SAP CRM Middleware Configurations

Applies to:
SAP CRM Middleware Configurations. For more information, visit the Customer Relationship Management homepage.

Summary
This whitepaper elaborates the steps that we generally need to follow while we are doing the configurations for Middleware settings from SAP CRM Application to other applications e.g. SAP R/3 system or SAP BW.

Author: Piyush Sagolekar
Company: Accenture
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Author Bio
Piyush Sagolekar has been working with Accenture handling projects in SAP CRM. He has led various crucial projects in his career. He has over 8 years of experience out of which over 5 years are in SAP working for various high profile clients which includes a global automobile major and a telecommunication equipment giant. A consultant with a sound educational background and rich domain experience, he is considered to be one of the experts in delivering projects in SAP SD and CRM.
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Introduction

SAP has a very strong middleware tool when compared to other applications like Oracle where it is pretty easy for SAP CRM application to connect with and exchange data with other SAP Applications like SAP BW, SAP R/3 system etc. This connection and data transfer is established through middleware. From an ERP application perspective this is an extremely important aspect the data exchange among the systems is kind of back-bone and the crux of very existence of the application. This data exchange can be of following types between other systems and CRM:

1. Initial data transfer which is also called as Initial Load in SAP terminology
2. Intermediate synchronization of data among the applications also called as Delta Load in SAP terminology
3. Synchronization

Just to throw some light on the kinds of data exchange mentioned above, it can be better understood if we look at the frequency of the data exchange. Initial load is primarily a one time activity wherein when the connectivity is established between the systems, the data is transferred from one system to another. This data can range from configuration data (like pricing conditions) to master data (like Business Partners and Products) to transactional data (like Sales Quotations, Contracts and Sales Orders).

Delta load is an activity of intermediate data transfer among the systems. This activity takes place more often than not to keep the data in various systems in sync and also take care of the changes to details of the data in various systems. It also takes care of newly created data in the system and distributes the same to other connected applications. Primarily this takes place in real-time and is primarily done automatically.

Synchronization activity is to take care of any out of sync data. This may be a cause of connectivity failure or might as well be an outcome of maintenance activity. This is primarily done manually as and when needed.

Steps involved in Middleware setting configuration

Setting up of RFC connection
Selection of Industry
Maintain Default Customer Industry
Generation of Industry specific objects
Configuration of Publication, Sites and Subscription
Define Middleware Parameters
Registration of Destinations
Registration of Inbound Queues
Maintain Organization Unit Objects
Maintain Object Number Ranges
Set Up Objects Exchange

Steps involved in data exchange

Start Initial Load
Monitor Objects
Setup Delta Load
Create Synchronization Request
Start Synchronization Request
Monitor Synchronization Request
Setting up of RFC connection

Go to Transaction SM59 to set up RFC (Remote Function Call) connection.

We can as well navigate through the following path:

IMG → Customer Relationship Management → CRM Middleware and Related Components → Communication Setup → Define RFC Destinations

The same is shown below:
Here we reach the RFC Connection Configuration screen as shown below. Click on the ‘Create’ button on this screen to create a new connection.
On clicking the create button, we get the new RFC Destination screen. Provide the RFC Destination Name and the connection type. Although we can choose any name for RFC Destination, names should contain as best practice the host name and system name. For R/3 system connection the Connection Type should be 3 – Connection to ABAP system. Provide a short description(s) of the RFC Destination. The same is depicted below:
Once these details are provided, hit enter button on the keyboard so as to get the relevant fields in technical settings tab and other tabs. The same is depicted below:
Keep the radio button for Load Balancing selected to ‘No’. System Number can be found for the target system from the SAP Logon pad itself as given below:

We can get the Target Host details and other details from the system administrator and accordingly update the same.
Once the details are populated, we can move to tab Logon and Security as depicted below:

If we have defined this system as a trusted system in the target system then we can select the radio button as Yes. Else we can leave it as No. As we shall be using the RFC in background as well we can keep the check-box for Logon screen as unchecked. If we check this checkbox then system would throw up the logon screen where the details are to be entered in order to login to the system. This kind of manual intervention cannot be handled in background.

If we are using the Secure Network Communication (SNC) for which the profile has already been configured then this field becomes active.
We can have an added authorization to allow only specific users to use the RFC Connection. This can be done by adding a value in the field ‘Authorization for Destination’. Whatever value we input here in this field has to be maintained for ICF_VALUE for ICF_FIELD activity = DEST in the authorization object S_ICF for the PFCG Role which is assigned to the User. The same is depicted below:

Provide the logon data to be used for logging in to the target system. You may specify the language as well. Provide the correct Client for the R/3 system. Input the User which is a valid user in the target system and the corresponding password.

After saving the configuration settings and once the RFC Connection is established we can as well activate the MDMP Settings and do the language or codepage entries. We can leave the other settings as defaulted and the details of those settings are out of scope of this document and will be handled in another whitepaper.
We may check the newly created RFC Connection details and as well edit the same. The same is depicted below:
We can test the newly created RFC Connection if that is working or not by clicking on the button ‘Connection Test’ at the header of the screen as depicted below:

Once the RFC Connection is saved we can check the entry in table RFCDES.
**Selection of Industry**

The industry selection determines the repository objects and the services generated for data exchange. We can select the relevant industry by navigating through the following path:

IMG → Customer Relationship Management → CRM Middleware and Related Components → Generating Industry-Specific Objects and Services → Select Your Industry

The same is depicted below:
We can select the relevant entry and save the setting. This detail gets stored in table SMOHPARIND.

Generation of Industry specific objects

Go to Transaction SMOGTOTAL to start the generation of Industry Specific objects.

We can as well navigate through the following path:

IMG → Customer Relationship Management → CRM Middleware and Related Components → Generating Industry-Specific Objects and Services → Generate Industry-Specific Objects

The same is shown below:
In general, this activity need not be done for new installations. Only in case of upgrades this needs to be done. We may check the initial generation log by going to transaction SMOGLASTLOG.

If we see that the generation is already done then we need not do this activity again.

The objects generation activity is very time consuming and may takes hours together to complete. After starting the generation, we can monitor the status of the same through transaction GENSTATUS.

We can as well navigate through the following path:

IMG → Customer Relationship Management → CRM Middleware and Related Components → Generating Industry-Specific Objects and Services → Check Generation Processes
The same is shown below:

![Image of Display IMG](image)

The report screen looks like the one depicted below:

![Image of Generation Status](image)
From this screen itself we can start the generation jobs, check the jobs which are scheduled/finished, navigate to the log which we discussed earlier (SMOGLASTLOG). All these buttons can be seen at the top of the screen or we can use the options in the menu.

Configuration of Publication, Sites and Subscription

Before we jump to the configuration of each of the Sites, Publication and Subscription, it is important to conceptually understand as what exactly each entity means and the relationship between them.

Systems which are involved in the exchange of data are called sites. A site can be the very own CRM System or R/3 system or BW System. We have to configure all the sites that are involved in the data exchange. Each site can act as a source site or target site or it can act as both in case of two way data exchange.

A Publication is logical congregation or set of data e.g. Business Partners, Business Partner Relationships, Campaigns, Conditions etc. Each publication has replication object (which is generated from and represents a particular BDoc type) assigned to it which determines the data which shall be exchanged.

Finally, an assignment of a Publication to a particular Site is a Subscription.

The activity of configuration of each of these entities can be done in the Administration Console. The Administration Console can be called from transaction SMOEAC.

We can as well navigate through the following path:

IMG → Customer Relationship Management → CRM Middleware and Related Components → Communication Setup → Create Sites and Subscriptions
In order to configure a Site, select the Object Type from the drop-down as Site and click on button ‘Create’ as depicted below:
On doing so we get the new Site screen as depicted below:

Input the relevant details for the Name of the Site and Description along with the selection of Type of site from the drop-down. The value relevant to R/3 System for Type of site is R/3.
Provide the relevant values and hit Enter button on the keyboard. On hitting Enter button the Site gets activated automatically and we can notice the checkbox ‘Active’ getting checked.
Click on the button ‘Site Attributes’ besides the Type field. On doing so, we get the pop-up to select the relevant attributes.

Select the RFC Destination here. We can as well add the Employees and Organizations in the Dependant Information tab. This can be done by clicking on ‘Create’ button.

On saving, the relevant Site gets created in the system. Once the Site is created we can as well add Subscriptions in the same Dependant Information tab by clicking on ‘Create’ button.
Now the second step here is to configure the Publications. This can be done by selecting the value Publication from the drop-down for Object Type and clicking on the button 'Create' as depicted below:
On doing so a pop-up window for the Publication Wizard would appear as depicted below:
Follow the Wizard instructions and provide the relevant Publication Name and select the publication type radio button. Only the publication type which has some Replication Objects would be active. On selecting the relevant Publication Type the list of all Replication Objects would appear. Based on the Publication type that has been selected we can select either one or multiple Replication Objects. In general for the Intelligent Publication types we can select only one Replication Objects whereas for the others we can select multiple Replication Objects.
In the next screen we select the Criteria Fields we can select the required fields as applicable and then click on the arrow button to add the same. That is depicted below:
Once this is done, just complete the wizard by clicking on the ‘Complete’ button on the final screen to create the Publication.
Once the Sites and Publications are created, it is time to create the Subscriptions. This can be done by selecting the value Subscription from the drop-down for Object Type and clicking on the button ‘Create’ as depicted below:
On doing so a pop-up window for the Subscription Wizard would appear as depicted below:

The Subscription Wizard supports you in creating a new subscription.
Choose Continue to proceed to the next screen.
Choose Cancel to leave the Subscription Wizard.
Follow the Wizard instructions and provide the relevant Subscription name select the Publication which needs to be assigned as depicted below:
If applicable (if we have selected Criteria Values during configuration of the Publication as we have seen in the earlier step) then the screen for Criteria Values shall appear. Else on clicking the ‘Continue’ button this step shall vanish and the screen for Sites assignment shall appear as depicted below:
On this screen we can assign the Sites by clicking on the Assign button. This shall throw up a pop-up window with all the Sites that have been configured earlier. We can as well select multiple Sites by checking the relevant checkboxes against the sites as depicted below:
Continue the wizard and complete the same by clicking on button Complete to create the Subscription creation. Once the activity is done we can get the display of all the Publications which have been subscribed to the Site. Also in the Publication we can see all the Subscriptions.

**Define Middleware Parameters**

These are the parameters which determine how the data exchange between various systems will happens. These parameters would be dependant on the various business scenarios of the Client.

We can maintain these parameters using transaction R3AC6.

We can as well navigate through the following path:

IMG → Customer Relationship Management → CRM Middleware and Related Components → Communication Setup → Middleware Parameters
The same is shown below:

The maintained entries can be checked in table SMOFPARSFA.

Just to site an example of the kind of entries that we maintain in this parameters table we shall take a general example which can also be found in SAP Note 490932. Refer this note for some more examples and other details.
1) To control the pricing in CRM Transaction replication to R/3 system we have to maintain the following entries and relevant value based on

Maintain the Value as B if we want a new pricing to be executed in R/3 system when the document is replicated.

Maintain the Value as C to re-determine the pricing in R/3 system except for the manual price components which has been added in CRM System.

Maintain the Value as G Copy price components as it is in CRM system and re-determine taxes.

There are certain tables in R/3 system that also needs to be maintained viz. CRMCONSUM, CRMRFCPAR and CRMPAROLTP.
Registration of Destinations

Check that all the RFC Destinations have been registered. Unless and until the registration is done there shall not be any data exchange with those destinations.

This can be done in transaction SMQS. Click on the button ‘Registration’ at the top of the screen and provide the details as depicted below:

We can as well navigate to the above screen through transaction SMWP as depicted below:
**Registration of Inbound Queues**

In order to have the data exchange to the CRM System from other systems like R/3, relevant queues should have been registered for the data to be received. This can be verified / done through transaction SMQR.

We can as well navigate through the following path:

**IMG → Customer Relationship Management → CRM Middleware and Related Components → Queue Setup → Register CSA Queues**

The same is shown below:
Generally the queues from R/3 system except the CSA* queue is set up automatically and we just need to verify if is available.

<table>
<thead>
<tr>
<th>Queue name</th>
<th>Type</th>
<th>Mode</th>
<th>Max. Runtime</th>
<th>Attempts</th>
<th>Pause</th>
<th>Destination with LOGON data</th>
</tr>
</thead>
<tbody>
<tr>
<td>870 CRM*</td>
<td>R</td>
<td>D</td>
<td>60</td>
<td>30</td>
<td>300</td>
<td></td>
</tr>
<tr>
<td>870 CSA*</td>
<td>R</td>
<td>D</td>
<td>60</td>
<td>30</td>
<td>200</td>
<td></td>
</tr>
<tr>
<td>870 R3A*</td>
<td>R</td>
<td>D</td>
<td>60</td>
<td>30</td>
<td>200</td>
<td></td>
</tr>
</tbody>
</table>

Here there consideration of the queues is done from specific to general. It means that the specific entry has more preference than the general entry. For example R3AD* for delta queues overrules the basic R3A* registration.
Set up Number Ranges as applicable for the objects

There might be a special case where we need different number ranges for the Organization objects. This activity can be done through transaction OONR.

1) Select the subgroup

2) Click this button to maintain the number range for the subgroup
Once that is done we get the screen as depicted below. Here we can now maintain the number ranges.
Maintain Organization Unit Objects

Organizational objects can be maintained through transaction PO10. The same is depicted below:

Set Up Objects Exchange

There are primarily three types of objects viz. Business Objects, Customizing Objects and Condition Objects. These can be done in transactions R3AC1, R3AC3 and R3AC5 respectively. Here we can as well setup the filters and inactivate/activate objects for data exchange.

We can as well navigate through the following path:

SAP Menu → Architecture and Technology → Middleware → Data Exchange → Object Management
Once the configuration steps are done we can start with the data exchange between SAP R/3 and CRM system.

**Start Initial Load**

The initial load can be started using transaction R3AS. Here we have to provide the objects for which we want to start the initial load along with the sender and receiving Sites.

We can as well navigate through the following path:

SAP Menu → Architecture and Technology → Middleware → Data Exchange → Initial Load
The initial load screen is depicted below:
Monitor Objects

On starting the initial load, we can monitor the progress and status of the data exchange through transaction R3AM1.

We can as well navigate through the following path:
SAP Menu → Architecture and Technology → Middleware → Data Exchange → Initial Load

The same is shown below:
We can provide the criteria and object and execute the report to get the display of the status as depicted below:

![Monitor Objects](image)

We can as well monitor the Initial Load through transaction SMWP by following the path below:

SMWP → Runtime Information → Adapter Status Information → Initial Load Status
The same is depicted below:

Setup Delta Load

The delta download can be setup through transaction R3AC4. Here we can specify which of the Objects classes and the events under that Object Class to be added and if we want to inactivate that we can as well do so.

We can as well navigate through the following path:
SAP Menu → Architecture and Technology → Middleware → Data Exchange → Delta Load
The same is shown below:
Create Synchronization Request

The synchronization requests can be created through transaction R3AR2.

We can as well navigate through the following path:

SAP Menu → Architecture and Technology → Middleware → Data Exchange → Synchronization

The same is shown below:
Start Synchronization Request

The synchronization requests can be created through transaction R3AR4.

We can as well navigate through the following path:

SAP Menu → Architecture and Technology → Middleware → Data Exchange → Synchronization

The same is shown below:
Here we have to specify the Request name which we created in the earlier step and also source and target sites. The same is depicted below:

### Monitor Synchronization Request

We can monitor the started requests for their status through transaction R3AR3.

We can as well navigate through the following path:

SAP Menu → Architecture and Technology → Middleware → Data Exchange → Synchronization

The same is shown below:
Here we can provide the details related to Request name and the status which we are looking for and execute the report.

We can as well monitor request running status through transaction SMWP by following the path below:

SMWP → Runtime Information → Adapter Status Information → Request Status

The same is depicted below:
Related Content
SAP OSS Note: 490932 - Data exchange of sales transactions between CRM & R/3
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