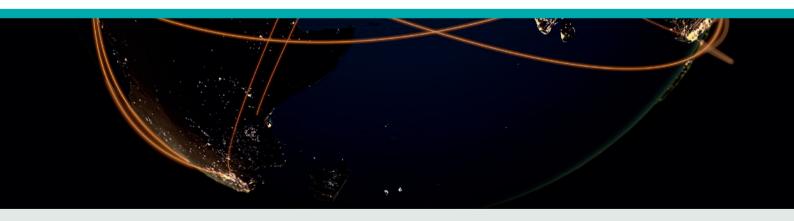


Electronic License Delivery Made Easy





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Author



Ruediger Kuegler first became involved in software development in 1988, working in FORTRAN, C, and Assembler as part of his physics degree course. After completing his studies in 1995, he held positions as a project manager and head of project management for software protection, software distribution, internet banking, and multimedia projects.

Since 2003, Ruediger Kuegler has been working with Wibu-Systems as a security expert and leader of the professional services team. His core competences include the protection of software against reverse engineering, the integration of licensing in the internal processes

of software vendors, and the optimization of software and license distribution and management processes. As part of his role, he contributed substantially to the development of Blurry Box® technology, which took first place in the 5th German IT Security Prize awarded by the Horst Goertz Foundation.

Introduction

The rise of the Internet has changed how we buy software and deliver licenses. Prior to the Internet, software was sold on floppy discs or CD-ROMs. The storage medium itself often doubled as a license for the software. Sophisticated copy protections required the CD-ROM or disc to be in the drive for the software to function. The discs were often modified and did no longer meet the Yellow Book specifications, which make them harder to copy. With hindsight, the entire process was prone to faults and error, and far from secure.

Dongles have long been recognized as a good and simple solution, especially for high end software. The user receives a dongle alongside the software, where the dongle represents a form of protected license. In the early 1990s, activation CDs were commonplace: Several encrypted applications were sold on a single CD-ROM, with demo versions which the user could test privately. If the application was convincing, he could order it by phone and would be given a personal activation code once payment had been processed.

With growing bandwidth and shrinking costs, the Internet has done away with this approach to delivering software and software licenses. The modern standard is to sell software as downloads from the Internet (Electronic Software Distribution – ESD) and to deliver the required licenses in the same manner (Electronic License Distribution – ELD). Some software is still delivered in a hybrid process, with the user receiving a CD-ROM, while updates are downloaded from the Internet.

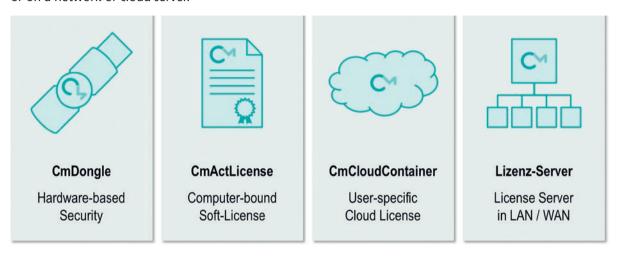
Modern licenses and software are usually delivered in an automated process. Users might use an e-commerce system to buy licenses online and receive their licenses automatically in the form of an activation code. For business software, the order is captured by SAP or a similar ERP system and the license is created automatically in the system. Automation in this manner makes the process more economical for the vendor and faster for the user: a true win-win solution.

Many vendors expand electronic delivery features with a portal that allows users to see and manage the licenses they own. The advantages are clear: The self-service system allows the user to handle all licensing concerns quickly and without having to rely on the aid of tech support.



Storing Licenses with CodeMeter

CodeMeter is a modern software protection and licensing system that allows the vendors of software applications and digital content to deliver licenses in a simple and quick electronic process. With CodeMeter, software vendors define where their users store their licenses: On mobile dongles, on individual computers, or on a network or cloud server.



Mobile Storage on CmDongles

Dongles were virtually the first storage medium for licenses that was fit for purpose – and they continue to be so. But not all dongles are alike. The CodeMeter dongle, or CmDongle, is unique and invalidates three common misconceptions about dongles. Its advantages are:

CmDongles can be adjusted in the field

When many developers and users think of dongles, they still think of fixed, unchangeable configurations of licenses. In the case of CmDongles, licenses can be added, changed, or removed at any time – in a process as simple and fast as online activation.

CmDongles can include licenses from different vendors

Users have a misconception of massive key rings of different dongles for different purposes. The right dongle needs to be plugged in at the right time. In the case of CmDongles, users can combine many licenses from many different vendors on a single dongle – if the developers allow it.

CmDongles keep licenses whole

In real-life practice, it is only too common for dongles to be used only as a form of ID for activation purposes, while the licenses themselves are kept in license files. This has two major drawbacks, which is why CmDongles use a different approach. In CmDongles, the licenses are kept secure in a special smart card chip. They can be transferred easily from machine to machine, simply by swapping out CmDongles. When dongles are only used as a form of ID, licenses can also not be returned safely. In this case, a license file cannot be invalidated once it has been created. With CmDongles that have the license file in their smart card chips, this is absolutely no problem.

CmDongles come in many form factors and with or without flash memory. The licenses are kept in the smart card chips in all cases, and the flash memory can be used to securely deliver software or store data from applications.

Binding to a Computer with CmActLicense

A CmActLicense is an encrypted and signed license file that is normally bound to specific traits of the computer on which the licensed software is used. An exception would include pre-activated licenses for temporary or permanent use or network licenses. In the latter case, the license file is bound to traits of the license server.

With the patented CodeMeter SmartBind® technology, the license file is encrypted in a way that it can only be used by the device for which it was intended. SmartBind allows a degree of tolerance when the hardware of that computer changes; the license remains valid and can still be decrypted even if components were added or replaced. A signature is used to ensure that the license was delivered as intended by the original vendor.

The combination of encryption and signatures puts CodeMeter far above other licensing systems. Another essential feature of CmActLicenses is the ability to safely return licenses. For that purpose, a new CmActLicense is created to replace the old CmActLicense with the returned licenses. CodeMeter makes sure that the older CmActLicense cannot be restored or used again.

License Servers in the Network or in the Cloud

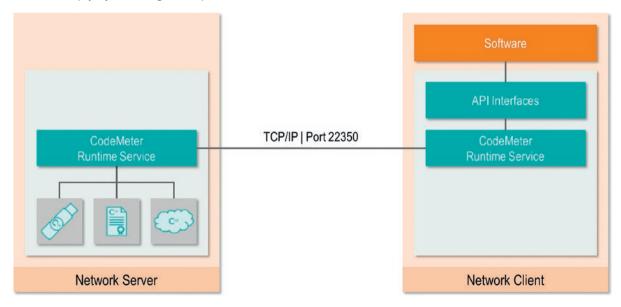
When using a server in a network or cloud, the licenses are bound to the server or stored in a CmDongle linked with that server. If floating network licenses are allowed, they are available for use by the maximum authorized number of users in the network.

Network servers play a special role when licenses are delivered, as the server is usually not connected directly to the Internet. A part of the delivery process has to happen offline: this is not a problem for CodeMeter.

Important criteria for licenses on a server:

- Assignment to named users or user groups
- Monitoring of license use
- Borrowing of licenses for mobile use

With CodeMeter, the user's administrator can assign licenses to specific users or user groups in the Active Directory. License tracking monitors how licenses are used, which can be checked via CodeMeter WebAdmin. Alternatively, the data can be exported for use by any other application. Vendors can allow users to borrow licenses simply by checking that option.



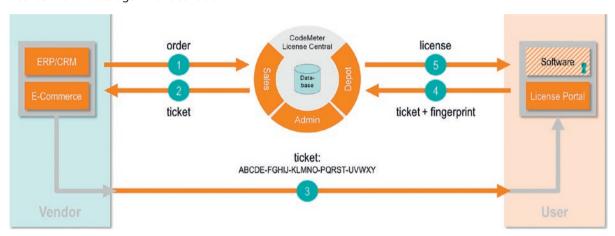
Delivering Licenses with CodeMeter License Central

The Basic Principle: Tickets

CodeMeter License Central is a system for the creation, delivery, and management of licenses. To keep configuration simple, CodeMeter License Central uses minimal master data: Product managers only need to configure items for CodeMeter License Central, and the process is ready to start. These items include CodeMeter details and an item ID, usually the same part number that ERP or e-commerce systems use to keep the different systems aligned. CodeMeter details include options like single-user licenses, network licenses, trial versions, subscription licenses, and many other options.

Licenses are usually created as part of a purchase. With this in mind, CodeMeter License Central was designed to mirror that process: Vendors create a new order and add one or more items to it. They can enter a customer ID or order ID for reference in their ERP or e-commerce system. When the order has been created, the ticket is produced. A ticket would usually look like this: ABCDE-FGHJK-LMNPQ-RSTUV-WXZ23. The vendor sends this ticket to the user, either as a purchase confirmation email from the e-commerce system, by email, as part of the delivery documents, or even as a separate letter.

The users need the ticket to transfer and activate licenses. For each item in an order, the user receives one license for activation. This can usually be done only once. The vendor can determine whether licenses from one ticket can be distributed to several CmContainers (CmDongles or CmActLicenses) or whether they should always stay together. The vendor also decides whether his users can de-activate licenses. In this case, they could return a license from a CmContainer to CodeMeter License Central. After its successful return, the license is available again for activation.



Scalable Editions – Lean Interfaces

CodeMeter License Central is available in six unique editions. The most cost-efficient choice is the entry-level Desktop Edition, which includes CodeMeter License Central and a web-based user interface for software vendors. The Internet Edition adds interfaces for ERP and e-commerce systems and for online activation as well as a license portal for the users.

The Desktop and Internet Edition are two options that software vendors can operate from their own data center. In addition to these two on-premise editions, they have a choice of four cloud editions: Datacenter Edition, Dedicated Server Edition, High Performance Edition, and High Availability Edition. All four are ready for use and operated by our special Wibu Operating Services team. They differ in the number of available interfaces and the maximum number of monthly license activations.

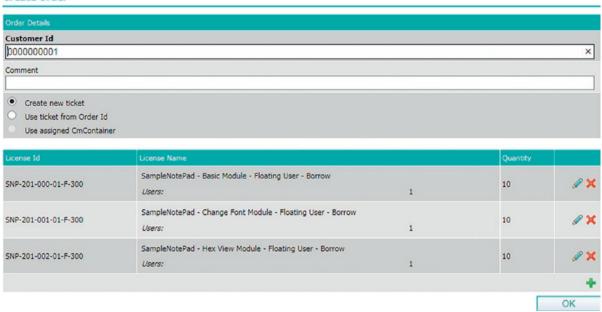
The cloud and on-premise editions offer identical feature sets, which makes changing from one edition to another easy at any point in time.

The interfaces with ERP and e-commerce systems and for online activation were developed to be as lean and simple as possible to make them easy to integrate with many different systems. For instance, orders can be entered and licenses created in a single process. The interfaces are available as SOAP interfaces or, alternatively, as a JSON-based interface for online activation.

Creating Licenses

Licenses are created as a result of an order. One quick and simple approach is to manually enter the data in the web-based user interface on CodeMeter License Central.

Create Order



An alternative is the use of the SOAP interface, which sends the order ID, customer ID, and a list of the licensed items to CodeMeter License Central. This request returns the completed order with a new ticket number.

Depending on the system, the SOAP interface can either be accessed directly or via a connector that receives the information from the sending system and translates it into a form that can be processed by CodeMeter License Central on the receiving side. The connector also translates the output into a format that can be read by the target system. Complete connectors are available for common e-commerce solutions like Avangate, Cleverbridge, Digital River, element5, and share*It!, and a generic, universal connector is available to be adjusted to any other system.

A complete solution for SAP has also been created with our partner Informatics. This solution not only handles the simple creation of licenses, e.g. as part of a production order, but also manages the storage of the ticket in an equipment in SAP. If the vendor does not use equipments in SAP the solution can be customized to match the processes of the vendor.

Changing a license is an essential process to be considered. CodeMeter License Central offers utmost flexibility by using update items. These items create a special license that changes an existing license. The changes can either be applied flexibly to an existing license or used with the same ticket for a specific license. When the latter option is used, i.e. the same ticket, the vendor only needs to enter the order ID of the original process when preparing the change request. The new item and thus the new licenses are then appended to the existing ticket. This option is best used to extend features or renew maintenance contracts or subscriptions.

Licenses Transferred by the User

One of the key features of CodeMeter License Central is the ability to transfer licenses yourself from the cloud to a chosen local CmContainer. This option gives users maximum flexibility and takes the burden off the shoulders of the support team. The software vendor still stays in full control, because he can configure which activities the user is entitled to and because all actions of the user are recorded and monitored. For any action that he does not want his users to perform, he can either handle himself or approve on a case-by-case basis.

Licenses are transferred either via a license portal or by the software vendors own application, e.g. with an activation wizard. Both solutions can also be combined to meet the wishes and preferences of the users and to give sufficient fallback options.

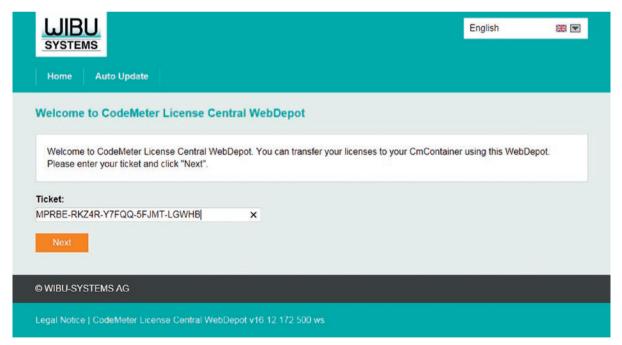
The basic functions include License overview, License activation, License de-activation, License re-activation, Restoring CmContainers, Automatic updates, and Splitting licenses

License Portal

The software vendor has three options for the license portal:

- The ready-for-use WebDepot
- The customizable CustomDepot
- Integration in an existing portal

WebDepot is a ready-for-use solution that can be adjusted in terms of color palette, scripts, texts and workflows to match your corporate design and to fit your processes. WebDepot was designed as a PHP solution to run on any PHP-enabled web server. By using standard SOAP interfaces, CodeMeter License Central stays compatible with WebDepot. WebDepot includes a license overview and functions to activate, de-activate, and re-activate licenses.



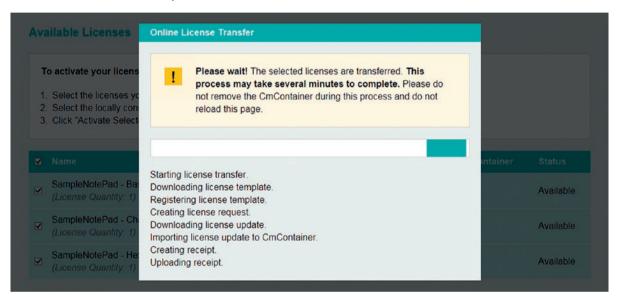
CustomDepot is based on WebDepot and offers a construction kit of readily customizable additional modules, including customer registration, the creation of trial licenses, and a feature to manage licenses across tickets. Integration with existing portals via SOAP and SAML is just as easy as adding other features.

Alternatively, you can use the SOAP interface of CodeMeter License Central to integrate the WebDepot or CustomDepot functions into an existing portal.

The license portal provides a user interface that is tailored to your needs, and it gives you a simple way to implement individual rules and requirements. For instance, vendors can determine whether licenses from one ticket have to stay on the same CmContainer. Configuring the interface and rules of this nature is easy.

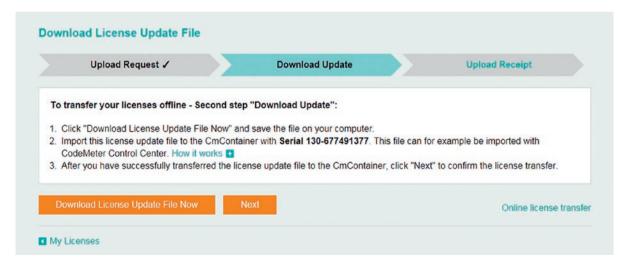
Online Delivery

The user can activate licenses directly via the online license portal, for which he only needs the CodeMeter Runtime to be installed on the computer. CodeMeter provides a combination of technologies for the web browser to interact with CmContainers, i.e. WebSockets, an ActiveX control, and a Java applet. These features make activation simple in most common web browsers.



Offline Delivery

If the license is to be delivered onto a computer that is not connected online, there is an option to use a file-based, offline delivery method. This is also the fallback option if restrictive browser settings inhibit the online process.



Offline delivery uses a fingerprint of the CmContainer, which is stored as a "Wibu CodeMeter Remote Activation Context" file (*.WibuCmRaC). This file can then be transferred onto an online machine, where the user uploads the file to the license portal and receives an activation file, the "Wibu CodeMeter Remote Activation Update" file (*.WibuCmRaU). This is returned back to the target machine and executed to deliver the license offline. Another "Wibu CodeMeter Remote Activation Context" file can be used to confirm the successful transfer to CodeMeter License Central.

Integration in Custom Applications

When the system is integrated in an own application, the user interface and the implementation of custom rules are kept separate. The vendor can use several pre-defined examples for C/C++, C#, and Java to integrate the user interface into his application. The server provides special gateways to implement individual rules and requirements, which use the same code as WebDepot. This makes integration in an own application and the license portal work together as one.

A combination of both types is also possible. One popular choice is to create the "Wibu CodeMeter Remote Activation Context" file in your own software and to use the license portal offline with that file. The vendor can also include the execution of the "Wibu CodeMeter Remote Activation Update" file in his own application.

Functions

License Overview

After entering the ticket, the user will be shown a list of all licenses and their current status. The CustomDepot can also allow users to log in with user name and password in the place of a ticket. In that case, the portal will display all licenses for all tickets.

Name	Activated On	CmContainer	Status
SampleNotePad - Basic Module - Floating User - Borrow *License Quantity: 1)	2016-12-20 09:32:38	130-3556429651	Available: 0 (1)
SampleNotePad - Change Font Module - Floating User - Borrow License Quantity: 1)	2016-12-20 09:32:38	130-3556429651	Available: 0 (1)
SampleNotePad - Hex View Module - Floating User - Borrow License Quantity: 1)			Available: 1 (1)

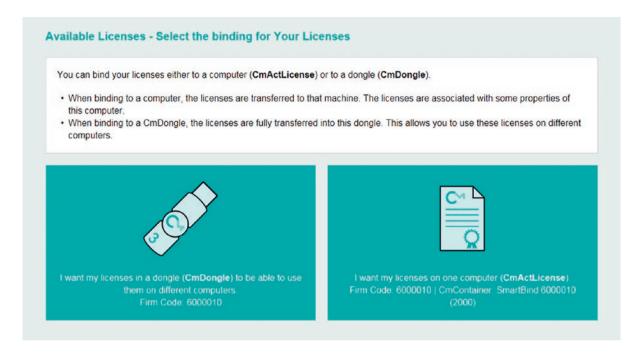
In addition to the list of licenses, the user is also shown all of his options at this point.

Activating Licenses

If a license has never been activated or has been activated and returned in the proper manner, it will be available for activation in CodeMeter License Central.

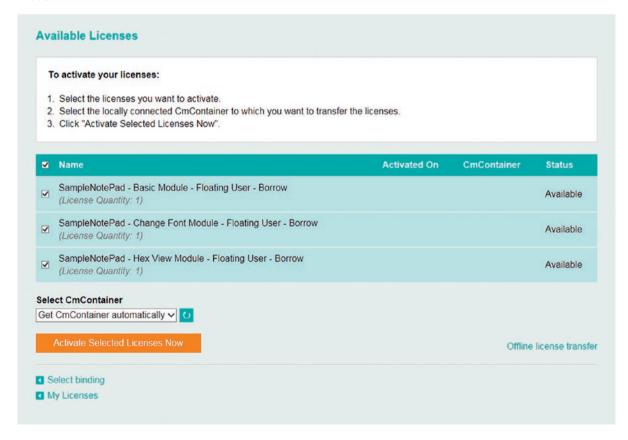
The vendor can allow several CmContainer types, such as CmDongles or device-bound CmActLicenses in the configuration of the licenses. The user can now select the desired type in the first step. If only a single type of CmContainer is allowed, this step is skipped.

In the next step, the user can select one or more of the available licenses to be activated. By configuring the license portal or gateway, the developer can also require the user to activate all licenses or all licenses that are older than the original selection. This is particularly useful when licenses are meant to be used in sequence.



The user selects the available CmContainer in the same step. Only suitable CmContainers are displayed; in the case of device-bound CmActLicenses, the user also has the option of creating a new CmContainer from scratch.

As a fallback option and for activations on other devices, the user can now also switch to offline delivery mode.

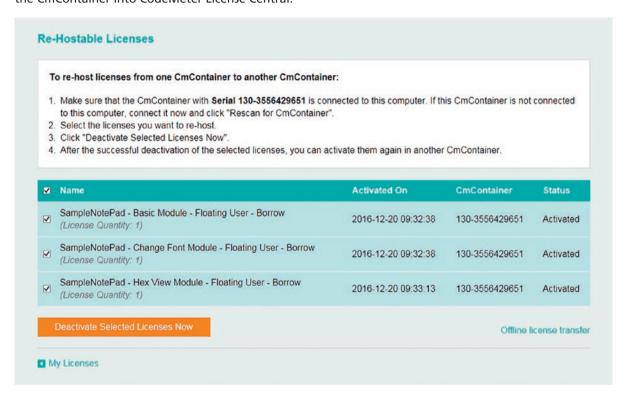


By clicking "Activate Selected Licenses Now", the user begins the online activation. In the background, a fingerprint of the CmContainer is created and sent to CodeMeter License Central. CodeMeter License Central again checks whether the selected licenses are still available and creates an update that is valid only for the original CmContainer. The update is then applied locally. As a last step in the process, a receipt is created and sent back to CodeMeter License Central to confirm the successful activation.

In addition to checking the availability of licenses, CodeMeter License Central also tests whether there are any unfinished activities for this CmContainer, which can include missing receipts, open updates or mandatory updates. Whenever possible, the required activities are completed automatically in the background.

De-Activating Licenses

If a license has been activated and the vendor allows its de-activation, the user can return the license from the CmContainer into CodeMeter License Central.



This process works in the same way as the original activation process: The user enters his ticket and selects the CmContainer with the license he wants to return. If all licenses for the ticket are stored in that one CmContainer, this selection step is skipped automatically. In the next step, the user selects the licenses to be returned. By clicking "Deactivate Selected Licenses Now", the process is initiated.

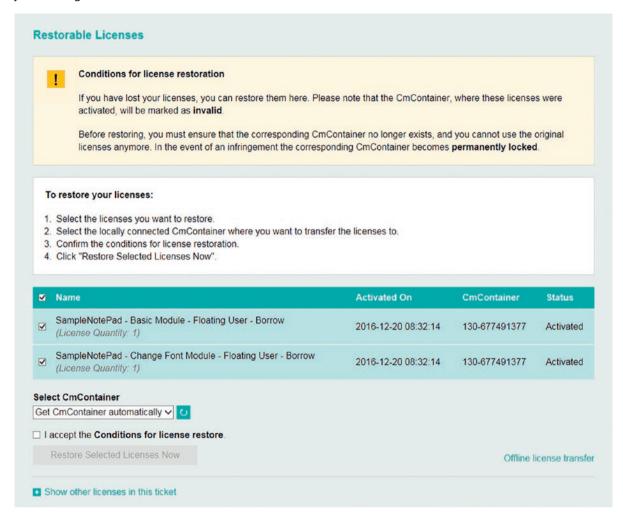
After the successful confirmation of their de-activation, the licenses are again available in CodeMeter License Central for activation in a different CmContainer.

Re-Activating Licenses

In the case of device-bound CmActLicenses in particular, it is not uncommon for the computer they are based on to be taken out of service alongside the activated license. If the transition to a new computer was planned ahead, the user himself can transfer the license by de-activating and activating it on the new machine. But if this step was forgotten or if the computer broke down unexpectedly, there is a special procedure for re-activating licenses.

Re-activation refers to a second activation without the previous return of the license. The vendor can decide whether the user can do so, whether the license can only be re-activated after a set blocking period of e.g. one year, or whether he would approve each re-activation individually.

When the feature is used, the license overview will include a "Restore License" button. This takes the user to a page on which he would confirm that the old CmContainer is no longer being used. The user is then informed that the old CmContainer has been blacklisted. After he has confirmed this, the process proceeds just as a regular activation.



A re-activation blacklists the old CmContainer that includes the original license. The same CmContainer can no longer be used with CodeMeter License Central. If this is attempted, all licenses on the CmContainer are flagged as invalid and the CmContainer becomes worthless for the user. The vendor can also include the blacklist in his software to deliver and enforce it offline.

Restoring CmContainers

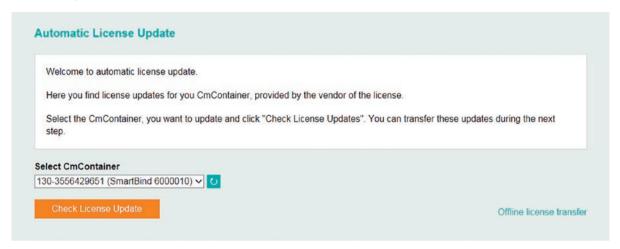
When a computer is not completely taken out of service, users might choose to reinstall their system on an old machine. This is done frequently in training centers or educational settings. Not unlike the re-activation of licenses on different machines, it is up to the vendor whether this process is allowed for the user by choosing either the "allow" or "allow after blocking period" settings.

By contrast to restoring individual licenses via re-activation, this action restores a complete CmContainer on presumably the same computer. Vendors can define how much of the computer can have changed for it to be recognized as the same machine.

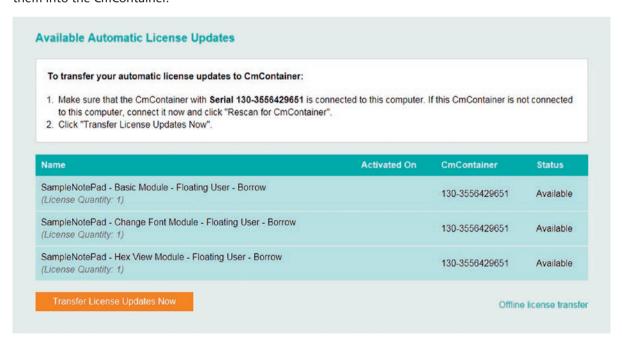
This option is only recommended and available for CmActLicenses and will create a new CmContainer on the computer.

Automatic Updates

In addition to activating licenses with tickets, CodeMeter License Central offers a means of linking updates with a specified CmContainer. These updates are mandatory and are executed for each activation, deactivation, or re-activation. The user will never see the process in the background, and he cannot skip or undo the update.



Vendors can also use this option without tickets, e.g. when linking licenses with set CmContainers. To do so, they can use the auto-update function in the license portal: The user identifies himself with the CmContainer, instead of a ticket. He can see all automatic updates for this CmContainer and can transfer them into the CmContainer.



Summary

CodeMeter License Central streamlines the intricate processes in electronic license delivery. The vendor simply creates licenses in the form of one or more tickets to be delivered to the user, who can then use the tickets to activate and manage their licenses. The process is substantially more flexible and less supportintensive for vendors.

The vendor still has full control over the licenses. Users can allocate and move the licenses themselves via the license portal, but CodeMeter License Central keeps track of all actions to give the vendor up-to-date information about which license is being activated where at any given moment.

Each license is tracked with its own activation history, which shows when and how frequently licenses were moved from one CmContainer to another. The vendor can also search for licenses that were created, but never activated. For support purposes, it can be essential to have proof whether a license has indeed ever been activated. The receipt records in CodeMeter License Central put this information at your fingertips.

A license portal is the current state of the art in the field, and users will be thrilled by the ease of use offered by the system. With WebDepot, CodeMeter License Central offers a ready-for-use portal that vendors can tailor to match their corporate design. Workflows and rules can be configured with little effort to adjust the license management process quickly and effectively to your needs. Any additional changes can be achieved with the flexibly customizable CustomDepot, and the entire system can be integrated in an existing user portal.

By integrating license activation in their software, vendors can also customize their software's feature set and processes even better to their target group. Combined with a WebDepot or CustomDepot, they will have everything they need for truly modern license management.

Vendors can automate the creation of tickets and integrate it with existing ERP or e-commerce systems to speed up the delivery of licenses and make the entire process far less labor-intensive – your users will thank you for it!

Headquarters



WIBU-SYSTEMS AG

Rueppurrer Str. 52-54, 76137 Karlsruhe, Germany Tel.: +49 721 93172-0

Fax:+49 721 93172-22 sales@wibu.com | www.wibu.com















WIBU-SYSTEMS Branch Offices

WIBU-SYSTEMS (Shanghai) Co., Ltd.

Shanghai: +86 21 556 617 90 Beijing: +86 10 829 615 60

info@wibu.com.cn

WIBU-SYSTEMS NV/SA

Belgium | Luxemburg +32 3 808 03 81

_sales@wibu.be

WIBU-SYSTEMS sarl

+33 1 86 26 61 29 sales@wibu.fr

WIBU-SYSTEMS USA, Inc.

USA: +1 800 6 Go Wibu +1 425 775 6900

sales@wibu.us

WIBU-SYSTEMS LTD

United Kingdom | Ireland +44 20 314 747 27 _sales@wibu.co.uk

WIBU-SYSTEMS BV

The Netherlands +31 74 750 14 95 sales@wibu-systems.nl

WIBU-SYSTEMS IBERIA

Spain | Portugal + 34 91 123 07 62 sales@wibu.es

WIBU-SYSTEMS, a privately held company founded by engineers Oliver Winzenried and Marcellus Buchheit in 1989, is an innovative technology leader in the global software license lifecycle management market.

In its mission to deliver the most secure, unique, and highly versatile technology to software publishers and intelligent device manufacturers, Wibu-Systems has developed a comprehensive, award-winning suite of hardware- and software-based solutions that incorporate internationally patented processes dedicated to protecting the integrity of digital assets, technical know-how and intellectual property.

Through its motto "Perfection in Protection, Licensing and Security", Wibu-Systems is standing up for ethically produced software and reinforces its commitment to eradicate software counterfeiting, reverse-engineering, and code tampering, while generating new digital business models fully integrated with ERP, CRM, and e-commerce platforms

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