

AX License Framework

Dynamics Software AX License Framework (DYS-ALF) for Microsoft Dynamics™ AX is the tool to control the validity of your Microsoft Dynamics™ AX Add-ons. Microsoft discontinued the Partner Licensing Program and is no longer distributing License Key Serial Numbers for Add-ons. As Microsoft Dynamics AX being an open software application, it is important to control your intellectual property (IP). The AX License Framework enables Microsoft Dynamics AX Independent Software Vendors (ISV's) and Microsoft Dynamics AX Value Added Resellers (VAR's) to secure and control the validation of licenses by number of named or concurrent users, control the period for activation of licenses and many other variables you want to have controlled.

Key benefits:

- ✚ Supports ISV's and VAR's securing their intellectual property
- ✚ Allows ISV's to independently issue licenses, based on single license framework
- ✚ Does not require interaction with Microsoft for normal licensing operations.
- ✚ Enable flexible licensing methods which can be linked to variable metrics (i.e. Microsoft Dynamics AX serial number, number of licensed AX concurrent users, active users, named users, etc).
- ✚ Enables ISV's /VAR's to set expiry dates per license key. This expiry date can be defined independent from the Microsoft Dynamics AX expiry date.
- ✚ Enables ISV's/VAR's to equalize (or not equalize) the license expire date to the expiry date of the standard Microsoft Dynamics AX expiry date for the certification period of your reselling partners
- ✚ Allows for multiple ISV/VAR licenses active in a single installation, yet allow each ISV/VAR to independently issue license keys for their own Add-ons.



- ✚ Respects open software code, doesn't obscure morphx code.
- ✚ Integrates with the normal AX licensing framework, i.e. have the system configuration form behave identical for both standard AX and ISV/VAR licensing.
- ✚ Can secure revenue as a result of number of user dependency
- ✚ Enables ISV's/VAR's to activate user dependent Add-ons (named or concurrent) or non user dependent Add-ons.

Introduction

The AX License Framework enables ISV's/VAR's to secure and control the validation of licenses by many variables, like number of users, activation period. The AX License Framework uses standard .NET encryption libraries, using an RSA crypto provider and a Private/Public key pair.

The AX License Framework incorporates:

- ✚ Code signing of the base license class and each subsequent license classes
- ✚ Date validation
- ✚ Licensed qty validation
- ✚ Several ISV/VAR solutions in a single application, sharing the code for licensing

Organization

The AX License Framework allows multiple ISV's/VAR's to control their license keys. The license keys are linked to a Software License ID (SL ID). This ID makes the ISV/VAR license files unique. This SL ID will be generated and maintained by the Software License Certification Authority.

In order to avoid that ISV's/VAR's could generate each other's license keys the Software License Certification Authority has been founded. This certification authority validates and distributes the public-private key pairs on behalf of the ISV/VAR participating in the AX License Framework License Program.

The Software License Certification Authority (Dynamics Software) will validate the combination of the SL ID and the public key as part of the AX License Framework. This ensures customers they have a valid license ("Certificate").

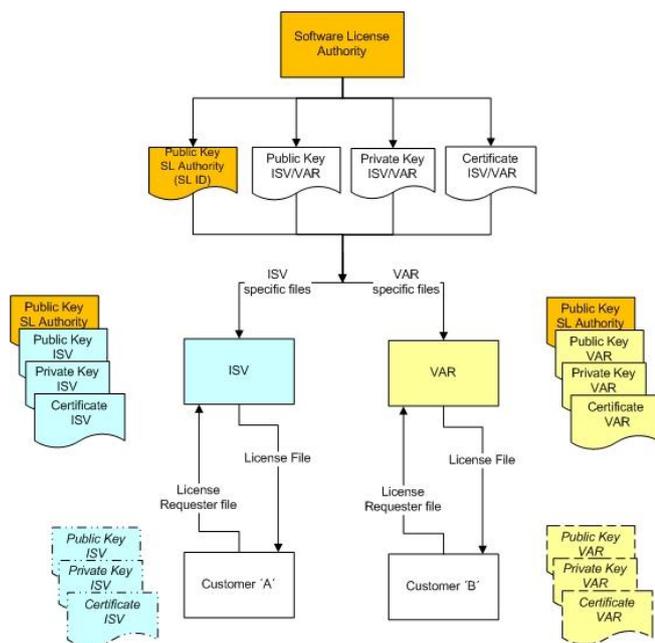


Fig. 1: Schematic overview of relation between the AX License Framework and the ISV/VAR Add-on

The keys as displayed above in orange are distributed and created by the Software license Authority. The turquoise colored keys are in the above example created by an ISV and the distributed to their customer

Licensing procedure

Each Add-on (license key) needs its own License class, similar like the License keys in Microsoft Dynamics AX. The class effectively connects the module (and its activation) to a configuration key.

The public-private key pairs must be part of the ISV/VAR source code. The public key class (and SL ID) will be signed and controlled with a "master" key. The participating ISV /VAR should deliver its SL-ID + public key to the ISV License Certification Authority and a signature for this combination will be generated. The ISV License Certification Authority will validate the combination of the SL ID and the public key as part of the AX License Framework. This ensures customers they have a valid license ("Certificate").

At the customer site the standard Microsoft Dynamics AX application must be installed. Together with the licensed software a public license key is distributed by the ISV/VAR to the customer (Licensee). The customer (Licensee) can generate a license requester file from its application

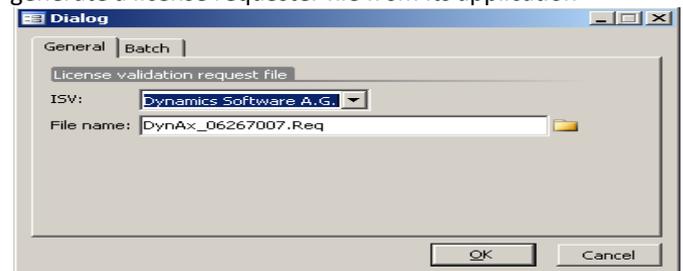


Fig. 2: A license request file is generated

During this step an inventory of the ISV/VAR add-ons will be done by finding all derived classes of the ISV/VAR License base class. ISV License table is populated with the result. The license request file contains a version string, a public key encrypted string of License name, Serial number, Number of licensed users and Expiry date of the standard AX license, and a list of modules within the application.

Name	Vendor	License Code	Qty	Exp. Date	Status
Fieldassist interface	C998ae722630c132823183c27589a42d4...		1	OK	1
Crossedocking	328bee28f9343ca5956fed8ec978d40fe...		1	OK	1
Utiliser assistant	2050526cc0406306cb530343a3945f81c1...		1	OK	1
Formuler standaardinstellingen	98e2d4e039a08c2083d6de9a2c2094e40e...		1	OK	1
Ervenr ontologie	68502a9c20a04e955f0c17a3930a07f83...		1	OK	1
Engineer to Order	9709f9a59605051c7d8666d510f9ba10f733...		1	OK	1
Service Management van Dynam...	78d4dca73e8b74c101567353460969480050...		20	OK	20
Verkooprijp afhandelen	2856a6ba4f08e08f1c174163064e40f10c04...		1	OK	1

Fig. 3: list of add-ons to be licensed

The licensee name and serial number of the Microsoft Dynamics AX license file are used in the AX License

Framework. The AX License Framework license is bound to this licensee name and serial number and will only work with this combination.

The license request file contains an encrypted portion that can only be decrypted with the ISV/VAR private key. It contains base licensing information of the Microsoft Dynamics AX license, to ensure compliance with the license agreements.

Purchased modules, license counts and expiry date (if any) are entered, and each module class(es) its signature + licensed info is put into an activation code. Activation codes are written into a text file and sent to the customer.

Accordingly, license activation codes & class signature are written to the license file. These signatures ensure that code used at the customer is identical to the code used on the license generator installation. Tampering with code on the customer site will invalidate the license.

Information in the license records, like expiry date, serial number and licensee name are signed in similar fashion to the code signature. Using a license on another installation (with a different serial number) will not work. Changed information in the license records will not validate, as the signature differs from the data content.

name	valid until	activation code	Qty	ISV Lic	To use
Fieldassist interface		c2969e7705630c121821482c27289e4524...	1	OK	1
Crossdocking		328bee28f5432bc781956fa32ac97b407f6...	1	OK	1
License assessment		208033c2d494810a05d53121a176d9f81c...	1	OK	1
Populaire standaardinstellingen		1042146352b2c3208126e9e42b2904b456...	1	Violated	1
Externe catalogus		66821a9f2301a4e9350ff3e171a300ea1709...	1	Violated	1
Engineer to Order		9370f9a396a6561c7c086666510f9db2f933...	1	Violated	1
Service Management van Dynam...		780c46ca77a8b74e21587353400962460305...	20	OK	20
Verkooprij afhalen		25b1968a4f0b208f1274303094e4f23234...	1	OK	1

Fig. 4: list of add-ons with violated licenses

Checking

License checking is performed during application startup. This includes quantity checks for licensed users. Violated licenses are flagged as such, and associated configuration keys are disabled. The AX License Framework includes a protection for disabling configuration keys. The license table itself will also check the licenses during form opening and after license file import. At specific areas in the code, additional checks can be performed to check the license, in particular the number of active users. During startup, a warning is displayed if any license expires within a period of 21 days from startup date.

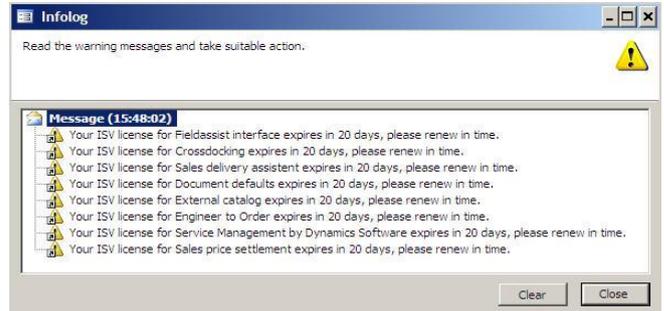


Fig. 5: license expiry warning

User definition

As example, Dynamics Software Service Management concurrent users are defined by the code check as follows: the amount of the licensed AX users should be equal to the amount of licensed Service Management users. If this isn't the case the associated configuration keys are disabled.

For other license keys, Microsoft Dynamics AX active users can be used, i.e. this means that the users in service calls and/or service tasks can be counted to determine the maximum number of distinct users. This is a real time check.

Technical information:

- .NET encryption classes, using Public/Private key pairs.
- License generator environment (By ISV/VAR) & runtime environment (VAR/Customer).
- Base class with general functionality, with its source code string signed with a Checksum, which ensures activation, only occurs if the base class in the generator environment equals the one in the runtime environment.
- Derived license module classes that contain ISV-Id, Module identification, and ActiveCount method.
- The public key is distributed with the ISV/VAR's application.

About Dynamics Software

Dynamics Software AX License Framework is developed and maintained by Dynamics Software AG. Dynamics Software is a Gold Certified Microsoft Dynamics™ AX Independent Software Vendor (ISV). Dynamics Software builds solutions that work with Microsoft Dynamics™ AX. This information is based on Dynamics Software AX License Framework 1.2 for Microsoft Dynamics™ AX, version 4.0 and AX 2009

About Microsoft Dynamics

Microsoft Dynamics is a line of financial, customer-relationship and supply-chain management solutions that help businesses work more effectively. Delivered through a network of channel partners providing specialized services, these integrated, adaptable business management solutions work like and with familiar Microsoft software to streamline processes across an entire business. Microsoft Dynamics AX is developed by Microsoft Corporation and marketed and distributed worldwide. Microsoft Dynamics AX is a trademark of Microsoft Corporation.

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