or/IxProtector

e-based Activation Licensing

2009

Industrial Solutions

CodeMeter License Central

Database

Sales

Depot

Admin

2013

ActLicense

2 GB

CM CARD

Industrial CompactFlash®

CmCard/CF:
1043-02-105

.NET
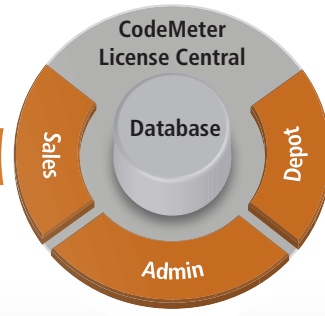
Linux 64-bit
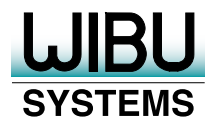
Embedded OS

CODESYS

VxWorks

KEYnote 25
THE WIBU MAGAZINE

Continuity and Innovation @ Wibu-Systems

Topics

- VxWorks EDK with CodeMeter
- Traps against Hacker
- License Central Reporting

WIBU SYSTEMS

Content

Dear Customers and Partners,

Politicians, businesses and tr ade organizations are dedicating themselves to Industry 4.0, otherwise known as the fourth industrial revolution. Economies of scale in serial production and individualization should converge into a concept which allows for batch sizes as small as 1. Manufacturing is seeing the emergence of so-called Cyber Physical Production Systems with intelligent machines which are self-managing and capable of autonomously swapping information between each other . They are used in Smart F actories to create a totally new kind of production logic i.e. horizontal integr ation of the v alue-added chain and a network of interactive production systems with coherent engineering throughout the entire life cycle. Protection against product pir acy and know-how protection are now more relevant than ever before. Integrated security concepts which address both cloud and industrial security are required. We can already provide these solutions today, thanks in no small part to our involvement in the "Security in Industry 4.0" working group in Germany and our commitment to integrating our solutions into the Unified Architecture (UA) of the American OPC Foundation, which we joined in December 2012.

This i mportance o f c ontinuity a nd i nnovation n ow becomes apparent. Our latest tools still support WibuKey. At the same time we are continuing to extend the feature list of CodeMeter which now r anges from softw are-based CmActLicenses through hardw are CmDongles for deployment in industrial working environments , to cloud solutions for license rollout and integr ation in sales and production processes. Many of the features currently described by market competitors as "new and unique" were implemented in our solutions more than ten years ago.

Some of the informative topics in this issue include a journey through the history of Wibu-Systems solutions, know-how protection in Rockwell's RS Logix 5000, improved security with tr aps against hack ers, our EDK for Wind River's VxWorks, cloud-based hosting solutions for CodeMeter License Central, the success story of our customer Glaser-ISB and lots of other news.

We shall be exhibiting at a number of tr ade fairs this Spring, so please join us – I look forw ard to meeting you personally.

Oliver Winzenried (CEO)

Studio 5000 Project Protection
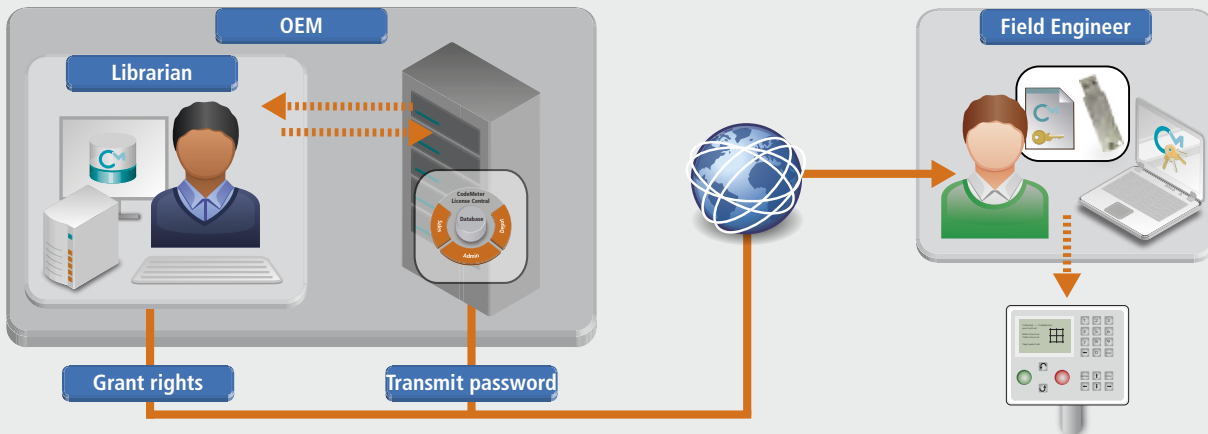
User right management for IP Protection is the new added value of Rockwell's Studio5000 IDE solution

There used to be a time when the access to the source code was regulated simply by passwords. Passwords are pretty feeble tools by themselves and human nature adds a further layer of instability. Passwords can in fact be weakly built up and thus easily tracked down, shared intentionally or naively with unauthorized users, and since they are time unlimited in usage the access is provided permanently.

Embedded systems that took great investment to see the light and the related processes they are meant at controlling with extreme accuracy deserve the best possible protection. If a password can still be an easy entry system for the deputed programmers to edit the source code of an application, the password should then be saved in a robust container. This two-factor authentication approach represents an effective way to restrict the access to sensitive data to only those that are fully entitled.

The Studio 5000 Logix Designer from Rockwell is a design and configuration software that streamlines engineering with outstanding ease of use. Its integrated control system ensures a single and scalable development environment to original equipment manufacturers, system integrators and end users.

Rockwell controllers are programmed through source files that are visible from Studio 5000. With the new technology implemented by Wibu-Systems, passwords are no longer saved unencrypted on a local machine, but rather encrypted in a CmContainer from Wibu-Systems. The CmContainer can either be a CmDongle (a tamperproof hardware device embedding a smart card controller) or a CmActLicense (a software license file).

An application, the CSPP (namely CodeMeter Source Protection Provider), is then complementing the offering; it has been specifically designed for enterprises to centrally manage passwords. A librarian can grant user's rights from his CSPP Manager; passwords are transferred through the CodeMeter License Central installed on the corporate server to the field engineer; the latter has the CSPP Client running and interfacing with the Studio 5000, and can enjoy the rights assigned to him for the specific time and functions they have been set for.

Password storage and management is thus turned into a sturdy solution featuring not just the most robust storage technology, but also strong authentication capability and remote password handling, including email update of the complete dongle contents. Moreover all main functionalities that are typical of Wibu-Systems have been implemented, from expiration date setting to usage counters as an alternative to traditional perpetual licensing mechanisms. And to top it off a CmDongle with Local Storage is backward compatible to all Rockwell source protection keys already in the field by providing a secure storage mechanism for the traditional password file.

The productivity optimization rendered by the Logix architecture through Studio 5000 is now guaranteed to deliver world-class capabilities for all disciplines, from process to safety to motion, unaffected by any involuntary or fraudulent modifications. And original equipment manufacturers can fully capitalize on their own intellectual property development efforts now that the hackers' life has been made much more complicated.

VxWorks EDK with CodeMeter

The Embedded Development Kit for VxWorks is the result of a collaboration between Wind River, Emerson and Wibu-Systems. The EDK allows developers to protect their know-how and products from piracy, reverse engineering and attacks. It prevents code from being manipulated, and ensures the operating system and the developers' applications are securely booted and executed. Flexible pricing models such as pay per use or feature on demand facilitate the implementation of new business models.

CodeMeter has been modified for VxWorks to allow integration into the Eclipse-based Wind River Workbench. Developers can now protect their code without the need to use external tools.

The step-by-step instructions and illustrative examples explain usage in a wide range of areas:

- Encryption of program code for protection from software piracy
- Reverse engineering protection of profit-making know-how in algorithms
- Integrity protection to prevent program code being tampered with, e.g. in cyber attacks
- Feature on demand as a business enabler for new business models

The scope of delivery of the Wind River EDK includes an Emerson NITX-315 board with an Intel Atom processor and three CmDongles. The VxWorks development environment is started directly from the CmStick/M which is connected to the host computer. The CmCard/

µSD with the VxWorks boot image and the required CodeMeter licenses is inserted into the target board. The CmStick/C is connected to the target board. This dongle contains a license to enable other software features in the image, as and when required.

The AxProtector plugin for Eclipse protects several different types of projects, e.g. VxWorks images (VIP), downloadable kernel modules (DKM) and real time processes (RTP). All configuration settings are made in the Wind River Workbench and include settings for reverse engineering
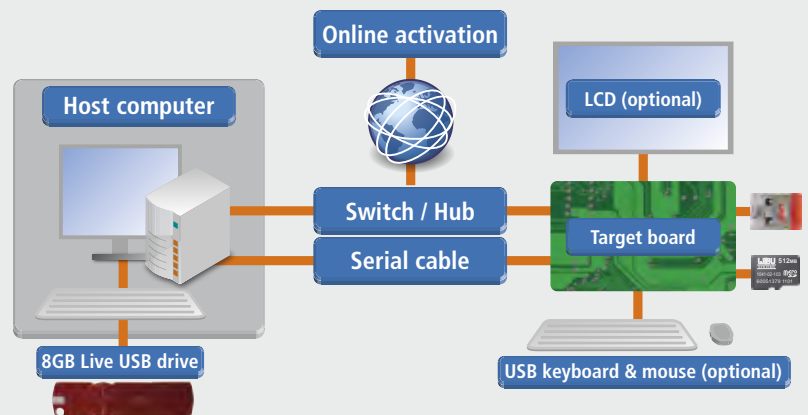
Connecting the CodeMeter dongles, development PC and target board
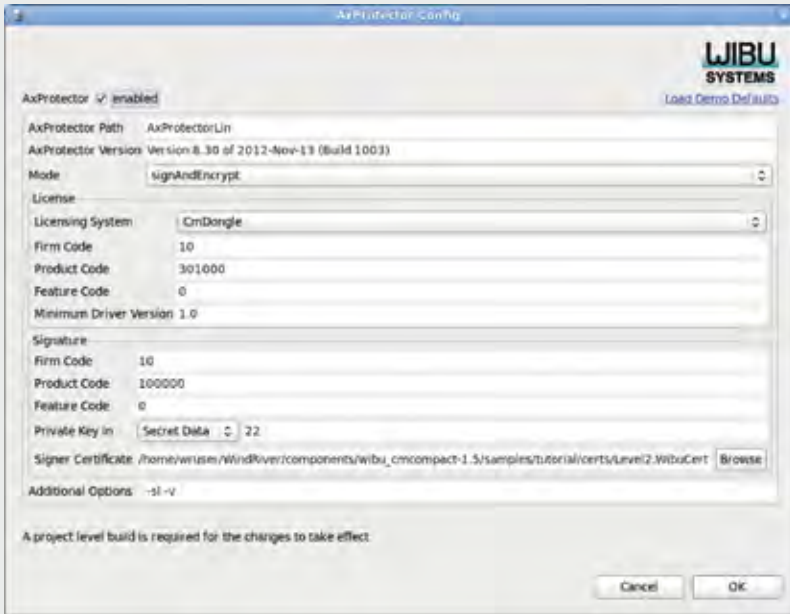
All configuration settings for Wibu-Systems AxProtector are made via a plugin in the Wind River Workbench

protection, license management, signatures to protect the code from manipulation, parameters for license management and code encryption, and a key source for the private key which is used to sign the code.

To use the security and license management functions, the standard VxWorks loader must be replaced by the CodeMeter VxWorks loader. This ensures only correctly signed projects can be executed and decrypted on the target system.

Signatures and certificates

When the protected VxWorks project starts on the target system, its integrity is verified by CodeMeter. AxProtector generates the signatures in a three stage process using asymmetric cryptography with elliptic curves (ECDSA, Elliptic Curve Digital Signature Algorithm):

1) AxProtector signs the checksum, or more precisely, the hash value of the project or program code with the private key. The signed hash value is referred to as the signature and is a digital fingerprint of the project.
2) The modified VxWorks loader also calculates the hash value and compares it with the digital signature. The public key is required here to check the two hash values are the same and hence verify the fingerprint.
3) If verification is successful the VxWorks project is considered unchanged and not tampered with since it was signed with the genuine private key.

Certificates are needed to make sure a genuine public key is used for verification. Certificates are the digital equivalent of identity documents in real life. They check whether the stored public key really belongs to the corresponding private key.

Certificate chain

Wibu-Systems uses a series of certificates, known as a "chain of trust", to verify the authenticity of the public key. A certificate is verified through the use of another certificate, hence creating a chain of certificates which ends with the root certificate, the so-called "anchor of trust." Trust is thus passed to the level above. The key value is stored in the respective public key. A detailed description of the certificate chain is given below:

1) The developer uses the AxProtector configuration settings to define and create an integrity certificate containing a hash value, the signature and the public key.
2) As soon as the VxWorks project has been loaded, the VxWorks loader calculates the binary hash value and compares it with the hash value generated by AxProtector in the integrity certificate. If the values differ, the VxWorks project is not loaded.
3) If the hash values are the same, signature verification via the certificates begins. Each level of signature verification uses the public key of the level below until the root certificate is reached.

Although at first glance this process appears to be very complicated, its integration into the system has been carried out in such a way as to make it easy for developers to use. Its major benefit is that it requires the most important secret, i.e. the private key of the root certificate, to be used only once to sign the lower level certificates. Afterward it can be returned to its safe. If a certificate ever becomes compromised, a "revocation mechanism", which will not be explained here, can be called to revoke the certificate. In this way the security and integrity of the overall system is maintained and rolled out systems need never be superseded.

License generation, management and rollout

Alongside the security functions, it is also important to integrate the generation and distribution of licenses and keys into the sales and production processes. CodeMeter License Central is the right solution for this The software is operated via a browser or web interface and can be easily incorporated into existing ERP systems such as SAP or MS Dynamics, CRM systems such as Sales Force, or online shops. License Central can be operated by the vendor or used in a Wibu-Cloud solution.

The Wind River EDK demonstrates to developers how the different functions can be protected in different ways in an application. Accordingly each function requires its own license before it can be executed in the live application. This can be beneficial if the aim is to sell device functions on an individual basis, for example, as part of an after sales service It also allows activation of specific functions for particular groups of people such as service technicians.
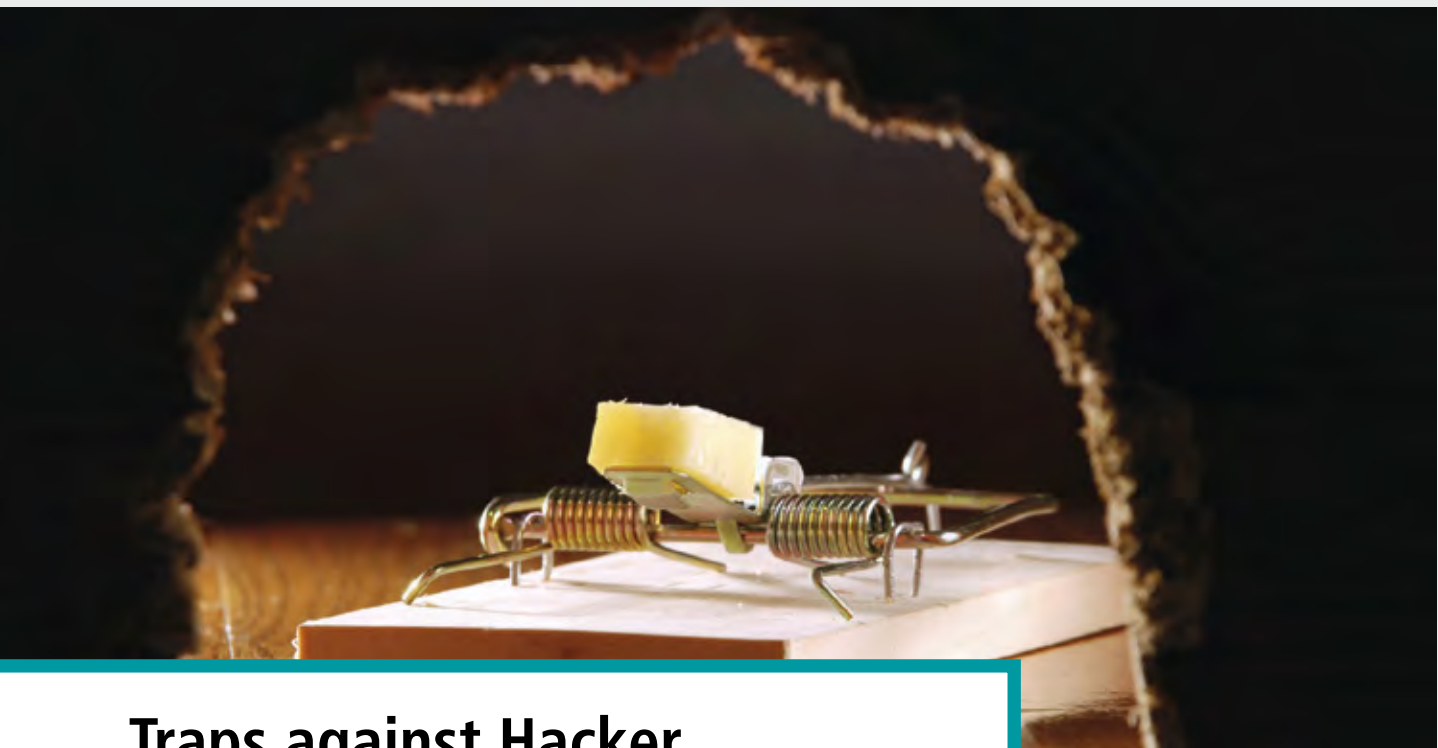
Traps against Hacker

Maybe you've read my article "Software protection from a hacker's perspective" in one of the last issues of KEYnote. In this article I described the difficulties of emulating a CodeMeter dongle. The encrypted communication between dongle and software may be no more than "state-of-the-art" but the P-RID packets hidden in the data stream add a totally new level of quality protection to the software. The attack described in that article was based on dongle emulation. I've mostly witnessed this kind of attack in Russia which is why I refer to it as the "Russian Hack." CodeMeter knows how to defend itself against this hack but how does it cope with the "Chinese Hack?"

The Chinese Hack

Whereas the Russian Hack hardly makes any changes to the software, the Chinese Hack patches it i.e. replaces encrypted sections of software with unencrypted code. The time and effort, and the possible risks and side effects of this hack are of course much greater than those associated with its Russian counterpart. Naturally the time and effort required for the "Chinese Hack" depends on whether the software is encrypted at all or whether it just makes API calls. If it's encrypted, it of course makes a big difference whether one large block is encrypted with just one key, as is the case with most tools, or whether many small jigsaw pieces are encrypted with possibly different keys, as is the case with CodeMeter.

Here too CodeMeter has proven to be the "Best of Breed." CodeMeter's AxProtector and IxProtector tools divide the software into many small jigsaw pieces and dynamically reassemble them at runtime. Different keys are even used for the same license. But how well does it hold out against the "Chinese Hack?"

Dynamic vs. static

Basically there are two types of reverse engineering methods. The hacker either analyzes the software without executing it, i.e. by disassembling and manually decrypting it (static analysis), or he executes the software in a debugger and simultaneously observes and modifies it (dynamic analysis).

For "hello world" applications both methods are more or less trivial. During the dynamic analysis there's always the chance anti-debugging mechanisms have been implemented in the protected software and that I, the hacker, will be caught by a debugger detector.

The situation is totally different though with a proper application. During static analysis I, the hacker, have to find all the pieces and fit them together. This is very time consuming so I naturally want to automate the process.

The dynamic analysis

I often hear young up-and-coming hackers say that for a dynamic hack "you only need to wait until all the encrypted methods have been executed and sit decrypted in memory." I've been working in the areas of software development, software testing and reverse engineering since 1996, the year of the first Yellow Point and Yellow Star CDs (see below). Out of experience I can say with absolute certainty that if anyone manages to execute every line of code in a software application he hasn't written himself, he's found both the philosopher's stone and the holy grail. This person would make so much money selling

test tools, he would be able to sit under a sun umbrella on his privately-owned South Sea island sipping cocktails every day.

Let's take MS Word as an example of a software application. Even power users never use more than 10% of its capabilities. If the software were accordingly protected, which hacker would ever manage to execute 100% of the code?

The situation can be summed up as follows: dynamic analysis of an application protected by IxProtector will not succeed, the only exception being applications whose complexity does not usually exceed that of a "hello world" program, or those with only rudimentarily implemented IxProtector protection.

A quick look back

Incidentally, the Yellow Point CD is an excellent example of how not to do things. A pure marketing firm commissioned a consulting engineering company (with no previous experience of software protection) to develop an activation CD. It was cracked in less than a week following its release. The flaw was due to a fatal implementation error which drastically shortened the length of the used key. If you are able to assume an exe file is stored at the beginning of each encrypted archive, as was the case for 95% of the products, you only had to look through a few keys to trigger on "MZ" (the first two bytes of an exe file). And that was it. The hack was complete. The decryption routines were even shipped with the software. Following this debacle a company with many years of experience in the sector was chosen to develop Yellow Point's successor, Yellow Star. This CD was never cracked by the way. The company Yellow Point, who worked alone internally, soon disappeared from the market. The company behind Yellow Star, on the other hand, was successful for many years. Maybe because they were willing to buy know-how and solutions?

The static analysis

So, what's the situation if I, the hacker, statically analyzes the application? I decrypt every single method separately and afterward put the application back together again. Like with the Yellow Point CD, the shipment includes the code to decrypt the application. I don't even have to make the effort to write this routine, which wouldn't be any problem for me anyway as the CodeMeter API is very easy to use.

Now I know the theory, I'm going to try it out in practice. And it doesn't take long before I discover a big dirty trick of CodeMeter. It has set traps in the encrypted application for me to fall into during static analysis and within no time my license is deactivated, just like with the debugger detector during dynamic analysis.

I try to understand what's going on. It seems the application contains code which is never executed and hence never decrypted. My static analysis of course discovers all the pieces of code which are encrypted, which is no easy task. If I decrypt all these pieces one after the other, I will inevitably end up decrypting a trap too. And as soon as I do this the CodeMeter dongle is automatically deactivated internally. There's no way I can detect the traps in advance because CodeMeter uses so many different keys. I don't notice until it's too late and the license has been deactivated. The game is over. I can forget about trying the decrypt the rest of the code: Once locked, the license is locked forever.

This type of trap, which makes use of encrypted methods to automatically deactivate the license as soon as they are decrypted, is another quantum leap for CodeMeter and sets it apart from other protection and licensing systems.

Flow chart

I allow myself one more attempt. I decide to follow the program flow and start with the main function. I decrypt this and note the methods called from here (of course I've written a tool to help me do this). In other words I draw a flow chart for the software to find out which methods are called and which aren't. By the way, the names of the methods don't mean anything. The CodeMeter team are professionals down to the smallest detail.

When I've finished the flow chart I'll know where all the good pieces of code are and hence be able to say where the pitfalls are. At least that's what I thought. But even here CodeMeter has put obstacles in my way. Have I mentioned that as a hacker, CodeMeter makes me want to pull my hair out? Sometimes the methods are called using reflection (of course the names of these methods are encrypted too) and hence can't automatically be recognized as good functions. And it gets worse: Some of the traps seem to have ended up in my flow chart. There are branches which are never executed according to the program logic but my analysis reports them as being "good" branches. Once again, I've been caught.

My conclusion

So, I have to say I'm impressed with CodeMeter It has answered all my questions. On the face of it, the difference between CodeMeter and other products is minimal: Almost all provide a wrapper. But when you look underneath the surface and examine the functions more closely, you soon realize why CodeMeter never fails to stay that one important step ahead of the hacker.

Of course, the level of protection provided by CodeMeter depends very much on how well it's integrated into the software. CodeMeter can automatically insert traps but they don't become fully effective until I, the software developer, neatly tuck them away behind my business logic. As a developer, I know a slope can never be steeper than 90%, that a pack of cards must have an even numbers of cards in it, that my car engine can't do more than 19,000 rpm, that the highest tax rate can never exceed 100%. The hacker doesn't normally know these things though and hence falls into a trap which deactivates his license. And a hacker without a license is like a warrior without a sword. Thank goodness for CodeMeter.

Automatic Protection
AxProtector/IxP...

1989 Separated Processes –
Software Integration and Licensing

2003 SmartCard based, AES
ECC, RSA, Driverless,
Remote Update, Clock

Flash Memory and
OEM customizable

Software-based
Identical Licensi...

MAC OS   Java   Linux 32-bit   .NET

MS-DOS   **Windows 16-bit**   **Windows 32-bit**   **Windows DLL**   **Windows 64-bit**

Continuity and Innovation @ Wibu-Systems

Wibu-Systems was founded in 1989 with the aim of developing simple and easy-to-use software protection systems. The idea was to protect intellectual property from reverse engineering and prevent illegal use of software, i.e., to provide copy protection and enable new business models. Even then our Wibukey offered features which are not commonplace today such as single-user and network user capabilities on one stick, individual encryption of program functions, and software usage protected by customized licenses.

Today, 24 years later, its broad range of unique products and its philosophy of combining continuity with innovation has made Wibu-Systems one of the world's most important solution providers:

- Software-based activation
- Smart card-based dongles with diverse interfaces
- Web- and cloud-based license rollout with integration into sales processes.

Areas of use range from mobile systems through industrial applications in embedded systems and PLCs to desktop PCs, servers and the cloud. No other market competitor offers so many products across such a broad range of categories.
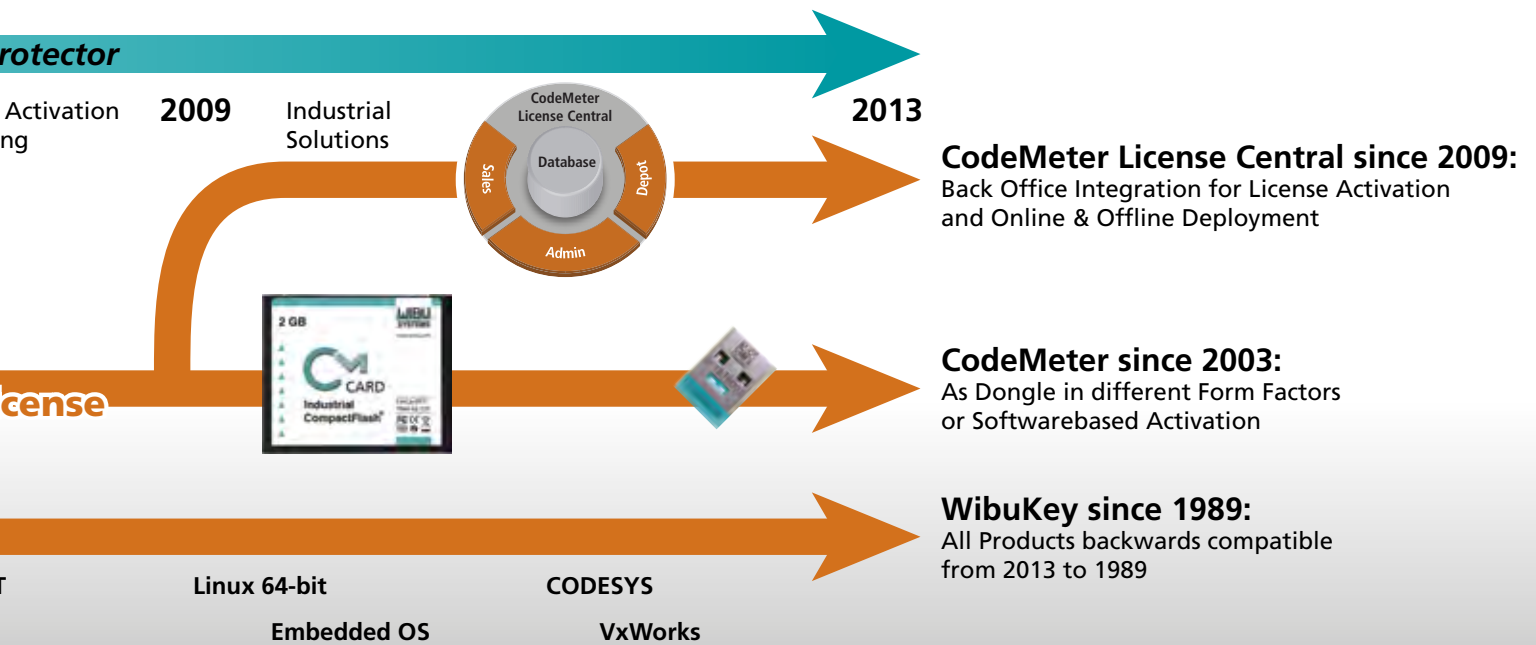
What does the term "continuity" mean to Wibu-Systems?

- **Company:** Managed by the owner, financially independent, stable vision; staff, suppliers and customers share a common philosophy of cooperation
- **Staff:** Same contact person over many years; continuous education and training in all areas; strong identification with the company, its products and goals
- **Development processes:** Integrated into the QM system based on ISO 9001:2008; code metrics, daily builds, test driven development (partly using Scrum), professional product management, no outsourcing; design, development & production "Made in Germany"
- **Cooperations:** R&D projects with universities, research institutes and other partners; involvement in standards committees such as USB IF, SDA, OPC; intensive participation in consortiums
- **Products:** Long-term availability, high reliability, bill of materials (BOM), backwards compatible, upgradeable in the field, "Made in Germany"

Come on a journey through the history of Wibu-Systems' most important innovations:

1989:
- WibuKey: Single-user and network dongle, still available in 2013
- Licensing of up to 240 individual software functions with a single dongle
- Software encryption only once, individual licensing for all customers
- WibuKey available as an ASIC

1990:
- WibuKey with serial interface and available as a plug-in card
- Automatic protection of Windows and DOS applications without modifications to the source code
- WibuKey dongles with FEAL algorithm from NTT in Japan, backwards compatible with V1 from 1989
- 4 billion different encryptions per license entry

8

Activation
ng

2009

Industrial
Solutions

**CodeMeter
License Central**

Database

Sales

Depot

Admin

2013

CodeMeter License Central since 2009:
Back Office Integration for License Activation
and Online & Offline Deployment

CodeMeter since 2003:
As Dongle in different Form Factors
or Softwarebased Activation

WibuKey since 1989:
All Products backwards compatible
from 2013 to 1989

Linux 64-bit

Embedded OS

CODESYS

VxWorks

1993:
- WibuBox/M in PCMCIA card format

1994:
- New award-winning WibuBox/P housing
- Encryption of individual functions (AXAN, known today as IxProtector)

1997:
- Wibu-Systems receives ISO 9001 certification

1998:
- WibuBox/U with USB interface

2001:
- First elementary CodeMeter patent filed

2003:
Launch of CodeMeter with groundbreaking features:
- Highest level security with smart card chips at its heart
- Use of AES-128, ECC-224, RSA-1024, SHA-256 standard encryption methods, all usable via API
- Large 64 KB license and data memory space for more than 1,000 individually licensed functions
- Internal tamper-proof clock in the CodeMeter dongle
- Driverless: Mass storage communication used
- Firmware update possible i.e. customer has access to revisions and new functions without sending in hardware
- Development tools simultaneously support WibuKey and CodeMeter

2004:
- AxProtector for automatic software protection without changing the source code, for native code running on Windows, Mac OS X and Linux as well as Java and .NET, for CodeMeter and WibuKey in a protected application
- All WibuBoxes with 16 KB memory and FEAL-32 with 16-bit keys (export restrictions loosened, compatible with V1 from 1989 and V2 from 1990)
- CmStick wins iF Design Award
- First CmStick/M, dongle with flash disk

2008:
- Launch of CmActLicense, software-based licensing method

2009:
- Launch of CodeMeter License Central for generating, managing and shipping licenses
- Flexible license borrowing for all combina-tions of dongle and CmActLicense

2010:
- Larger license and data memory (384 KB) allowing more than 6,000 individually li-censed functions
- CmCards in µSD, SD and CF format with up to 16 GB flash memory for industrial applications
- Support of embedded operating system e.g. Wind River VxWorks

2011:
- Launch of CmStick/C, the world's smallest USB CodeMeter stick
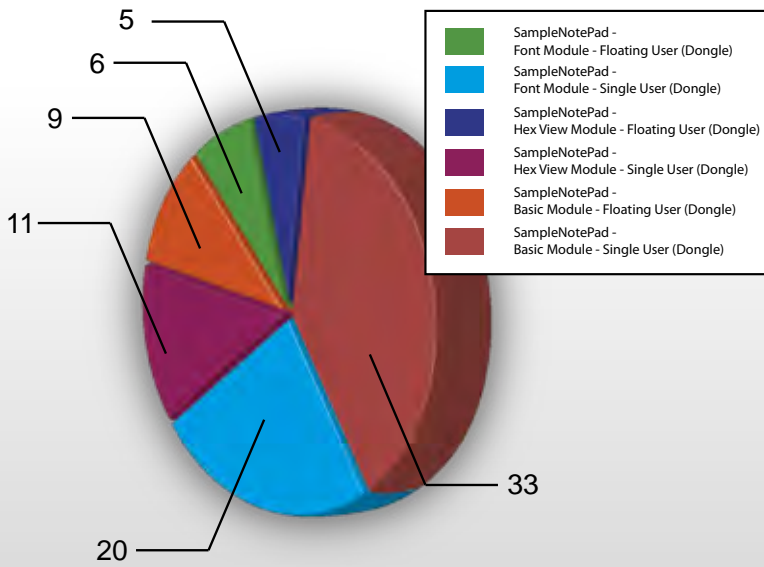- Launch of CmStick/T with uninterruptible clock

2012:
- 2048-bit RSA key
- CmSticks in USB format, quick swap between HID and mass storage communication
- Support of CODESYS IEC61131 development environment

Today in 2013, market competitors are presenting some of our innovations from 1989 as "new and unique." If you're in the process of looking for a new licensing solution, check us out first.
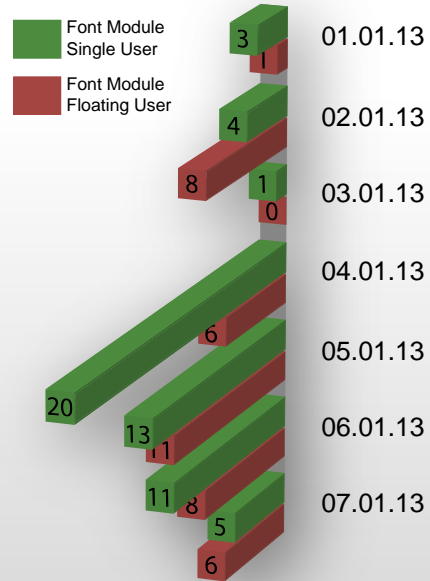
Benefits of partnership with Wibu-Systems:
- **Safe investment:** Protection solutions with long-term availability
- **Future-proof:** Ongoing hardware and software innovations, retrofits and updates possible
- **Focus on software licensing and protection:** Clear objective to address a niche market across the board from mobile systems through embedded system, PLCs, industrial PCs, desktop PCs and servers, to the cloud
- **Trust:** Constant contact person in an owner-managed and finan-cially independent company with stable visions and goals
- **Partnership:** Collaboration in R&D, open to new ideas
- **Made in Germany:** Design, development and production with partners in Germany and local support worldwide

Products sold 01.-31. December 2012

Legend:
- SampleNotePad - Font Module - Floating User (Dongle)
- SampleNotePad - Font Module - Single User (Dongle)
- SampleNotePad - Hex View Module - Floating User (Dongle)
- SampleNotePad - Hex View Module - Single User (Dongle)
- SampleNotePad - Basic Module - Floating User (Dongle)
- SampleNotePad - Basic Module - Single User (Dongle)

Expired Licenses 01.-07. January 2013

Legend:
- Font Module Single User
- Font Module Floating User

License Central Reporting

A quick overview of what licenses have been sold and which ones are about to expire can help sales teams create the right strategies for follow-up business. This is just one of the many evaluation methods offered by the new License Central Reporting.

What does the new reporting tool offer?

The new reporting tool is built upon on a newly developed and easy-to-use search engine with a diverse range of features. The search engine doesn't just return static results in response to a search query. Rather it allows further flexible in-depth searches to be carried out on some of the obtained results in order to fetch detailed information about them. Each individual report comprises the search window, a summary view and a detailed view. Five different types of report
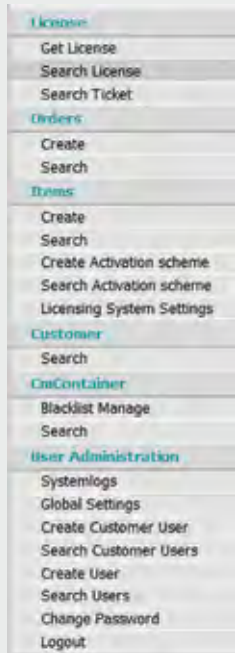
exist: the license report, the order report, the ticket report, the customer report and the CmContainer report.

The new menu structure facilitates quick generation of the reports When the user selects an item from the menu, the search window for this report opens. The layout of this window is the same for all reports and hence simplifies data entry for the user.

The search window

The search window is the key element to finding the required information quickly and easily. The layout of the search window has been designed to enable an in-depth yet easy-to-use search. Accordingly the search fields have been divided into two sections: the upper section contains the default search fields and the lower one the optional fields. The upper section is the same for all reports. The optional search fields can be used to specify additional comparison criteria for data. Typical examples could be selecting a group of items e.g. products, or specific data appended to the licenses in the information fields.

The search can begin once the search criteria have been defined. The results are retrieved from the database and displayed in the summary view.

New menu structure

The summary view

The summary view

The summary view shows on the one hand the search results; on the other hand it is the starting point for retrieving more detailed information about certain results.

The summary view is displayed directly below the search window. This keeps the search criteria in view which makes it easy to refine the search. Criteria can be removed by unticking the corresponding box. In the same manner, the search can be narrowed down by selecting additional search criteria.
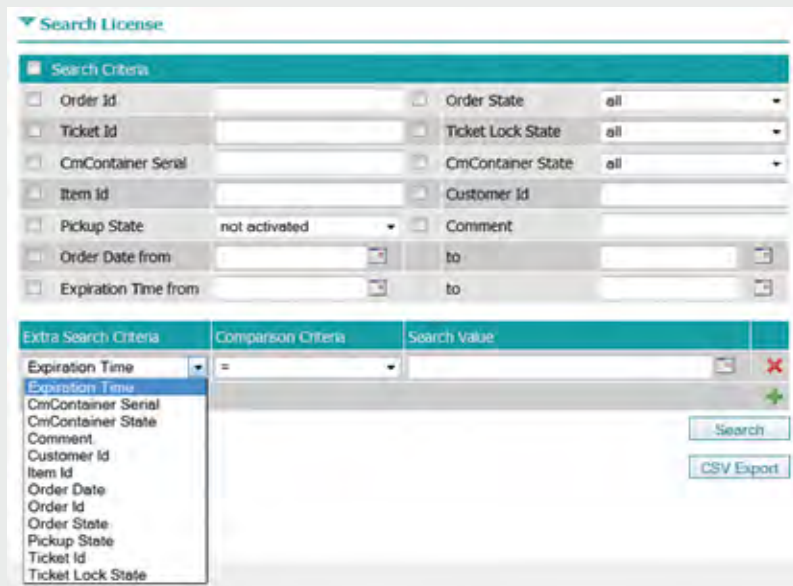
The summary view provides a quick overview of the search results. The view's contents depend on the selected report. The license report is used here as an example to explain the summary view. It displays the information stored in the following fields: *last activation date*, *item ID*, *license name*, *license status*, *number of licenses*, *period of use*, *expiration time*, *maintenance period*, *number of activations*, *order date*, *order ID*, *ticket ID*, *customer ID* and the *CmContainer serial number*. It also shows icons for the following features: *not activated|activated just once|activated several times*; *returned |transferred|splitted*; and contains *fetch error|awaiting acknowledgement*. A section of the search results is shown in the diagram below and includes information about the item ID, name, expiration time and customer number for licenses which expire within a specified time period.

The summary view can be used as the starting point for unearthing more information about the displayed results. For example, it might be desirable to discover which other licenses belong to the order, or which CmContainers a license has been transferred to, if the license has been activated multiple times.

Thanks to an automatic link created for each of the results, additional information can be retrieved quickly. A click on the license name in the name column is all that's needed to open a new detailed view.

The detailed view

The detailed view shows additional information about an individual license, a CmContainer, an order, a customer or a ticket. The detailed view is not the end of the road though. On the contrary more information can still be displayed. Just like in the summary view, you can click on some of the results to obtain more information about them. For example, the detailed view of the license report can also show information

CodeMeter License Central - search window

about the license, the orders for the license, the corresponding tickets and the CmContainers in which the license has been activated. A click on the customer ID, which is assigned when an order is created, shows detailed information about the customer. This could include a list of the licenses already shipped to him. Hence it can be ascertained which ones he's still waiting for and that he might be expecting you to take some action to ensure they are shipped.

How can I implement integrated reporting?

How can I produce diagrams etc. from the search results? With the new reporting tool you can export the search results to a CSV file. CSV files can be opened by external programs such as Excel. These programs allow you to process the search results and display them in various diagrams.

How can I integrate reporting into other applications?

The structure of License Central comprises three components: the database, the web service and the user interface.

Consistent with this structure, much attention was paid to the web service during the programming of the reporting tool to ensure this new service easily connects to your applications. That's why a web service was developed with a method for each of the above-mentioned reports.

A call of the method for the order report could be implemented as shown below, for example:

The results fields continue to be mapped as complex types in the web service. This means optimal support for connecting to development environments is possible, for example, through the use of IntelliSense in Microsoft Visual Studio.

Our **WIBU Professional Services team** will be happy to help you make the connection!

```
public WSReporting2.OrderReport
QueryOrderByCustomer(int count, int page, string
customerNumber, out long numberOfFoundItems)
{
WSReporting2.Message message = null;
WSReporting2.OrderReport[] report = null;

WSReporting2.SearchCondition searchCondition =
new WSReporting2.SearchCondition;
searchCondition.licenseActivationDateFrom = new
DateTime(2012, 10, 01);
searchCondition.licenseActivationDateTo = new
DateTime(2012, 12, 01);
searchCondition.customerNumber = customerNumber;

WSReporting2.OrderBy orderBy = new WSReporting2.
OrderBy[1];
orderBy[0] = new WSReporting2.OrderBy();
orderBy[0].field = „OrderId";
orderBy[0].direction = WSReporting2.Direction.
Ascending;

orderReport = mReporting2.
queryOrder(GetSecurity(), GetMessageId(),
GetAction(„queryOrder"),
        GetTo(), GetReplyTo(), GetClientIp-
        Address(),
        searchCondition, orderBy, count, page,
out
        numberOfFoundItems, out message);

CheckMessage(message);
return report;
}
```
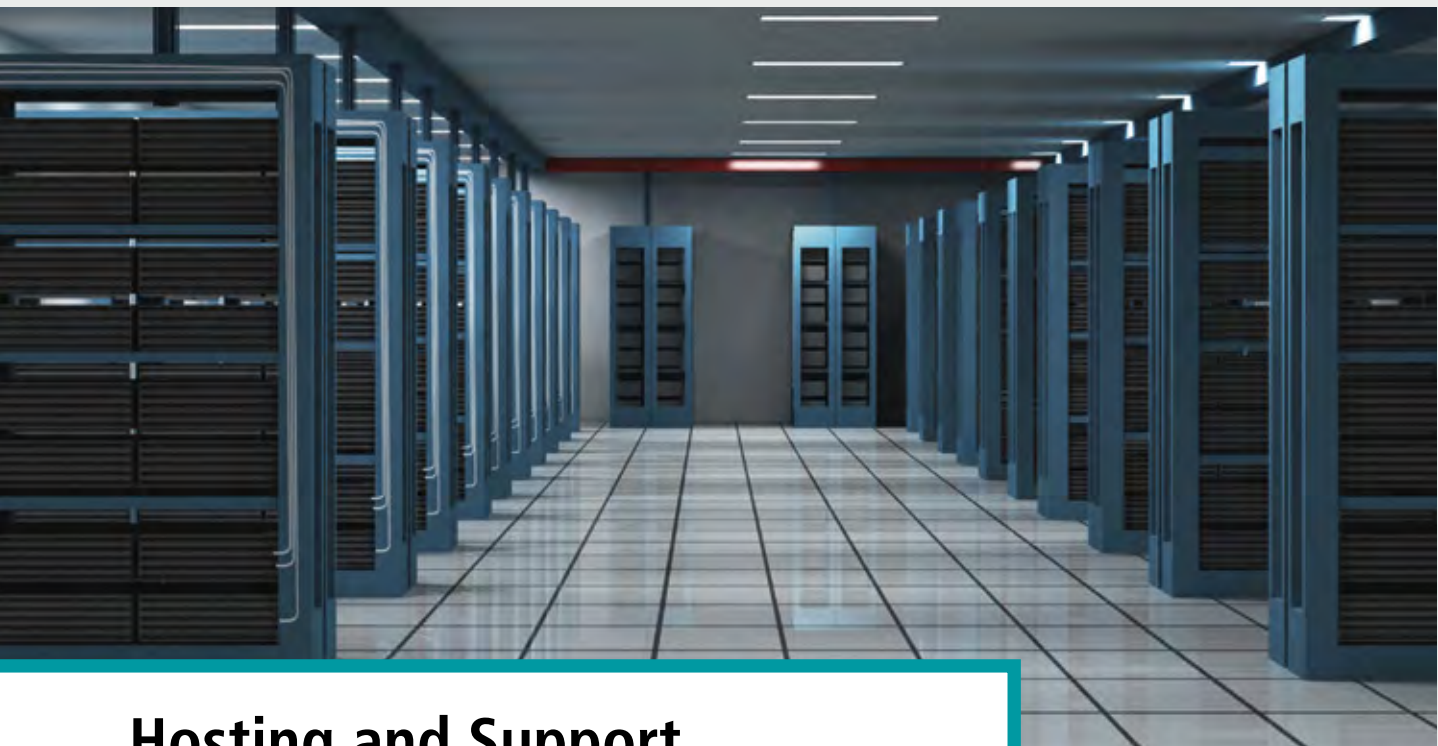
Hosting and Support

You've finished your software and successfully integrated Wibu-Systems' software protection and license management into it; how do you now go about distributing the licenses to customers? CodeMeter License Central Internet provides you with the answer. You're missing the infrastructure required by this solution? You don't have the time or expertise available to securely set up the system to current specifications? You're worried about the internal cost and effort involved in running the system? No problem! Make life easy for yourself and let Wibu-Systems do the work for you!

CodeMeter License Central Internet lets you manage the sale and distribution of customer licenses in an easy and straightforward manner. This powerful tool can be extended in numerous ways, and includes the option to integrate it into your company's internal processes.

Before these functionalities can be used though, CodeMeter License Central must be installed, configured and subsequently administered on a server. It goes without saying, that while this work is being carried out, the data center's network and security requirements must be complied with. After completing this initial stage and before commissioning takes place, time should be taken to define a suitable backup and disaster recovery strategy which is capable of handling every conceivable situation quickly and reliably. Once the system is in operation, security updates for the various components (from the operating system through to the applications) must be

installed as soon as they become available. To save time and money, it might seem an attractive business proposition to host the system in the Wibu-Systems data center rather than operate it yourself in your own organization. An argument in support of this proposition is the frequent observation that such investments very quickly pay for themselves as the internal cost of the required hardware and human resources is not insignificant.
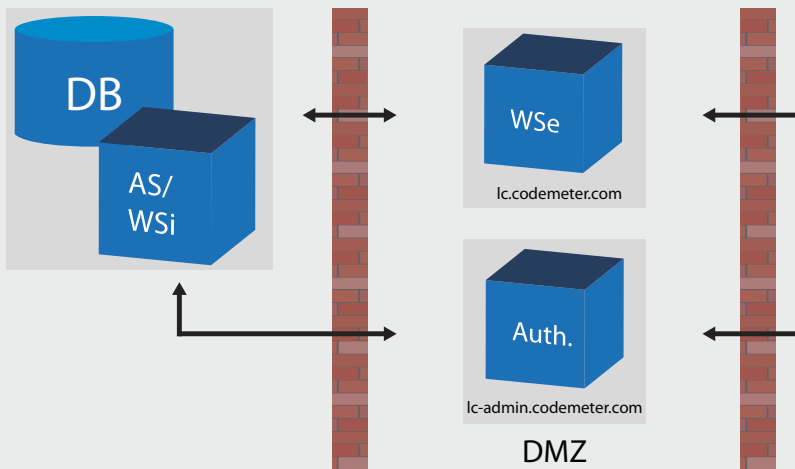
The architecture

Basically there are two ways to access CodeMeter License Central. On the one hand, as a provider, you need to access the system in order to administer it and sell your products; on the other hand you must provide your customers with some way to pick up their licenses For this reason the architecture shown below has been chosen for the hosted system. A distinction is made between the internal web server (WSi)

and the external web server (WSe). In both cases though the database (DB) is accessed via the application server. Hence there are two different routes to accessing the system depending on whether you are the provider or the customer.

Your customer accesses the CodeMeter License Central retrieval pages (depot) via lc.codemeter. com. You are free to redesign these pages to reflect your company's corporate identity and workflows.

In your role as provider you go to lc-admin. codemeter.com which is secured by https. This URL provides unlimited access to the internal web server. Consequently you can carry out any of the tasks you would normally carry out on your own in-house CodeMeter License Central. A client certificate controls access to the system by authenticating your computer to the CodeMeter License Central.

DB

AS/WSi

WSe
lc.codemeter.com

Auth.
lc-admin.codemeter.com

DMZ

CodeMeter License Central architecture for customers and administrators

A two stage architecture is deployed to protect the hosted CodeMeter License Centr al from external attacks . The external web server is located in a DMZ,   while the database , internal web server and application server are completely shielded from the outside world. Together with the internal early warning system, this guarantees state-of-the-art security.

Structure and operation of the system

When you opt for a hosted CodeMeter License Central you not only opt for a service which supplies the server, but one which also includes the complete installation and configuration of t he p ackage. O ne o f t he m ost r elevant factors here is the continuous oper ation of the system which in turn encompasses the following aspects:

- Installation of operating system updates
- Installation of CodeMeter License Centr al updates
- Availability monitoring
- Monitoring and deployment of appropriate measures to counter attacks
- Daily backups of the database

Integration into your own processes

The hosted v ariant of CodeMeter License Central also provides you with full access to the interfaces . This means you can integr ate the system into your internal workflows in the manner you are used to . Suitable connectors exist to generate tickets which can then be used with the corresponding gateways to fetch the licenses. Connectors allow links to be created to CRM systems such as SAP® or Salesforce . com. They can also be used to directly connect to shop systems such as Digital River, element5, share*it! or Cleverbridge.

Types of hosting solution

Wibu-Systems provides two different types of hosting solution. The first is a cost-effective entry level solution. The second is a customized variant which is specially designed to meet your individual requirements.

- Data Center Edition: In this type of host-ing you share a server with other providers. For security reasons though you have your own individual database. Likewise the HTML pages of the WebDepot, where customers retrieve their licenses, can be designed to re-flect the corporate identity of your company.
- Dedicated server: This software package pro-vides you with a virtual machine for your CodeMeter License Central. You can modify all the connectors and gateways to meet your needs. Special extension modules can be developed to implement any additional requirements you may have.

Both packages guarantee the same high level of server availability at 99.9 per cent, excluding scheduled maintenance.

Hosting models from Wibu-Systems save you time and money during installation and config-uration amd during the subsequent operation of CodeMeter License Central as system oper-ation requires detailed attention to many areas, each of which can be critical to performance . You may also be interested in our "Silver " and "Gold " support contr acts which guar antee fixed response times and provide you with your own personal contact person. It couldn't be easier!

Service	Data Center Edition	Dedicated Server
Provision of server	✓	✓
Installation and configuration of CodeMeter License Central	✓	✓
Installation of operating system updates	✓	✓
Installation of CodeMeter License Central updates	✓	✓
Availability monitoring	✓	✓
Monitoring, protection and deployment of appropriate measures to counter attacks	✓	✓
Daily backup	✓	✓
Link to the Internet	✓	✓
Access to the internal web server (client certificate)	✓	✓
Access to connectors and gateways	✓	✓
Customized depot pages	✓	✓
Access to web services		✓
User extensions to CodeMeter License Central		✓
Administrator permission for CodeMeter License Central		✓
Number of accounts including client certificates	3	10
Availability	99.9 %	99.9 %

Latest News Summary

HID-conform CmSticks

Since the mark et launch of CodeMeter in 2003, it has never been necessary to install additional drivers thanks to its use of the operating system's "mass storage" driver. With the introduction of version 2.02 of CodeMeter's firmware and CodeMeter Runtime version 5.0, USB CmSticks can now be configured as HID conform devices. This means the sticks no longer appear as a drive in Windows Explorer.

CodeMeter SDK 5.0

A whole set of improvements have been made to CodeMeter SDK 5.0: the new AxProtector 8.50, HID-support of CodeMeter Runtime and many other minor improvements. Another new feature is CmWAN with an optional communications channel via https which, when deployed in a suitable infrastructure, allows license allocation via the Internet, assuming, of course, successful authentication has previously taken place.

B&R Automation opt for CodeMeter

"Perfection in Automation" – that's the slogan which appears on B&R's website. Automation trends and i nnovations feature strongly in the company's long term

strategy and philosophy . We are proud and excited to have been chosen by B&R for future licensing of its Automation Studio and runtime components using CodeMeter . We are also delighted the company encourages its customer to use CodeMeter know-how and product protection features.

Automation Award for CodeMeter

During SPS IPC Drives 2012, the jury nominated CodeMeter for the Automation Aw ard. Trade fair visitors were ask ed to cast their vote for the product or solution they lik ed best. The result: CodeMeter won 4th prize. The prize-giving ceremony took place on January 22nd 2013 in Stuttgart.

We are pleased about this award for CodeMeter as i t re cognizes ou r co mmitment to t he automation industry.

Cooperation with the OPC Foundation
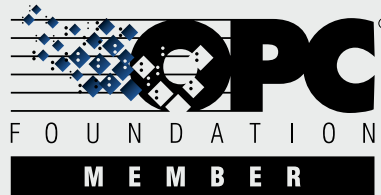
Wibu-Systems joined the OPC F oundation at the end of 2012. Our aim is to implement CodeMeter as an OPC UA conform solution for authentication of industrial control components with secure and user -friendly mechanisms for certification rollout. Wibu-Systems' str ategy includes support for Industry 4.0, Cyber Physical Systems and the automation industry in general.

CSSI 5.0 now available

charismathics
the middleware company

A n ew m ajor r elease o f c harismathics P KI middleware, CSSI 5.0, is now av ailable. The multi-platform and multi-token product offers secure stor age of X.509 certificates in the CmDongle's smart card chip with 1024 or 2048-bit RSA k eys. The solution is PKCS#11 and Microsoft CSP compatible and is available for Windows, Mac OS X and Linux.

Successful series of webinars launched

As a supplement to our workshops and seminars, w e a re n ow o ffering w ebinars: December 2012's webinar focused on Software Monetization, and J anuary 2013's topic w as Embedded Software Security. Both webinars were carried out in partnership with F rost & Sullivan. The next CodeMeter seminar w as scheduled for F ebruary 1st, and on F ebruary 19th the "Secure Development of Connected Applications with Out of the Bo x Complete IP Protection" webinar takes places together with Wind River and Emerson. Thanks to the positive feedback received, we will be extending our series of webinars. Try one out for yourself.

Newsflash

+++ Firefo x 19 CodeMeter P assword Manager plugin now av ailable +++ Firefo x 19 CmIdentity plugin +++ License Central 2.0 with sophisticated reporting to be launched shortly +++ CodeMeter Runtime and SDK 5.0 available +++ Wibu-Systems + Emerson + Wind River: EDK ready for delivery +++ Whitepaper on integrity protection using CodeMeter +++

Current software versions:
- CodeMeter SDK 5.0, March 2013
- CodeMeter License Central 2.0, March 2013
- CmIdentity 4.50, 2011-12-20
- WibuKey SDK 6.10a, 2012-12-21
- AxProtector 8.40, March 2013
- SmartShelter PDF 11, 2013-01-09

Current firmware:
- CmStick 1001-02: 2.02
- CmStick/M 1011-02: 2.0
- CmCard/µSD, /SD, /CF 104x-02: 2.01

The latest software versions give you the benefit of new improvements; the latest firmware offers you high stability and new functionality.

Please update regularly.

www.wibu.com/en/cs25.html

GLASER
-isb cad-
a N E M E T S C H E K Company

-isb cad- Success Story

-isb cad- 2013

Construction engineers and architects depend on specialist software tools to plan and manage their projects. -isb cad- is a highly specialized CAD program specifically designed to handle the tasks associated with construction planning. The time-saving tool generates high quality results, making it ideal for all types of construction engineering. The carefully thought out detailed solutions set it apart from non-specific CAD programs which are less capable of meeting planners' requirements.

Engineers also use -isb cad- to plan construction reinforcement. The plans show where and how much reinforcing steel is needed in the foundations, ceiling and floor slabs, walls and other building components made from reinforced concrete. -isb cad- creates the steel lists from the plans. These lists contain the exact amounts and bending shapes of the steel, and are the result of analyzing the framework plans and other structural conditions.

All -isb cad- programs combine simple operation with high efficiency.

The challenge

The -isb cad- 2013 CAD software is based on the latest .NET technology and should be reliably and securely protected from piracy and reverse engineering. Flexible licensing should be available to provide customers with optimal scalability of the program packages and the required use models. License generation and distribution should be integrated into the sales processes. The switch from the previous protection system must be completed in accordance with the product release cycle. Prior to release of -isb cad- 2013, the existing dongles of several thousand users must be replaced by new ones.

The solution

The encryption of methods in the various modules can be controlled by attributes in the source code. Users quickly became familiar with the easy-to-use high performance AxProtector and the CodeMeter software protection API. Wibu-Support provided expert help at all stages.

The PGE-Arena in Gdansk is one example for many projects worldwide successfully implemented with GLASER -isb cad-

The success

Optimized processes and the broad functional scope of the Wibu CodeMeter system cut selling costs and facilitate the development of new sales concepts. The CmSticks with their high quality laser marked metal housing or the extra small CmStick/C promote customer awareness of the GLASER -isb cad- brand.

Matthias Glaser, Graduate Engineer,
CEO of GLASER -isb cad- Programmsysteme GmbH
"Use of CodeMeter allows us to provide reliable customized -isb cad- licensing. Remote updates improve the efficiency of the distribution channels which means our customers receive their products even quicker. We are strongly positioned to handle the new challenges of the IT landscape, catchword virtualization and terminal server solutions. The Wibu team's comprehensive and dedicated support during all phases of the migration project was exemplary and helped us achieve our project goals within a tight timeline."

Product training

Wibu-Systems organizes several product training sessions each year for the implementation of software protection, software licensing, document protection, media protection, and access control.

You can register for an open training or a special in-house session with an unlimited amount of participants from your company. The open trainings start at 09.00 a.m.; the maximum amount of participants is 6. The sessions can be held in English, Dutch, or Spanish. In-house training can be adapted to meet your specific requirements.

Training location	Protection & Licensing of Software, 1 day, £ 373 / € 399 per participant	CodeMeter License Central Desktop, 1 morning, £ 186 / € 199 per participant	CodeMeter License Central Internet & Back office Int., 1 day, £ 373 / € 399 per participant
Madrid (ES)	24 April 2013	25 April 2013	25 April 2013
Edegem (B)	28 May 2013	29 May 2013	29 May 2013
Driebergen (NL)	25 June 2013	26 June 2013	26 June 2013
Hengelo (NL)	04 Sept 2013	05 Sept 2013	05 Sept 2013
Milton Keynes (UK)	24 Sept 2013	25 Sept 2013	25 Sept 2013
Madrid (ES)	02 Oct 2013	03 Oct 2013	03 Oct 2013

Masterclasses
Smart & secure software licensing

Wibu-Systems offers you the opportunity to participate in one of the special seminars about:
- Code protection against illegal use & reverse engineering
- Licensing of software, with hardware or software-based keys (SmartBind)
- Solutions for embedded software in systems or cloud applications
- Back office integration

Training location	Date	Time
Landgoed Te Werve, Rijswijk (NL)	26 March 2013	11.00-15.00
Bletchley Park, Milton Keynes (UK)	28 March 2013	11.00-15.00
Kennedy Hotel, Kortrijk (B)	16 April 2013	11.00-15.00
Rest. Graaf Floris V, Muiden (NL)	21 May 2013	11.00-15.00
Brussels Kart Groot, Bijgaarden (B)	18 June 2013	11.00-15.00
Creatieve Fabriek, Hengelo (NL)	27 June 2013	11.00-15.00
Shangri-La Hotel, The Shard, London (UK)	23 Sept 2013	11.00-15.00
Namur / Liege (B)	24 Sept 2013	11.00-15.00

Contact your local sales representative for details

United Kingdom / Ireland	+44 (0)2031474727	sales@wibu.co.uk
Netherlands	+31 (0)747501495	sales@wibu-systems.nl
Spain / Portugal	+34 (0)914148768	sales@wibu.es
Belgium / Luxembourg	+32 (0)34000314	sales@wibu.be

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MEDIA
ACCESS
PERFECTION IN SOFTWARE PROTECTION
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CeBIT

Hall 12 | Booth D82
March 5 - 9, 2013
Hannover, Germany

HANNOVER MESSE
8.–12. APRIL 2013

Halle 8 | Stand D5
April 8 - 12, 2013
Hannover, Germany

tech 2013 days

March 5 - 7, 2013
Antwerp, Belgium

Booth 28
March 7 - 8, 2013
The Hague, Netherlands

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