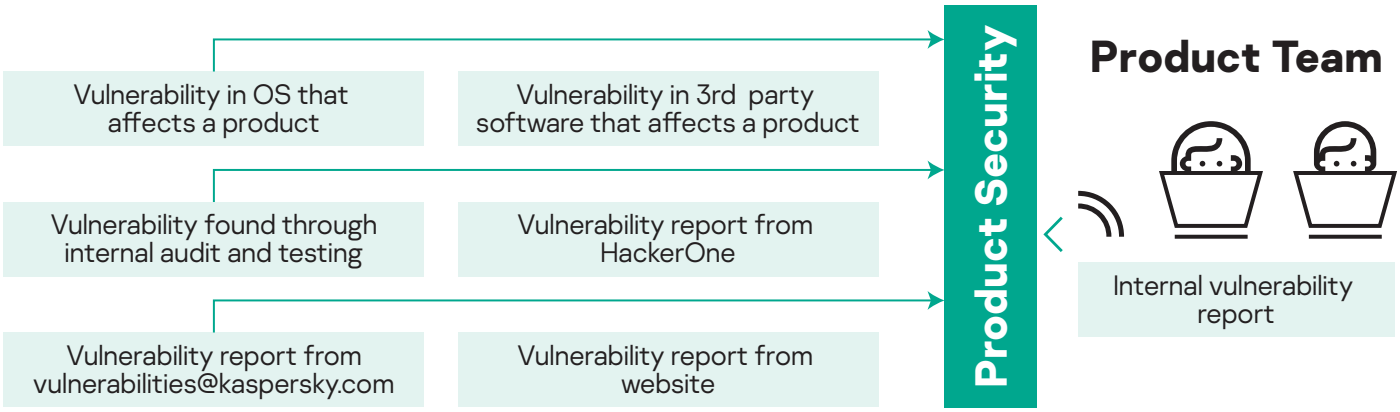
Attacked from within

In early 2019, Kaspersky researchers discovered that a live software update tool, downloaded from the official site of a major computer hardware manufacturer, had been hacked to install a malicious backdoor onto customers' computers. The attackers had managed to hijack the vendor's server – the hacked software even featured the vendor's legitimate digital certificates!

Source: **Securelist.com**

The real danger lies in a cyber-attacker getting access to any developers' own factory, where they could theoretically introduce portions of malicious code into legitimate software right from the outset, creating a perfectly disguised attack tool.

But this can't happen if security is built into all aspects of the development process, as is the case with Kaspersky. A securely built environment incorporating code integrity monitoring and the automated testing of all components as they are developed – plus regular security assessments of the apps and the infrastructure itself, and a multitude of other precautions we'd rather keep to ourselves - all this makes it virtually impossible for any insider attack to get to first base, let alone to succeed.



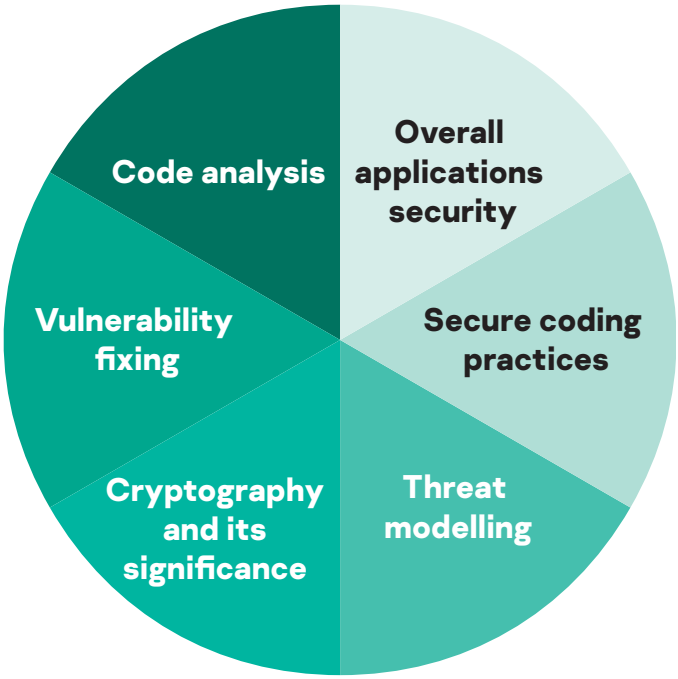
The different sources of vulnerabilities intelligence that Kaspersky receives

Never stopping learning

As we integrate secure practices into our software development lifecycle, we ensure that every developer and architect is trained in all aspects of product security. That way, we know that security will automatically be at the forefront of every design decision.

DevSecOps: substance under every syllable

In line with our principles of built-in, continuous and adaptive security, Kaspersky has been implementing the principle of Development and Operations connected through Security (currently known as 'DevSecOps') since well before this became a common buzzword. Our integrated approach to security means that even in the case of a compromise – and as we have said, nobody, not even a security vendor, is 100% bulletproof – our customers would remain entirely safe. This is what lies at the heart of the world's most tested and most awarded security.



Areas of security training for Kaspersky developers and architects.

For more of the latest thinking on corporate cybersecurity and threat developments, visit Kaspersky's business blog.

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