# SMART 365

## Manual of Operation for Platforms

## CRM 2011/2013/2015/2016/365 (ONPREMISE-ONLINE)

## Version 7.5

https://smartxrm.microsoftcrmportals.com/en-US/SmartEIABus/

**Smart Process 2018-09-10**

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# Reviews and Approvals

## Review Smart Process

| Date | Author | Version | Role |
|---|---|---|---|
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| 2018-09-10 | Juan Carlos Parra | V2 R2 | Arquitecto |

## Aprobaciones Internas

| Date | Name | Version | Role |
|---|---|---|---|
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| | | | |
| | | | |

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# 1 INTRODUCTION

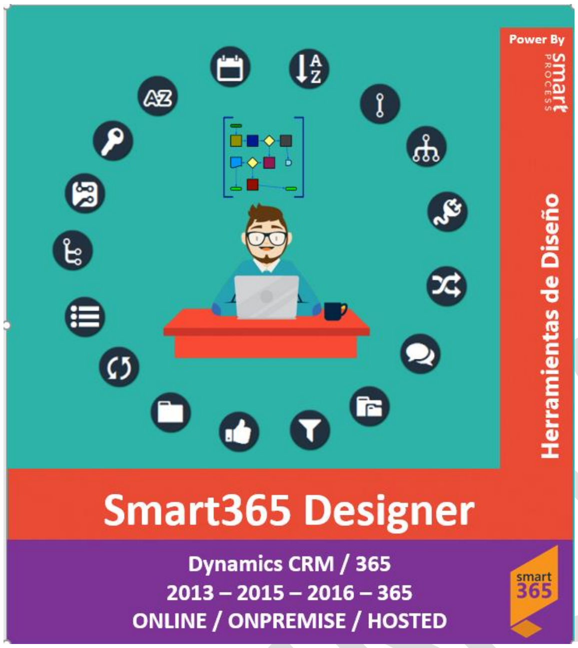
Smart Process company focused on Microsoft Dynamics CRM, introduces an integration product based on the Dynamics platform to cover all the needs of an organization in the use of the solution by providing the required profiles:

It is expected that organizations can count on the support of our organization to grow the use of the solution in the organizations processes in an effective way.

## 1.1 How Smart 365 works

Smart 365 works with its two main components, SMART ENGINE (Img-a) and SMART DESIGNER (Img-b); The smart engine is responsible for the integration taking the data from an application of origin to a destination application applying all the business logic that is configured, this component is an application that is installed on an integration server; the smart designer is in charge of the configuration, supervision and parameterization of the integrations, the smart designer uses the CRM as its design platform and not necessarily where the application is installed.

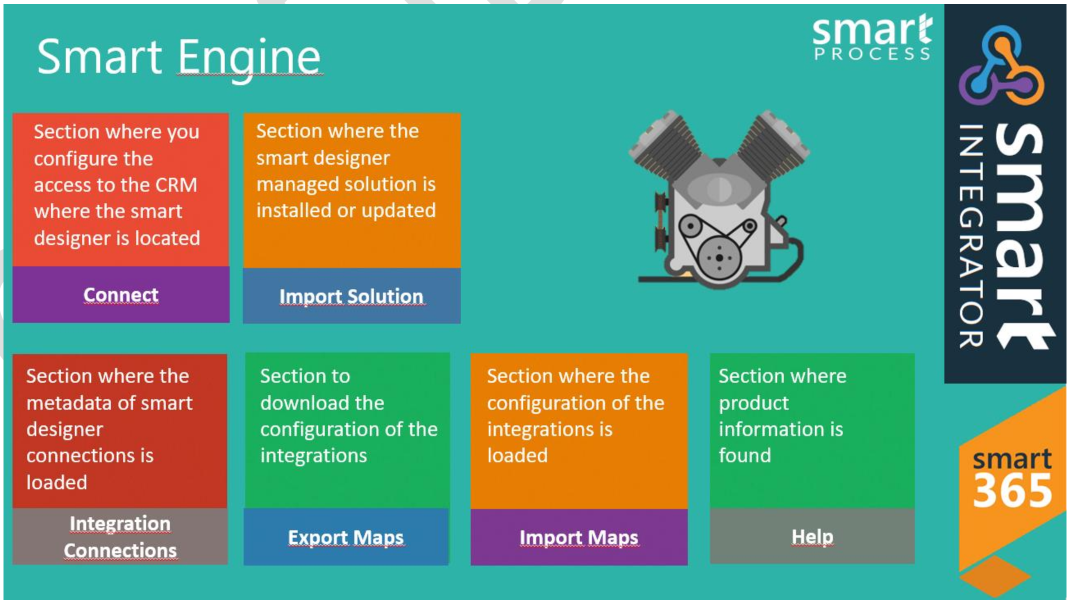
**Img-a**



Img-b

## 1.2 Smart 365 Architecture

### 1.2.1 Smart Engine



Smart Engine

Section where you configure the access to the CRM where the smart designer is located

Connect

Section where the smart designer managed solution is installed or updated

Import Solution

Section where the metadata of smart designer connections is loaded

Integration Connections

Section to download the configuration of the integrations

Export Maps

Section where the configuration of the integrations is loaded

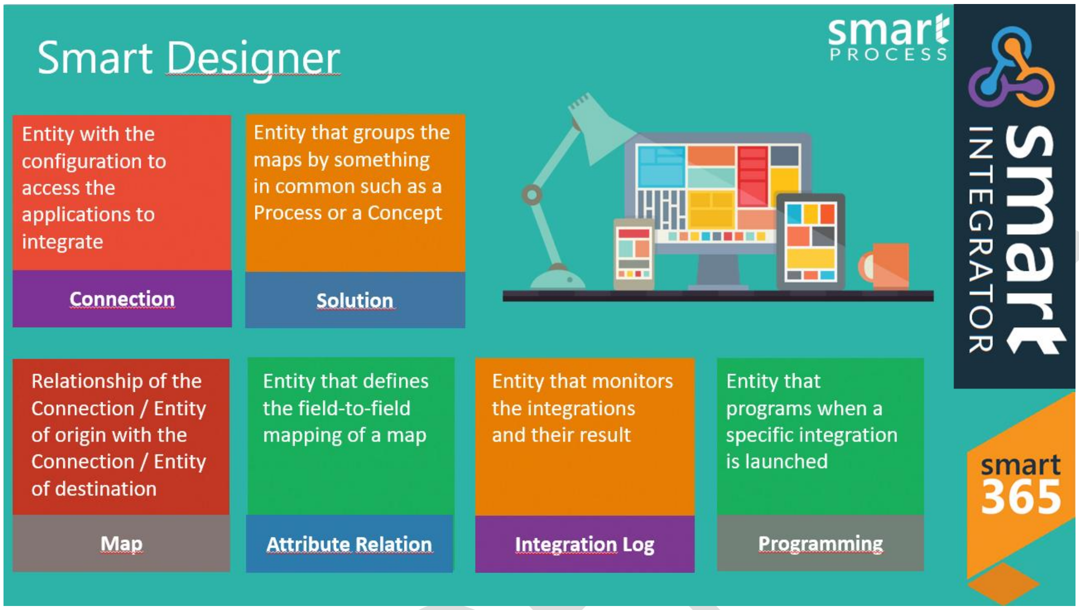
Import Maps

Section where product information is found

Help

Img-c

### 1.2.2 Smart Designer



Smart Designer

Entity with the configuration to access the applications to integrate

**Connection**

Entity that groups the maps by something in common such as a Process or a Concept

**Solution**

Relationship of the Connection / Entity of origin with the Connection / Entity of destination

**Map**

Entity that defines the field-to-field mapping of a map

**Attribute Relation**

Entity that monitors the integrations and their result

**Integration Log**

Entity that programs when a specific integration is launched

**Programming**

**Img-d**

# 2 SMART ENGINE

The smart engine is responsible for the integration taking the data from an application of origin to a destination application applying all the business logic that is configured, this component is an application that is installed on an integration server.

## 2.1 Requirements

Server for Integration Engine:

a) Minimum 8 GB RAM, recommended 16GB

b) 50 GB Hard Disk

c) Intel processor 2.6 Ghz

d) Operating System: Windows Server 2008 R2, Windows Server 2012 std, Windows Server 2012 R2

e) Framework 3.5 and 4.5

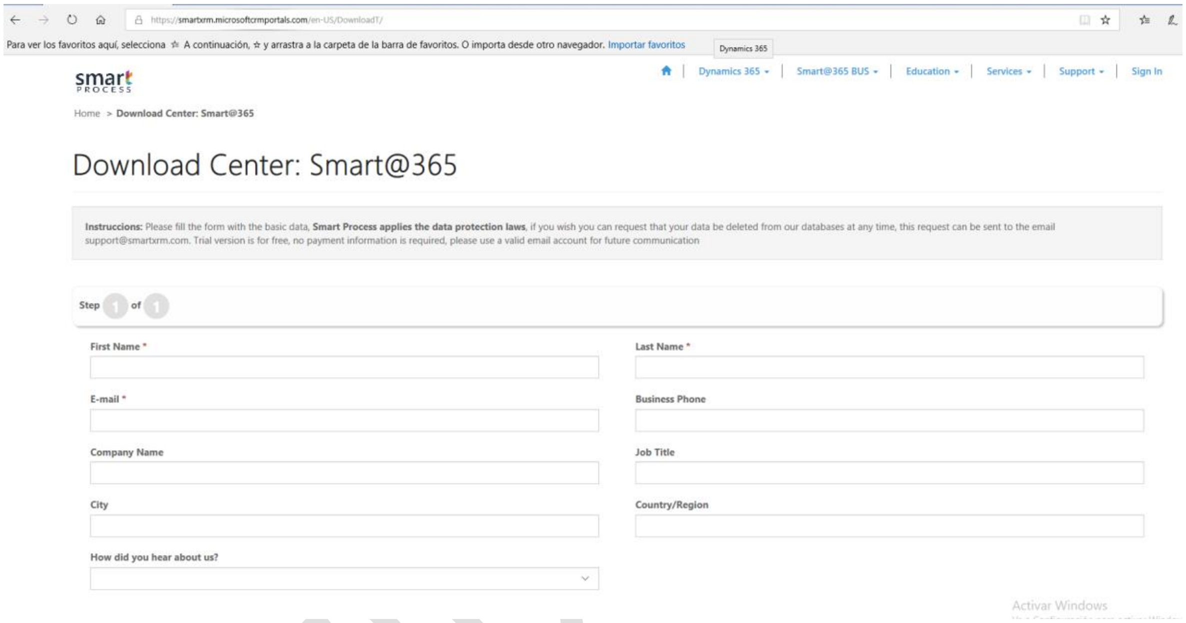
f) IIS 7.0 or higher

g) Internet.

## 2.2 Installation and Implementation

- Download the .zip application from the following link:

https://smartxrm.microsoftcrmportals.com/en-US/DownloadT


https://smartxrm.microsoftcrmportals.com/en-US/DownloadT/
Para ver los favoritos aquí, selecciona ☆ A continuación, ☆ y arrastra a la carpeta de la barra de favoritos. O importa desde otro navegador. Importar favoritos
Dynamics 365
smart PROCESS
Dynamics 365 ▾ | Smart@365 BUS ▾ | Education ▾ | Services ▾ | Support ▾ | Sign In
Home > Download Center: Smart@365
Activar Windows

Download Center: Smart@365

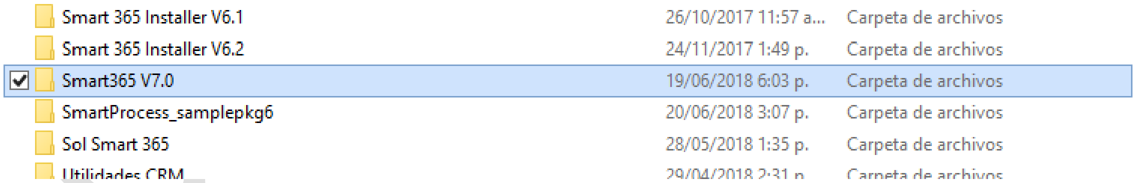
**Instruccions:** Please fill the form with the basic data, **Smart Process applies the data protection laws**, if you wish you can request that your data be deleted from our databases at any time, this request can be sent to the email support@smartxrm.com. Trial version is for free, no payment information is required, please use a valid email account for future communication

Step 1 of 1

| | |
|---|---|
| First Name * | Last Name * |
| E-mail * | Business Phone |
| Company Name | Job Title |
| City | Country/Region |
| How did you hear about us? | |

**Img-0**

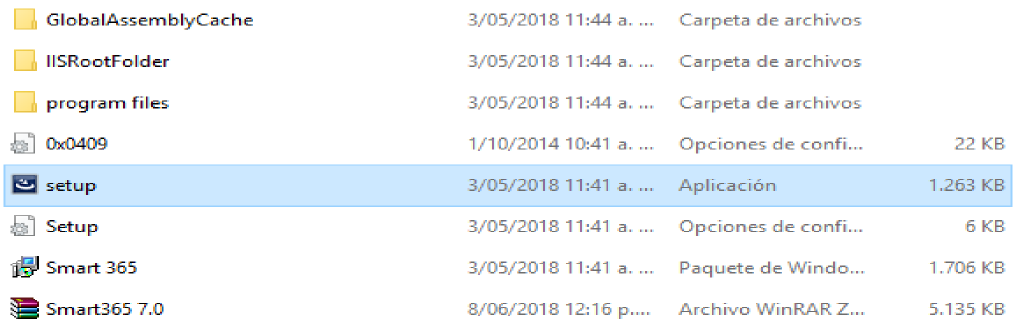
- **Smart Integration**, comes with a .zip file (Smart365 V7.X.zip), unzip the file in your local directory where the integration engine will be installed, there you will find a folder with the same name (Img-1).



| | | |
|---|---|---|
| Smart 365 Installer V6.1 | 26/10/2017 11:57 a... | Carpeta de archivos |
| Smart 365 Installer V6.2 | 24/11/2017 1:49 p. | Carpeta de archivos |
| ☑ Smart365 V7.0 | 19/06/2018 6:03 p. | Carpeta de archivos |
| SmartProcess_samplepkg6 | 20/06/2018 3:07 p. | Carpeta de archivos |
| Sol Smart 365 | 28/05/2018 1:35 p. | Carpeta de archivos |
| Utilidades CRM | 29/04/2018 2:31 p. | Carpeta de archivos |

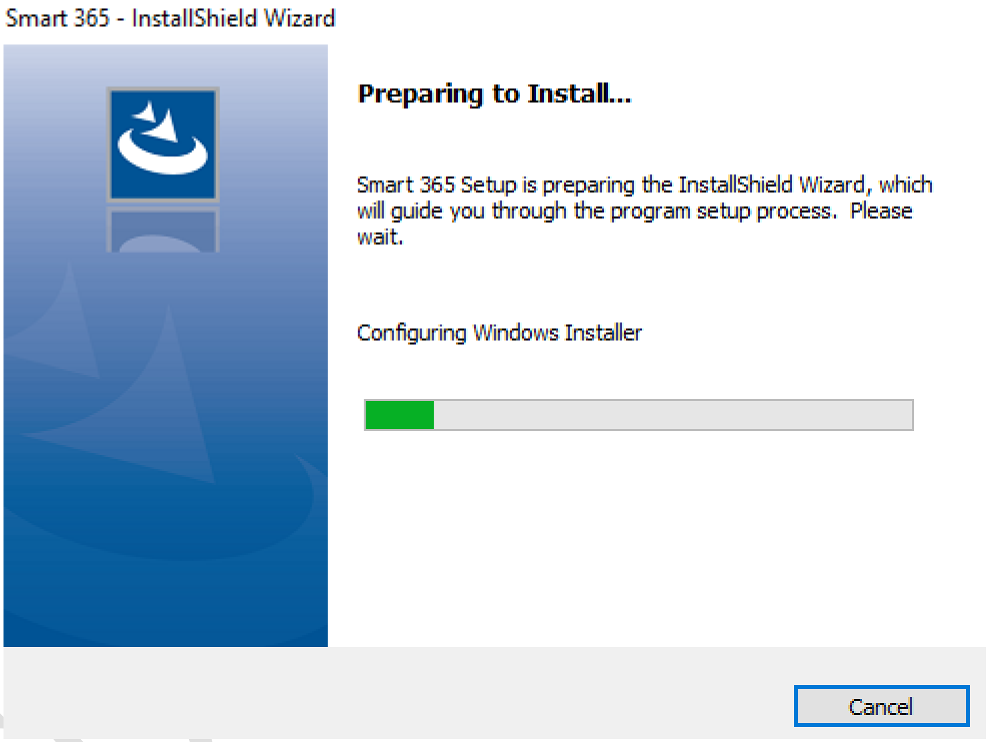
**Img-1**

- Open the contents of the folder and run the setup (Img-2) file, an installation window (Img-3) will be displayed, wait for it to complete and then press Next (Img-4)



| | | | |
|---|---|---|---|
| GlobalAssemblyCache | 3/05/2018 11:44 a. ... | Carpeta de archivos | |
| IISRootFolder | 3/05/2018 11:44 a. ... | Carpeta de archivos | |
| program files | 3/05/2018 11:44 a. ... | Carpeta de archivos | |
| 0x0409 | 1/10/2014 10:41 a. ... | Opciones de confi... | 22 KB |
| setup | 3/05/2018 11:41 a. ... | Aplicación | 1.263 KB |
| Setup | 3/05/2018 11:41 a. ... | Opciones de confi... | 6 KB |
| Smart 365 | 3/05/2018 11:41 a. ... | Paquete de Windo... | 1.706 KB |
| Smart365 7.0 | 8/06/2018 12:16 p.... | Archivo WinRAR Z... | 5.135 KB |

**Img-2**



Smart 365 - InstallShield Wizard

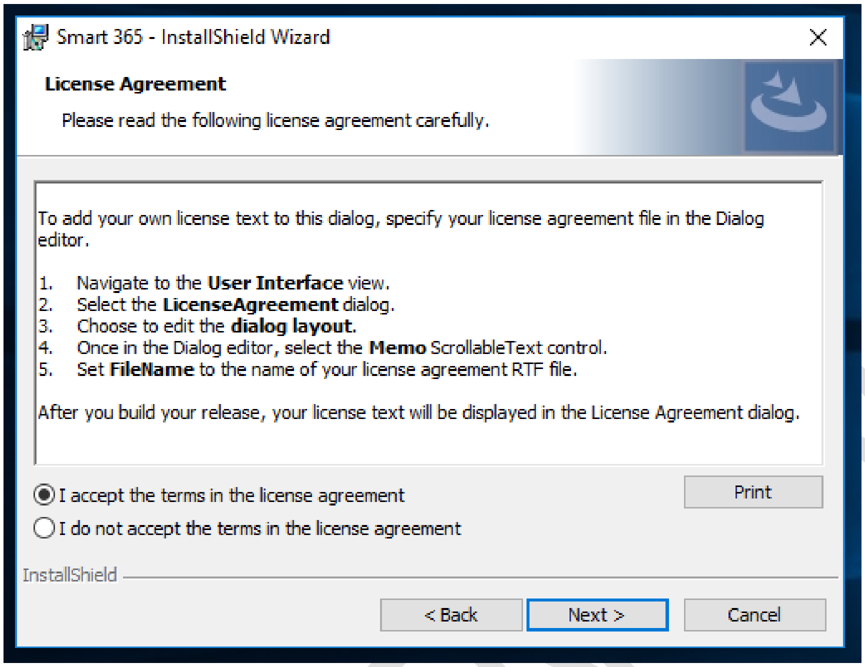
**Preparing to Install...**

Smart 365 Setup is preparing the InstallShield Wizard, which will guide you through the program setup process. Please wait.

Configuring Windows Installer

**Img-3**

- The Contract will be displayed, accept the terms and conditions and press Next (Img-4).



Smart 365 - InstallShield Wizard

**License Agreement**

Please read the following license agreement carefully.

To add your own license text to this dialog, specify your license agreement file in the Dialog editor.

1. Navigate to the **User Interface** view.
2. Select the **LicenseAgreement** dialog.
3. Choose to edit the **dialog layout.**
4. Once in the Dialog editor, select the **Memo** ScrollableText control.
5. Set **FileName** to the name of your license agreement RTF file.

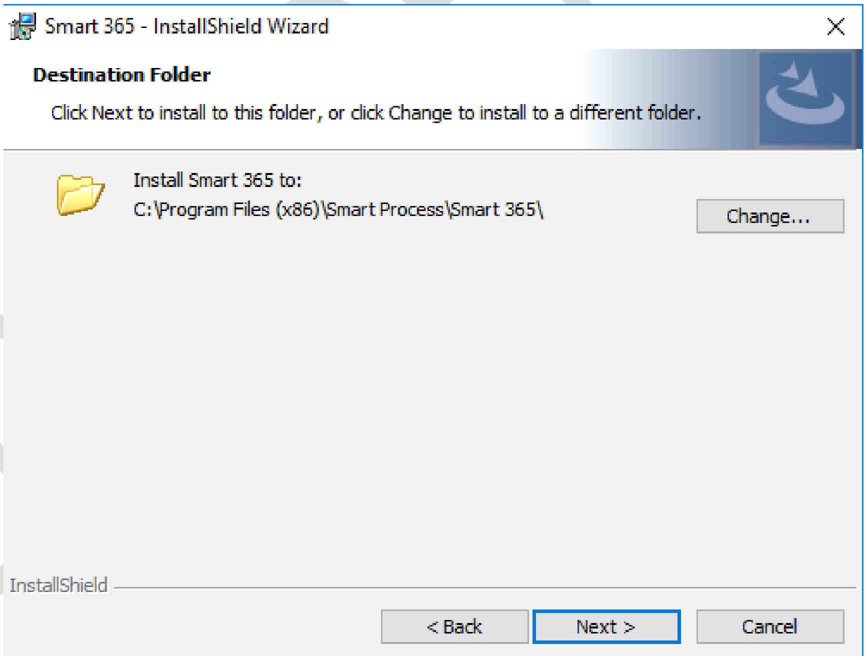
After you build your release, your license text will be displayed in the License Agreement dialog.

● I accept the terms in the license agreement

○ I do not accept the terms in the license agreement

**Img-4**

- Click Next to install to this folder (Img-5)



Smart 365 - InstallShield Wizard

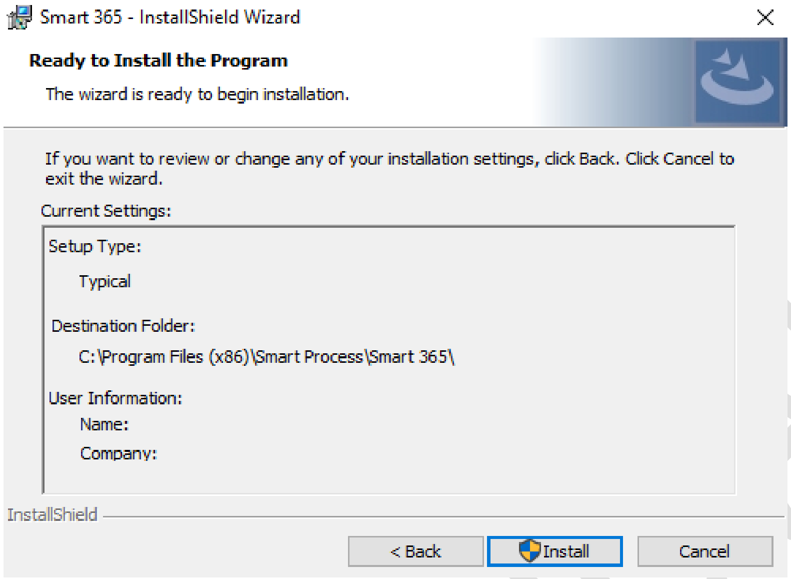
**Destination Folder**

Click Next to install to this folder, or click Change to install to a different folder.

Install Smart 365 to:
C:\Program Files (x86)\Smart Process\Smart 365\

**Img-5**

- Next, you will find the installation data (Img-6) press Install, you will be notified if the user can make changes to the equipment press Yes and wait for the product to be installed, You will find a screen (Img-7), where you are notified of the installation of the product, click Finish.



Smart 365 - InstallShield Wizard

**Ready to Install the Program**

The wizard is ready to begin installation.

If you want to review or change any of your installation settings, click Back. Click Cancel to exit the wizard.

Current Settings:

Setup Type:

Typical

Destination Folder:

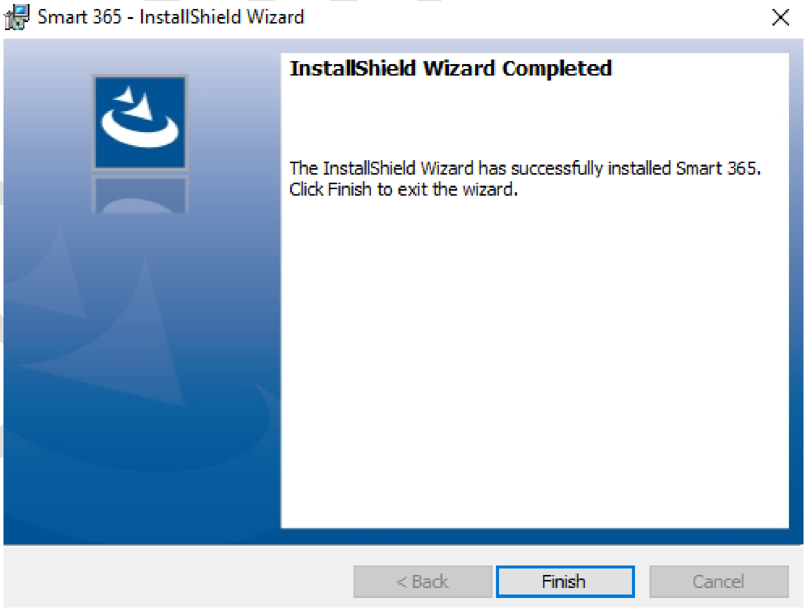
C:\Program Files (x86)\Smart Process\Smart 365\

User Information:

Name:

Company:

**Img-6**



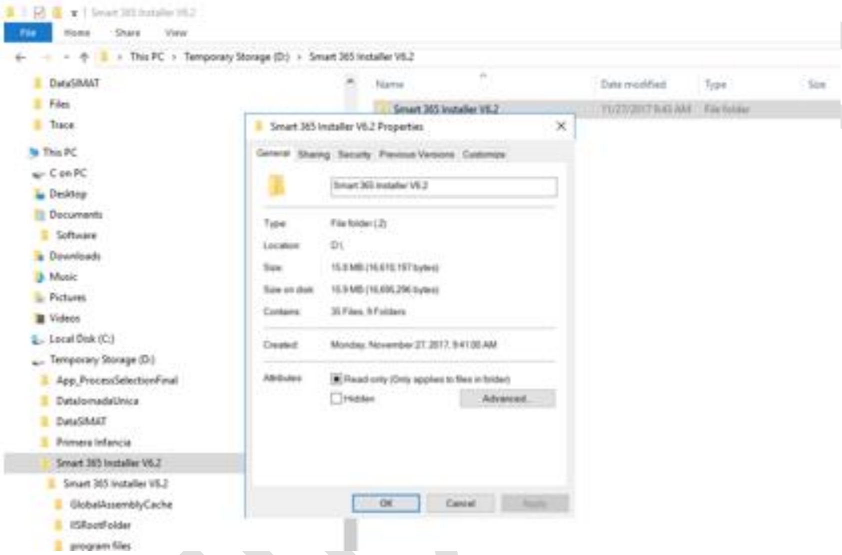
Smart 365 - InstallShield Wizard

**InstallShield Wizard Completed**

The InstallShield Wizard has successfully installed Smart 365. Click Finish to exit the wizard.

**Img-7**

- After the installation is complete, we proceed to give permissions to the folder where the product was installed, for this we go to: \ Program Files (X86) \ SmartProcess (Img-10), there we right click on the Smart folder and Select Properties will open a window (Img-11), and press Edit, another window will open where we select Users in the first tab and give Total Control in the second tab (Img-12).



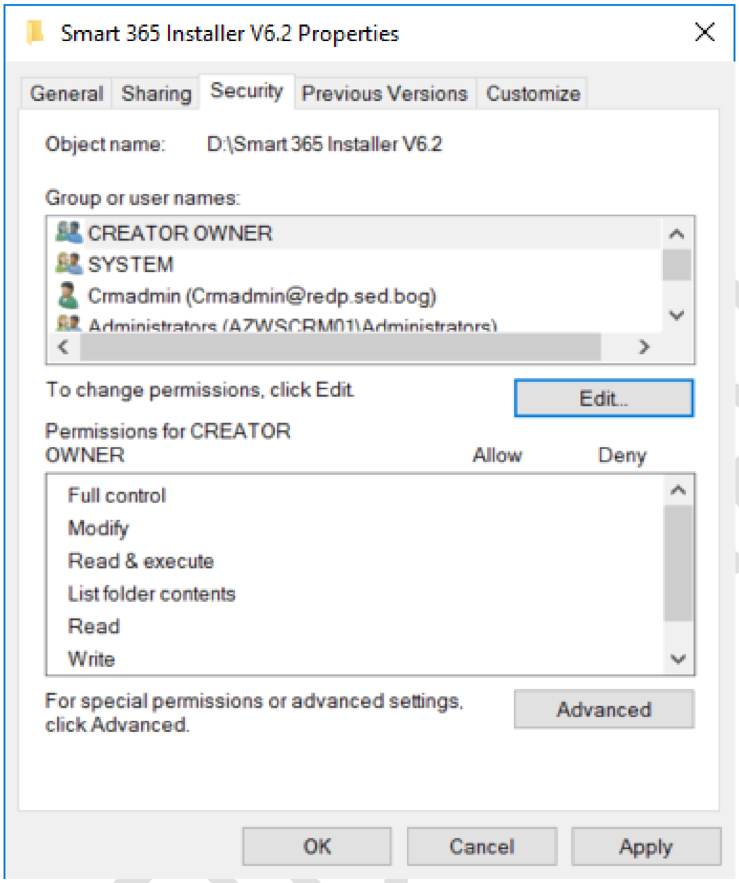
Smart 365 Installer V6.2

Type: File folder (.2)
Location: D:\
Size: 15.8 MB (16,610,197 bytes)
Size on disk: 15.9 MB (16,696,296 bytes)
Contains: 35 Files, 9 Folders

Created: Monday, November 27, 2017, 9:41:00 AM

Attributes: ■ Read-only (Only applies to files in folder)
□ Hidden

**Img-10**



Object name: D:\Smart 365 Installer V6.2

Group or user names:

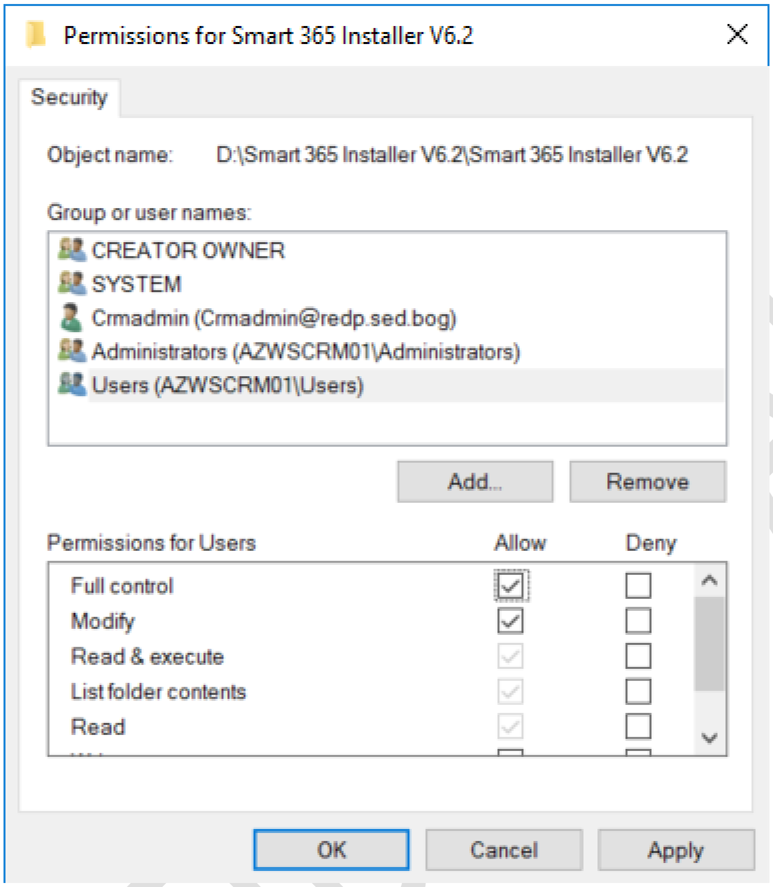
- CREATOR OWNER
- SYSTEM
- Crmadmin (Crmadmin@redp.sed.bog)
- Administrators (AZWSCRM01\Administrators)

To change permissions, click Edit.

| Permissions for CREATOR OWNER | Allow | Deny |
|---|---|---|
| Full control | | |
| Modify | | |
| Read & execute | | |
| List folder contents | | |
| Read | | |
| Write | | |

For special permissions or advanced settings, click Advanced.

**Img-11**



Object name: D:\Smart 365 Installer V6.2\Smart 365 Installer V6.2

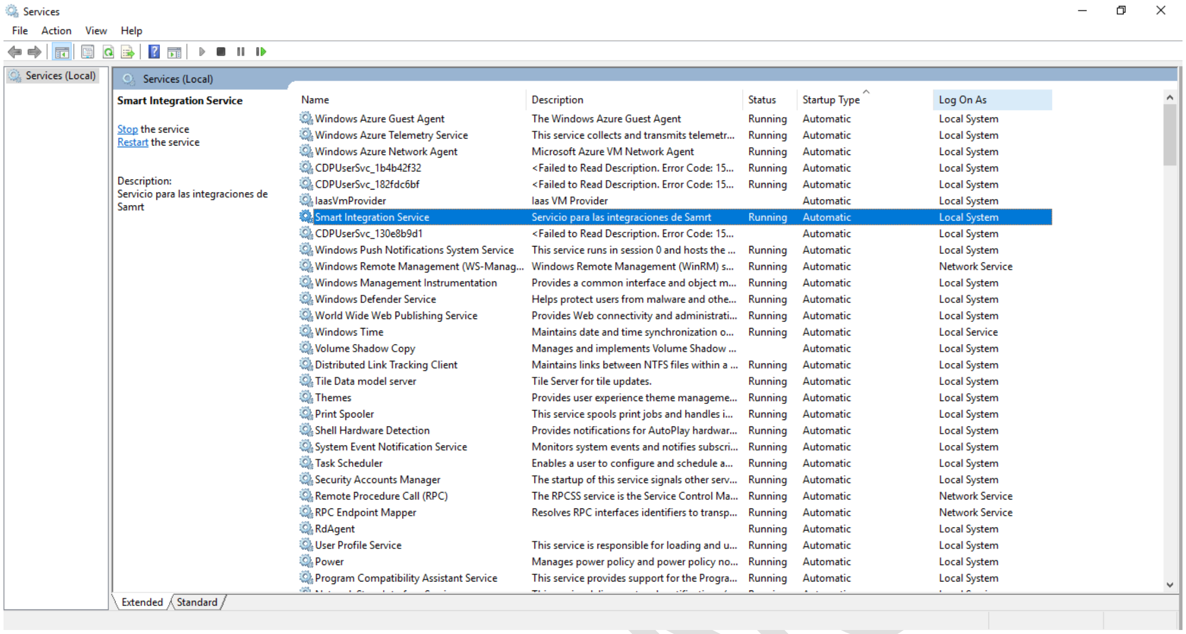
Group or user names:

- CREATOR OWNER
- SYSTEM
- Crmadmin (Crmadmin@redp.sed.bog)
- Administrators (AZWSCRM01\Administrators)
- Users (AZWSCRM01\Users)

| Permissions for Users | Allow | Deny |
|---|---|---|
| Full control | ☑ | □ |
| Modify | ☑ | □ |
| Read & execute | ☑ | □ |
| List folder contents | ☑ | □ |
| Read | ☑ | □ |

Img-12

- In this moment the Integration engine has been installed correctly, to visualize the correct operation of the engine, we will check the service installed in the machine, for this we execute Windows services and we review the Integration Service SP (Img-13) That its state is initiated and type of Automatic start, we can change the user that executes the service, since this user will execute the integrations and therefore for certain connections (BD SQL, BD Oracle, etc) with Windows authentication the user of the Service will be the one that authenticates, therefore to change it double click on the service and change it in the screen Next (Img-14).



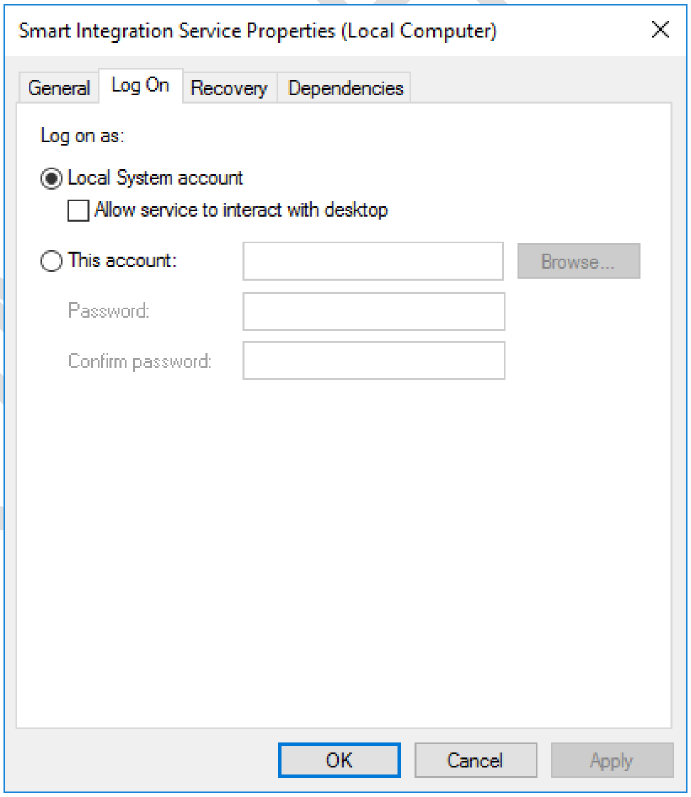
Smart Integration Service

Stop the service
Restart the service

Description:
Servicio para las integraciones de Samrt

| Name | Description | Status | Startup Type | Log On As |
|---|---|---|---|---|
| Windows Azure Guest Agent | The Windows Azure Guest Agent | Running | Automatic | Local System |
| Windows Azure Telemetry Service | This service collects and transmits telemetr... | Running | Automatic | Local System |
| Windows Azure Network Agent | Microsoft Azure VM Network Agent | Running | Automatic | Local System |
| CDPUserSvc_1b4b42f32 | <Failed to Read Description. Error Code: 15... | Running | Automatic | Local System |
| CDPUserSvc_182fdc6bf | <Failed to Read Description. Error Code: 15... | Running | Automatic | Local System |
| IaasVmProvider | Iaas VM Provider |  | Automatic | Local System |
| Smart Integration Service | Servicio para las integraciones de Samrt | Running | Automatic | Local System |
| CDPUserSvc_130e8b9d1 | <Failed to Read Description. Error Code: 15... |  | Automatic | Local System |
| Windows Push Notifications System Service | This service runs in session 0 and hosts the ... | Running | Automatic | Local System |
| Windows Remote Management (WS-Manag... | Windows Remote Management (WinRM) s... | Running | Automatic | Network Service |
| Windows Management Instrumentation | Provides a common interface and object m... | Running | Automatic | Local System |
| Windows Defender Service | Helps protect users from malware and othe... | Running | Automatic | Local System |
| World Wide Web Publishing Service | Provides Web connectivity and administrati... | Running | Automatic | Local System |
| Windows Time | Maintains date and time synchronization o... | Running | Automatic | Local Service |
| Volume Shadow Copy | Manages and implements Volume Shadow ... |  | Automatic | Local System |
| Distributed Link Tracking Client | Maintains links between NTFS files within a ... | Running | Automatic | Local System |
| Tile Data model server | Tile Server for tile updates. | Running | Automatic | Local System |
| Themes | Provides user experience theme manageme... | Running | Automatic | Local System |
| Print Spooler | This service spools print jobs and handles i... | Running | Automatic | Local System |
| Shell Hardware Detection | Provides notifications for AutoPlay hardwar... | Running | Automatic | Local System |
| System Event Notification Service | Monitors system events and notifies subscri... | Running | Automatic | Local System |
| Task Scheduler | Enables a user to configure and schedule a... | Running | Automatic | Local System |
| Security Accounts Manager | The startup of this service signals other serv... | Running | Automatic | Local System |
| Remote Procedure Call (RPC) | The RPCSS service is the Service Control Ma... | Running | Automatic | Network Service |
| RPC Endpoint Mapper | Resolves RPC interfaces identifiers to transp... | Running | Automatic | Network Service |
| RdAgent |  | Running | Automatic | Local System |
| User Profile Service | This service is responsible for loading and u... | Running | Automatic | Local System |
| Power | Manages power policy and power policy no... | Running | Automatic | Local System |
| Program Compatibility Assistant Service | This service provides support for the Progra... | Running | Automatic | Local System |

**Img-13**



Log on as:

● Local System account

□ Allow service to interact with desktop

○ This account:

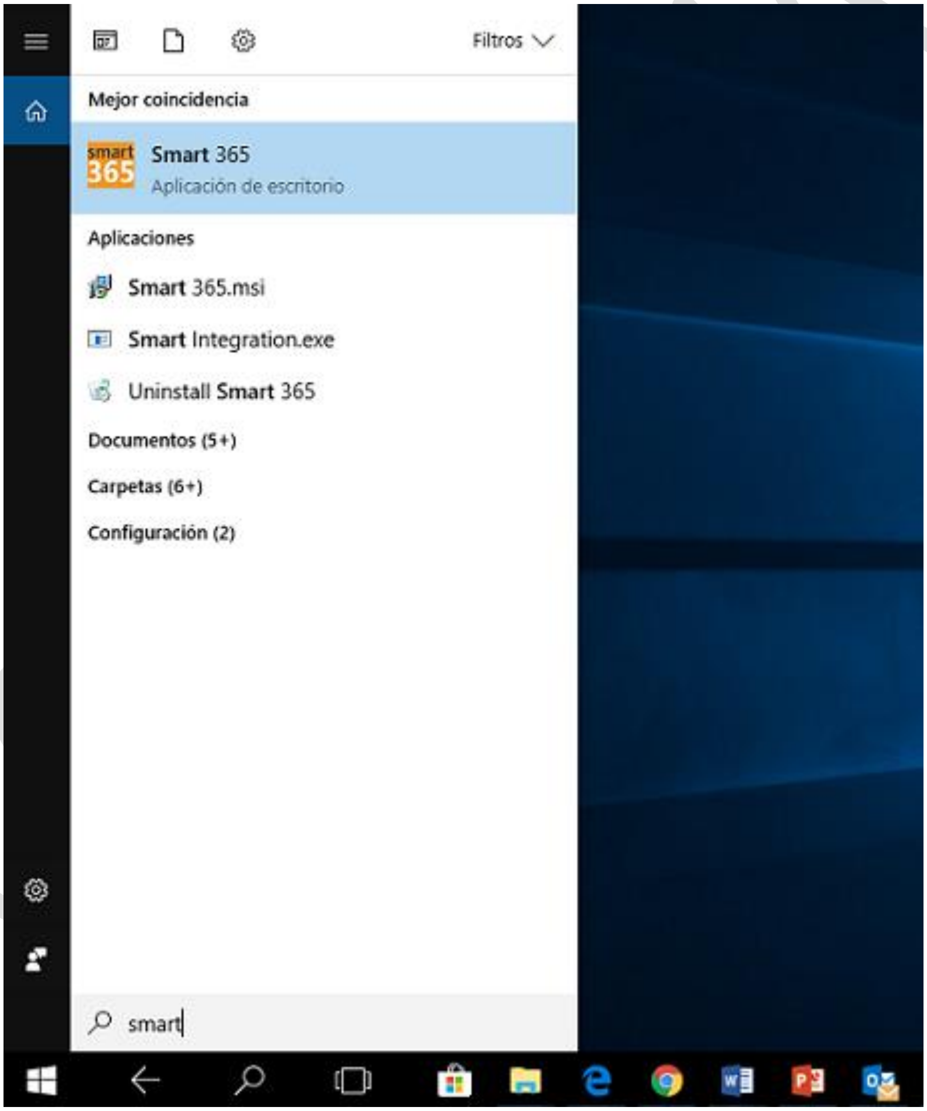
Password:

Confirm password:

**Img-14**

## 2.3 Engine App

- After the installation of the engine, the next step is to configure the engine to connect to the platform of CRM Dynamics where you configure, manage and monitor integrations; so we look for in Windows with the word SMART and there to show us in your search aplicación(Img-15), we proceed to run Smart Integration.exe and there the app opens(Img-16).



Filtros

Mejor coincidencia

Smart 365
Aplicación de escritorio

Aplicaciones

Smart 365.msi

Smart Integration.exe

Uninstall Smart 365

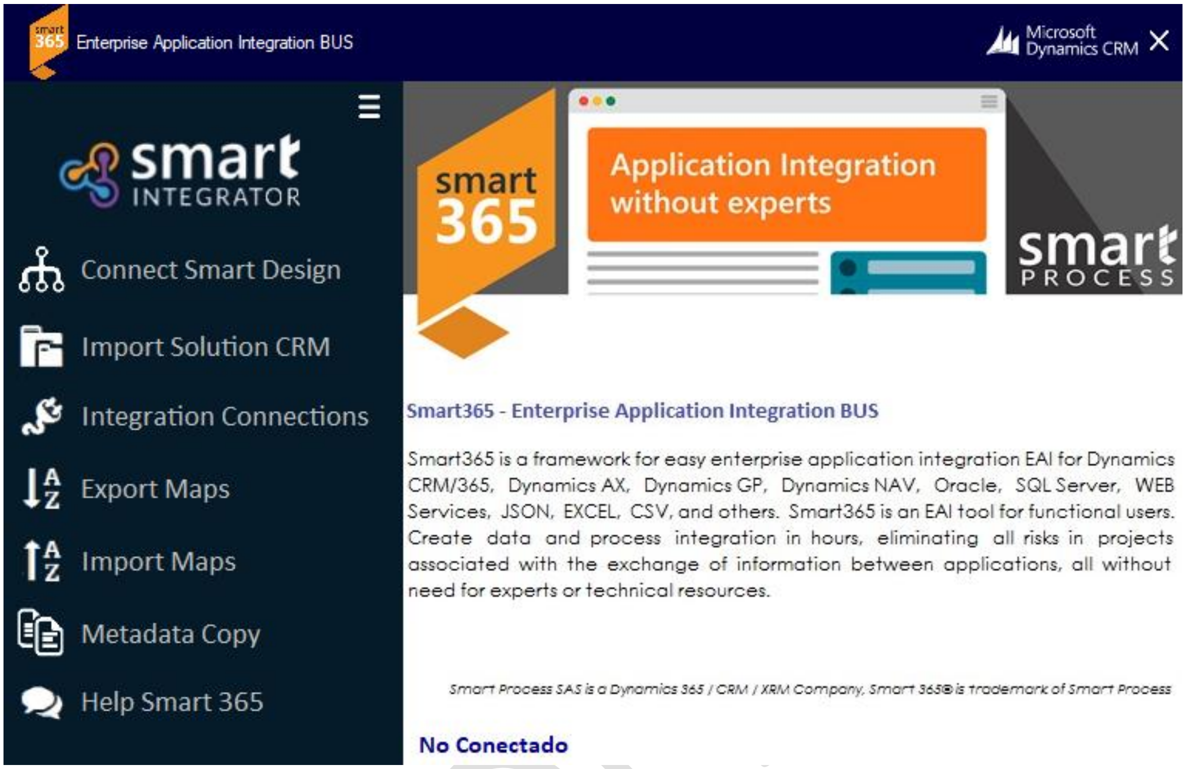
Documentos (5+)

Carpetas (6+)

Configuración (2)

smart

**Img-15**



Smart365 - Enterprise Application Integration BUS

Smart365 is a framework for easy enterprise application integration EAI for Dynamics CRM/365, Dynamics AX, Dynamics GP, Dynamics NAV, Oracle, SQL Server, WEB Services, JSON, EXCEL, CSV, and others. Smart365 is an EAI tool for functional users. Create data and process integration in hours, eliminating all risks in projects associated with the exchange of information between applications, all without need for experts or technical resources.

Smart Process SAS is a Dynamics 365 / CRM / XRM Company, Smart 365® is trademark of Smart Process

No Conectado

**Img-16**

### 2.3.1 Connect Smart Design

- The first thing is to configure the CRM, to do this press the **Connect Smart Design** button and the connection configuration screen (Img-17) is displayed, in this screen the following data is processed:

  - **Connection Name:** A name that refers to the organization to be connected is placed.

  - **Url Implementation:** The Discovery URL is placed, this data is found in CRM dynamics in CONFIGURATION \ PERSONALIZATIONS \ DEVELOPER RESOURCES.

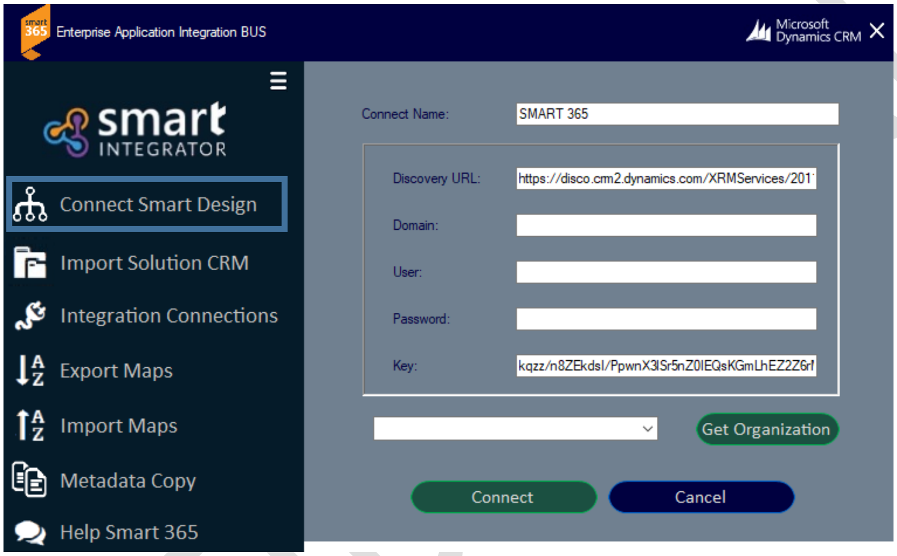
  - **Domain:** If the CRM Implementation is Online that field is not diligent, otherwise if Local (On-Premise) is placed the domain where the CRM implementation is hosted.

  - **User:** System administrator user and Dynamics CRM Implementer.

  - **Password:** User Password to enter CRM Dynamics.

- **Key:** Licensing Key provided by SMART PROCESS (See Licensing in https://smartxrm.microsoftcrmportals.com/en-US/SmartEIABus/).

- When completing the above information we press **Get Org**, there brings us the organizations available given the premise that the CRM is Multiorganizational, so we choose which we will implement the integrator and we will **accept**.



Connect Name: SMART 365

Discovery URL: https://disco.crm2.dynamics.com/XRMServices/201

Domain:

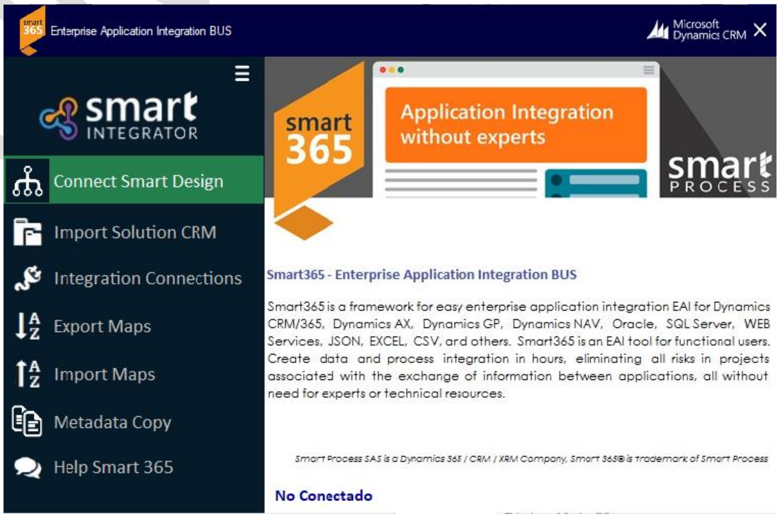
User:

Password:

Key: kqzz/n8ZEkdsI/PpwnX3lSr5nZ0IEQsKGmLhEZ2Z6r

Img-17

- Finally, the start screen with all active options (Img-18a) will be displayed, each button and operation of this application will be explained in more detail later.



Smart365 - Enterprise Application Integration BUS

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No Conectado

**Img-18a**

- **File .config**

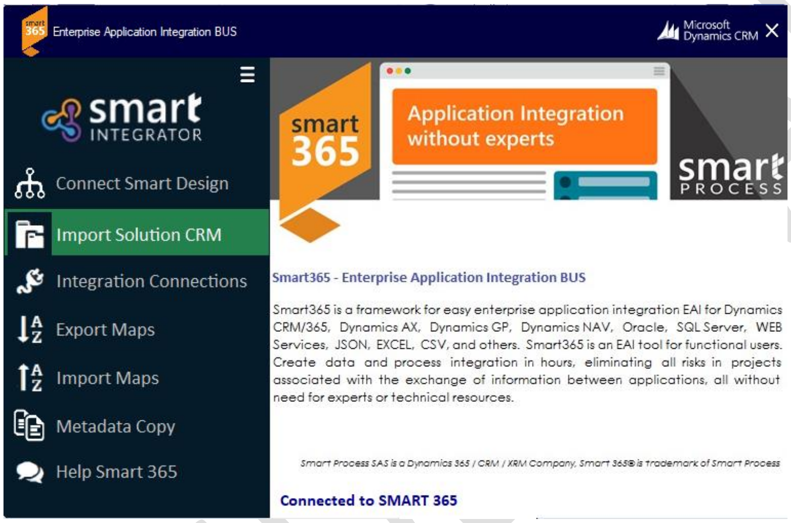
  After configured connection all parameters are stored in the .config file, to access that file follow the following path**: C:\Program Files (x 86) \Smart Process\Smart 365\Files**, there you will find the **Smart Integration.exe.config** file, open a program's text (Notedpad, Word, etc.), there you will find the following information:

```
<?xml version="1.0" encoding="utf-8"?>
<configuration>
  <appSettings>
    <add key="OrganizationName" value="DBConnection String 1" />
    <add key="ClientSettingsProvider.ServiceUri" value="" />
  </appSettings>
  <connectionStrings>
    <add name="Name" connectionString="SMART" />
    <add name="UrlDiscovery"
connectionString="https://disco.crm2.dynamics.com/XRMServices/2011/Discovery.svc"
/>
    <add name="OrganizationName" connectionString="ORG" />
    <add name="Domain" connectionString="XXXX" />
    <add name="User" connectionString="Admin@smartprocess.onmicrosoft.com" />
    <add name="Pass" connectionString="XXXXXX" />
    <add name="Solucion" connectionString="" />
    <add name="MapaTodos" connectionString="" />
    <add name="Mapa" connectionString="" />
    <add name="ProcesoAlt" connectionString="" />
    <add name="Key" connectionString="XXXXXXXXXXXXXXXXX" />
    <add name="TimeRelaunch" connectionString="15" />
    <add name="AllowParallel" connectionString="Y" />
  </connectionStrings>
</configuration>
```

**NOTE:** Each time you run the Engine App you need to reconnect to the CRM by clicking on **Connect** and have the license key on hand, enter it, run **Get Org** select the Organization and press **OK**

## 2.3.2 Import Solution

- After Connected, the next step is to deploy the solution in the CRM, in the Smart Integration App (Img-18b), click on the Import Solution button(Img-18c), validate if the CRM implementation already has An installed solution, otherwise a window with the question is displayed if you want to create the solution in the connected organization, if it already exists it is for the update of the same.



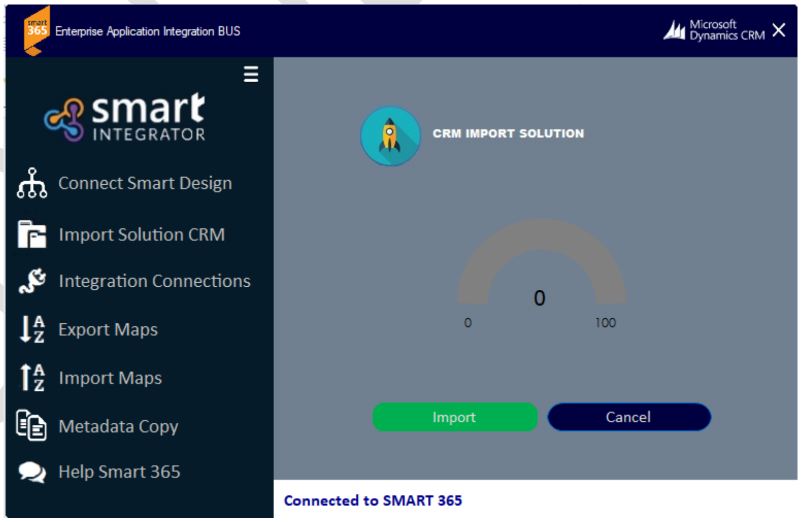
Smart365 - Enterprise Application Integration BUS

Smart365 is a framework for easy enterprise application integration EAI for Dynamics CRM/365, Dynamics AX, Dynamics GP, Dynamics NAV, Oracle, SQL Server, WEB Services, JSON, EXCEL, CSV, and others. Smart365 is an EAI tool for functional users. Create data and process integration in hours, eliminating all risks in projects associated with the exchange of information between applications, all without need for experts or technical resources.

Smart Process SAS is a Dynamics 365 / CRM / XRM Company, Smart 365® is trademark of Smart Process

Connected to SMART 365

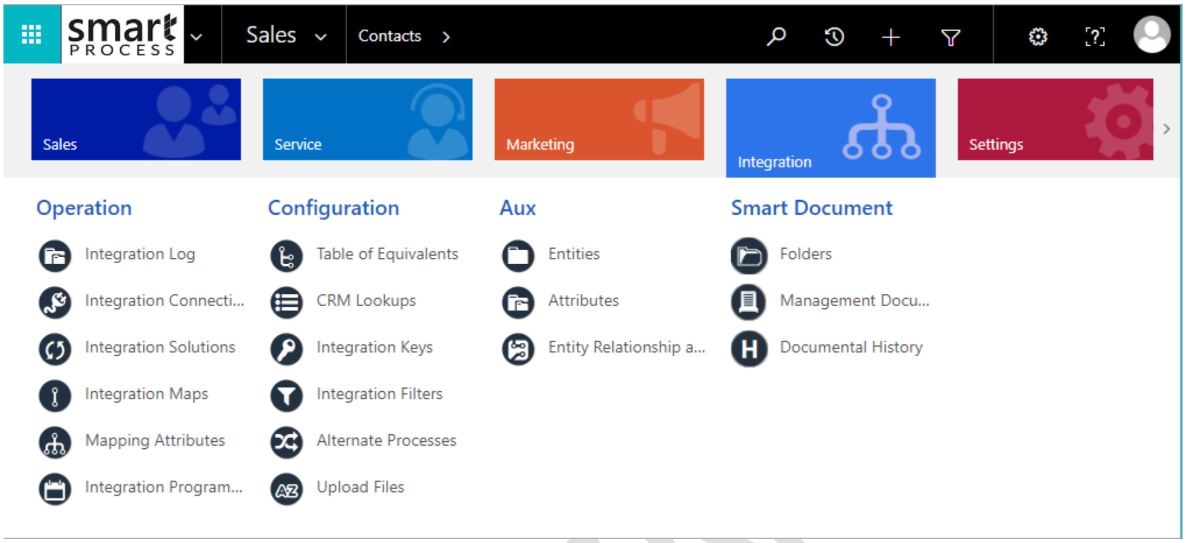
**Img-18b**



Connected to SMART 365

**Img-18c**

- To View the Correct CRM Dynamics installation Enter Dynamics and you will find the **Integration** module as shown by the (Img-19a)

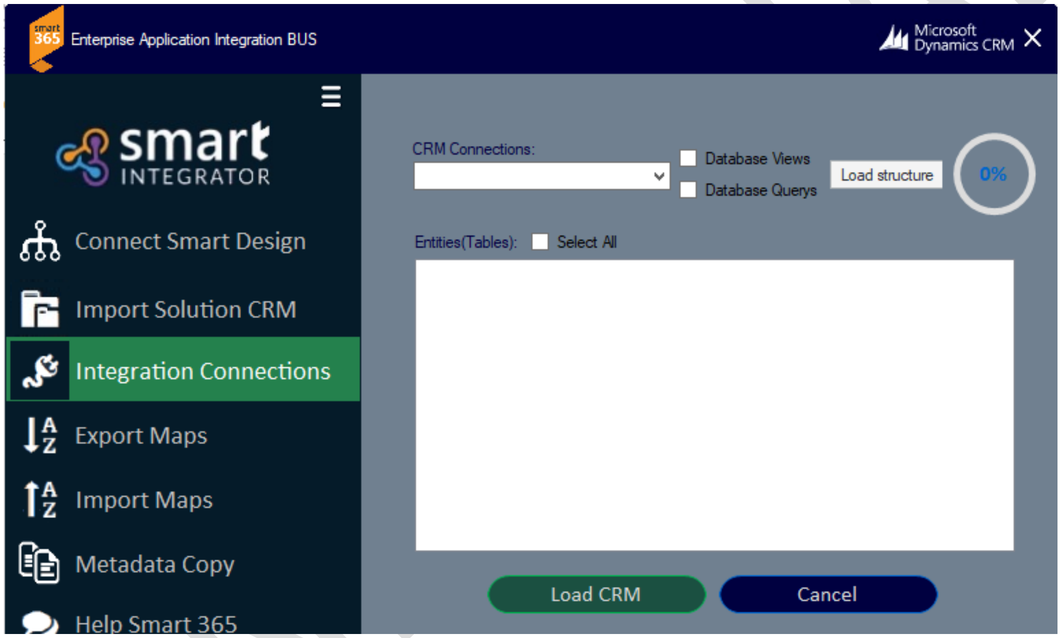


**Img-19a**

### 2.3.3 Integration Connections

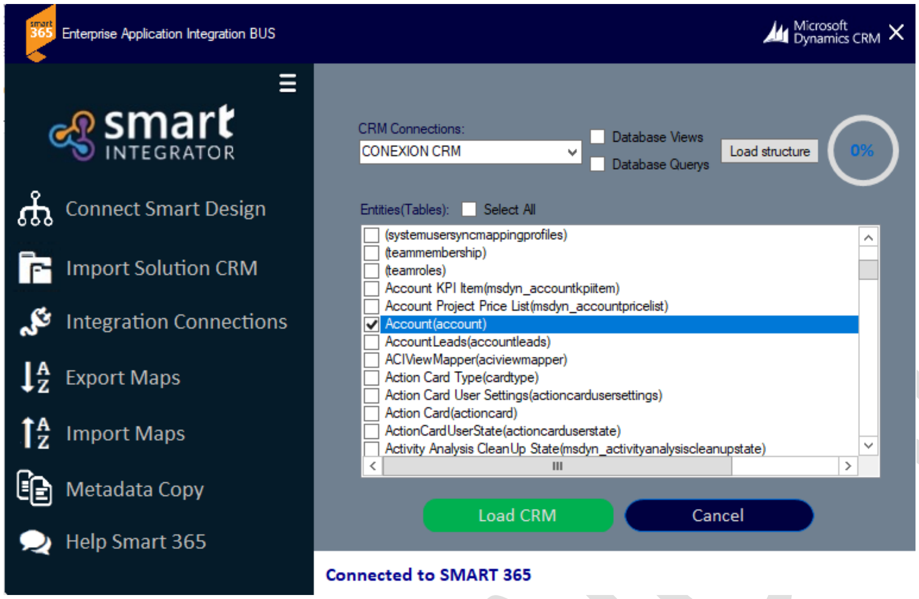
When a connection log is created in the Smart 365 designer(Img-22) Section 3.1 this document, the next step is to create the entity structures and attributes to be integrated into the smart app(Img-19b).

Within the **CRM Connections** field, you will find the list of connections created in the Smart 365 designer, where the connection to which we will create the structure of tables and attributes is created, to then create the solutions, the maps and the mapping of attributes; If the Connection Type is Database, options **Database Views** are for creating the structure of the views and Option **Database Querys** for the structure of the queries that are created in the Smart designer.



**Img-19b**

The first step is to choose a CRM connection in the list and select options Database Views or Database Querys if the connection is of the Database type, then press the **load structure** button and the entities or tables contained in the connection are shown in the list below. , then select the Entity to create the structure and press **load CRM (**Img-19c**),** wait for the process to finish(Img-19d)



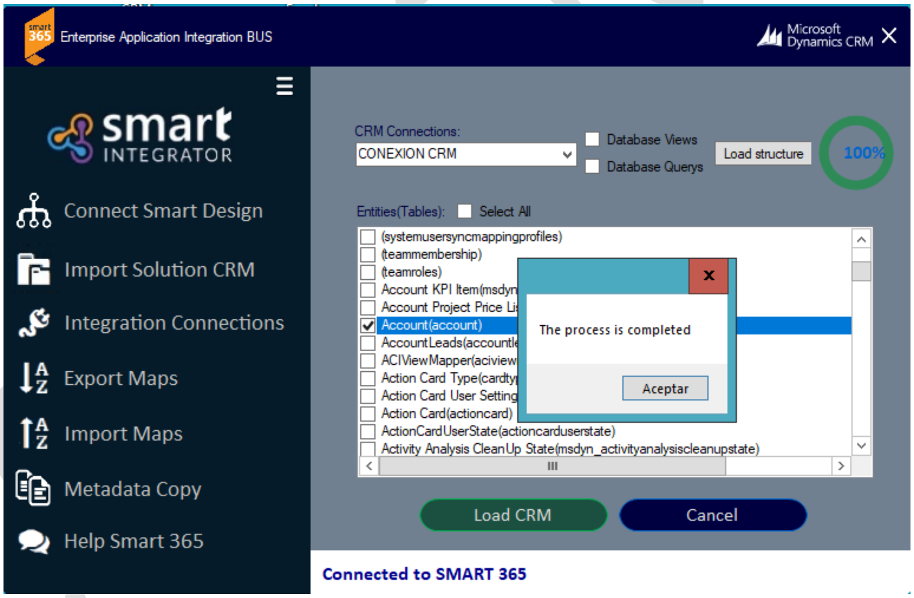
CRM Connections: CONEXION CRM

Entities(Tables): □ Select All

- □ (systemusersyncmappingprofiles)
- □ (teammembership)
- □ (teamroles)
- □ Account KPI Item(msdyn_accountkpiitem)
- □ Account Project Price List(msdyn_accountpricelist)
- ☑ Account(account)
- □ AccountLeads(accountleads)
- □ ACIViewMapper(aciviewmapper)
- □ Action Card Type(cardtype)
- □ Action Card User Settings(actioncardusersettings)
- □ Action Card(actioncard)
- □ ActionCardUserState(actioncarduserstate)
- □ Activity Analysis CleanUp State(msdyn_activityanalysiscleanupstate)

Connected to SMART 365

**Img-19c**



CRM Connections: CONEXION CRM

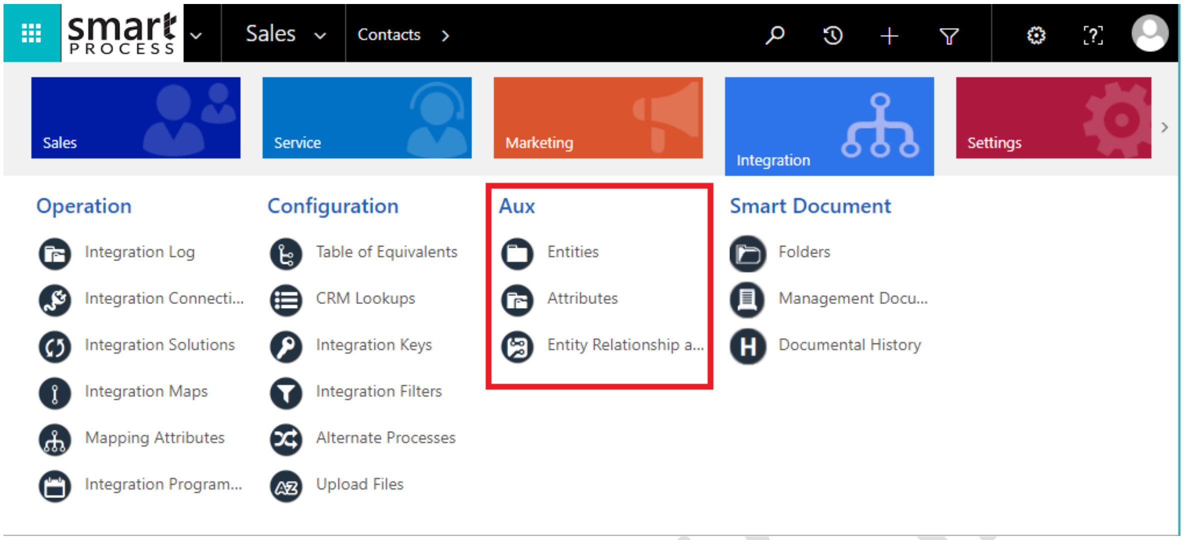
Entities(Tables): □ Select All

The process is completed

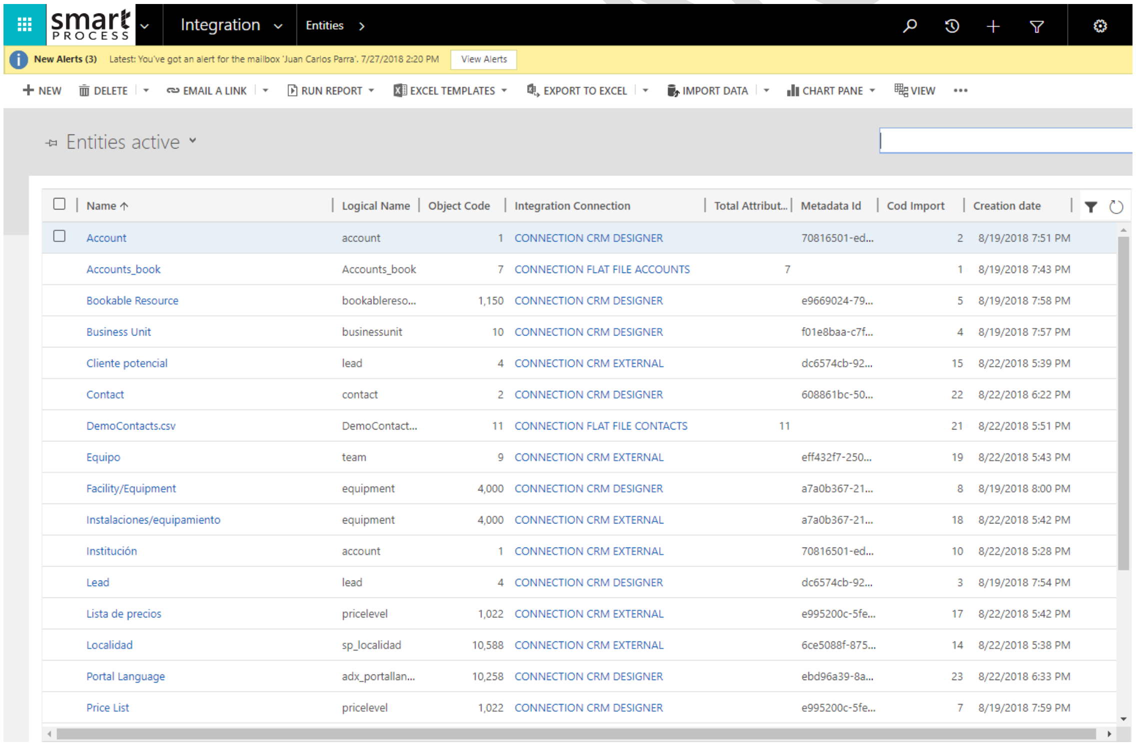
Connected to SMART 365

**Img-19d**

After the Load Process, go to the Smart Designer and there in the integration module in the auxiliary group go to Entities(Img-19e), there you will find the structures (Entity and attributes) created in the previous steps(Img-19f).



**Img-19e**



New Alerts (3) Latest: You've got an alert for the mailbox 'Juan Carlos Parra'. 7/27/2018 2:20 PM

Entities active

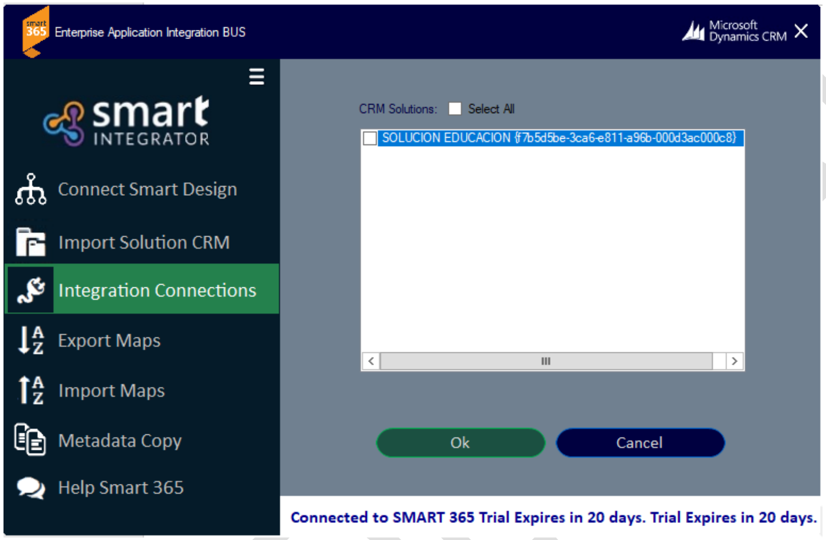
| Name ↑ | Logical Name | Object Code | Integration Connection | Total Attribut... | Metadata Id | Cod Import | Creation date |
|---|---|---|---|---|---|---|---|
| Account | account | 1 | CONNECTION CRM DESIGNER | | 70816501-ed... | 2 | 8/19/2018 7:51 PM |
| Accounts_book | Accounts_book | 7 | CONNECTION FLAT FILE ACCOUNTS | 7 | | 1 | 8/19/2018 7:43 PM |
| Bookable Resource | bookablereso... | 1,150 | CONNECTION CRM DESIGNER | | e9669024-79... | 5 | 8/19/2018 7:58 PM |
| Business Unit | businessunit | 10 | CONNECTION CRM DESIGNER | | f01e8baa-c7f... | 4 | 8/19/2018 7:57 PM |
| Cliente potencial | lead | 4 | CONNECTION CRM EXTERNAL | | dc6574cb-92... | 15 | 8/22/2018 5:39 PM |
| Contact | contact | 2 | CONNECTION CRM DESIGNER | | 608861bc-50... | 22 | 8/22/2018 6:22 PM |
| DemoContacts.csv | DemoContact... | 11 | CONNECTION FLAT FILE CONTACTS | 11 | | 21 | 8/22/2018 5:51 PM |
| Equipo | team | 9 | CONNECTION CRM EXTERNAL | | eff432f7-250... | 19 | 8/22/2018 5:43 PM |
| Facility/Equipment | equipment | 4,000 | CONNECTION CRM DESIGNER | | a7a0b367-21... | 8 | 8/19/2018 8:00 PM |
| Instalaciones/equipamiento | equipment | 4,000 | CONNECTION CRM EXTERNAL | | a7a0b367-21... | 18 | 8/22/2018 5:42 PM |
| Institución | account | 1 | CONNECTION CRM EXTERNAL | | 70816501-ed... | 10 | 8/22/2018 5:28 PM |
| Lead | lead | 4 | CONNECTION CRM DESIGNER | | dc6574cb-92... | 3 | 8/19/2018 7:54 PM |
| Lista de precios | pricelevel | 1,022 | CONNECTION CRM EXTERNAL | | e995200c-5fe... | 17 | 8/22/2018 5:42 PM |
| Localidad | sp_localidad | 10,588 | CONNECTION CRM EXTERNAL | | 6ce5088f-875... | 14 | 8/22/2018 5:38 PM |
| Portal Language | adx_portallan... | 10,258 | CONNECTION CRM DESIGNER | | ebd96a39-8a... | 23 | 8/22/2018 6:33 PM |
| Price List | pricelevel | 1,022 | CONNECTION CRM DESIGNER | | e995200c-5fe... | 7 | 8/19/2018 7:59 PM |

**Img-19f**

### 2.3.4 Exports Maps

Functionality to obtain a backup of smart design information (Integration Solutions, Maps, Attributes Relationship etc) and can be loaded in other dynamics CRM.

- In the Smart Engine application, click on button export maps (Img-19g)

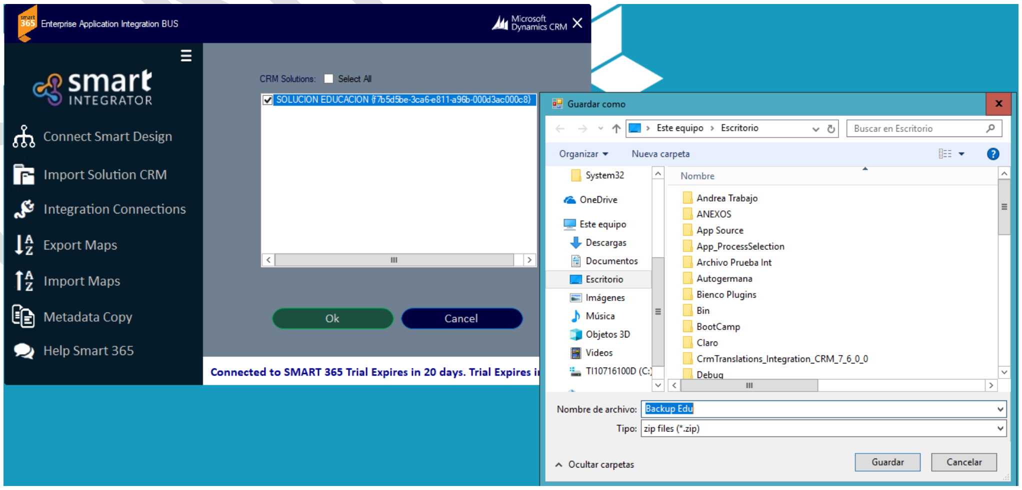


□ SOLUCION EDUCACION {f7b5d5be-3ca6-e811-a96b-000d3ac000c8}

Connected to SMART 365 Trial Expires in 20 days. Trial Expires in 20 days.

**Img-19g**

- Select the solution to make the backup and then press OK(Img-19h), then a window opens asking for the location and the name of the file to be downloaded, supply them and press save a .zip file will be created in the given location and name.



☑ SOLUCION EDUCACION {f7b5d5be-3ca6-e811-a96b-000d3ac000c8}

Connected to SMART 365 Trial Expires in 20 days. Trial Expires i

Nombre de archivo: Backup Edu

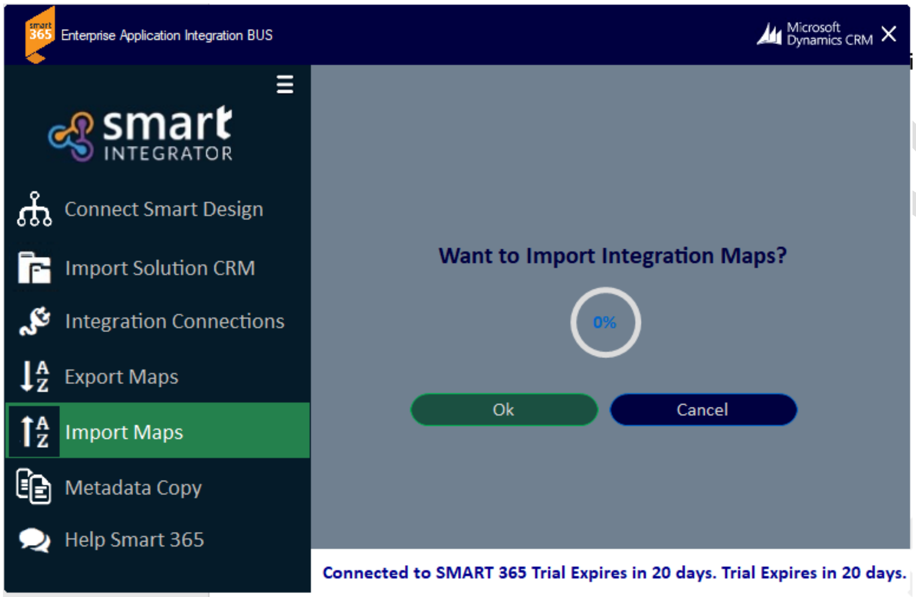
Tipo: zip files (*.zip)

**Img-19h**

### 2.3.5 Import Maps

Functionality to upload the backup (.zip) of the information exported from smart design(Img-19i)

- In the Smart Engine application, click on button **Import maps** (Img-19g).

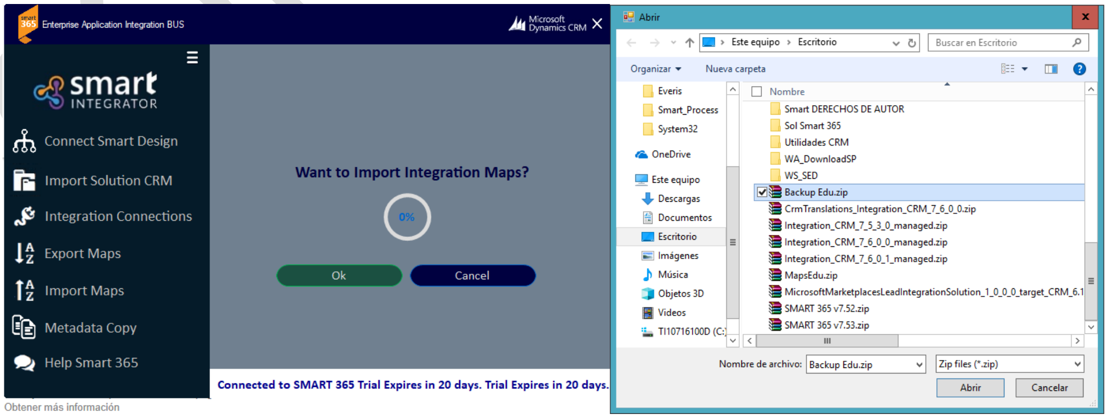


Want to Import Integration Maps?

Connected to SMART 365 Trial Expires in 20 days. Trial Expires in 20 days.

**Img-19i**

- Select OK, and then a screen opens there looking for the .zip to load and press open, start loading and wait for it to complete 100%



Want to Import Integration Maps?

Connected to SMART 365 Trial Expires in 20 days. Trial Expires in 20 days.

Nombre de archivo: Backup Edu.zip

Zip files (*.zip)

**Img-19j**

# 3 SMART DESIGNER

## 3.1 Requirements

For Smart Integration Installation and Configuration, the following components are required:

a) CRM Dynamics Versions 2013, 2015, 2016 or 365 (Online or Onpremise):

b) CRM Dynamics System Administrator User is required

c) Connectivity to the Integration Engine

## 3.2 Integration Configuration

This section of the document refers to the configuration of the tool for integrations, there are 3 groups of entities (Img-20):

**a) OPERATION**

Main entity group with which the integration administrator user configures, manages and monitors the entities that are in the group are:

**- Integration Log:** Entity that contains the logs that monitor the integration and the indicators of the integrated logs, created, updated deleted etc. Additional error log.

**- Integration Connections:** Entity containing Integration connection records are either source or destination.

**- Integration Solutions:** Entity that contains the records that pack the integration maps.

**- Integration Maps:** Entity that contains the records that configure the source and destination connection, and the corresponding tables or entities to integrate, additional are the general rules of integration and package attribute mapping.

**- Attribute Mapping:** Entity that contains the field-to-field mapping records of the tables specified in the integration map, additional contains the validation rules, business rules and equivalence tables by attribute to be integrated.

**- Integration Programming:** Entity that contains the records of the schedules that specify the moment in which the integrations are executed.

### b) CONFIGURATION

Group of Entities that support the main entities, these entities are configured manually by the integration administrator, the entities that are in the group are:

- **Table of Equivalence:** Entity that contains the equivalence records in the mapping of each attribute.

- **CRM Lookups:** Records that referto fields of type lookups in CRM Integrations.

- **Integration Keys:** Entity that contains the records of the keys for certain type of operations (Update if exists, Delete if exists, Insert / update), these keys specify the unique attribute for each record eg for a contact the cedula is the unique attribute Which is not repeated.

- **Integration Filters:** Entity that contains the records of the source attributes in which the filtering rules are placed.

- **Alternate Processes:** Entity that contains the records with the rules of the processes alternate to the integration.

- **Upload Files:** Entity to load attachments of flat file type connection with the CRM attachment archive option in YES

### c) AUXILIARY

Group of Auxiliary entities that are generated automatically as the integrations are configured, the entities that are in the group are:

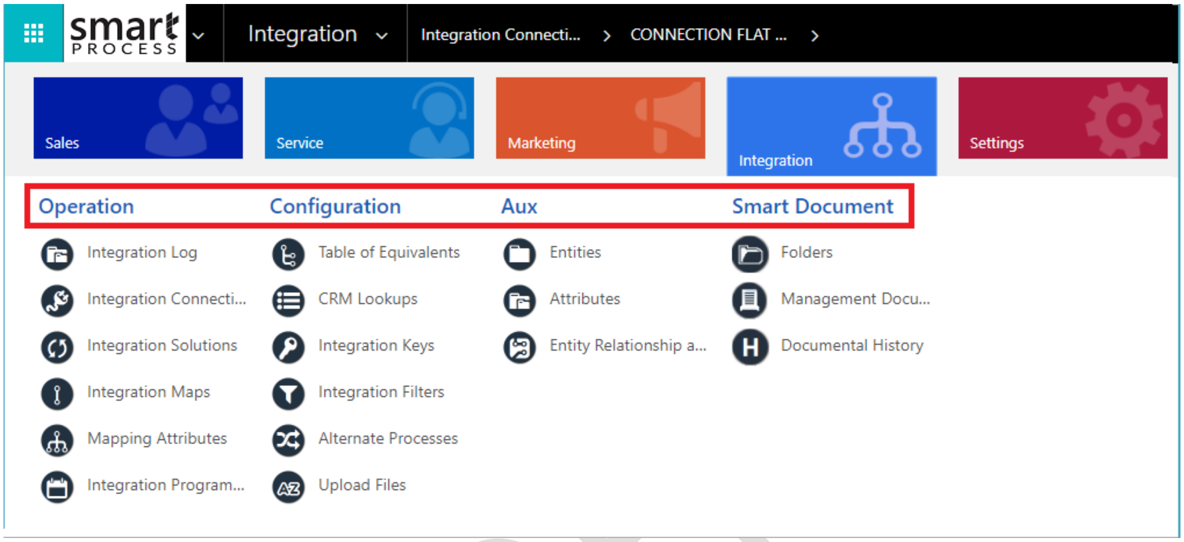
- **Entities:** Entity that contains the records that refer to the names of the tables or Entities to be mapped.

- **Attributes:** Entity that contains the records of the attributes of the entities of the previous item.

- **Entity Relationship attributes:** An entity that contains the relations of CRM Entities.

### d) SMART DOCUMENT

**NOTE:** The Group Smart Document does no apply for this document

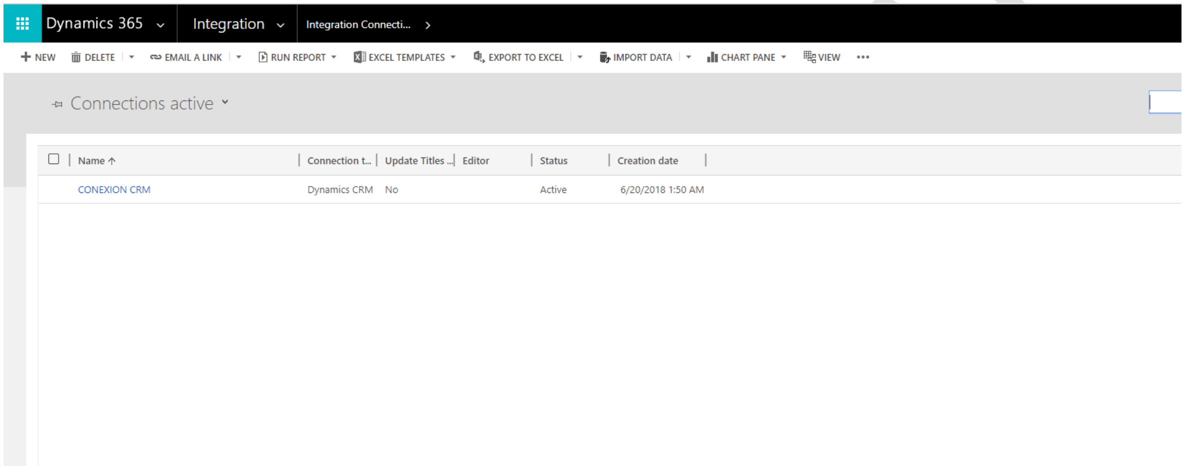


**Img-20**

## 3.3 Integration Connections

Integration Connections refer to these interfaces (Connectors) of the systems to be integrated either source or destination, below will show examples of the most common connection types (CRM Dynamics, BD SQL, BD Oracle, BD Postgress, BD MySQL, File Flat etc).

- In the **Integration** Module (Img-20) in the **Operations** section, click on **Integration Connections**. There you will see the screen (Img-21) and click on the **New** command bar.



| ☐ | Name ↑ | Connection t... | Update Titles ... | Editor | Status | Creation date |
|---|---|---|---|---|---|---|
| | CONEXION CRM | Dynamics CRM | No | | Active | 6/20/2018 1:50 AM |

**Img-21**

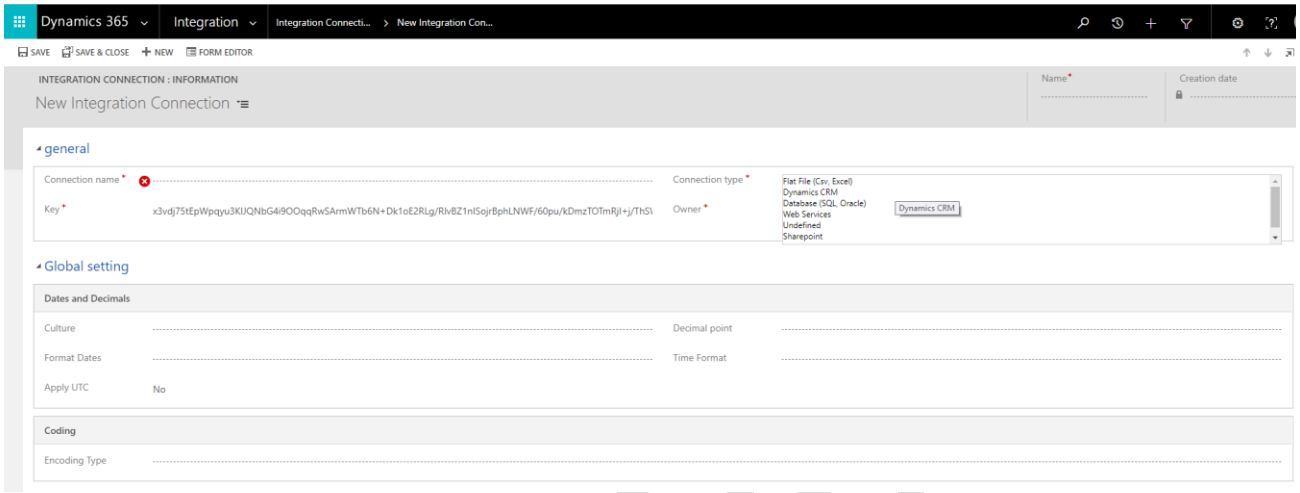
- Next, a record is created for the creation of a connection (Img-22), there you will find a **GENERAL** tab in which you have the following fields to fill:

**GENERAL TAB:**

- **Connection Name:** Name that refers to the Integration, specify some.

- **Type of Connection:** Type of connectors available for Integration, Values:
  a) Flat File(Csv,Excel)
  b) Dynamics CRM (2011,2013,2015,2016,365)
  c) Base de Datos(SQL,ORACLE)
  d) XML
  e) Web Services
  f) Undefinied(Dll)
  g) Sharepoint

- **Key:** Licensing key of the connector specified in the previous field, see Licensing in https://smartxrm.microsoftcrmportals.com/en-US/SmartEIABus/.



INTEGRATION CONNECTION : INFORMATION

New Integration Connection

Name*

Creation date

general

Connection name*

Key* x3vdj75tEpWpqyu3KlJQNbG4i9OOqqRwSArmWTb6N+Dk1oE2RLg/RlvBZ1nlSojrBphLNWF/60pu/kDmzTOTmRjl+j/ThS\

Connection type*
Flat File (Csv, Excel)
Dynamics CRM
Database (SQL, Oracle)
Web Services
Undefined
Sharepoint

Owner* Dynamics CRM

Global setting

Dates and Decimals

Culture

Decimal point

Format Dates

Time Format

Apply UTC No

Coding

Encoding Type

**Img-22**

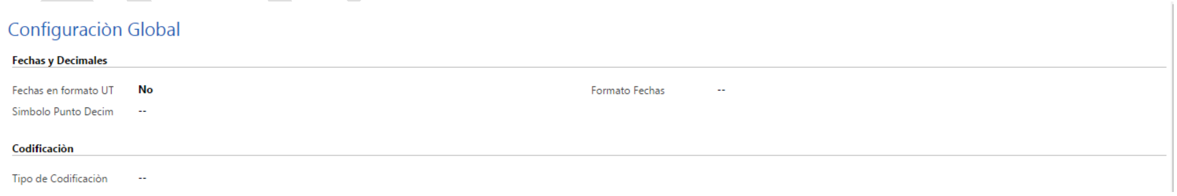
**TAB GLOBAL CONFIGURATION (img-23):**

- **Date in UTC format:** Field that refers to whether the source data is in UTC (SI) format or with the specified locale (NO).

- **Format Dates**: Field that refers to the date format of the Datetime fields.

- **Decimal point symbol:** Field that refers to numeric data type Decimal, Float, doublé, Currency, the format of the decimal point.

- **Coding type:** Coding type of texts, eg UTF-8, UTF-16, Unicode, etc.



Configuraciòn Global

**Fechas y Decimales**

Fechas en formato UT **No**

Formato Fechas --

Simbolo Punto Decim --

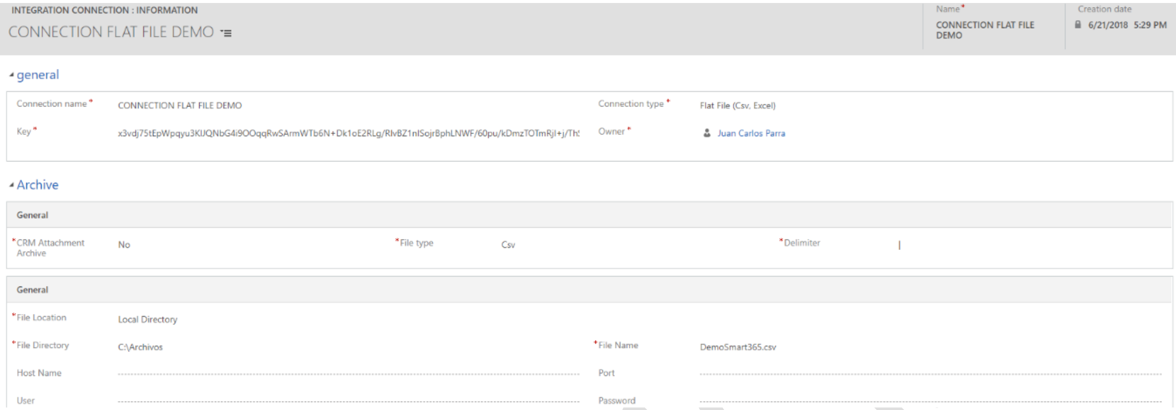
**Codificaciòn**

Tipo de Codificaciòn --

**Img-23**

## 3.3.1 Connection Types:

### 3.3.1.1 Flat File Connection (CSV, EXCEL)



INTEGRATION CONNECTION : INFORMATION
CONNECTION FLAT FILE DEMO

Name*: CONNECTION FLAT FILE DEMO
Creation date: 6/21/2018 5:29 PM

general

| | | | |
|---|---|---|---|
| Connection name* | CONNECTION FLAT FILE DEMO | Connection type* | Flat File (Csv, Excel) |
| Key* | x3vdj75tEpWpqyu3KIJQNbG4i9OOqqRwSArmWTb6N+Dk1oE2RLg/RlvBZ1nlSojrBphLNWF/60pu/kDmzTOTmRjl+j/Th: | Owner* | Juan Carlos Parra |

Archive

General

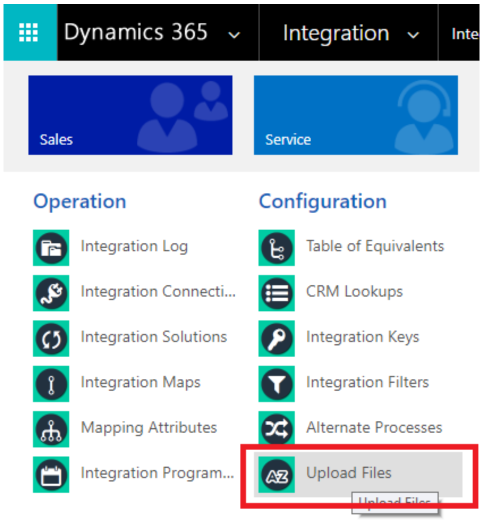
| | | | | | |
|---|---|---|---|---|---|
| *CRM Attachment Archive | No | *File type | Csv | *Delimiter | \| |

General

| | | | |
|---|---|---|---|
| *File Location | Local Directory | | |
| *File Directory | C:\Archivos | *File Name | DemoSmart365.csv |
| Host Name | | Port | |
| User | | Password | |

**Img-24a**

- **CRM Attachement Archive:** This option to be in YES specifies if the file is loaded in the notes of the connection to create the structure and later in entity Upload Files(Img-24b) of the Smart Designer, otherwise the file is loaded from a local location or from an FTP.



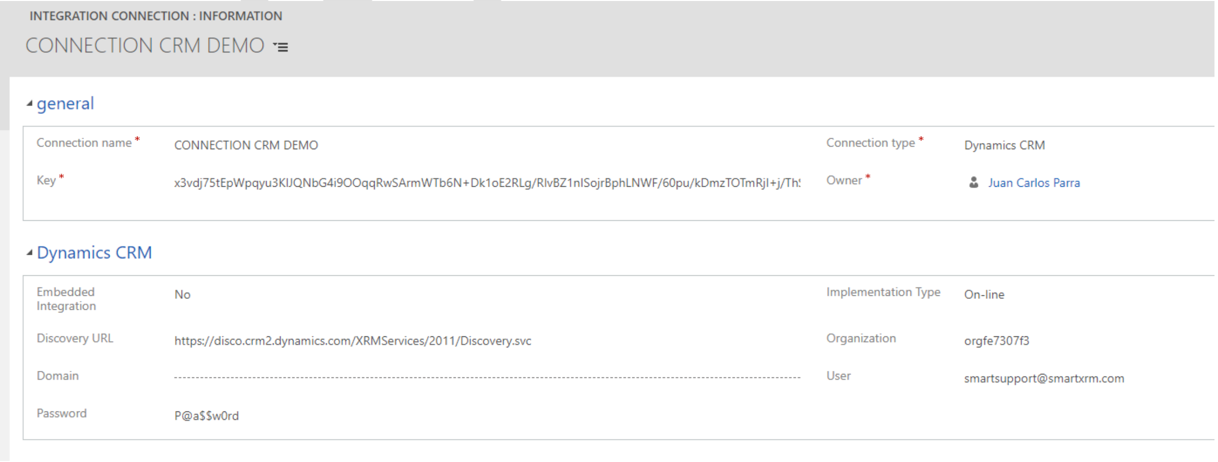
**Img-24b**

- **File Type:** This is the type of flat file to integrate, the types are csv, Excel 97-2003 (xls), Excel 2007 (xlst, xml)
- **Delimiter:** If the file type is CSV, the column delimiter is specified here(ej: |)

Options if CRM Attachement is NO

- **File Location:** The location of the file, if it is a local directory or is an ftp or sftp
- **File Directory:** This is path of the file directory(ej: C:\Documents)
- **File Name:** This is name of the file with extension included(ej: file.csv)
- **Host Name:** If the location is on another server than the Smart engine, enter the name of the server or IP.
- **Port:** If the location is on another server than the Smart engine, enter the port of the server or FTP
- **User:** If the location is on another server than the Smart engine, enter the username
- **Pass:** If the location is on another server than the Smart engine, enter the password

#### 3.3.1.2 Dynamics CRM Connection



INTEGRATION CONNECTION : INFORMATION

CONNECTION CRM DEMO

general

| | | | |
|---|---|---|---|
| Connection name * | CONNECTION CRM DEMO | Connection type * | Dynamics CRM |
| Key * | x3vdj75tEpWpqyu3KIJQNbG4i9OOqqRwSArmWTb6N+Dk1oE2RLg/RlvBZ1nlSojrBphLNWF/60pu/kDmzTOTmRjl+j/Th! | Owner * | Juan Carlos Parra |

Dynamics CRM

| | | | |
|---|---|---|---|
| Embedded Integration | No | Implementation Type | On-line |
| Discovery URL | https://disco.crm2.dynamics.com/XRMServices/2011/Discovery.svc | Organization | orgfe7307f3 |
| Domain | ---------- | User | smartsupport@smartxrm.com |
| Password | P@a$$w0rd | | |

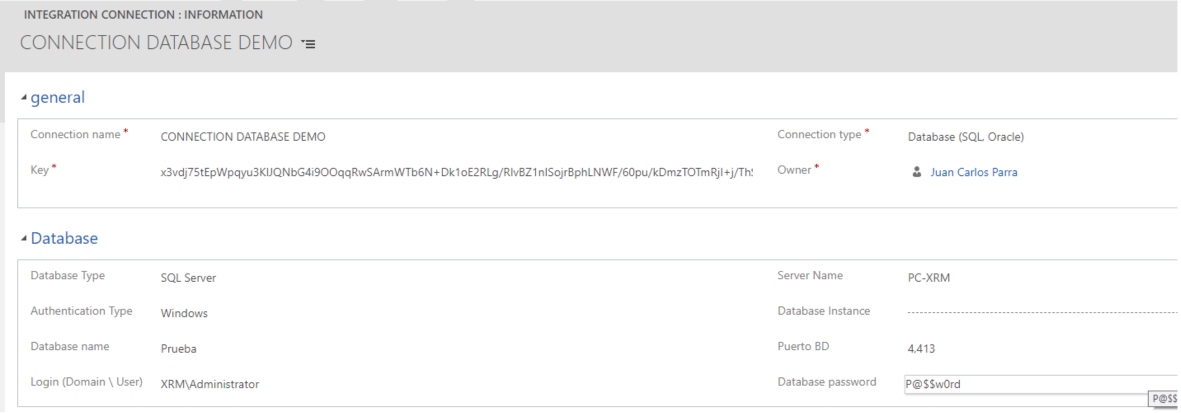
**Img-25**

- **Embedded Integration**: Specify 'YES' if the CRM connection is the same where the Smart 365 designer is installed.

- **Implementation Type**: Type of implementation if Online, Onpremise or IFD
- **Discovery URL**: It is the Discovery URL that is in the CRM to connect (Settings / Customizations / Developer Resources)
- **Organization**: Organization Name of CRM to connect (Settings / Customizations / Developer Resources)
- **Domain**: Domain Name, only Type of implementation Onpremise
- **User**: User to connect to CRM
- **Password**: Password to connect to CRM

**NOTE:** Embedded Integration is YES if the CRM connection is the same where the Smart 365 designer is.

### 3.3.1.3 Database Connection



INTEGRATION CONNECTION : INFORMATION

CONNECTION DATABASE DEMO

general

| | | | |
|---|---|---|---|
| Connection name * | CONNECTION DATABASE DEMO | Connection type * | Database (SQL, Oracle) |
| Key * | x3vdj75tEpWpqyu3KIJQNbG4i9OOqqRwSArmWTb6N+Dk1oE2RLg/RlvBZ1nISojrBphLNWF/60pu/kDmzTOTmRjl+j/Th! | Owner * | Juan Carlos Parra |

Database

| | | | |
|---|---|---|---|
| Database Type | SQL Server | Server Name | PC-XRM |
| Authentication Type | Windows | Database Instance | |
| Database name | Prueba | Puerto BD | 4,413 |
| Login (Domain \ User) | XRM\Administrator | Database password | P@$$w0rd |

**Img-26**

- **Database Type:** The type of the database is specified: SQL Server, Oracle, Postgress, MySQL
- **Server Name:** Name of the server or IP where the Database is located
- **Authentication Type:** Specify the type of authentication if it is Windows or SQL

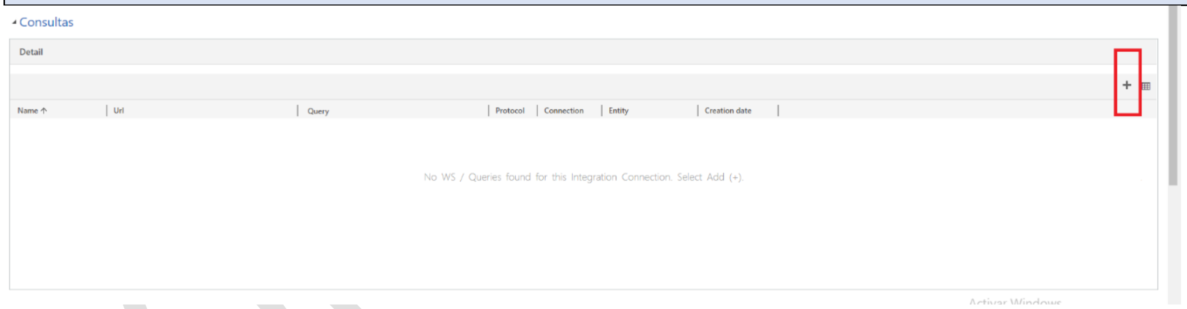
- **Database Instance**: Name of the instance of the Database
- **PortBD:** Port where the Database is located
- **Login(Domain\User):** Domain and User to access to database
- **Database Password:** password to access to database.

TAB QUERIES

At the bottom is the query tab, where you can add a personalized query by pressing the + of the grid(fig-27a), Then a query record is displayed, which has two fields, an entity name or query and a field to write the query(fig-27b).

- **Entity Name**: Name of the query to later be the name of the entity when it is synchronized in the Smart engine
- **Allow CRM Filter**: Option used to specify whether the query filter takes it from the integration map or is specified in the query field with a "where"
- **Quey**: Select type SQL statement(ej: select * from table where var1 = "1")

**NOTE:**
The entities that are generated from the queries database can only be used in origin connections in the integration maps



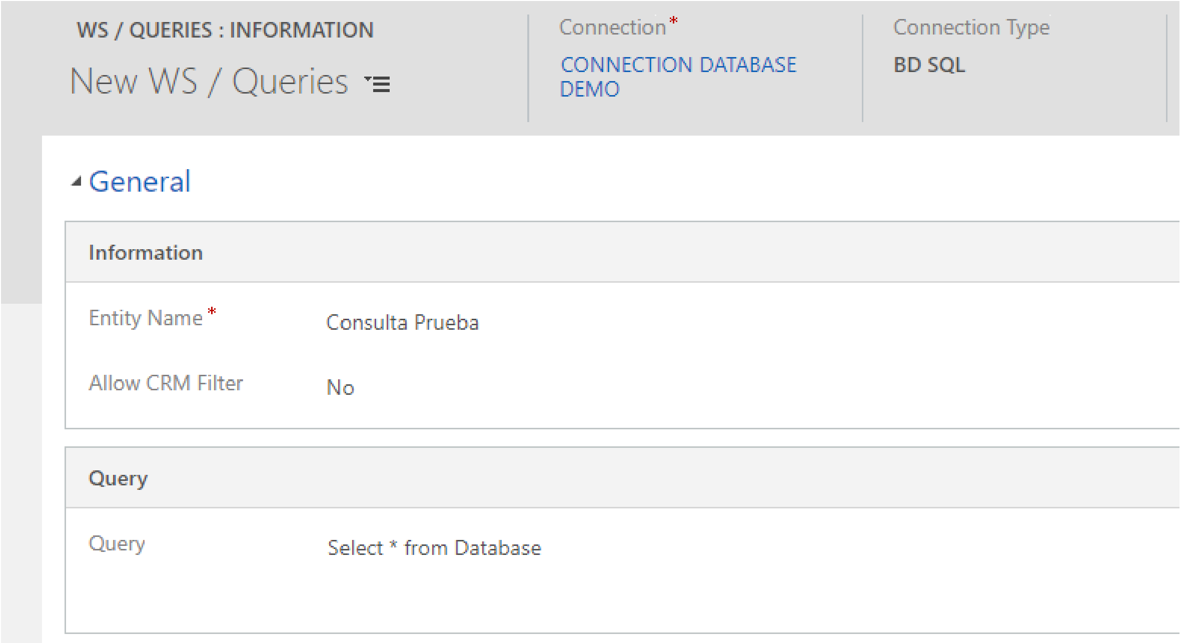
Consultas

Detail

| Name ↑ | Url | Query | Protocol | Connection | Entity | Creation date |
|---|---|---|---|---|---|---|

No WS / Queries found for this Integration Connection. Select Add (+).

**Img-27a**



WS / QUERIES : INFORMATION

New WS / Queries

Connection*: CONNECTION DATABASE DEMO

Connection Type: BD SQL

General

Information

Entity Name*: Consulta Prueba

Allow CRM Filter: No

Query

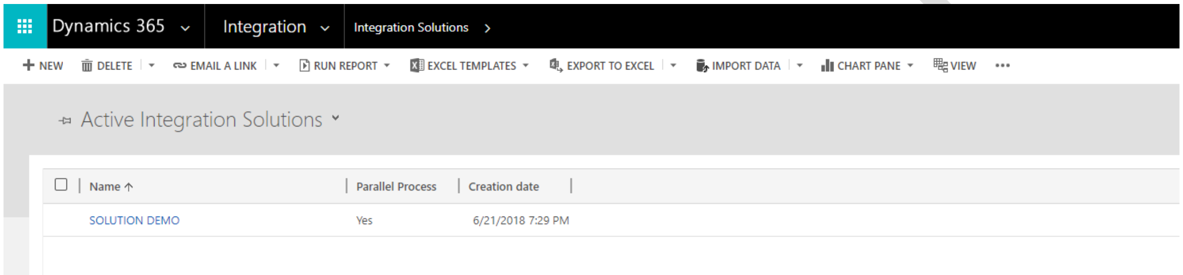
Query: Select * from Database

**Img-27b**

## 3.4 Integration Solution

Integration Solutions refer to records that contain several Integration maps, such maps can be ordered so that when executing a solution, maps are executed one by one in the order specified.

- In the **Integration** Module (Img-20) in the **Operations** section, press **Integration Solution**. There you will see the screen (Img-28) and click on the **New** command bar.



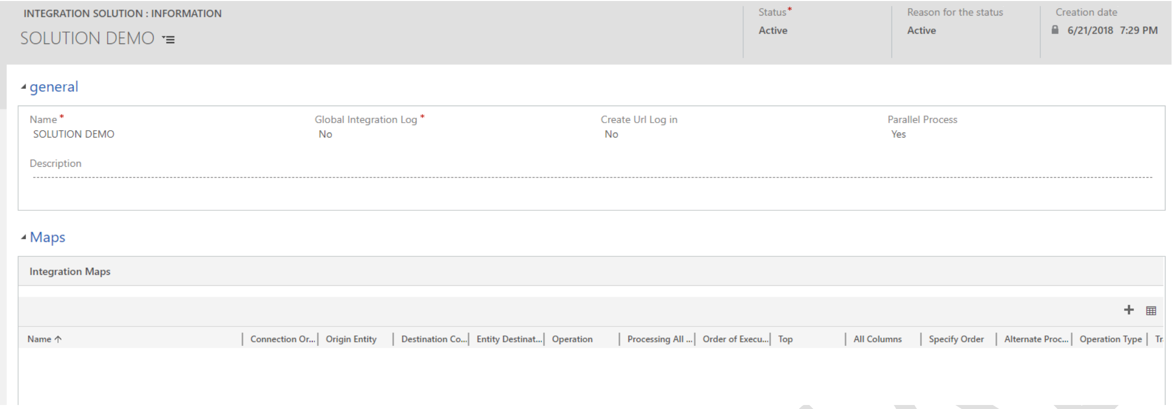
| Name | Parallel Process | Creation date |
|---|---|---|
| SOLUTION DEMO | Yes | 6/21/2018 7:29 PM |

**Img-28**

- A new window will open on the solution to be created (Img-29), locate a GENERAL tab with the following Fields.

  - **Name:** Text field that refers to the name of the solution, specify some.
  - **Description**: Field that refers to the description of the Solution, specify some.
  - **Global Integration Log**: Field that refers to whether a Global Integration Log is generated, which adds the indicators (#reg Processed, #reg Created, #reg Updated, #reg Deleted, #reg Errors, #reg Adv) from The maps that this solution contains.
  - **Parallel Porcess**: If any solution is running and this option is "YES", you can run another one in parallel at the same time.

**NOTE:** Each time an integration map is executed, a solution is generated by map integration, activating the global log generates a total of all maps executed in the solution.



INTEGRATION SOLUTION : INFORMATION

SOLUTION DEMO

Status*: Active

Reason for the status: Active

Creation date: 6/21/2018 7:29 PM

general

Name*: SOLUTION DEMO

Global Integration Log*: No

Create Url Log in: No

Parallel Process: Yes

Description

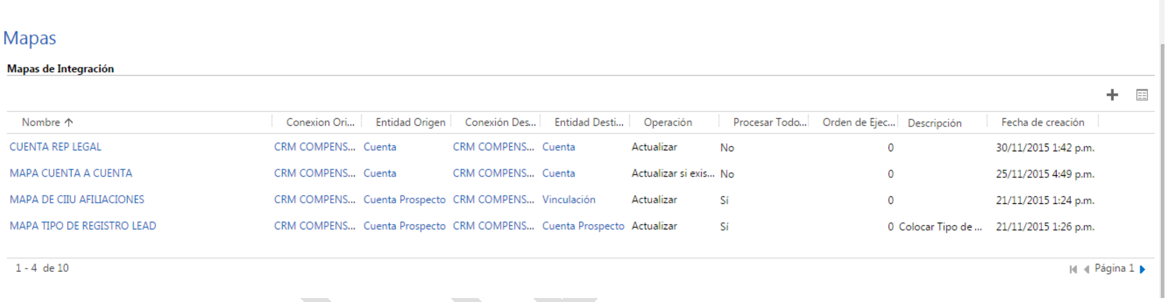
Maps

Integration Maps

| Name ↑ | Connection Or... | Origin Entity | Destination Co... | Entity Destinat... | Operation | Processing All ... | Order of Execu... | Top | All Columns | Specify Order | Alternate Proc... | Operation Type | Tr |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

Img-29

- After filling in the fields, the solution is created and then the maps are added to the grid in the MAPS tab (Img-30). Click on the **(+)** symbol for that action.



Mapas

Mapas de Integración

| Nombre ↑ | Conexion Ori... | Entidad Origen | Conexión Des... | Entidad Desti... | Operación | Procesar Todo... | Orden de Ejec... | Descripción | Fecha de creación |
|---|---|---|---|---|---|---|---|---|---|
| CUENTA REP LEGAL | CRM COMPENS... | Cuenta | CRM COMPENS... | Cuenta | Actualizar | No | 0 | | 30/11/2015 1:42 p.m. |
| MAPA CUENTA A CUENTA | CRM COMPENS... | Cuenta | CRM COMPENS... | Cuenta | Actualizar si exis... | No | 0 | | 25/11/2015 4:49 p.m. |
| MAPA DE CIIU AFILIACIONES | CRM COMPENS... | Cuenta Prospecto | CRM COMPENS... | Vinculación | Actualizar | Sí | 0 | | 21/11/2015 1:24 p.m. |
| MAPA TIPO DE REGISTRO LEAD | CRM COMPENS... | Cuenta Prospecto | CRM COMPENS... | Cuenta Prospecto | Actualizar | Sí | 0 | Colocar Tipo de ... | 21/11/2015 1:26 p.m. |

1 - 4 de 10

Página 1

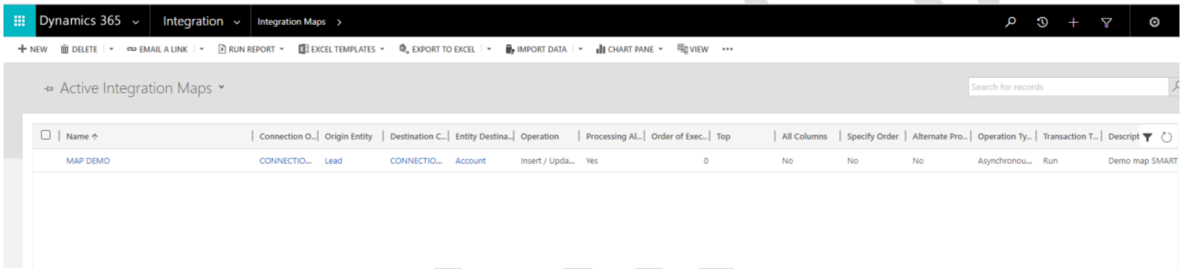
Img-30

## 3.5 Integration Maps

Integration Maps refers to records that relate a source table that come from a source connection, against a destination table that comes from a destination connection, in this map record the rules are configured with which they go To execute a specific integration among these are: the type of operation filter rules sorting rules, update / deletion keys, Alternate processes, Responses to the integrated register etc.

Additional the integration map contains a grid with the Attribute to Attribute mapping where field-by-field of the source table is related to the target table.

In the **Integration** Module (Img-20) in the **Operations** section, click on **Integration Map**. There you will see the screen (Img-31) and click on the **New** command bar.

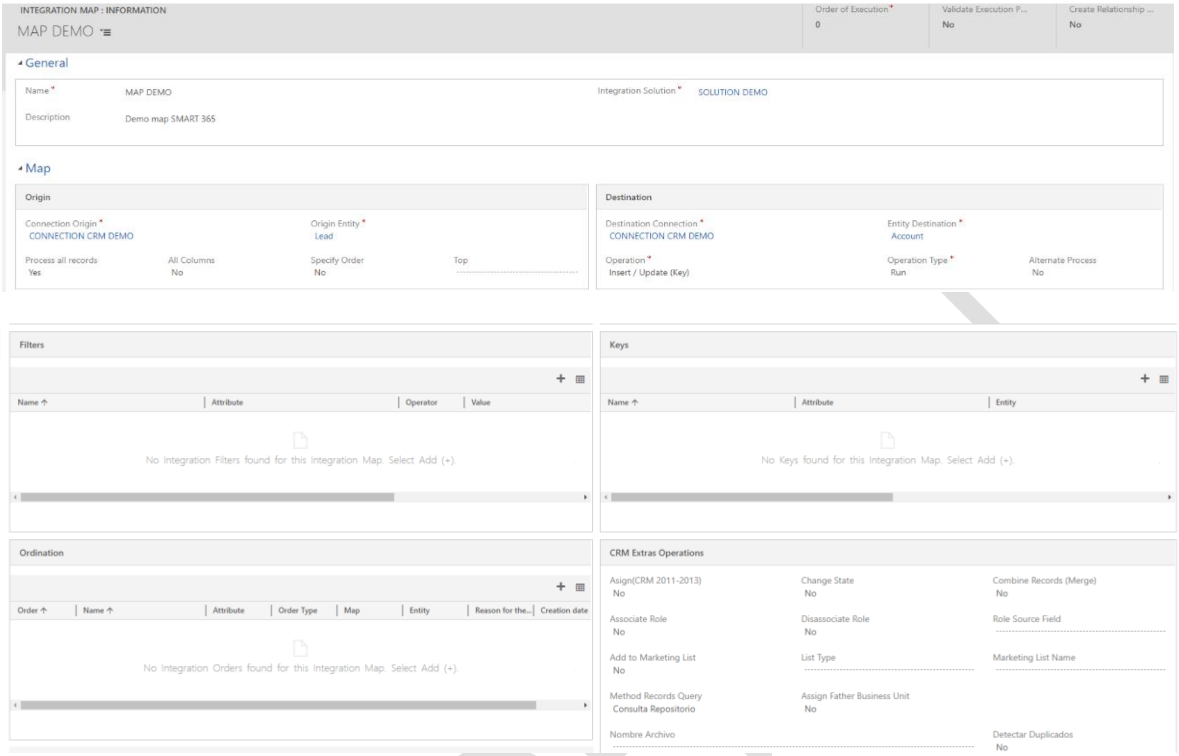


| Name | Connection O... | Origin Entity | Destination C... | Entity Destina... | Operation | Processing Al... | Order of Exec... | Top | All Columns | Specify Order | Alternate Pro... | Operation Ty... | Transaction T... | Descript |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MAP DEMO | CONNECTIO... | Lead | CONNECTIO... | Account | Insert / Upda... | Yes | 0 | | No | No | No | Asynchronou... | Run | Demo map SMART |

**Img-31**

**NOTE**: Another way to create a map is from the solution registry, since there you will find the grid of maps that the solution will contain (Img-30).

- Next, a new Map record is displayed (Img-32), where there are several tabs with grids, the purpose of this manual is to allow the user to know how to configure each of these elements.



INTEGRATION MAP : INFORMATION
MAP DEMO

Order of Execution * 0 | Validate Execution P... No | Create Relationship ... No

General

Name * MAP DEMO
Integration Solution * SOLUTION DEMO
Description Demo map SMART 365

Map

Origin

Connection Origin * CONNECTION CRM DEMO
Origin Entity * Lead
Process all records Yes
All Columns No
Specify Order No
Top

Destination

Destination Connection * CONNECTION CRM DEMO
Entity Destination * Account
Operation * Insert / Update (Key)
Operation Type * Run
Alternate Process No

Filters

| Name ↑ | Attribute | Operator | Value |
|---|---|---|---|

No Integration Filters found for this Integration Map. Select Add (+).

Keys

| Name ↑ | Attribute | Entity |
|---|---|---|

No Keys found for this Integration Map. Select Add (+).

Ordination

| Order ↑ | Name ↑ | Attribute | Order Type | Map | Entity | Reason for the... | Creation date |
|---|---|---|---|---|---|---|---|

No Integration Orders found for this Integration Map. Select Add (+).

CRM Extras Operations

Asign(CRM 2011-2013) No
Change State No
Combine Records (Merge) No
Associate Role No
Disassociate Role No
Role Source Field
Add to Marketing List No
List Type
Marketing List Name
Method Records Query Consulta Repositorio
Assign Father Business Unit No
Nombre Archivo
Detectar Duplicados No

**Img-32**

- We identify the **GENERAL Tab** which we will fill out before creating our Map registry, for this we find the following fields to fill out:

- Name: Text field, specify a name for the map.
- Integration Solution: Search field select the solution record to which the map will belong.
- Execution Order: Numeric field that specifies the order in which the maps are executed, if it is programmed to execute an entire solution, that order goes from 1 to 1000, additional number 0 is not taken into account at the time of the execution.

**NOTE:** In the programming record you can execute a specific map, so the order is not taken into account, only the order is taken into account when running an entire solution.

- We identify the **MAP Tab**, which we will fill out before creating our record, said TAB has a particularity since it is divided into two sections, the one on the left side is the source section and refers to the data And the rules of the source connection, and the right side section is the target section and refers to the operation and configuration rules of the target connection.

### 3.5.1 Section of Origin

**- Source Connection:** Search field that brings a connection record, previously created.

**- Origin Entity:** Search field that brings a source entity record (table), previously filtered by the Source connection, this field refers to the source table which will be queried the data.

**- Process All records:** Field of type two options (YES / NO), Enable or Disable the filters that are placed to the query of data of the Entity (table) of origin.

**A) YES:** check all records regardless of filters.

**B) NO:** It takes into account the filters that are added in the Grid Filter.

- **All Columns:** Field of two options (YES / NO), Gets or Discards all columns of the source entity (**table**).

**A) YES:** Bring all the columns contained in the Entity (table) of origin.

**B) NO:** It only brings the columns that are in the mapping of attributes.

- **NOTE:** When specifying fields in expressions that are not referenced in the mapping, it is necessary to bring all the columns, because an error is generated that the field is not present at the time of integration.

**- Specify Order:** Field of two options (YES / NO), Enable or Disable the order of the data of the Entity (**table**) of origin.

**A) YES**: It takes into account the order that is added to the grid of ordinations

**B) NO:** Brings the records in a random order given by the source connection

- **Top:** Numeric field that brings a specified number of data, if not specified brings the amount of records given by the query and stipulated filters if they are previously configured.

- **Filters:** Records that indicate what information to bring from the source.

- **Ordering:** Records indicating the order in which the origin registers are brought.

-

### 3.5.2 Section Detination

- **Destination Connection:** Search field that brings a connection record, created previously.

- **Destination Entity:** Search field that brings a destination entity record (table), previously filtered by the Destination connection, this field refers to the destination table which is to perform a specific operation.

- **Operation**: Field of options, refers to the type of action to be performed on the target entity (table).

a) **Insert:** All data coming from the data source are created without exception.

b) **Update(key):** the destination records referenced in the source are updated by a key that is configured in the grid of keys, this will cause the integrator to perform a search in the destination with all the records with the Attribute key and upload this data to a temporary table and from there each source record by means of the key see what your record to update.

c) **Remove(Key):** the destination records referenced in the source are deleted by a key that is configured in the grid of keys, this will cause the integrator to previously perform a search in the destination bringing all the records with the Attribute key and upload this data to a temporary table and from there each source record by means of the key see what its record to delete.

d) **Insert if it does not exist(Key):** Only the records that do not exist in the target entity (**table**) are created, for this it is necessary to configure the key (s) in the grid of keys that will be the attribute (S), which will make the registration unique **eg: for a contact the identification number and type of identification are the key**

e) **Insert / Update(Key):** All records are created or updated depending on the keys previously configured to know if the record is created or updated

- **Operation type:** Option field that refers to the type of transaction.

  **a) Run:** Normal Execute.

  **b) Simulation:** It simulates the operation but does not execute any action on the destination, it is worth mentioning that if it generates all the rules and a log of integrations to identify which records contain errors without carrying out the operation. It is recommended to use this type of transaction to correct possible errors of the origin registers.

- **Alternative Process**: Field of type two options (YES / NO), Enable or Disable Alternate processes to execute with the integration of this map.

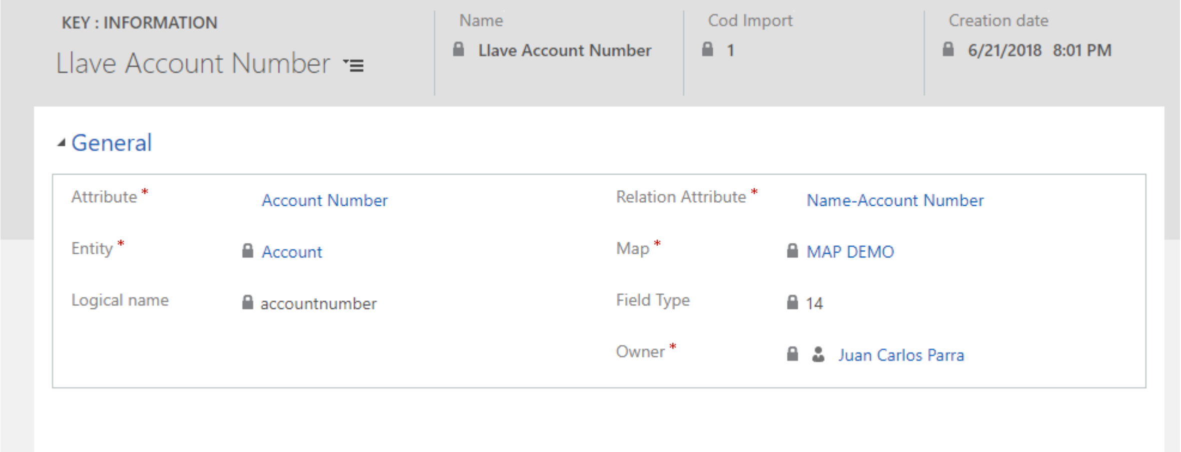
  a) YES: Enables alternate processes (Process Grid)

  b) NO: Does not enable alternate processes (Process Grid)

### 3.5.2.1 Keys

Integration Keys refer to records containing the attributes of the target entity (table) that determine that a record is unique (eg identity number in a contact), so that the integration process identifies that Records are created and records are updated or deleted.

To insert a key from the map there is a grid located at the bottom of the connection and destination entity, there we can give (+) and then a screen (Img-33) will open.



KEY : INFORMATION

Llave Account Number

| Name | Cod Import | Creation date |
|---|---|---|
| Llave Account Number | 1 | 6/21/2018 8:01 PM |

General

| | | | |
|---|---|---|---|
| Attribute * | Account Number | Relation Attribute * | Name-Account Number |
| Entity * | Account | Map * | MAP DEMO |
| Logical name | accountnumber | Field Type | 14 |
| | | Owner * | Juan Carlos Parra |

**Img-33**

- There you will find the following fields to fill:

- **Attribute:** The target key attribute.
- **Relation Attribute:** The previous attribute necessarily requires a mapping with a field of the source entity (table).

- The record is created after filling in these fields and automatically fill in the fields: Entity, Map, Logical Name, Field Type.

**NOTE:** Multiple keys can be created for a single map, it should be noted that each key record must have a related record of mapping attribute

### 3.5.2.2 Alternate Processes

The Alternate Processes They refer to Registers that configure a process that can be executed in three moments of the integration by each map.

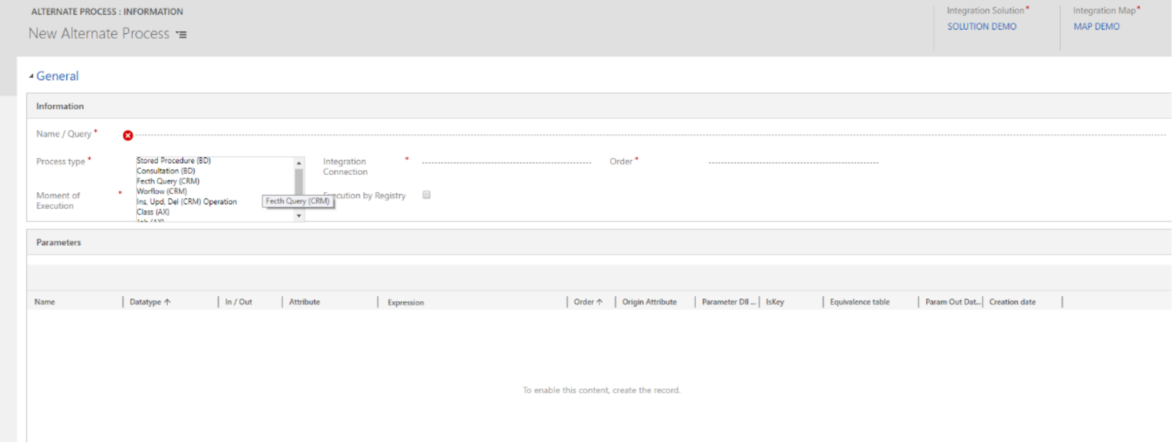
a) Before executing all the records of the integration.
b) For each Integrated Record.
c) After executing all the records of the integration.

These processes are used to generate complex business logic and are based on existing processes.

a) BD Store Procedure
b) Query BD (Select * from Nombre_Tabla)
c) Fecth Query (CRM Connections only)
d) Insert, Update, Delete CRM Operations
e) Class AX
f) Job AX
g) Worflow (CRM Connections only)
h) Web Services(SOAP)
i) Assemblies
j) Solution and Integration Map

**NOTE:** Connections that refer to these alternate processes may be the same as the source or the different destination or connections.

- To create an alternate process in the integration map, there is a field Alternate Process of two Options, it must be placed in SI, to display the Alternate Process Grid, there the **(+)** is pressed and a window will open (Img-34 ) To complete the registration.



ALTERNATE PROCESS : INFORMATION

New Alternate Process

Integration Solution * SOLUTION DEMO

Integration Map * MAP DEMO

General

Information

Name / Query *

Process type *
Stored Procedure (BD)
Consultation (BD)
Fecth Query (CRM)
Worflow (CRM)
Ins, Upd, Del (CRM) Operation
Class (AX)

Fecth Query (CRM)

Integration Connection *

Order *

Moment of Execution *

Execution by Registry □

Parameters

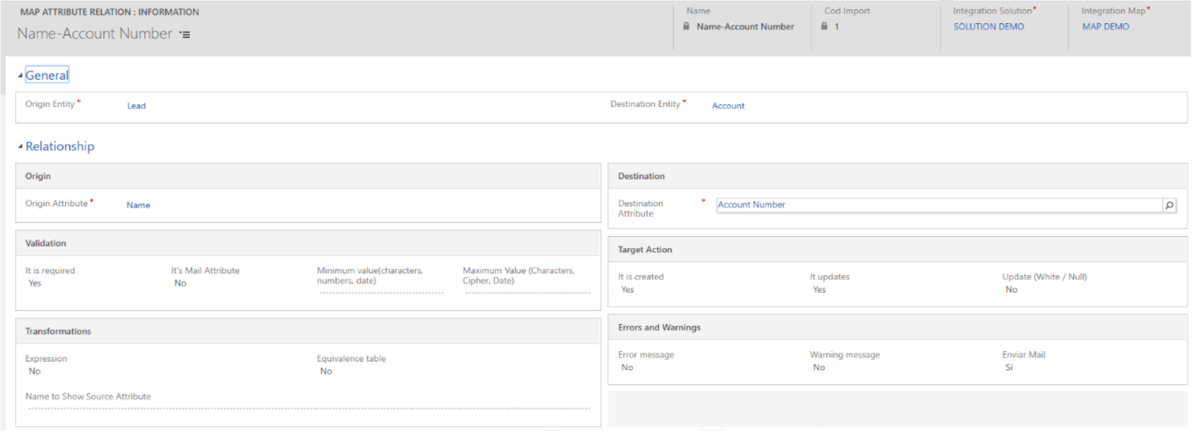
| Name | Datatype ↑ | In / Out | Attribute | Expression | Order ↑ | Origin Attribute | Parameter Dll ... | IsKey | Equivalence table | Param Out Dat... | Creation date |
|---|---|---|---|---|---|---|---|---|---|---|---|

To enable this content, create the record.

Img-34

## 3.6 Attribute Mapping

The Mapping of attributes corresponds to the entity that has the records of the mapping field to field from the source to the destination for our integration, to insert these records there is a grid at the bottom of the integration map register, there we press the (**+**), And a window will open (Img-35).



MAP ATTRIBUTE RELATION : INFORMATION
Name-Account Number

| Name | Cod Import | Integration Solution* | Integration Map* |
|---|---|---|---|
| Name-Account Number | 1 | SOLUTION DEMO | MAP DEMO |

General

Origin Entity*: Lead
Destination Entity*: Account

Relationship

**Origin**
Origin Attribute*: Name

**Destination**
Destination Attribute*: Account Number

**Validation**

| It is required | It's Mail Attribute | Minimum value(characters, numbers, date) | Maximum Value (Characters, Cipher, Date) |
|---|---|---|---|
| Yes | No | | |

**Target Action**

| It is created | It updates | Update (White / Null) |
|---|---|---|
| Yes | Yes | No |

**Transformations**

| Expression | Equivalence table |
|---|---|
| No | No |

Name to Show Source Attribute

**Errors and Warnings**

| Error message | Warning message | Enviar Mail |
|---|---|---|
| No | No | Sí |

**Img-35**

• At a glance the record already fills some fields automatically (Solution, Map, Source entity, Target entity), these data are necessary for the filtering of the source and destination attribute.

• Required fields are filled out.

- **Source Attribute:** Entity Field (table) of Source to be mapped.
- **Destination attribute:** Destination Entity field (table) to be mapped.

**NOTE:** If the destination field is a lookup field, another Attribute field will be displayed, which will contain the attributes of the entity of the lookup field of the destination attribute, where the field is chosen Resolve the data source the lookup record.

**NOTE:** The attributes that are displayed in the lookup attribute of the target attribute lookup field type must be preloaded with the integration engine app.

- In the attribute mapping log there are 3 sections:
  - **Validation**: This section refers to the rules of validation of the data of the origin attribute.
    - It is Required: field of two options YES / NO, when placed in SI specifies that the data in the source field is required and has to bring information, otherwise it generates an error in the log file and therefore the record will not perform The operation specified on the map.
    - It is Mail attribute: Field of two options YES / NO, when placing it in itself assumes that the source data of the source attribute is of type mail and valid that contains an (@) and (.)
    - Minimum value: Valid the minimum limit depending on the data type; If Text is valid the minimum number of characters, if numerical is valid the minimum numerical value, if it is Date (Datetime) validates the minimum date.
    - Maximum value: Valid the maximum limit depending on the data type; If Text is valid the maximum number of characters, if numerical is valid the minimum numerical value, if it is type Datetime validates the maximum date.
  - **Errors and Warnings**: This section refers to the rules of the error log:
    - Error message: field of two options YES / NO, when placed in SI specifies that the validation rules of the previous section generates an error in the log file and therefore the record will not perform the operation specified in the map.
    - Warning message: field of two options YES / NO, when placed in SI specifies that the validation rules are the previous section generates a warning in the log file, therefore if you leave to perform the operation specified in the map but with a Warning in this field.
    - Send Mail: Send an email to the contact referenced in the integration map

- **Target Action:** At the type that allows to execute in the destination on the mapped field.
  - It is Created: Allow this field to fill in the creation option
  - It is Update: Allow this field to fill in the Update option
  - Update in White / Null: Refreshes the target value, blank or blank, containing or not containing information.

- **Transformations:** This section refers to business rules or conversions that have effect on the data source of the specified attribute.
  - It's expression: Field of two Options YES / NO when placed in SI Enables a template of several lines of text to fill programming code with different functions (SEE ANNEX: EXPRESSIONS).
  - Table of Equivalences: Field of two Options YES / NO when placed in YES Enables a grid of equivalences where inserts registers by pressing in the (+), a screen will be generated (Img-36).

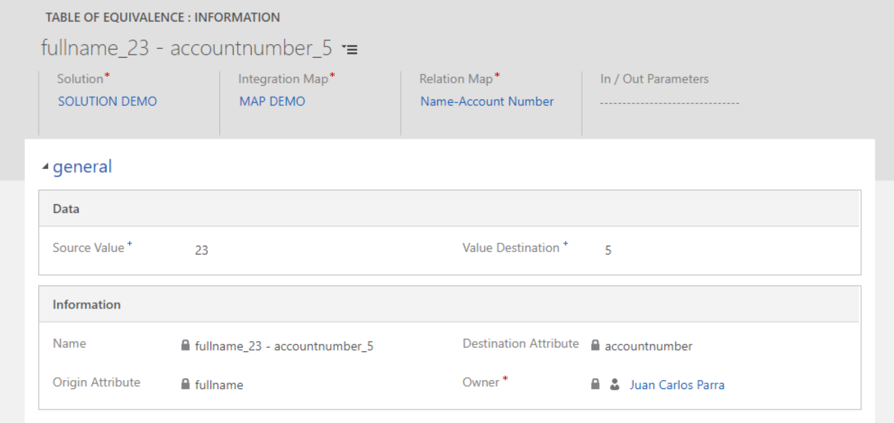


TABLE OF EQUIVALENCE : INFORMATION

fullname_23 - accountnumber_5

| Solution* | Integration Map* | Relation Map* | In / Out Parameters |
|---|---|---|---|
| SOLUTION DEMO | MAP DEMO | Name-Account Number | ------------------------------ |

general

Data

| | | | |
|---|---|---|---|
| Source Value * | 23 | Value Destination * | 5 |

Information

| | | | |
|---|---|---|---|
| Name | fullname_23 - accountnumber_5 | Destination Attribute | accountnumber |
| Origin Attribute | fullname | Owner * | Juan Carlos Parra |

**Img-36**

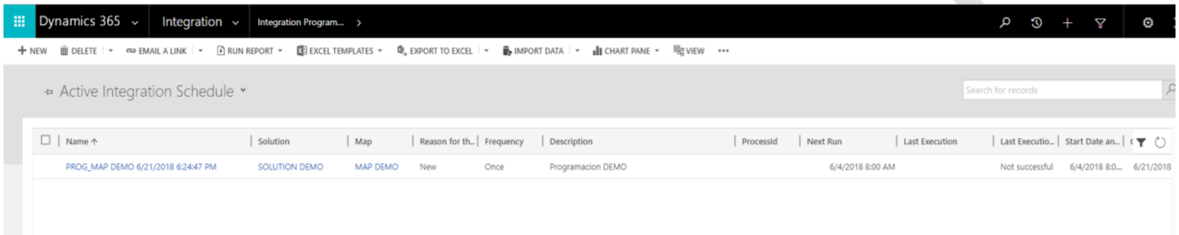
- Only the following fields are filled:
  - Source Value : Value that comes from the origin.
  - Destination value: Value to convert to destination

**NOTE:** A practical example where the equivalence tables are used are the data of the lists or set of options that usually the origin value never coincides with the destination, therefore by value it creates an equivalence register.

## 3.7 Programming Integration

Programming logs refer to events that trigger a complete integration (Integration solution with all your maps), or a specific map.

- In the **Integration** Module (Img-20) in the **Operation**s section, press **Integration Programming**. There you will see the screen (Img-37) and click on the **New** command bar.



| Name | Solution | Map | Reason for th... | Frequency | Description | ProcessId | Next Run | Last Execution | Last Executio... | Start Date an... | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| PROG_MAP DEMO 6/21/2018 6:24:47 PM | SOLUTION DEMO | MAP DEMO | New | Once | Programacion DEMO | | 6/4/2018 8:00 AM | | Not successful | 6/4/2018 8:0... | 6/21/2018 |

**Img-37**

- A screen (Img-38) will be displayed, which will contain the following fields to fill out.
  - **Name**: Text field to fill out with a name.

  - **Specific Map**: If you want to program a specific map please fill in this field with the map to integrate.

  - **Description**: Text field to fill out with a description

  - **Frequency**: Field of options that gives us the frequency with which the integration is executed.

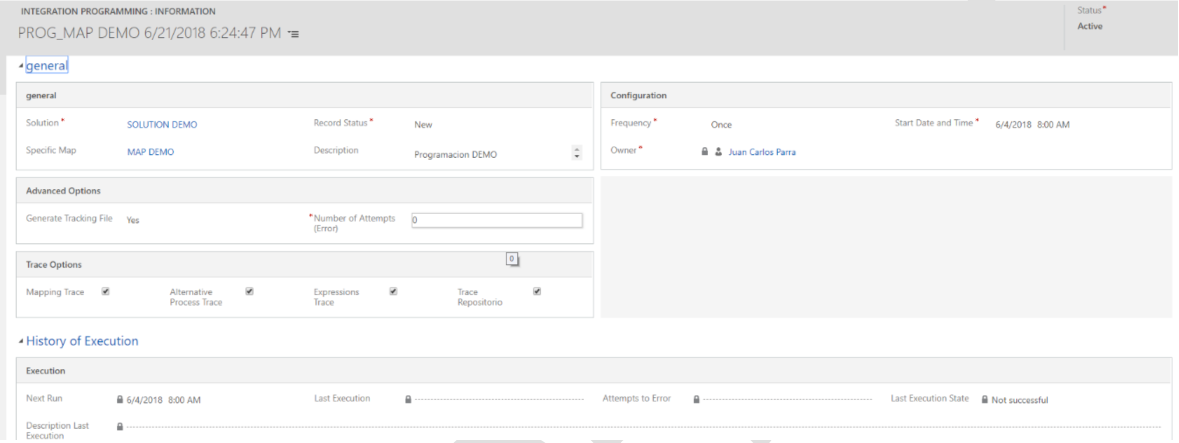
    **a) Once:** It is executed only once its start corresponds to the date and time of the field **DATE AND TIME OF START.**

    **b) Daily:** It is executed every day starting at the date of the field **DATE AND TIME OF START**, additional the daily execution time is the time of said field; Note the field **Daily Repeat** which is of numeric type the value of this field indicates how many times the integration is repeated every day, if it does not have data it runs every 24 hours and has for example a 2 runs every 12 Hours and so on

*Daily Executions = 24 / Number Daily Repeat*

c) **Weekly:** when selecting this option the days of the week are displayed where you can choose in which to perform the integration periodically, the start time is the field **DATE AND TIME OF START**

d) **Monthly:** selecting this option displays the months in which you can choose in which to perform the integration periodically, the start time is the field **DATE AND TIME OF START**


INTEGRATION PROGRAMMING : INFORMATION
PROG_MAP DEMO 6/21/2018 6:24:47 PM

Status* Active

general

**general**

Solution* SOLUTION DEMO
Record Status* New
Specific Map MAP DEMO
Description Programacion DEMO

**Configuration**

Frequency* Once
Start Date and Time* 6/4/2018 8:00 AM
Owner* Juan Carlos Parra

**Advanced Options**

Generate Tracking File Yes
*Number of Attempts (Error) 0

**Trace Options**

Mapping Trace ☑
Alternative Process Trace ☑
Expressions Trace ☑
Trace Repositorio ☑

History of Execution

**Execution**

Next Run 6/4/2018 8:00 AM
Last Execution ---
Attempts to Error ---
Last Execution State Not successful
Description Last Execution ---

**Img-38**

- **Start Date and Time**: Day and time when the integration of the specified solution and map is executed

- **Generate Tracking File:** When activating this option, the "Trace Options" section is shown, which you can choose to generate a tracking file, which is hosted in:

  **C:\Program Files (x86)\Smart Process\Smart 365\Files\Trace**

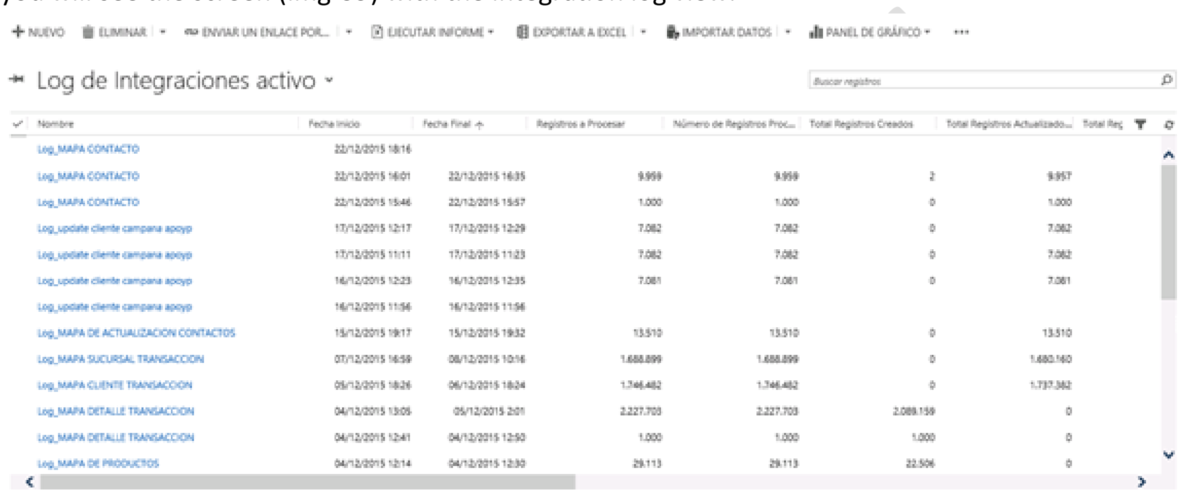
- **Number of Attemps(Error):** It is the number of attempts to relaunch the integration if it falls

- After the fields have been completed, be sure to place the field **Reason for status** in **Scheduled**, and then proceed to create the record, automatically wait for the engine in about 3min or less to automatically place it on release, and being in that state is generated An integration log; At the end of the integration this record is inactive if it is frequency once, otherwise it is reprogrammed automatically with the new date and time depending on the stipulated frequency.

## 3.8 Integration Log

The log of integrations is the entity that refers to the visualization of what happening happening in the integration, and additional to its final indicators.

- In the Integration Module (Img-20) in the **Operations** section, click on **Integration Log**. There you will see the screen (Img-39) with the integration log view.



| Nombre | Fecha Inicio | Fecha Final | Registros a Procesar | Número de Registros Proc... | Total Registros Creados | Total Registros Actualizado... | Total Reg |
|---|---|---|---|---|---|---|---|
| Log_MAPA CONTACTO | 22/12/2015 18:16 | | | | | | |
| Log_MAPA CONTACTO | 22/12/2015 16:01 | 22/12/2015 16:35 | 9.959 | 9.959 | 2 | 9.957 | |
| Log_MAPA CONTACTO | 22/12/2015 15:46 | 22/12/2015 15:57 | 1.000 | 1.000 | 0 | 1.000 | |
| Log_update cliente campana apoyp | 17/12/2015 12:17 | 17/12/2015 12:29 | 7.082 | 7.082 | 0 | 7.082 | |
| Log_update cliente campana apoyp | 17/12/2015 11:11 | 17/12/2015 11:23 | 7.082 | 7.082 | 0 | 7.082 | |
| Log_update cliente campana apoyp | 16/12/2015 12:23 | 16/12/2015 12:35 | 7.081 | 7.081 | 0 | 7.081 | |
| Log_update cliente campana apoyp | 16/12/2015 11:56 | 16/12/2015 11:56 | | | | | |
| Log_MAPA DE ACTUALIZACION CONTACTOS | 15/12/2015 19:17 | 15/12/2015 19:32 | 13.510 | 13.510 | 0 | 13.510 | |
| Log_MAPA SUCURSAL TRANSACCION | 07/12/2015 16:59 | 08/12/2015 10:16 | 1.688.899 | 1.688.899 | 0 | 1.680.160 | |
| Log_MAPA CLIENTE TRANSACCION | 05/12/2015 18:26 | 06/12/2015 18:24 | 1.746.482 | 1.746.482 | 0 | 1.737.382 | |
| Log_MAPA DETALLE TRANSACCION | 04/12/2015 13:05 | 05/12/2015 2:01 | 2.227.703 | 2.227.703 | 2.089.159 | 0 | |
| Log_MAPA DETALLE TRANSACCION | 04/12/2015 12:41 | 04/12/2015 12:50 | 1.000 | 1.000 | 1.000 | 0 | |
| Log_MAPA DE PRODUCTOS | 04/12/2015 12:14 | 04/12/2015 12:30 | 29.113 | 29.113 | 22.506 | 0 | |

**Img-39**

- In the Active Logging View, we have the following columns:

  - **Name**: Is the name of the log that refers to the map that is executed or executed.

  - **Start Date**: It is the date and time that the integration started.

  - **End Date:** This is the date on which the integration ended.

**NOTE:** When the map is being integrated this date appears blank when it is full, because it completes the integration and the log log goes to the inactive state.

  - **Record to Process**: It is the number of records that the query brings to the data source, this data appears at the beginning of the integration.

  - **Number of records processed**: When the map is being integrated this value is changing from 1000 to 1000, thus we know how many records are processed, at the end must give the same number as the previous item.

- **Total Created Records**: If the operation is Insert, Insert if it does not exist or insert / Refresh, this column shows the records created

- **Total Updated Records**: If the operation is Update, Update if Exist, or Insert / Update, this column shows the updated records.

- **Total Records deleted**: If the operation is Delete or Delete if it exists, this column shows the records deleted.

- **Total Warnings**: Total number of records with warnings, configured in attribute mapping.

- **Total Errors**: Total number of records with errors, configured in attribute mapping.

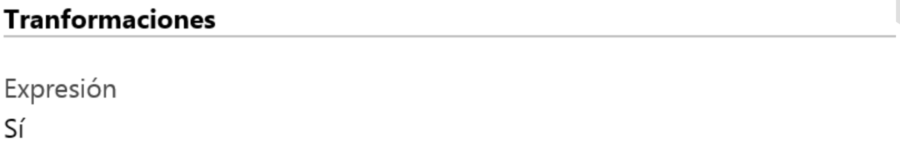
- **Error Detail**: If an error is generated before starting to launch the data this field contains the description of the general error Eg: Connectivity.

- **Global Solution Log**: field of two options YES / NO, if it contains YES these values are the sum of all integration of all integrated maps.

# 4 EXPRESSIONS

## 4.1 Definition

Expressions are functions that allow us to inject in the mapping relationship attributes certain business rules to transform the information from the source to the destination, to activate an expression within the relationship form mapping attribute go to the Transformations session and there you will find the option Of Expression (Img-40), the functions are sometimes composed of arguments that are separated by a character (Separator of Terms).

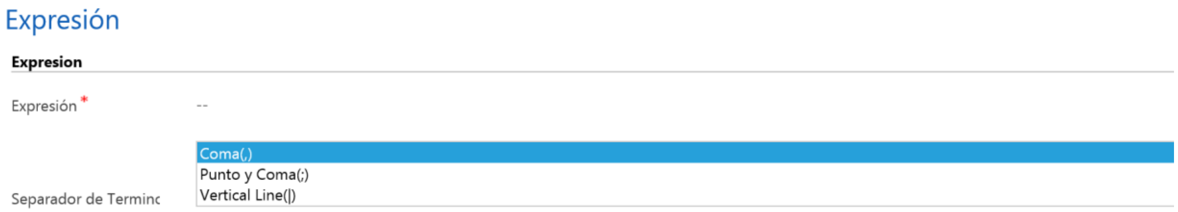


**Tranformaciones**

Expresión
Sí

**Img-40**

When you place the option in YES, at the bottom of the form you will see an Expression tab (Img-41) which contains two fields: Expression, Terms Separator



Expresión

**Expresion**

Expresión * --

Separador de Terminc
Coma(,)
Punto y Coma(;)
Vertical Line(|)

**Img-41**

- **Expression**: Text where you inject the functions that perform the data transformation

- **Terms Separator:** Some functions contain more than 1 argument, so a separator is required that is selected in this option

> **NOTE:** Expressions are returned as text except for = NULL, Smart Integrator handles the conversion at the end depending on the destination data type.

## 4.2 Components

Expressions have several components.

a) **$VAR#**

Variables where the results of the functions are saved, are composed of a prefix $, and in the end it carries the number of the Variable

E.g.

$VAR1, $VAR2……..$VAR20

b) **$RESULT**

Final variable that is the one that is loaded to the destination attribute of the attribute relation.

E.g.

$RESULT

c) **=**

Identifier that separates the variable of the function, on the left side are placed the variables where the resulting values that generate the functions will be stored

E.g.

- $VAR1=FUNCION Load the result in variable 1
- $RESULT=FUNCION Load the result of the function in the final variable
- =FUNCION Load the result of the function in the final variable the same as the previous

d) **FUNCTION**

It is the method that performs a transformation on the data, the functions are composed of the following components:

1) **Name** Refers to the name of the function.
2) **()** The parentheses carry within the arguments necessary for the function, some have parentheses and some do not.
3) **Arguments** are values necessary for some functions, which can be Variables ($ VAR #), Result ($ RESULT), Source Attributes, Constants.
4) **Separator** Characters responsible for separating arguments, because there are functions with more than 1 argument.

**NOTE:** Source Attributes that are part of the arguments, require that their logical name (e.g. **sp_name**) be placed, additional values can be placed from the source attributes, this is when this attribute refers to another table (attribute type Lookup), for it is placed Name of the related table: Logical name of the attribute of that related table.

**account:emailaddress1**

## 4.3 List of Functions

### 4.3.1 =EMPTY

Function that places a text in void, has no arguments.

**E.g.**

=EMPTY()

### 4.3.2 =TODAY

Function that places the current date and time, has no arguments.

**E.g.**

=TODAY()

### 4.3.3 =NULL

Function that places a null, has no arguments.

**E.g.**

=NULL()

### 4.3.4 =UTCTODAY

Function that places the current date in UTC format (regardless of the locale), has no arguments.

**E.g.**

=UTCTODAY()

### 4.3.5 =YEAR

Function that subtracts the year component from a date type attribute, takes only 1 argument.

**E.g.**

- =YEAR(createdon)
  It extracts the component coming year into an origin attribute creation date, and places it in the final result.

- $VAR1=YEAR(createdon)
  Extracts the component coming year in an origin attribute created date, and places it in Variable 1.

- $RESULT=YEAR($VAR1)
  Extracts the component next year in variable 1, and places it in the final result.

### 4.3.6 =MONTH

Function that subtracts the month component from a date type attribute, takes 1 single argument.

**E.g.**

- =MONTH(createdon)
  Extracts the next month component in a source attribute creation date, and places it in the final result.

- $VAR1=MONTH(createdon)
  Extracts the next month component in an origin attribute created date, and places it in Variable 1.

- $RESULT=MONTH($VAR1)
  Extracts the next month component in variable 1, and places it in the final result.

### 4.3.7 =DAY

Function that subtracts the day component from a date type attribute, takes 1 single argument

**E.g.**

- =DAY(createdon)
  Extracts the next day component in an origin attribute created date, and places it in the final result.

- $VAR1=DAY(createdon)
  Extracts the next day component in an origin attribute created date, and places it in Variable 1

- $RESULT=DAY($VAR1)
  Extracts the next day component in variable 1, and places it in the final result

### 4.3.8 =ADDY

Function that adds a numeric value to the year component to a date type attribute, takes 2 arguments

**E.g.**

- =ADDY(createdon,5)
  Adds 5 years to the origin attribute (creation date), and places it in the final result, the arguments are separated by the term (,)

- $VAR1=ADDY(account:createdon;10)
  Adds 10 years to the related source attribute (Creation date of the account entity), and places it in variable 1, the arguments are separated by the term (;)

- $RESULT=ADDY($VAR1|15)
  Adds 15 years to variable 1, and places it in the final result, the arguments are separated by the term (|)

### 4.3.9 =ADDM

Function that adds a numeric value to the month component to a date type attribute, takes 2 arguments

**E.g.**

- =ADDM(createdon,5)
  Adds 5 months to the origin attribute (creation date), and places it in the final result, the arguments are separated by the term (,)

- $VAR1=ADDM(account:createdon;10)
  Adds 10 months to the related source attribute (Creation date of the account entity), and places it in variable 1, the arguments are separated by the term (;)

- $RESULT=ADDM($VAR1|15)
  Adds 1 month to variable 1, and places it in the final result, the arguments are separated by the term (|)

### 4.3.10 =ADDTIME

Function that adds the Time component (Days, Hours, Minutes, Seconds) to a date type attribute, takes 5 arguments.

**E.g.**

- =ADDTIME(createdon,5,10,30,10)
  Adds 5 days, 10 hours, 30 minutes and 10 seconds to the source attribute (creation date), and places it in the final result, the arguments are separated by the term (,)

- $VAR1=ADDTIME(account:createdon;10;12;45;10)
  Adds 10 days, 12 hours, 45 minutes and 10 seconds to the related source attribute (Creation date of the account entity), and places it in variable 1, the arguments are separated by the term (;)

- $RESULT=ADDTIME($VAR1|15|1|10|5)

  Adds 15 days, 1 hour, 10 minutes and 5 seconds to variable 1, and places it in the final result, the arguments are separated by the term (|)

### 4.3.11 =TAKETIME

Function that subtracts the Time component (Days, Hours, Minutes, Seconds) to a date type attribute, takes 5 arguments.

**E.g.**

- =TAKETIME(createdon,5,10,30,10)
  Subtracts 5 days, 10 hours, 30 minutes and 10 seconds from the source attribute (creation date), and places it in the final result, the arguments are separated by the term (,)

- $VAR1=TAKETIME(account:createdon;10;12;45;10)
  Subtracts 10 days, 12 hours, 45 minutes and 10 seconds from the related source attribute (Creation date of the account entity), and places it in variable 1, the arguments are separated by the term (;)

- $RESULT=TAKETIME($VAR1|15|1|10|5)
  Subtracts 15 days, 1 hour, 10 minutes and 5 seconds to variable 1, and places it in the final result, the arguments are separated by the term (|)

### 4.3.12 =OPER

Function that executes basic operations such as addition, subtraction, multiplication and division, takes 3 or 4 arguments.

Structure:

| | |
|---|---|
| =OPER(Valor1, Valor2, Oper) | 3 Arguments |
| =OPER(Valor1, Valor2, Oper, SepDec) | 4 Arguments |

**Valor1, Valor2** = Numerical attribute, Numerical Variable or a number

**Oper** = **+** (Addition), **-** (Subtraction), ***** (Multiplication), **/** (Division)

**SecDec** = Decimal Separator (**,**) or (**.**)

E.g.

- =OPER(actualvalue,#10,+)
  Add 10 to attribute actualvalue, the arguments are separated by the term (,)
- $VAR1=OPER(actualvalue;account:revenue;*)
  Multiply the value of actualvalue attribute with the value of the related attribute revenue of account, the answer saves it in $VAR1, the arguments are separated by the term (;)
- =OPER($VAR1|actualvalue|*)
  Subtract the value of variable $VAR1 with the value of actualvalue attribute, the arguments are separated by the term (|)
- =OPER($RESULT|actualvalue|*|.)
  Divide the value of variable $RESULT with the value of actualvalue attribute, the decimal separator is a Point(.), the arguments are separated by the term (|).

### 4.3.13 =DATETOJULIANA

Convert a datetime to a Julian date, takes 1 argument of type datetime(Attribute, Variable).

E.g

- $VAR1=DATETOJULIANA(createdon)
  Convert the value of the creation date attribute, in Julian format, the answer saves it in $VAR1

- =DATETOJULIANA(account:createdon)
  Convert the value of the related attribute createdon of account, in Julian format.

### 4.3.14 =DATEFROMJULIANA

Convert a Julian date to a datetime, takes 1 argument of type julian date (Attribute, Variable).

E.g

- $VAR2=DATEFROMJULIANA($VAR1)
  Convert the Julian value of $VAR1, in datetime, the answer saves it in $VAR2

- =DATEFROMJULIANA(account:attjulian)
  Convert the value of the related attribute attjulian of account, in datetime format.

### 4.3.15 =CONCATENATE

Concatenates strings of characters that can be text attributes, text variables, or a text string, takes n arguments.

E.g

- $VAR2=CONCATENATE(firstname, “ ”, middlename, “ ”, lastname)
  Concatenate the attributes firtsname, middlename, and lastname with a sapece between them, the answer saves it in $VAR2, the arguments are separated by the term (,)

- =CONCATENATE(“SR ”|contact:fullname|” Good morning”)
  Concatenate the value of the related attribute fullname of contact with a line of text, the arguments are separated by the term (|)

- =CONCATENATE($VAR1;” ”; $VAR2)
  Concatenate variable $VAR1 with variable $VAR2 with a space between them, the arguments are separated by the term (;)

### 4.3.16 =TOUPPER

Converts a string of characters, text attributes or text variables into uppercase, takes 1 argument.

E.g

- $VAR2=TOUPPER(firstname)
  Convert the value of the firstname attribute to uppercase, the answer saves it in $VAR2.

- =TOUPPER($VAR1)
  Convert the value of the $VAR1 variable to uppercase.

- $VAR1=TOUPPER(account:name)
  Convert the value of the related attribute name of account to uppercase, the answer saves it in $VAR1.

### 4.3.17 =TOLOWER

Converts a string of characters, text attributes or text variables into lowercase, takes 1 argument.

E.g

- $VAR2=TOLOWER(firstname)
  Convert the value of the firstname attribute to lowercase, the answer saves it in $VAR2.

- =TOLOWER($VAR1)
  Convert the value of the $VAR1 variable to lowercase.

- $VAR1=TOLOWER(account:name)
  Convert the value of the related attribute name of account to lowercase, the answer saves it in $VAR1.

### 4.3.18 =TRIMSTART

Removes all leading whitespaces of a string of characters or a text attribute or text variable, takes 1 argument

E.g

- $VAR1=TRIMSTART(firstname)
  Remove the initial whitespaces of value of the firstname attribute, the answer saves it in $VAR1.

- =TRIMSTART($VAR1)
  Remove the initial whitespaces of value of the $VAR1 variable.

- $VAR1=TRIMSTART(account:name)
  Remove the initial whitespaces of value of the related attribute name of account, the answer saves it in $VAR1.

### 4.3.19 =TRIMEND

Removes all end whitespaces of a string of characters or a text attribute or text variable, takes 1 argument

E.g

- $VAR1=TRIMEND(firstname)
  Remove the end whitespaces of value of the firstname attribute, the answer saves it in $VAR1.

- =TRIMEND($VAR1)
  Remove the end whitespaces of value of the $VAR1 variable.

- $VAR1=TRIMEND(account:name)
  Remove the end whitespaces of value of the related attribute name of account, the answer saves it in $VAR1.

### 4.3.20 =TRIM

Removes all leading and end whitespaces of a string of characters or a text attribute or text variable, takes 1 argument

E.g

- $VAR1=TRIM(firstname)
  Remove the initial and end whitespaces of value of the firstname attribute, the answer saves it in $VAR1.

- =TRIM($VAR1)
  Remove the initial and end whitespaces of value of the $VAR1 variable.

- $VAR1=TRIM(account:name)

  Remove the initial and end whitespaces of value of the related attribute name of account, the answer saves it in $VAR1.

### 4.3.21 =PADLEFT

Returns a new string of a specific length in which the beginning of the string is filled with spaces or with a Unicode character, takes 2 or 3 arguments.

Structure:

=PADLEFT(Valor, Num)    2 Arguments

=PADLEFT(Valor, Num, Character)    3 Arguments

**Valor** = String attribute or String Variable

**Num**= Number of characters in the resulting string, equal to the number of original characters plus the number of additional fill characters.

**Character** = Unicode fill character

E.g.

- =PADLEFT(fullname,10)
  **fullname=** jhon
  **result=**      jhon
  Results in the value of the fullname attribute with a length of 10 characters, which are filled with blanks at the beginning, if its length is less, the arguments are separated by the term (,).

- $VAR1=PADLEFT(account:name;15)
  **account:name=**smart
  **result=**          smart
  Results in value of the related attribute name of account with a length of 15 characters, which are filled with blanks at the beginning, if its length is less, the answer saves it in $VAR1, the arguments are separated by the term (;).

- =PADLEFT($VAR1|20|_)
  **$VAR1=**smart365
  **result=**------------smart365
  Results in the value of the $VAR1 variable with a length of 20 characters, which are filled with character - at the beginning, if its length is less, the arguments are separated by the term (|).

- =PADLEFT($RESULT|12|*)
  **$VAR1=**smart365
  **result=******smart365
  Results in the value of the $RESULT variable with a length of 12 characters, which are filled with character * at the beginning, if its length is less, the arguments are separated by the term (|).

### 4.3.22 =PADRIGHT

Returns a new string of a specific length in which the end of the string is filled with spaces or with a Unicode character, takes 2 or 3 arguments.

Structure:

| | |
|---|---|
| =PADRIGHT(Valor, Num) | 2 Arguments |
| =PADRIGHT(Valor, Num, Character) | 3 Arguments |

**Valor** = String attribute or String Variable

**Num**= Number of characters in the resulting string, equal to the number of original characters plus the number of additional fill characters.

**Character** = Unicode fill character

E.g.

- =PADRIGHT(fullname,10)
  **fullname=** jhon
  **result=**jhon //spaces
  Results in the value of the fullname attribute with a length of 10 characters, which are filled with blanks at the end, if its length is less, the arguments are separated by the term (,).

- $VAR1=PADRIGHT(account:name;15)
  **account:name=**smart
  **result=**smart //spaces
  Results in value of the related attribute name of account with a length of 15 characters, which are filled with blanks at the end, if its length is less, the answer saves it in $VAR1, the arguments are separated by the term (;).

- =PADRIGHT($VAR1|20|-)
  **$VAR1=**smart365
  **result=**smart365------------
  Results in the value of the $VAR1 variable with a length of 20 characters, which are filled with character - at the end, if its length is less, the arguments are separated by the term (|).

- =PADRIGHT($RESULT|12|*)
  **$VAR1=**smart365
  **result=**smart365****
  Results in the value of the $RESULT variable with a length of 12 characters, which are filled with character * at the end, if its length is less, the arguments are separated by the term (|).

### 4.3.23 =REPLACE

Searches a string for a specified value in a text attribute or test variable, and returns a new string where the specified values are replaced with new value, takes 3 arguments.

Structure:

=REPLACE(Valor, Character old, Character new) 3 Arguments

**Valor**= String attribute or String Variable

**Character old**=Chain of characters to replace, always have to go in double quote

**Character new** = Chain of characters to replace, can be a text in quotes, a text attribute or a text variable

E.g.

- =REPLACE(fullname,"A","E")
  Replaces the string of characters "A" of fullname attribute with the string of characters "E", the arguments are separated by the term (,).

- =REPLACE(account:name,"JHON",firstname)
  Replaces the string of characters "JHON" of the related attribute name of account with the value of the firstname attribute, the arguments are separated by the term (;).

- =REPLACE($VAR1|"Hello"|$VAR2)
  Replaces the string of characters "Hello" of $VAR1 variable with the value of the $VAR2 variable, the arguments are separated by the term (|).

### 4.3.24 =REMOVE

Removes a range of characters from an initial position to a text attribute or a text variable, takes 2 or 3 arguments

Structure:

| | |
|---|---|
| =REMOVE(Valor, StartIndex) | 2 Arguments |
| =REMOVE(Valor, StarIndex, Count) | 3 Arguments |

**Valor** = String attribute or String Variable

**StartIndex** = Start position on the string of characters of the text attribute or text variable

**Count** = Number of characters to be removed after startindex

- =REMOVE(fullname,2)
  **fullname=** abcdefg
  **result=** ab //remove cdefg
  Remove from position 2 onwards, the value of the fullname attribute, the arguments are separated by the term (,).

- $VAR1=REMOVE(account:name;6)
  **account:name=**smart_process
  **result=** smart_ //remove process
  Remove from position 6 onwards, the value of the related attribute name of account, the answer saves it in $VAR1, the arguments are separated by the term (;).

- =REMOVE($VAR1|3|2)
  **$VAR1=** smart365
  **result=** sma365 //remove rt
  Remove from position 3, 2 characters in advance of the value of the $VAR1 variable, the arguments are separated by the term (|).

- =REMOVE($RESULT|0|1)
  **$VAR1=** smart365
  **result=** mart365 //remove s
  Remove from position 0, 1 character in advance of the value of the $RESULT variable, the arguments are separated by the term (|).

### 4.3.25 =SUBSTRING

Extracts a range of characters from an initial position to a text attribute or a text variable, takes 2 or 3 arguments

Structure:

| | |
|---|---|
| =SUBSTRING(Valor, StartIndex) | 2 Arguments |
| =SUBSTRING(Valor, StarIndex, Count) | 3 Arguments |

**Valor** = String attribute or String Variable

**StartIndex** = Start position on the string of characters of the text attribute or text variable

**Count** = Number of characters to extract after startindex

○ =SUBSTRING(fullname,2)
**fullname=** abcdefg
**result=** cdefg
Extract from position 2 onwards, the value of the fullname attribute, the arguments are separated by the term (,).

○ $VAR1= SUBSTRING(account:name;6)
**account:name=**smart_process
**result=** process
Extract from position 6 onwards, the value of the related attribute name of account, the answer saves it in $VAR1, the arguments are separated by the term (;).

○ =SUBSTRING($VAR1|3|2)
**$VAR1=** smart365
**result=** rt
Extract from position 3, 2 characters in advance of the value of the $VAR1 variable, the arguments are separated by the term (|).

○ =SUBSTRING($RESULT|0|1)
**$VAR1=** smart365
**result=** s
Extract from position 0, 1 character in advance of the value of the $RESULT variable, the arguments are separated by the term (|).

### 4.3.26 CONSTANT

Value which is not equal to a function and is returned as a string of characteres

○ =HOLA
Return HOLA