25 YEARS

KEYnote 47
THE WIBU-MAGAZINE

Celebrating an anniversary hat trick for Wibu-Systems

Highlights

- Empowering Resellers to Help Themselves
- Urgent – Emergency
- Scaling New Heights: CodeMeter License Central's Hosting Upgrades

WIBU SYSTEMS

Content

Dear Clients and Partners!

When we embarked on the Wibu-Systems journey in 1989, we could sense the burgeoning wave of software innovation on the horizon, yet the full scope of the digital transformation that would permeate every facet of our lives was beyond our imagination. With the dawn of Industry 4.0, we seized the opportunity to broaden our portfolio, and today, we are zealously developing security solutions for emerging technologies poised to reshape our world even more profoundly and swiftly than the impacts witnessed during the Fourth Industrial Revolution.

It's with a deep sense of pride that I reflect on Wibu-Systems' 35th anniversary. Above all, I cherish our enduring, partnership-driven customer relationships and our ability to deliver significant economic and practical benefits through our innovations. Our operations are driven by a commitment to sustainability, fairness, and the highest ethical standards in business practices. During our INNO DAYS on June 26th – an event you're warmly invited to – we'll recount the past 35 years through customer stories, motivational keynotes, and a thought-provoking roundtable.

WibuKey, our original product from 1989, remains in use today, and CodeMeter, our premier technology, celebrated its 20th anniversary last year. Our commitment to incremental improvements and groundbreaking technological advancements is unwavering. These advancements, including preparations for post-quantum cryptography, cloud deployment, and artificial intelligence methodologies, are designed to simplify your engagement with our solutions. Prepare to be amazed by CmCloud, offering geo-redundancy with Amazon AWS, high availability of our CodeMeter License Central hosting solutions running in parallel in separate data centers, the protection of NVIDIA GPU code, and our ambitious plans for the next five years.

This edition of our KEYnote magazine offers a treasure trove of insights into our enhanced hosting services for CodeMeter License Central, strategies for managing licensing emergencies, integrating License Central into your ERP system, and our collaboration with Hilscher on the Flagship Store for the OI4 Community, among other topics. I hope these pages spark a wealth of ideas for you.

Looking forward, we aspire to remain your trusted partner in software protection, licensing, and security over the next 35 years. Let's initiate a dialogue. Wishing you all the best for 2024, I eagerly anticipate our personal interactions at upcoming trade fairs and events, or within your or our offices.

Yours,

Oliver Winzenried

CEO and Founder

Creating Licenses with CodeMeter License Portal

Generally, there are three fundamental options for creating licenses in CodeMeter License Central. The obvious option is configuring the products and creating the licenses within the CodeMeter License Central interface. This option is practical when the complexity of the products and the number of licenses to be created do not exceed a certain scope.

The second option involves creating licenses through the SOAP API from a third-party system, such as an ERP system, a CRM system, or an e-commerce solution. In this case, the same products configured in CodeMeter License Central typically already exist in the third-party system. While the third-party system primarily maintains commercial attributes, such as price, CodeMeter License Central stores the technical protection options.

Today, we specifically look at the third option, CodeMeter License Portal. This option is primarily used when external partners, like resellers, need to create licenses themselves but do not have access to a third-party system, such as an ERP system.

Permissions

Two common requirements when creating licenses through external partners are the ability to limit the product range in general and specify license options in particular. These permissions can be configured in CodeMeter License Portal.

To use permissions, you define categories into which you can later sort products. Products can be sorted into multiple categories if needed. These categories also represent permissions. You can entitle a user to create, modify, and revoke or delete licenses of these products. If the user is an administrator, they can pass on or revoke these permissions to other users in their group or subgroups. An administrator can only inherit permissions they possess themselves. An ISV administrator, an administrator at your top level as a software manufacturer, inherently has all permissions and can

therefore grant and revoke them. In the next step, you can sort the products into categories.

"Fixed" Parameters

In CodeMeter License Central, you have the option to define static products. These are sold as they are. You can also define options with order-specific parameters when creating the license.

When sorting products into a category, you can configure these order-specific parameters for the products. For example, these parameters can be given a fixed value in this category. This explains why it can make sense to have the same products, but with different predefined values in different categories. With different permissions, the same product then results in different licenses.

Flexible Parameters

In CodeMeter License Portal, there is also the option to dynamically capture order-specific parameters during order creation. For configuration in the interface, the following options are available:

- **Text:** A flexible input field
- **Number:** A numeric value that can be set with a minimum and maximum threshold
- **Selection box:** Choice from a list of predefined values
- **Date:** A date that can be set with a minimum and maximum threshold (relative to creation).

Here too, for example, different value ranges for different categories can be defined. A common example is the duration of a demo version,

which is limited to 30 days for partners. Internal staff, who can access other categories, can choose from a selection between 5, 30, 60, and 90 days.

Subscriptions

CodeMeter License Portal has a special procedure for creating subscriptions. The product for a subscription is created with an activation-specific field in CodeMeter License Central. Depending on the subscription type (license subscription or maintenance subscription), either the Expiration Time field or the Maintenance Period field is used. In the configuration in CodeMeter License Portal, you define the cancellation period, the type of subscription to be created, and rules for consideration and the value range of the end date.

The sale of this product then automatically creates a subscription. This runs until the specified end date. If the subscription is canceled before the end of the cancellation period, it ends without further action on the end date. If there is no cancellation, the subscription automatically extends for another year. The extended license is available to the user after the cancellation period expires.

Data Fields

As a bonus option, data fields for additional information, such as an external order number, can be configured. Here too, the user interface and workflows can be individually adapted to your requirements.

Empowering Resellers to Help Themselves

Selling consulting-intensive and complex software in one's own region is already a challenge – doing so globally is nearly impossible for small and medium-sized software vendors on their own. The solution to this challenge is local dealers who speak the customer's language, know and understand local requirements and conditions, and refine the software with add-ons. This article looks at the handling of creation, delivery, and billing of licenses to local dealers.

On this topic, we can speak not only from our customers' experience but also from our very own experience at Wibu-Systems. We sell our CodeMeter licenses to our subsidiaries and partners worldwide, and they in turn sell them to software vendors in their regions. Like many software vendors, we also rely on subscription models, which we will discuss in detail, especially regarding billing.

Production "In Stock"
One possible strategy is to produce licenses in advance and store them at the dealer's location. This strategy has a major advantage: You have the same workflows as with hardware products. You produce, store, and ship them to customers and dealers. The dealer can decide which items to order and whether to store them in an intermediate warehouse if necessary. Another advantage is that the production of your licenses is done by your production; this sounds logical and is quite old-fashioned.

From my experience, the disadvantages outweigh the advantages. First, every dealer un-

derstands why they pay for hardware upon receipt, with the rare cases of consignment goods excepted. However, with software, everyone expects it to be billed only upon sale to the user. Second, the start of the warranty, maintenance, or subscription period is completely unclear at the time of production and requires an additional feedback channel. And the third disadvantage is the combinatorics with complex licenses. Which combination of licenses do you stock? Or do you prefer to produce individual licenses for each function? The risk of not having what you need in stock is as high as the risk of catching unsellable dead stock.

Production "On Order"
The alternative is obvious. The dealer orders the license in a configuration they want. This order is recorded in your ERP system and triggers the production of the individual license.

The advantages are clear: billing upon order, no "wrong" licenses in stock, analogous processes to individually configured hardware, and warranty, maintenance, or subscription periods are

already determined at the time of production.

However, there is a significant disadvantage: Depending on your processes and time zone delays, it can take several hours to days from order receipt through order recording and production to delivery.

Point System
I would not want to withhold the option of a point system from you. The customer or dealer buys a number of points from you. Functions in the software have corresponding values.

You produce the points and put them in stock. The dealer stocks up on them. When configuring the software, the dealer transfers the points to the customer.

Personally, I am not a fan of such a solution, as it mainly loses transparency about which feature was sold how often. Also, subscription and maintenance contracts are difficult to depict. Providing proof of the warranty period becomes more complicated. Support processes

Reseller - WIBU-SYSTEMS Germany (WIBU-SYSTEMS Germany)

Information

Licenses

Name	Ticket	Creator	Order ID	Creation Date	License Type	End Date	Cancellation Until	Activation Date	CmContainer	Status
SampleNotePad - Subscription (Periodic Renew) Hex View Module	P3Y7Q-YSEWS-QUV6V-22SKD-W4K79	admin@iptext.com		2024-03-18	Subscription	2024-12-31	-	-		cancelled valid
SampleNotePad - Subscription (Periodic Renew) Change Font Module C/C++ Language Extension Python Language Extension	MUVCD-LZWVD-M2TKB-SXGUY-AX6FV	admin@iptext.com		2024-03-18	Subscription	2024-12-31	2024-10-02	-		active
SampleNotePad - Modular Licenses (Selected Features) C# Language Extension C/C++ Language Extension	M3CA5-MH4XK-WB534-QVGBM-KA5XQ	admin@iptext.com		2024-03-18	License	-	-	-		active
SampleNotePad - Evaluation (Selected Features - Flexible Days)	7UTHG-Y2PDS-UTBKR-V99LK-PF4AF	admin@iptext.com		2024-03-18	Trial	2024-05-19	-	-		active
SampleNotePad - Subscription (Periodic Renew) Change Font Module C# Language Extension	HHT63-KDRVY-KSQF3-KDKS2-UAETH	admin@iptext.com		2024-03-18	Subscription	2024-12-31	2024-10-02	-		active

Create License

like "lost points" increase complexity manifold. Of course, all of this can be implemented with CodeMeter, and there are successful project use cases. But let's first look at a fourth alternative before you make a final decision.

Creation "On Demand"

From my point of view, the most modern and flexible solution is to give your dealers the ability to generate licenses on demand. This is also the solution we at Wibu-Systems have implemented for our own licenses; of course, using CodeMeter, CodeMeter License Central, and CodeMeter License Portal.

The dealer creates the license in CodeMeter License Portal, which then creates it in the background in CodeMeter License Central. In our own use, our dealer adds you as a customer in the Portal and automatically assigns the license to you.

Adding customers in the Portal is optional for the entire process, but it simplifies many processes for the vendor, the dealer, and the customer. Moreover, as a vendor, you receive information about which customer is using your software. In our information sheet on CodeMeter products and GDPR, you will find the legal basis for collecting this data, such as minimal data collection, legitimate interest, or the possibility of deletion.

This scenario combines the advantages of all the above methods: Licenses are flexible, precisely timed, and immediately available. Billing occurs only after creation. Periods, e.g., for subscriptions, are automatically and correctly captured without special processes.

Of course, you may wonder what the disadvantages of this approach are. Let's look at two aspects: rights and billing.

Rights for the Dealer

You give your dealers the right to create licenses themselves. Through CodeMeter License Portal, you can define for each dealer individually which licenses or license configurations the dealer can create themselves. You can also specify value ranges for individual parameters,

e.g., the minimum and maximum duration of a subscription. While the dealer can create licenses, you can see in which CmContainer the license was activated and use all options of CodeMeter License Central, such as recall or blacklisting, in case of unauthorized use.

As a bonus option, a point system for the permission to create licenses is possible. Then you only give your dealer the permission to create a certain number or value of licenses. Unlike the "Point System" option, where the points were delivered to the dealer, these points only exist in CodeMeter License Portal and are exchanged for real licenses on demand. Thus, transparency about the sold licenses remains. This point system can be implemented according to your individual wishes and requirements by our Professional Services Team together with you.

Billing Licenses

The second aspect is billing. When the dealer creates the license, this information first lands in CodeMeter License Portal rather than in

your ERP system. We need a new process to transfer these billing data from CodeMeter License Portal to the ERP system.

Here, too, a point system could make the additional process unnecessary. You sell points to the dealer and bill them via the ERP system. The points are produced and delivered to the Portal. There, the dealer can exchange the points for the desired licenses.

But what about subscriptions? And here the disadvantage of a separate process becomes a great advantage. I have often experienced in projects that ERP systems do not support subscriptions or that extensive adjustments, configurations, and additional modules are required.

CodeMeter License Portal creates a billing report for all licenses generated in the billing month and all subscriptions valid in the billing month. The billing can be done as an individual invoice per customer or license, but also as a collective invoice for the dealer. In the case of a collective invoice, the ERP system only creates the collective invoice, and the Portal serves as individual proof for the collective invoice. This is, for example, the process we at Wibu-Systems have implemented with our subsidiaries and partners. You can of course design the process differently for each dealer and also for customers if you like.

When billing subscriptions, you can configure the calculation of pro-rata subscriptions: Billing can be done on a daily basis or with a cut-off rule.

An interesting aspect especially for German software vendors is the accounting distinction. There, subscriptions are not accounted for at the time of purchase but over the service period. Subscriptions must in this case be spread over the fiscal years, which is usually the cal-

Reporting

28 | WIBU-SYSTEMS Germany | WIBU-SYSTEMS Germany | from: 2024-4 | to: 2024-4

ID	Name	External-Order-ID	Order-Date	Ticket	Item-ID	Item-Name	List Price	Start-Date	End-Date	License-State
28	WIBU-SYSTEMS Germany		2024-03-18	HHT63-...	SNP-201-606-01-9101	SampleNotePad - Subscription (Periodic Renew)	100,00 €	2024-03-18	2024-12-31	active
28	WIBU-SYSTEMS Germany		2024-03-18	HHT63-...	SNP-201-601-01	Change Font Module	6,00 €	2024-03-18	2024-12-31	active
28	WIBU-SYSTEMS Germany		2024-03-18	HHT63-...	SNP-201-602-01	C# Language Extension	6,00 €	2024-03-18	2024-12-31	active
28	WIBU-SYSTEMS Germany		2024-03-18	MUVCD-...	SNP-201-606-01-9101	SampleNotePad - Subscription (Periodic Renew)	100,00 €	2024-03-18	2024-12-31	active
28	WIBU-SYSTEMS Germany		2024-03-18	MUVCD-...	SNP-201-601-01	Change Font Module	6,00 €	2024-03-18	2024-12-31	active
28	WIBU-SYSTEMS Germany		2024-03-18	MUVCD-...	SNP-201-604-01	C/C++ Language Extension	6,00 €	2024-03-18	2024-12-31	active
28	WIBU-SYSTEMS Germany		2024-03-18	MUVCD-...	SNP-201-606-01	Python Language Extension	6,00 €	2024-03-18	2024-12-31	active
28	WIBU-SYSTEMS Germany		2024-03-18	P3Y7Q-...	SNP-201-606-01-9103	SampleNotePad - Subscription (Periodic Renew)	100,00 €	2024-03-18	2024-12-31	cancelled valid
28	WIBU-SYSTEMS Germany		2024-03-18	P3Y7Q-...	SNP-201-602-01	Hex View Module	6,00 €	2024-03-18	2024-12-31	cancelled valid
							300,00 €			

Explanation column status
active *   : Active license or subscription, currently not activated
activated *   : activated license or subscription
activated update *: Activated, but an update (renew) available
withdraw requested * : withdraw was requested, but not delived yet
withdraw delivered * : withdraw was delivered, but not confirmed
withdraw expired : withdraw license or subscription, which is already expired
withdraw confirmed : withdraw confirmed
cancelled valid * : cancelled subscription, but still valid (not expired)
cancelled expired : Cancelled and expired subscription
expired   : Expired license

* will be charged

endar year, or even on the individual months. Therefore, many German providers align the duration of subscriptions with the calendar year. In international business, however, it is more common to align the subscription with the purchase date. And exactly this accounting-compliant allocation of the subscription to the service periods is automatically taken over by the reporting of CodeMeter License Portal.

Urgent – Emergency

Since 2006, Wibu-Systems has provided you with CodeMeter License Central, a tool that allows you to generate, deliver, and manage licenses. Just a year after its launch, it was clear that Wibu-Systems should offer a turnkey solution as Software-as-a-Service in the cloud in addition to the option to install CodeMeter License Central on your own. This marked the birth of our **W**ibu **Op**erating **S**ervices Team, WOPS for short.

The first data center was the company's own server room – already equipped with temperature control, redundant RAID storage, and an alternative Internet connection. After a few years, mainly due to capacity reasons, the move to an external data center was made. The highest attention was paid to data security and redundancy. Last year, what can be described as a worst-case scenario occurred: Despite supposed redundancy in storage, connection, etc., there was a failure with a significant duration.

This article takes this as an occasion to summarize which business continuity options are already available today and which further measures have been and will be taken by Wibu-Systems. Here, we consider the use cases of provisioning new users with licenses, planning existing users to migrate existing licenses to another system, and of course, the case of existing licenses failing and keeping a production system running.

Security Built-In
One of the great strengths of CodeMeter is the fact that CodeMeter Protection Suite encrypts your software to be protected, using a key that is securely stored in the license. This creates an extremely strong bond between the license and your protected software, which also means that

your software cannot start without the matching license. To increase security against attacks like memory dumping, parts of your software are encrypted in memory and dynamically decrypted on demand. Thus, the license is not only necessary at the start of the application but also at intervals dependent on user interaction.

Warning Instead of Error
A strategy that is not recommended from a security perspective is to let the software run without a license and only display warning messages about the missing licenses. This might be a viable solution for a few markets and customer groups, but it reduces licensing to a voluntary self-check. From my own over 20 years of experience in supporting customers with the integration of CodeMeter, I can tell you that this has only happened once with me.

In this case, CodeMeter Protection Suite cannot be used, or is used in the so-called No-License Mode. The software is encrypted with a key that is not located in the license but obfuscated within the software. The software then always starts, even if no license is present. The license is queried via CodeMeter Core API, and if it is not present or has expired, red warning lights are turned on at the machine.

This option ensures that the software runs in all the above-mentioned use cases, but at the cost of security.

Check Only at Start
For the use case where a license fails during operation, I am occasionally asked by customers whether it is possible to only check the license at the start of the software, especially in connection with CodeMeter Protection Suite. The answer is Yes: There are options where all nec-

essary cryptographic data is read at the start and kept in a cache. Naturally, this extremely reduces protection against memory dumping, as everything needed is present in memory.

I also personally find the use case questionable since restarting the software is no longer possible. The bogeyman in this case, "A person mistakes a CmStick for a memory stick, takes it with them, and the plant comes to a standstill", might have been present when memory sticks were still expensive luxury items, but today it has faded more than just a bit. I have only experienced a "break" of a CmActLicense during operation when virtual machines were moved in High Availability environments. And this requirement can be met through special settings of the binding.

All in all, the "Check Only at Start" option is possible, but it only helps in a very limited scenario and is disproportionate to the reduction in security.

Offline Emergency License
In all more secure solutions, the user needs a license. The simplest solution is the offline emergency license delivered with your software. This is a CmActLicense that is not bound to any specific hardware. It can therefore be used on any computer. You determine how long the licenses contained in the CmActLicense are valid for your software and that this CmActLicense file can only be used once per computer.

With the file's import on a computer, this CmActLicense is anchored to the system. Even after deleting the file, CodeMeter Runtime recognizes that this file has already been used and prevents a new import. The licenses are provided with a Usage Period of x days. When the li-

cense is first used by your software, the Usage Period starts. After x days, the licenses expire and can no longer be used.

Mostly, these offline emergency licenses are modeled with the full range of software functions, and in some cases, even future functions are already unlocked. In case of need, you can create new license files that the user can use again.

Security-wise, this is a trade-off between security and availability. A potential attacker can obtain a time-limited license and thus has more attack surface than if they had no license at all. However, the license itself is limited, can be immediately blocked if attacks are detected, and during operation, CodeMeter Protection Suite can use all functions for dynamic decryption of your software.

However, I strongly advise against use in virtual environments, as one can always set up a new virtual machine and reset the game at any time.

Emergency Dongle

One of my preferred solutions is the emergency dongle. Comparable to the offline emergency license, it usually contains all licenses or a Product Code that unlocks all features. Optionally, these licenses are provided with a Usage Period or a Unit Counter. A Usage Period works, as described for the offline emergency licenses, for x days from the first use. After x days, the licenses expire. As a publisher, you can reset these licenses to ensure your user's continued fail-safety after using the emergency dongle.

A Unit Counter can be counted down at an interval you define when using the software, similar to minutes when making phone calls. For example, if you count in 10-minute intervals, then a Unit Counter of 144 (24 hours times 6 per hour) means that the software runs for a full day or twice for half a day each or any arbitrary division. In this case, the emergency dongle can be used multiple times and, for example, can be tested by the customer upon handover.

From a security perspective, the emergency dongle is the ultimate solution. It is also easy to handle. It covers the use case where the customer already possesses the emergency dongle. For new customers just starting, there is a time delay until the emergency dongle arrives at the customer's site.

Emergency Cloud Container

Analogous to the emergency dongle, you can set up an emergency cloud container. Your user receives a credential file, which contains the ac-

cess data to the emergency cloud container. In an emergency, they import this credential file on their system, and a virtual dongle with the emergency licenses is immediately available to them.

Security-wise, CmCloudContainers are on par with CmDongles as emergency containers. They require a permanent online connection but can be delivered immediately. Thus, they are also optimally usable for new customers. Moreover, you can tailor the licenses specifically to the customer and reset the licenses directly after use. For simplicity's sake, I would implement the processes similarly to the emergency dongle and envisage a mix of CmCloudContainers (for new customers) and CmDongles (for offline cases).

Online Emergency License

Analogous to CmDongles or CmCloudContainers, you can also use CmActLicenses as emergency containers. Unlike the two pre-programmed containers, a CmActLicense is created on demand via CodeMeter License Central. You can decide whether to use a global license for all functions or a license specifically tailored to the customer.

To be independent of potential failures of the production line of CodeMeter License Central, CodeMeter License Central for emergency licenses is operated completely autonomously in another data center. This second data center is offered by Wibu-Systems; you can also operate this line of CodeMeter License Central yourself.

The only needed connection between the production line of CodeMeter License Central and the emergency instance is an automation rule that creates a corresponding emergency license on the emergency system for new licenses or new customers on the production system. The rule set for this synchronization can be adapted to your requirements. Additionally, you can manually generate emergency licenses in this instance and provide them to new customers if the production system is not available at that time.

In regards to security, this solution offers the same security level as a standard CmActLicense. It covers all use cases, both new customers and relocations as well as license failures. Monitoring tools can monitor consumption and automatically or according to workflow refill used emergency licenses.

Reactivation

A special solution for lost or broken licenses is the reactivation in CodeMeter License Central. You define to what extent the user can create a copy of a license on a new device. You can mon-

itor how often customers use them and intervene if there is suspicion of misuse.

The previous – replaced – license is marked in CodeMeter License Central and withdrawn or blocked at the next opportunity. For this purpose, it may be helpful if you initiate automatic updates of the licenses within your software.

In security terms, this solution offers the same security as the CmContainer used for licensing. Unlike the temporary emergency licenses described above, this is an immediate and sustainable solution to a license failure, provided that the production line of CodeMeter License Central is available at that time.

Increased Redundancy in WOPS

Starting in 2024, the hosting by our Wibu Operating Services Team (WOPS) offers even higher redundancy for two of the four editions. In addition to the local redundancies of computer, storage, and connection, the data of CodeMeter License Central will be mirrored in a second separate data center. Depending on the edition, the switchover in an emergency is done immediately and automatically (High Availability System) or manually if needed (High Performance Edition).

Various Paths

The connection to your CodeMeter License Central operated by WOPS depends not only on the availability of our system but also on the path to it. For example, nameservers play an important role in guiding the surfer on the Internet to the right address when entering lc.codemeter.com. A nameserver is not under the responsibility of Wibu-Systems but is a general address book on the Internet from various providers.

To also offer redundancy here, all systems are available under both lc.codemeter.com and lc.licensecentral.de. The two addresses are registered with different providers, so maximum redundancy is given here as well.

Additionally, lc2.codemeter.com and lc2.licensecentral.de provide two further alternative entry points to our hosting. These are alternative routes to different access points.

Conclusion

Redundancy and business continuity have been a major focus at Wibu-Systems since we started offering hosting services more than 15 years ago and are continuously improved, for example, through the additional data center and data mirroring starting in 2024. Choose the best option for you and your use cases from the available options.

Scaling New Heights: CodeMeter License Central's Hosting Upgrades

CodeMeter License Central is a product created by Wibu-Systems for a key mission: Ensuring backoffice integration for CodeMeter licenses. CodeMeter License Central empowers software developers and intelligent device makers to create licenses, software packages, or other product options for sale and distribution. This can be done manually or by a dedicated system like an integrated CRM or ERP system.

CodeMeter License Central can be run by the client or by Wibu-Systems on their behalf. For running it oneself, clients can choose the
- Desktop Edition
- Internet Edition

Both editions bring specific add-on product options suited for ease-of-integration and different performance levels.

Hosted variants include the
- Datacenter Edition
- Dedicated Server
- High Performance Edition
- High Availability Package

Up to now, the hosting options differed specifically in the number of recommended transactions for reliable operation, the standard availability, and the inclusion of a dedicated Firm Security Box.

Coming in the first quarter of 2024, the focus shifts to two other factors: the Recovery Point Objective (RPO), that is, the amount of data lost,

Edition	Activations Deactivations per License (Month / Hour)	License Queries per Item (Month / Hour)	WebService Calls (Month / Hour)
Datacenter Edition	1,500 / 15	50,000 / 500	–
Dedicated Server	3,000 / 30	250,000 / 2,500	250,000 / 2,500
High Performance Edition	25,000 / 250	250,000 / 2,500	250,000 / 2,500
High Availability Package	50,000 / 500	500,000 / 5,000	500,000 / 5,000

expressed as a unit of time, in the case of a failure, and the Recovery Time Objective (RTO), the time until CodeMeter License Central is back up and running.

Both are now optimized for different License Central editions, which is stated transparently in the pricing details as another important consideration for prospective buyers.
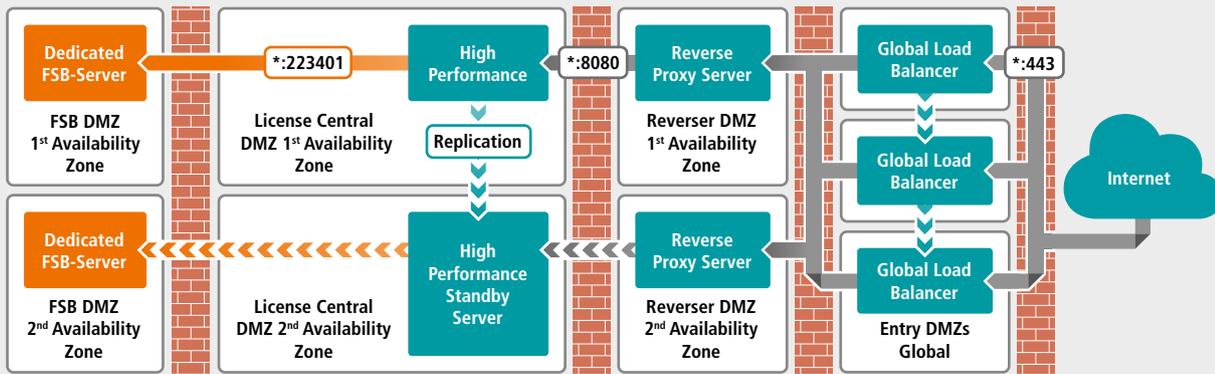
This article introduces some of the changes in how CodeMeter License Central is hosted to help current and would-be clients decide which hosting variant is the appropriate one for them.

Looking Closely

A general introduction to the differences between variants of CodeMeter License Central can help as a refresher for our readers:

The **Datacenter Edition** offers software publishers all necessary functions to handle their product licensing from one central place.

The **Dedicated Server Edition** carries its standout property in its name: It refers to a dedicated service on which one copy of CodeMeter License Central is run by Wibu-Systems on behalf of a software publisher. It can handle

Dedicated FSB-Server — FSB DMZ 1st Availability Zone
*:223401
High Performance — License Central DMZ 1st Availability Zone — Replication
*:8080
Reverse Proxy Server — Reverser DMZ 1st Availability Zone
Global Load Balancer — ***:443**
Internet

Dedicated FSB-Server — FSB DMZ 2nd Availability Zone
License Central DMZ 2nd Availability Zone
High Performance Standby Server
Reverse Proxy Server — Reverser DMZ 2nd Availability Zone
Global Load Balancer
Global Load Balancer — Entry DMZs Global

many more license queries and WebService calls than the Datacenter Edition, making it a perfect choice for clients who can expect regular license transactions.

The **High Performance Edition** goes above and beyond the Dedicated Server Version to enable software developers and intelligent device manufacturers to activate and deactivate licenses at a high rate. This edition is the best

Edition	High Availability Package	High Performance Edition	Dedicated Server	Datacenter Edition
Availability within one calendar month	**99.9%**	**99.7%**	**99.5%**	**99.5%**
Data loss Recovery Point Objective (RPO)	**<1 second** Database cluster	**<30 minutes** Replication of the virtual appliance in the 2nd data center	**<24 hours** Backup	**<24 hours** Backup
Recovery Time Objective (RTO)	**<1 second** Automatic switch over to the 2nd data center	**<4 hours** Manual start of the standby appliance in the 2nd data center	**<3 working days** Restoration of the virtual appliance from backup in the 2nd data center	**<3 working days** Restoration of the virtual appliance from backup in the 2nd data center

option for clients who want or need to provide large numbers of licenses and product options in the blink of an eye. It also includes data and system recovery times that are faster than the Dedicated Server Edition.

The top of the line is the **High Availability Package**. It more than doubles the speed of the High Performance Edition by running two or more High Performance Editions in parallel. This is the edition for clients who need exceptional speeds in their licensing system. Technically, a load balancing system is also included to make sure that the performance is shared out optimally across the different lines.

What is new?
Wibu-Systems has spent the last year on a close inspection of its entire hosting architecture and found several options to make the experience even smoother for clients who have their Code-Meter License Central operated by us. The focus was placed on increased availability and reduced downtimes and data losses in the case of a system failure.

Prospective clients can learn more about the differences between the hosting packages and match them to the requirements of their business cases.

The very first major step was the decision to host CodeMeter License Central in a second, separate datacenter, located at its own site with its own infrastructure and multiple, redundant Internet connections. This second datacenter is used as another availability zone for our own servers and the CodeMeter License Central application servers. Barring a total regional disaster, should our primary datacenter fail, the second datacenter will continue to function.

A multinational load balancer was set up to ensure the optimum spread between both datacenters. The load balancer itself is set up for high availability, with redundancy ensured by locations in different European countries. On top of regulating traffic between our two availability zones, it ensures improved protections against DoS attacks.

Our revised disaster failure concept brings with it new goals for reducing the recovery point objective (RPO) and the recovery time objective (RTO) by a considerable margin. The RPO defines the amount of data loss that can be tolerated, described as a unit of time. In Wibu-Systems' case, this defines the frequency of data backups. The RTO defines the maximum amount of time that CodeMeter License Central can be offline after an incident.

For the High Performance Edition, the second availability zone includes a second copy, constantly replicated and ready to take over productive operation at short notice when disaster strikes. We have been able to increase our availability standard to 99.7%. The RPO has been reduced from 24 hours (recovery from a backup) to less than 30 minutes, and the RTO has similarly been significantly optimized, coming down from three working days after an incident to less than four hours.

The illustration above shows the architecture of a High Performance Edition at a glance: The global load balancer takes in calls and hands them over to the http reverse proxy service that is available, should a failure occur. The replicated second copy of the High Performance Edition is brought online, and a second FSB is kept available in the second availability zone to ensure reliable operation.

What does it cost, and who needs it?
Our hosting options offer an extremely attractive way of running CodeMeter License Central. Powerful licensing components are ready for our clients, with excellent availability, failure protection, and data recovery standards. In addition, we will take over all updates and maintenance for you!

The High Performance Edition is a particularly great deal: It gives our clients far faster data and system recovery and considerably more resources at only 50% higher prices than the Dedicated Server Edition.

Feel free to contact our specialists for more information or an offer tailored to your needs.

NOTE
We are keeping the price for our hosting packages stable despite considerable added costs and efforts on our part.

Driving Business Growth through Strategic System Integration

Software monetization is already key for the commercial success of many businesses, and it is only gaining in importance as the world is getting increasingly digital. The optimal integration of a licensing solution into existing systems has become a basic element for any efficient process from when an order is first received to when a license is delivered and activated.

Monetization matters – everywhere

One rule applies to both traditional software businesses and industry enterprises that have come to realize how software is becoming increasingly important for configuring and controlling their machines: The effective and flexible monetization of their software is key for their commercial success. They need to know that their software's licenses cannot be broken and their IP pirated. And they need to have licensing models that can follow the changes in the markets and adapt to different local requirements.

Software licensing affects businesses in virtually every respect. It concerns many different stakeholders:

- The sales team needs to define the licensing models for products and brands in consultation with product managers.
- Developers need to integrate the license queries into the products.
- Order processing is in charge of taking in orders, and this includes creating the required licenses.
- Licenses need to be delivered to the end users via the right internal processes.

- Support needs to know which licenses are active in the field to handle certain jobs or customer queries, e.g. when a user needs to replace a device.
- Product managers can benefit from insights they gain from statistics about licensing in the field.

All of these stakeholders and all of these perspectives create certain requirements that a licensing system needs to fulfill, all seamlessly integrated into new or existing backend processes.

Business Intelligence

ERP

CodeMeter License Central

User Portal

CRM
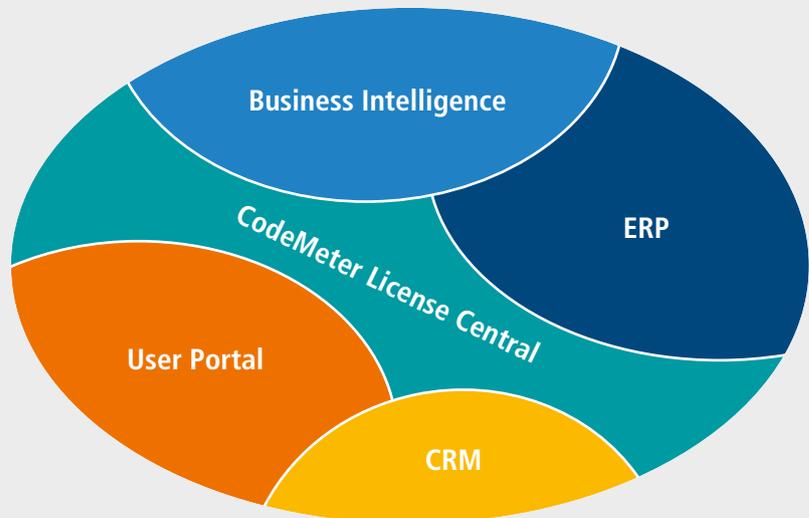
Automation is the Answer

One decisive factor when it comes to managing and delivering licenses to customers is automation, and lots of it. Every manual intervention in the process costs time and money and introduces a degree of uncertainty. Ideally, an order should be processed completely automatically from the moment it is received. Automated delivery processes should be in place so that licenses can be created and dispatched to the end users, who can then activate them on their devices. This is the exact purpose of CodeMeter License Central, integrated with existing back office systems. These can be internal systems or even external e-commerce systems, which allow even more automation, as it can handle the automated sale and distribution of software (and the right licenses) anywhere and at any time.

CodeMeter License Central

CodeMeter License Central is the powerhouse that takes charge of all the processes for managing and delivering licenses. Its database includes all products with the product IDs they also have in the seller's order processing systems. That back office system handles all the data about the customer, and CodeMeter License Central all the data related to the licenses. The main job for the license management system: Providing an activation code (ticket ID) for the end users that they can use to activate the licenses after delivery.

The process is simple: Once an order has been received by the ERP / CRM system, CodeMeter License Central is given the basic information it needs to create a ticket: the customer ID, the order number, and details about which licenses are needed (1). CodeMeter License Central then creates a unique ticket ID that entitles the user to receive the license, and it returns that ticket ID to the back office system in the lead (2). Defined internal processes then spring into action and send the ticket ID to the end user, e.g. as a delivery note with the ID included or directly as an email (3). The end user then uses this ticket to activate the licenses on the target
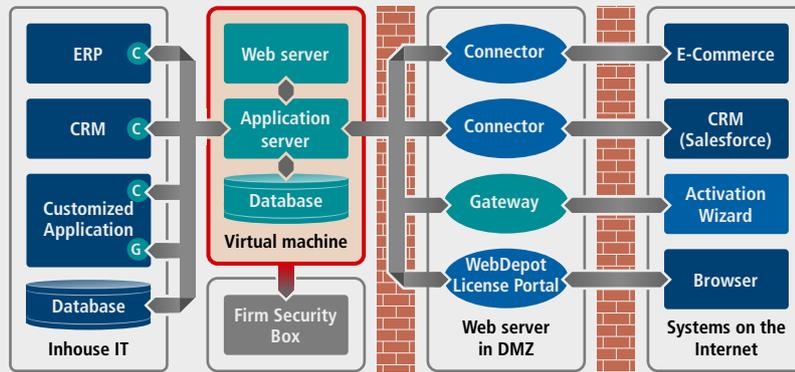
device. The seller, i.e. the license provider, can also use CodeMeter License Central to define whether the licenses can be delivered on a CmDongle, in a software CmActLicense, or a CmCloudContainer, or any combination thereof. The same mechanism applies both for the initial activation of a license and for later updates in the field.

Interfaces Aplenty

The market for ERP and CRM products is very diverse. Still, the requirement for CodeMeter License Central is that it should be seamlessly integrated in every case. To do so, it comes with integration interfaces on board that can be used by all back office systems to communicate with webservice interfaces. The functions and data of CodeMeter License Central can also be manually integrated into existing systems. The most common and most important of these are the functions for creating ticket IDs and for end users activating licenses. Connectors (C) can be used to create ticket IDs, and Gateways (G) can be used to activate licenses provided with a ticket via a license portal in a common web browser or via WebDepot. Using a license portal also gives end users the added ability to manage their active licenses themselves.

The activation process can even be integrated directly into the software itself by using the Activation Wizard. The choice of options is wide and varied, as illustrated here.

Represented above in the red frame, CodeMeter License Central is provided as a virtual machine, which can be located in the license provider's / ISV's data center or hosted as a service by Wibu-Systems. Different packages are available to match the required level of performance and availability. Irrespective of the actual location, both internal and external back office systems integrate easily with CodeMeter License Central.

With the Generic Connector (C) included in the CodeMeter License Central Internet (on premise) package or hosted (Dedicated Server Edition and above), license providers can handle integration with an ERP / CRM system either themselves or via an integrator. Alternatively, the Professional Service Team of Wibu-Systems is available for support.

Our partner INFORMATICS has prepared a fully-fledged and easily configurable module for integrating SAP systems.

The Art of Integration

A smart and efficient integration of back office systems and CodeMeter License Central allows an exceptional degree of automation in the creation, delivery, and management of licenses. Flexible licensing solutions can boost software revenue and, at the same time, reduce processing costs for the business – a genuinely integrated win-win solution.
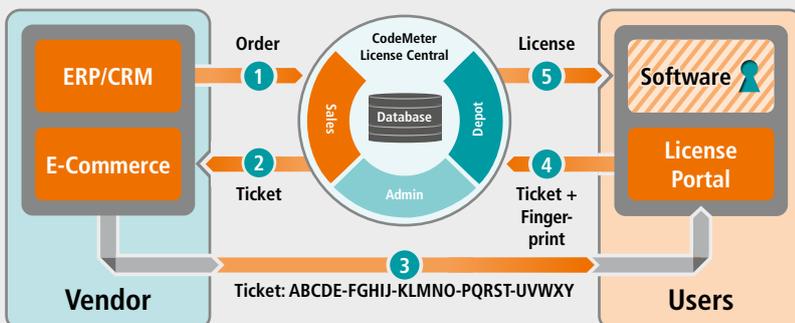
Celebrating an anniversary hat trick for Wibu-Systems

1989. 2003. 2014. Some years hold a special place in the history books, some are less remarkable, but all of them are milestones in the story of Wibu-Systems. This year, Wibu-Systems has more than enough reason to celebrate not one, but three anniversaries: The birth of the company, the launch of CodeMeter, and the invention of Blurry Box. Time for a look back at more than three decades of excellence in software protection, licensing, and security.

Twenty years ago, the engineers of Wibu-Systems were preparing for the global launch of CodeMeter, the groundbreaking protection and licensing solution that was set to not just replace its forerunner, WibuKey, but completely remodel both the company's business and the way we approach software licensing. While the first CmSticks may have arrived with less fanfare than peer Google, they did enjoy a brief stint at Karlsruhe's Christmas market. Twenty years later, while the IT world has changed immeasurably, CodeMeter is still going strong and continuing to evolve and lead the way as the premier protection and licensing technology of choice for professionals and as a real business enabler.

Deep roots
When its engineers were putting the finishing touches to CodeMeter, Wibu-Systems could already look back on 15 years of excellence in the software protection and licensing field. The two founders, Marcellus Buchheit and Oliver Winzenried, had set out on their mission to revolutionize software licensing at an exciting

time in the computing world. The Intel 80486 brought a new level of computing power, VGA graphics were wowing users with their vibrant colors, and Windows 3.0 would soon make GUIs the de-facto standard for end users.

This was the time that opened up computing to a wider audience and set the scene for much of what we now consider our digital reality. But with a new audience also came new threats: Software piracy in particular would turn from a fringe problem to a major burden for the industry in the 1990s. Developers fought back with a creative trick, including one-time pads and other gimmicks. This is where Winzenried and Buchheit – Wi-Bu for short – came in with a truly technical and sustainable solution: WibuKey was born.

WibuKey introduced the basic protection and licensing concept that would later mature into CodeMeter: Licenses using cryptographic key pairs to guarantee security and the proper enforcement of the license terms. A secret key is stored in the license – for much of the company's

early life in dongle form, as it still is with CmDongles – and is needed to run the licensed software.

From strength to strength
On 16 November 2003, CodeMeter replaced WibuKey – or almost: True to Wibu-Systems' spirit of long-term availability, the company still keeps the legacy system alive in its portfolio even today. But the new protection and licensing star CodeMeter came shooting out of the starting blocks and has not lost any of its original energy since.

Twenty years of constant innovation have ensured CodeMeter's place as one of the pioneering solutions in the markets. Wibu-Systems' engineers have constantly increased its capabilities and versatility, while avoiding bloat and keeping the technology sleek and fit for its original mission. The popular range of CmDongle hardware containers has grown to include a myriad of new form factors, including design-award-winning external dongles and powerful ASICs. New types of containers have

been added, ranging from the small-footprint software-based CmActLicenses to cloud containers and the new CmReady that combines the best of both worlds with a novel license binding concept. At the same time, the inner qualities of CodeMeter have continued to evolve to include new encryption capabilities for almost any development and usage scenario and top-end protection solutions like CodeMoving with its option to execute particularly sensitive code exclusively within the secure environs of a CmDongle or a CmCloud-Container.

One particular milestone in CodeMeter's evolution marks another anniversary: Ten years ago, Wibu-Systems unveiled Blurry Box, the Kerckhoffs-compliant encryption technology that takes CodeMeter protection to another level. What seems an arcane issue for crypto-enthusiasts – a 19th century French cryptographer's idea that only the keys themselves and not the inner workings or algorithms of a cryptographic system should be kept secret – is the holy grail for practical crypto-applications like software licensing. It is the antithesis to the misguided belief in security-by-obscurity. With Blurry Box, Wibu-Systems and its partners at the Karlsruhe Institute of Technology and the FZI realized such a system and immediately proved its strength in a public worldwide hacking challenge, beating all attempted attacks. Blurry Box deservedly won considerable industry attention and awards, including the 5th German IT Security Award.

Soaring away

As the company is well into its fourth decade in the market, Wibu-Systems continues to soar with new products and services and technological inventions. The cloud has featured prominently in Wibu-Systems' business in the last few years, as the company has invested in high availability data center resources, leveled up CodeMeter's capabilities for popular virtualization scenarios like the use of Docker containers, and added a whole new category to its license container lineup: CmCloud is far more than just another option next to software containers or dongles. With a new dimension of portability and connectivity, and protection power to rival the top-end CmDongles, CmCloud gives clients new inroads into CodeMeter licensing. Different service packages and hosting options are available to fit any scenario and help create entirely new software business models.

And Wibu-Systems has already set its sights on the next frontiers for protection and licensing: the means to secure AI and machine learning models, and the looming danger of quantum computing beating established cryptographic capabilities. With the bright minds at the company's new campus in Karlsruhe and a growing IT security community around the neighboring House of IT Security, Wibu-Systems is ready for what the future holds in store.

Time to celebrate

To mark the triple anniversary, Wibu-Systems is turning the dial up for this year's INNO DAYS on June 25th and 26th. Software vendors, device manufacturers, and all friends and partners of Wibu-Systems are invited to register for a very special event, featuring a high-profile, live-streamed roundtable discussion on hot industry trends, an inspiring keynote, lots of real-world stories and case studies to explore, and more than enough opportunities to meet and mingle with like-minded CodeMeter aficionados and the people behind your favorite protection and licensing solution.

Save the Date:
- When: June 25th + 26th
- Where: Wibu-Systems' campus
- Why: Because a digital world demands a professional strategy

For those arriving on June 25th, indulge in a delightful gourmet dinner with fellow attendees. It's the perfect opportunity to network and discuss the future of your business.

WIBU NEWSLETTER

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News in Brief

The Commercial Case for CodeMeter

In addressing the critical "Make or Buy" decision for software protection and licensing, this new white paper assesses CodeMeter's ROI using real-world data from diverse clients. It explores four case studies across different company sizes, detailing the comprehensive start-up and operating costs involved in implementing CodeMeter. The analysis juxtaposes these costs against anticipated revenue boosts from piracy prevention, market expansion, and new licensing models like subscriptions and pay-per-use. The findings highlight a significant, size-dependent ROI, with businesses typically reaching break-even within a year. Large firms can expect a three- to fourfold return, while smaller entities may see up to sevenfold ROI, emphasizing the sustainable, growing benefits of CodeMeter, particularly through economies of scale. Delve into our findings.

Upgrading CodeMeter License Central Hosting Packages

We've rigorously overhauled our failure management strategy, ensuring unparalleled resilience for your hosted CodeMeter License Central installations. While uptime percentage remains critical, we're broadening our focus to include two additional essential metrics: Recovery Point Objective (RPO) and Recovery Time Objective (RTO). Furthermore, we've enhanced our infrastructure with a secondary availability zone and are on the verge of launching a centralized portal for monitoring real-time system availability. Which hosting package suits your needs for operational continuity and effective license management? Compare to decide.

CodeMeter 8.00 and the Support for CmReady

The unveiling of CmReady, featuring CmActLicense binding ability with certified third-party memory cards, marks CodeMeter 8.00 cornerstone advancement, elevating license mobility and pioneering sustainable security frameworks on the shop floor. This iteration enhances compatibility with virtual environments on the Google Cloud Platform (GCP), refines license tethering to i.MX processor boards, and broadens virtual system recognition. As the market transitions away from outdated operating systems such as Windows 8.1 and specific Linux distributions, we've aligned our strategy by discontinuing them, yet we continue to offer extended support for ongoing security enhancements.

INNO DAYS 2024

To commemorate our 35th anniversary, we are thrilled to invite our esteemed customers and partners to a special celebration on June 26th. The event will feature a series of highlights for those attending in person, including a keynote speech on a cutting-edge cybersecurity topic, testimonials from customers across various sectors who have achieved remarkable success with CodeMeter, and presentations by our experts on the latest in monetization strategies. Moreover, for those unable to attend in person, we are organizing a virtual roundtable featuring a panel of distinguished professionals from academia, industry associations, and leading figures in the field. Secure your spot now. For those arriving on the evening of the 25th, we offer an exclusive opportunity to partake in a gourmet dinner, fostering engaging and insightful conversations.

Industry 4.0 App Store Galore

The ultimate aim for all participants in the Industry 4.0 movement is to forge a future that is more inclusive, interoperable, secure, and collaborative. Last year, in partnership with Hilscher within the Open Industry 4.0 Alliance ecosystem, we realized the ambition of creating a secure vendor-neutral and hardware-agnostic marketplace – the Flagship Store for the OI4 Community. This year, at Hannover Messe, we are excited to collaborate with Flecs Technologies to unveil an innovative automation solution poised to further elevate the success of app stores. CodeMeter plays a pivotal role in both projects, providing crucial support for virtualized environments and containerized infrastructures.

IT Security in Manufacturing: Benefit or Necessity for SMEs?

On March 20th, we hosted a pivotal event, celebrating the culmination of the ProCloud3D R&D project funded by the German Federal Ministry for Education and Research. We've achieved a breakthrough in de-veloping a cloud-based platform that automates, decentralizes, and secures all preparatory steps for 3D printing. Esteemed guests from the city of Karlsruhe and the German Mechanical and Plant Engineering Association (VDMA), alongside our experts, unanimously recognize we stand at the threshold of an unparalleled digital evolution. For SMEs, the message is clear: the imperative to integrate cybersecurity measures is immediate. Relive the event's standout moments with us.

Success Story | Hilscher

Hilscher's Flagship Store for the Open Industry 4.0 Alliance (OI4) Community brings the ease and openness of app stores to the industrial world. Powered by CodeMeter licensing and safeguarded by CodeMeter encryption, the store gives industrial users access to a library of apps and solutions for their shop floor automation and connectivity needs.

The Challenge
Apps rule modern industry: By collecting, analyzing, sharing, and processing data, they make factories smarter and more efficient. But in the fragmented world of industrial automation, even the strenuous standardization efforts by communities like the OI4 Alliance are struggling with opening up access to industrial apps and services. Announced at Hannover Messe 2023, the Flagship Store for the OI4 Community was envisioned by industrial communication specialists Hilscher and OI4 working groups to create a truly open, vendor and hardware-

agnostic app store that could serve as a conduit for apps and services and pave the way for a smarter and more connected industry.

The Solution
App stores are a boon to end users, but also a free-for-all for copycats, unscrupulous users, and outright software pirates. Both the IP invested in legitimate apps and their correct use by authorized users need to be secured without encumbering the process. For greater access and a smoother app integration process in industrial PCs, controllers, or other edge devices, Hilscher and the OI4 Alliance opted for Docker containerization as a virtualization-driven solution. Looking for a way to secure the process, they turned to Wibu-Systems' CodeMeter technology, known as an excellent combination with Docker systems. Apps created in any development ecosystem, from JavaScript, to C++, Java, .NET or Python can be encrypted and secured against theft. Smart licensing options ensure safe and reliable sales and even allow innovative options like per-feature licensing or freemium models without affecting the workings of the app store.

The Success
The CodeMeter-powered app store was launched as the "Flagship Store for the OI4 Community". Apps by Hilscher and other automation specialists and industry outfitters like Bytefabric.AI, Lenze, and UReason are available for download by registered clients. Built around Docker technology and CodeMeter protection and licensing, the store is set to simplify access to the industrial app market. With continued standardization efforts by the OI4 Alliance, it will soon work hand-in-hand with a standardized Open Operator Cloud that can automate and streamline the integration and commissioning of apps on the shop floor, as already exemplified by Hilscher's own device and application management solution, netFIELD.io.

The Company
Hilscher Gesellschaft für Systemautomation mbH bills itself as the market leader for industrial communication: Its products and solutions enable machines all over the world to communicate and make production processes smart, reliable, and elegant. Founded in 1986 in Hattersheim, Germany, Hilscher has grown into an international technology leader whose connectivity solutions make the idea of Industry 4.0 possible for manufacturers everywhere.

Uwe Schnepf, Head of Product Management Industrial IoT, Hilscher
"With our Flagship Store, we can show how easy it is for developers and users to bring applications to the shop floor. We launched it with partners from the OI4 community, and we hope to find more partners who can all help solve specific problems with their particular technology – without worrying about the safety of their IP, thanks to CodeMeter."

WIBU BLOG

**One idea at the right time
can change everything.**

Subscribe to our blog

Join Wibu-Systems at the following events:

Embedded World
9-11 April 2024
Nuremberg, Germany
Hall 4, Booth 168

Hannover Messe
22-26 April 2024
Hanover, Germany
Hall 16, Booth D16

Automate
6-9 May 2024
Chicago, USA
Booth 2185

SPS Italia
28-30 May 2024
Parma, Italy
Hall 6, Booth E044

MedtecLIVE
18-20 June 2024
Stuttgart, Germany
Hall 1, Booth 1-518

INNO DAYS
25-26 June 2024
Karlsruhe, Germany

WeAreDevelopers
17-19 July 2024
Berlin, Germany

SPS
12-14 November 2024
Nuremberg, Germany
Hall 6, Booth 428

Formnext
19-22 November 2024
Frankfurt am Main, Germany
Hall 12.0

INNO DAYS 2024

Celebrating our 35th anniversary with a unique edition of our signature event. Guests will enjoy networking, insights, and entertainment. This year features a keynote speaker, a special guest, an interactive roundtable for live viewers, customer testimonials and demos across diverse industries, and insights from Wibu-Systems experts. All discussions will center on contemporary IP protection and monetization technologies and best practices. Seize this opportunity to stay informed and shape a robust vision with your peers.

www.wibu.com/inno-days.html

Wibu-Systems German Roadshow

We double down: Our INNO DAYS invite you to our headquarters for a deep dive into the future. Meanwhile, our Roadshow brings the revolution to your doorstep. Mark your calendars for Hamburg on October 22nd and Munich on October 29th. Engage in expert-led, hands-on sessions, witness groundbreaking live demos, and expand your network. These events are designed to sharpen your understanding of crucial software protection, licensing, and security aspects, steering you towards successful software monetization. Secure your spot now – pre-registrations are officially open.

www.wibu.com/roadshow.html

Wibu-Systems' Masterclasses

Also, our monthly fully immersive masterclasses focus on unique content and are designed for beginner, intermediate, or advanced users of our CodeMeter technology. The 2024 season will cover areas such as the first operational steps with CodeMeter License Central, new user messages for AxProtector .NET, JS, and Python, best practices for handling CmCloudContainers in License Portal, how CodeMeter meets enterprise users' needs, and a lot more. Watch out for our forthcoming announcements either on our website or via newsletter and get ready to register for the sessions that are most helpful to you.

www.wibu.com/
wibu-systems-webinars.html

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PERFECTION IN PROTECTION

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