

# The VAULT

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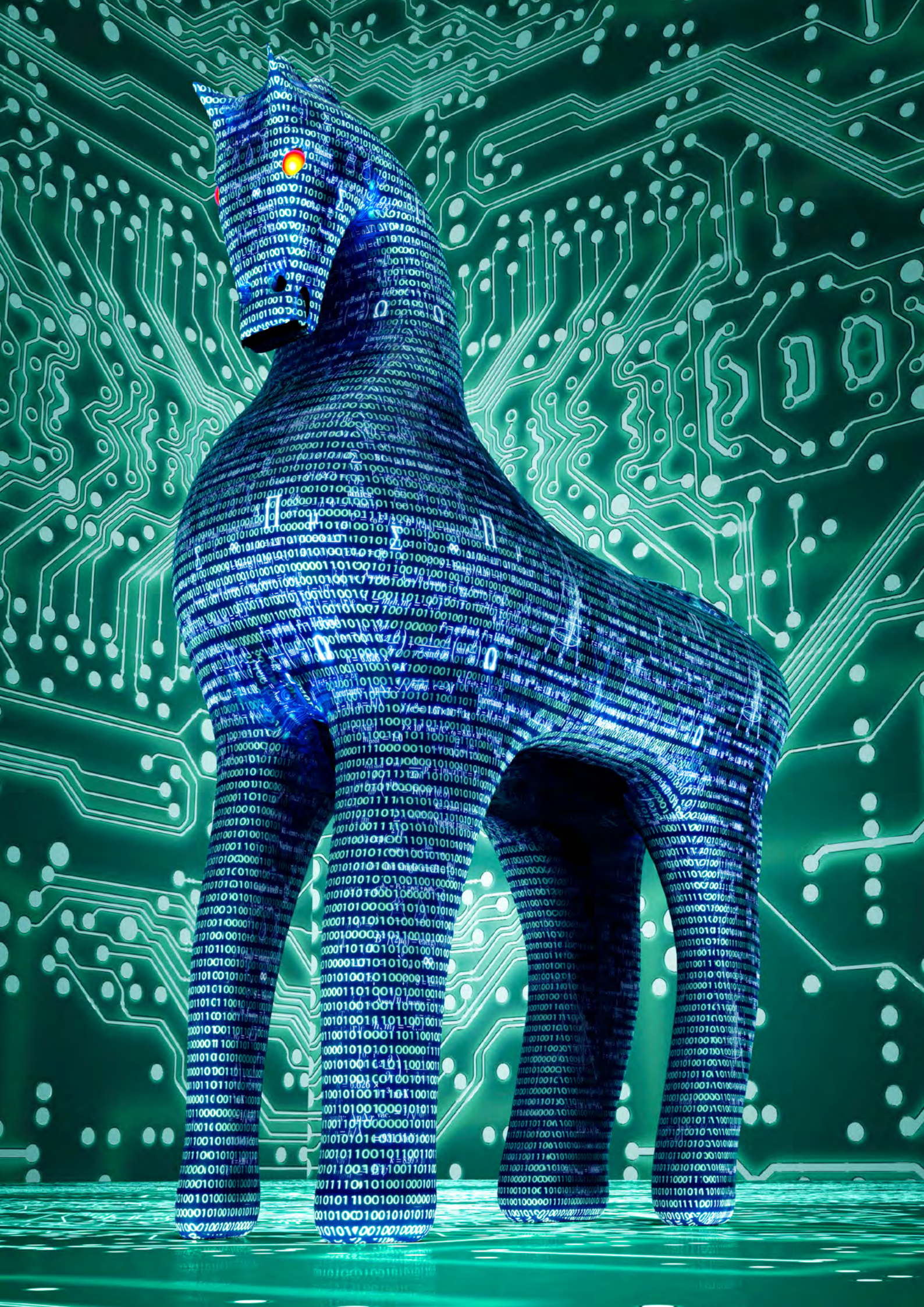
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# HORSES for *COURSES*: Picking the *Right LICENSE* CONTAINER

By Daniela Previtali, Wibu-Systems

□ Creating the perfect licensing and protection system is not easy. Or is it? With Wibu-Systems' CodeMeter, it becomes perfectly simple to pick and mix the right tools for the job, from different encryption tools for various languages and development environments, to multiple license delivery and management means or a choice of licensing models to suit every business model.

In the equestrian world, there is a saying: There are horses for courses. Do you need a trusty old pack horse, a heavysset, but strong Shire horse, a full-blooded Arab racehorse, a stable full of fresh and rested nimble little ponies, or – let your fancy fly – a winged Pegasus soaring up to the sky? The answer lies in a simple question: What are you trying to do? Are you going

for speed? Do you need to cover a lot of ground? Is there heavy lifting involved? And what on earth are you doing up in the clouds?

The same rule applies to the right choice of license container. There is not one ideal license container, and no container is inherently better than the other. Each container has its unique advantages and limitations, depending on the job it is used for. CodeMeter gives you a fundamental choice of four categories, each filled again with different types, models, and flavors to suit your tastes. There are software-only CmActLicense containers, the newly introduced hybrid CmReady™ containers, the popular hardware CmDongle containers, and the Pegasus option: CmCloudContainers.

## Lean and economical, but is it portable?

Use case 1: Tom is a maintenance engineer charged with keeping the shop floor workstations of his employer, a car parts manufacturer with factories across the continent, running. It is quite complicated work, because many of the workstations he will come across, are a jumble of legacy equipment that he needs to update regularly to keep the software landscape as uniform as possible. His work is made even more complicated by the fact that operational security reasons mean that the machines are not connected to the Internet, and he has only USB ports or memory card slots to work with.



As unlikely as the scenario sounds in today's hyperconnected world, licensing systems cannot automatically assume that there will be a steady and reliable Internet connection at all times. This means that a cloud-based solution like CmCloud is often not an option.

In this hypothetical scenario, both software and hardware containers are a viable choice. CmActLicenses, Wibu-Systems' leanest software-only container type, would represent the economical option: The license is kept in a signed and encrypted file that keeps the necessary cryptographic keys safe on the endpoint. Compared to simplistic and readily beaten software license containers, that rely on easily manipulated means like serial numbers to tie the license to the device in question, the magic of CmActLicenses lies in Wibu-Systems' patented

SmartBind® technology: A digital fingerprint is created out of a whole host of properties of the target device, even allowing for a – freely configurable – degree of tolerance when individual factors, like the hard drive or CPU, is replaced. In our scenario, with CmActLicenses, the license container could be securely bound to the many different workstations, and CodeMeter's versatile means of delivering licenses make it possible to deliver license updates even without an Internet connection. The service technician could simply carry the update file to the workstation and copy it over into the container.

Lean and economical as this option is, creating software license containers for every single workstation in this scenario is a headache for our hypothetical technician Tom. It is certainly doable and even easily automated and centrally organized with CodeMeter License Central and its user-friendly license management capabilities. But a more portable option, instead of potentially hundreds of separate license update files for hundreds of software license containers out in the field, is the new CmReady solution.

CmReady strikes the perfect middle ground between a pure software solution like CmActLicense and the high-end hardware container CmDongle. CmReady are license containers on mass storage devices, with Swissbit Data Protection (DP) cards available as the first incarnation of CmReady SD and microSD cards. Beyond the storage space they offer, these cards include security features that the CmActLicense software license container on them can be bound to. Instead of using a digital fingerprint of the target device, the binding technology is thus tied directly to the card itself.

For our scenario, the advantage is obvious: Instead of configuring and keeping track of numerous CmActLicense containers, Tom only has to have his CmReady card with the licenses on board to take out to the many workstations he has been entrusted with. And since CodeMeter containers can cope with several license tickets, update files etc., he can even handle multiple jobs on the machines without having to swap out his CmReady card.

## Mobile and agile, but is it smart enough?

Use case 2: Richard is a civil engineering consultant specializing in load monitoring for railroad bridges. His company has developed and sold a special sensor and data processing package to rail operators across the country that tracks temperature, vibration, and torsion on bridges and feeds the sensor data wirelessly to the local control center. He regularly visits the operators on site to run cyclical calculations on the highly specialized software. Concerns about hacker attacks on rail infrastructure mean that he, as an outside service agent, is not allowed to connect online to the system, but instead has to physically plug into the system.



This scenario seems closely related to the first, but there is one particular factor that sets it apart: In this case, special emphasis is placed on the invaluable IP contained in the civil engineering software. In this hypothetical situation, but also in many real-life scenarios, the software developer has created a very unique application, investing considerable time and money for a very limited user base. Any IP theft would be catastrophic for his business. For this reason, even the regular and, as yet, unbeaten CodeMeter encryption might not seem secure enough for developers concerned about their critical IP

being exposed to malfeasance, even if it be only during that brief moment of execution.

CmReady cards offer portability and offline capabilities at a more affordable price point than their bigger siblings, CmDongles. Both CmReady cards and CmDongles with flash memory also include storage space for both uncritical and sensitive data, such as the load profiles that this scenario's engineer would want to take back home for further analysis. But in this scenario, it is the big brother that wins out for one unique reason: CodeMoving.

CodeMoving is CodeMeter's ability to move protected code from the potentially compromised environs of an end user's device into a safe haven for execution, in this case the Infineon smart card chip that all CmDongles are equipped with. This Infineon chip is not only the hardware container's cryptographic powerhouse for all essential security operations, like binding the license to the dongle. It also has enough computing power to run sensitive code within the safe confines of the dongle. When protecting a software application, the tools in CodeMeter Protection Suite can not only encrypt code by individual functions, but also flag particularly sensitive functions for CodeMoving.

During runtime, the code is decrypted on the fly and normally executed on the target device, but as soon as CodeMeter comes across the flagged function, it never sees the light of day, but is instead executed on the dongle: Input parameters are fed into a black box, and output parameters come out. Despite some impact on performance, this is the optimum protection for sensitive software.

And it is the option of choice for civil engineer Richard. In our hypothetical scenario, his company opted for a CmStick, a dongle for USB interfaces, from the vast range of CmDongle form factors that include everything from memory cards to ASICs. All of the particularly critical engineering formulas and calculations that constitute the company's unique IP are flagged for CodeMoving, so they stay on Richard's CmDongle at every train yard he visits.

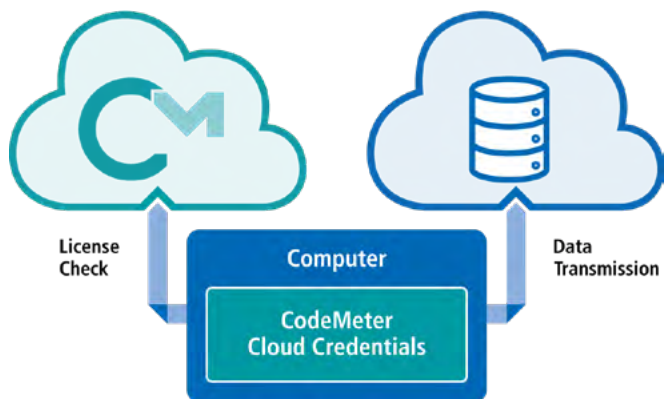
## Smart and secure, but does it scale?

Use case 3: Harriet runs the IT department of a major automobile insurer's "young drivers" startup unit. Her company offers a special insurance service for younger drivers that bills them on the basis of a complicated equation, taking not only the miles driven into account, but also factors like the speed and consistency of their driving, the time of day of their journey, and the postal code area they are driving in. Her clients' cars are fitted with special modules that track these factors and are equipped with software that already preprocesses some of the data before transferring it to the insurer. She needs that software and data to be safe from tampering and readily updated when premiums and conditions change.

In this scenario, connectivity rules: The hypothetical sensor modules are connected into the car's on-board bus system, but they intentionally lack any user-accessible ports. All external communication is handled by wireless Internet connections. This rules out CmReady cards and most CmDongles beyond built-in CmASICs. As the scenario again requires advanced protection capabilities, including CodeMoving for the critical data pre-processing operations, the straightforward option of preinstalled CmActLicense containers that CodeMeter License Central supplies with license updates and everything else over the ether, are out of the question.

### This is where Pegasus comes into play again:

CmCloudContainers, the highfliers among CodeMeter license containers. These are kept in the cloud, specifically in secure data centers run by Wibu-Systems, and are bound not to a fingerprint of the target device or to an Infineon smart card chip on a dongle, but to a specific user. All that is needed to access them is an Internet connection and a credential file.



### Scalability is key when it comes to CmCloud:

The number of containers can be easily ramped up or cut down depending on user numbers, with a variety of licensing and service contracts available from Wibu-Systems. This can be essential for a scenario like Harriet's: Clients can easily switch insurers, and having to organize a dongle switch-out every time a young driver moves to a different insurance provider (or indeed crashes their car) can soon become a logistical nightmare.






**DANIELA PREVITALI** is a marketing veteran who has dedicated more than twenty-five years of her career to the service of world-leading IT security vendors. Throughout her journey in this field, she has covered executive positions in international sales, product marketing, and product management and acquired comprehensive knowledge of both digital rights management solutions and authentication technologies. Working from the German headquarters of Wibu-Systems, she is currently leading both corporate and channel marketing activities, innovating penetration strategies, and infusing her multinational team with a holistic mindset.

The flexibility of CmCloud license solutions extends beyond this scalability: As licenses are bound to a user and not a single device, they can be easily “carried around” from computer to computer, making CmCloud a perfect choice e.g. in educational landscapes or in reseller arrangements, where the reseller acquires a number of licenses to pass on to a known number of users without having to worry about which device the actual software is eventually run on.

In terms of security, a properly set up CmCloud infrastructure rivals CmDongles in the level of protection, including the unique CodeMoving ability. The sensitive code is, in this case, not executed on the dongle, but far away in the data center and only the input and output parameters are shared through the ether. Updating CmCloud licenses is even easier than the already smart updating and forced update mechanisms of other CodeMeter containers, as necessary updates can be pushed through immediately in the cloud. All of these capabilities make CmCloudContainers the natural choice for our hypothetical scenario and many others of a similar nature.

## Lean, economical, portable, smart and scalable: A CodeMeter container for everyone

	CmActLicense	CmReady device	CmDongle
			
Time / Feature / Usage-based Licensing	✓/✓/✓	✓/✓/✓	✓/✓/✓
IP Protection	✓	✓	✓
Virtual Clock	✓	✓	✓
Mass Storage		✓	✓
Mobile Usage		✓	✓
Easy Offline Replacement of a broken Device/Computer		✓	✓
Hardware Clock			✓
Strong Authentication			✓
Key and Counter Storage in the Smart Card Chip			✓
Form Factors		Memory card	USB stick, memory card or ASIC

As these three scenarios, all hypothetical, but all very near to Wibu-Systems’ real clients, show, CodeMeter license containers offer the right options for every purpose, from economical CmActLicenses or CmReady cards, to the whole gamut of CmDongles in a range of styles and form factors and all the way to the cloud. And even better: Everything in CodeMeter is built to work with everything else. With interoperability a key design feature, different containers can be used side by side in a single licensing solution, and everything managed with CodeMeter License Central as the one place from where to manage one’s entire stable of license containers. ☒

- Compose your original code
- Orchestrate your license strategy
- Fine tune your IP protection
- Distribute your work of art

Sounds easy, right?  
And it is with CodeMeter

CM  
Certificate  
Vault

CM  
Embedded

CM  
Cloud

CM  
Dongle

CM  
LC



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+49 721 931720  
sales@wibu.com  
[www.wibu.com](http://www.wibu.com)



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