Oracle® Scheduler

Implementation Guide

Release 11*i* (11.5.2)

August 2000

Part No. A86164-01

Implementing Oracle Scheduler

This document provides descriptions of the setup and configuration tasks required to implement the application successfully.

Topics covered are:

Implementation Overview

Before setting up Oracle Scheduler, you must install and fully implement these Oracle applications or components:

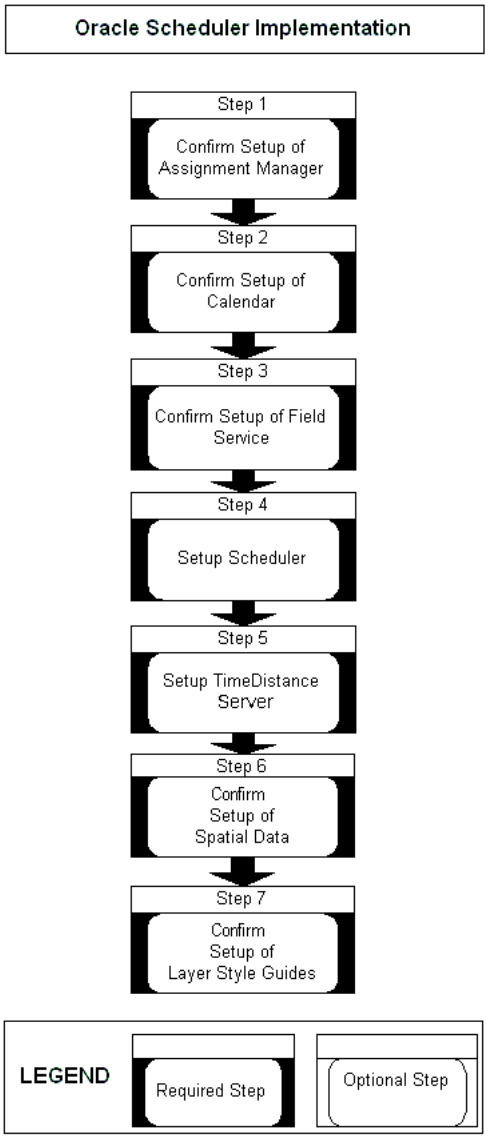
- Oracle Field Service
- Assignment Manager
- Calendar

For information regarding the installation and implementation of these applications, see the appropriate documentation.

The implementation tasks described here are tasks that are necessary to use the additional functionality included with Oracle Scheduler.

Implementing Flowchart

The following flow chart shows the recommended order:



Implementing Checklist

Complete the following implementation steps in sequential order.

Step	Required	Step Title
1.	Yes	Confirm Setup of Assignment Manager
2.	Yes	Confirm Setup of Calendar
3.	Yes	Confirm Setup of Field Service
4.	Yes	Setup Scheduler
5.	Yes	Setup Time Distance Server
6.	Yes	Confirm Setup of Spatial Data
7.	Optional	Confirm Setup of Layer Style Guides

Implementing Steps

Perform the following implementation steps in sequential order:

Step 1:Confirm Setup of Assignment Manager

Please refer to the appropriate section from *Implementing Oracle CRM Foundation* for Assignment Manager setup.

Please ensure the following profile options are set before using Scheduler.

The profile options are set at the application level and are unique to Assignment Manager.

You can set these options in any sequence.

Step	Option	Description
1	Activate Auto Selection of Resources	To activate auto selection of resource. Default set to: Y (yes).
2	Activate Workflow Name	To activate the workflow plug-in. Default set to: "None".
3	Activate Installed Base Preferred Resource	To retrieve preferred resource information from the installed base application. Default set to: Y (yes).
4	Activate Contracts Preferred Resources	To retrieve preferred resource information from the contracts application. Default set to: Y (yes).

Step 2: Confirm Setup of Calendar

Make sure you set up calendar as described in *Implementing Oracle CRM Foundation*.

Setup shifts in the calendar application. Ensure that all the following steps have been reviewed and completed:

- Ceate shifts for each service representative.

Step 3: Confirm Setup of Field Service

Make sure Field Service is fully installed, implemented, and setup as described in *Implementing Field Service*. Ensure that all the following steps have been reviewed and completed as necessary:

- Generating Shift Tasks

Step 4: Setup Scheduler

Make sure you setup Scheduler as described in Setting Up Scheduler. This involves the following tasks:

- Setting Scheduler Parameters
- Profile Options

Step 5: Setup Time Distance Server

The setup for Time Distance Server is done by setting the following Field Service specific profile options:

You can set these options in any sequence.

1.	CSF: Default travel distance for Time Distance Server	If no geocode exist for a task the value is used as the default travel distance between two tasks. Note: When a value is entered this is always used to indicate travel distance and overrules the capability to calculate it with the Time Distance Server.
2.	CSF: Default travel duration for Time Distance Server	If no geocode exist for a task the value is used as the default travel duration between two tasks. Note: When a value is entered this is always used to indicate travel duration and overrules the capability to calculate it with the Time Distance Server.
3.	CSF: Location Finder Installed	Value set to check if the location finder is installed. It is launched when a location for a task is missing, see profile option CSR: Create location. Note: This profile option needs to be set only when using Oracle Scheduler

4.	CSF: Time distance server calculation factor	If the factor is set the Time Distance Server calculates travel distance and duration faster but less accurate. Note: This profile option needs to be set only when using Oracle Scheduler

Step 6: Confirm Setup of Spatial Data

Spatial data is used for Map Display, route calculation and the location finding, it provides the TimeDistance Server with route information and the Location Finder with address information. Map Display is directly available to the user as part of the control tower functionality. The TimeDistance Server uses spatial data to calculate travel time and distances for Field Service and Scheduler.

After installing spatial data, check whether the data is csf_loaded into the system correctly. Perform the following checks:

- Check if the Spatial Data Option is Installed
- Check whether the Data Tables are Empty or not
- Check if the Normal and Spatial Indexes are Created

Check if the Spatial Data Option is Installed

Even though it's impossible to load spatial data when the spatial data cartridge is not installed, a DBA task is to check whether it is installed. The MDSYS user schema must be there.

Check whether the Data Tables are Empty or Not

The following data tables contain the necessary spatial data. For each country, the number of rows in each table might differ.

Check as a user with DBA access that none of the following data tables are empty:

> **Note:** Please note that the installation script delivered with the data should provide for this. The above is only required when a confirmation test is needed.

CSF.CSF_LF_BLOCKS

CSF.CSF_LF_NAMES

CSF.CSF_LF_PLACES

CSF.CSF_LF_PLACE_NAMES

CSF.CSF_LF_PLACE_POSTCS

CSF.CSF_LF_POIS

CSF.CSF_LF_POI_NAMES

CSF.CSF_LF_POSTCODES

CSF.CSF_LF_ROADSEGMENTS

CSF.CSF_LF_ROADSEGM_NAMES

CSF.CSF_LF_ROADSEGM_PLACES

CSF.CSF_LF_ROADSEGM_POSTS

CSF.CSF_MD_ADM_BOUNDS

CSF.CSF_MD_HYDROS

CSF.CSF_MD_INST_STYLE_SHTS

CSF.CSF_MD_LAND_USES

CSF.CSF_MD_LYR_METADATA

CSF.CSF_MD_LYR_STYLE_SHTS

CSF.CSF_MD_NAMES

CSF.CSF_MD_POIS

CSF.CSF_MD_POI_NM_ASGNS

CSF.CSF_MD_RAIL_SEGS

CSF.CSF_MD_RDSEG_NM_ASGNS

CSF.CSF_MD_RD_SEGS

CSF.CSF_MD_THEME_METADATA

CSF.CSF_SDM_CTRY_PROFILES

CSF.CSF_TDS_CONDITIONS

CSF.CSF_TDS_COND_SEGS

CSF.CSF_TDS_INTERVALS

CSF.CSF_TDS_NODES

CSF.CSF_TDS_RDBLCK_INTVLS

CSF.CSF_TDS_RDBLCK_SGMNTS

CSF.CSF_TDS_ROADBLOCKS

CSF.CSF_TDS_SEGMENTS

CSF.CSF_TDS_SEGM_NODES

CSF.CSF_TDS_TILES

CSF.CSF_TDS_BINARY_MAPS

CSF.CSF_TDS_BINARY_TILES

CSF.CSF_TDS_BINARY_MAPS_COPY

Check if the Normal and Spatial Indexes are Created

After loading the spatial data, indexes have to be created to achieve optimal performance. These indexes should exist and have status VALID. If these don't exist or are invalid, the performance will be less. A particular statement to see the list of indexes:

```
select object_name, object_type from all_objects
where object_name like 'CSF%'
and OBJECT_TYPE = 'INDEX';
```

The list indexes are:

CSF.CSF_MD_RDSEGS_N1

CSF.CSF_MD_RDSEG_NM_ASGNS_N1

CSF.CSF_MD_RDSEG_NM_ASGNS_N2

CSF.CSF_MD_NAMES_N1

CSF.CSF_MD_ADM_BNDS_N1

CSF.CSF_MD_RD_SEGS_N1

CSF.CSF_MD_HYDROS_N1

CSF.CSF_MD_RLSEGS_N1

CSF.CSF_MD_LND_USE_N1

CSF.CSF_MD_POIS_N1

CSF.CSF_LF_BLOCKS_N1

CSF.CSF_LF_BLOCKS_N2

CSF.CSF_LF_NAMES_N1

CSF.CSF_LF_NAMES_N2

CSF.CSF_LF_PLACES_U1

CSF.CSF_LF_PLACES_N2

CSF.CSF_LF_PLNMS_U1

CSF.CSF_LF_PLPCS_N1

CSF.CSF_LF_PLPCS_N2

CSF.CSF_LF_POIPL_N1

CSF.CSF_LF_POIS_N1

CSF.CSF_LF_PNAMES_N1

CSF.CSF_LF_PNAMES_N2

CSF.CSF_LF_POSTCODES_N1

CSF.CSF_LF_POSTCODES_N2

CSF.CSF_LF_RDSEGS_N1

CSF.CSF_LF_RDSEGNMS_N1

CSF.CSF_LF_RDSEGNMS_N2

CSF.CSF_LF_RDSEGPL_N1

CSF.CSF_LF_RDSEGPL_N2

CSF.CSF_LF_RDSEGMPC_N1

CSF.CSF_LF_RDSEGMPC_N2

CSF.CSF_TDS_BINARY_TILES_N1

CSF.CSF_TDS_BINARY_TILES_N2

CSF.CSF_TDS_BINARY_TILES_N3

CSF.CSF_TDS_TILES_N1

CSF.CSF_TDS_TILES_N2

CSF.CSF_TDS_TILES_N3

CSF.CSF_TDS_TILES_N4

CSF.CSF_TDS_SEGMENTS_N1

CSF.CSF_TDS_SEGMENTS_N2

CSF.CSF_TDS_SEGMENTS_N3

CSF.CSF_TDS_SEGMENTS_N4

CSF.CSF_TDS_SEGM_NODES_N1

CSF.CSF_TDS_SEGM_NODES_N2

CSF.CSF_TDS_SEGM_NODES_N3

CSF.CSF_TDS_SEGM_NODES_N4

CSF.CSF_TDS_SEGM_NODES_N5

CSF.CSF_TDS_NODES_N1

CSF.CSF_TDS_NODES_N2

CSF.CSF_TDS_NODES_N3

CSF.CSF_TDS_NODES_N4

CSF.CSF_TDS_NODES_N5

CSF.CSF_TDS_NODES_N6

CSF.CSF_TDS_CONDITIONS_N1

CSF.CSF_TDS_CONDITIONS_N2

CSF.CSF_TDS_COND_SEGS_N1

CSF.CSF_TDS_COND_SEGS_N2

CSF.CSF_TDS_COND_SEGS_N3

CSF.CSF_TDS_ROADBLOCKS_N1

CSF.CSF_TDS_ROADBLOCKS_N2

CSF.CSF_TDS_RDBLCK_INTVLS_N1

CSF.CSF_TDS_RDBLCK_INTVLS_N2

CSF.CSF_TDS_RDBLCK_SGMNTS_N1

CSF.CSF_TDS_RDBLCK_SGMNTS_N2

CSF.CSF_TDS_RDBLCK_SGMNTS_N3

CSF.CSF_TDS_INTERVALS_N1

CSF.CSF_TDS_INTERVALS_N2

Step 7: Confirm Setup of Layer Style Sheet

After installing spatial data, check whether the data is csf_loaded into the system correctly. Perform the following additional checks:

- Check whether the Layer Style Sheets Tables are not Empty
- Check whether the MDSYS.user_sdm_geo_metadata Table is not Empty
- Check Map Display

Check Whether the Layer Style Sheets Tables are not Empty

The following tables contain the layer sheets information:

CSF.CSF_MD_INST_STYLE_SHTS

CSF.CSF_MD_LYR_METADATA

CSF.CSF_MD_LYR_STYLE_SHTS

Layer style sheets define the “display” of the spatial data. These are all predefined and optimized for the data set used but it is possible to modify the style sheets. It is recommended to involve a consultant with experience in Geographic Information to define alternative settings in the layer style sheets.

By default in the style sheets it is defined per spatial object type (i.e., motorway, waterway, residential area, etc.) how and under what conditions it is displayed. For example when looking at an entire country there is no reason to display “local roads” as this kind of detail shows up as a colored blob on the screen. Also every object is given its own color. The color to display a road is different depending on the part of the world one is in, the style sheet also describes this information.

Knowledge required to modify the layer style sheets besides Oracle database is:

- Spatial cartridge and some geographic experience

Check Whether the mdsys.user_sdm_geo_metadata Table is not Empty

When the mdsys user is installed, a special table called mdsys.user_sdm_geo_metadata should be filled out. This table contains rows with the spatial data object type. Registering these rows will improve performance.

While the values can be changed, these are already optimal for every country.

Following is the script to insert all the rows needed:

```
Insert statements:
delete from user_sdo_geom_metadata where table_name in ('CSF_MD_RD_
SEGS',
'CSF_MD_HYDROS','CSF_MD_ADM_BOUNDS', 'CSF_MD_LAND_USES',
'CSF_MD_RAIL_SEGS');
   insert into user_sdo_geom_metadata values ('CSF_MD_HYDROS',
'GEOMETRY',
mdsys.sdo_dim_array(mdsys.sdo_dim_element('X', -180, 180, .0000005),
 mdsys.sdo_dim_element('Y', -90, 90,.0000005)), null);
   insert into user_sdo_geom_metadata values ('CSF_MD_ADM_BOUNDS',
'GEOMETRY', mdsys.sdo_dim_array(mdsys.sdo_dim_element('X', -180, 180,
.0000005), mdsys.sdo_dim_element('Y', -90, 90, .0000005)), null);
   insert into user_sdo_geom_metadata values ('CSF_MD_LAND_USES',
```

```
'GEOMETRY', mdsys.sdo_dim_array(mdsys.sdo_dim_element('X', -180, 180,
.0000005), mdsys.sdo_dim_element('Y', -90, 90, .0000005)), null);
   insert into user_sdo_geom_metadata values ('CSF_MD_RAIL_SEGS',
'GEOMETRY', mdsys.sdo_dim_array(mdsys.sdo_dim_element('X', -180, 180,
.0000005), mdsys.sdo_dim_element('Y', -90, 90,.0000005)), null);
   insert into user_sdo_geom_metadata values ('CSF_MD_RD_SEGS',
'GEOMETRY', mdsys.sdo_dim_array(mdsys.sdo_dim_element('X', -180, 180,
.0000005), mdsys.sdo_dim_element('Y', -90, 90,.0000005)), null);
```

Check Map Display

After the preceding checks, perform a quick check to see if the data is really there.

1. Navigate to the Control Tower in the Field Service application.
2. Select the Map.
3. Enter the user-id/password of the geographical database at the left of the **Init** button.
4. Click **Init**. The Map displays. Should it not be visible select zoom out.

When the map doesn't display at all, the data isn't there.

Setting Up Scheduler

Setting up the Scheduler application includes the following setup steps:

Step	Description
1. Settting Up Scheduling Parameters	Use this Scheduler setup screen to refine your business needs and define business rules for planning.
2. Profile Options	Set all the Scheduler specific profile options.

Setting Up Scheduling Parameters

Use the Scheduler setup screen to refine your business needs and define business rules for planning. Correct setup provides you with state of the art scheduling and optimization capabilities.

The setup screens consist of:

Setup Screen	Description
Cost Parameters tab	The cost parameters are setup to create a schedule that will take into account your organizations business rules for planning.
Window To Promise tab	Use the Window To Promise tab to adjust the time slots of service you want to offer to your customer.

Cost Parameters tab

The Scheduler provides a planning based upon cost. Each cost is related to a factor that might influence your planning, these factors are pre-defined. The information regarding these factors must be available to make the cost mechanism work. Set up cost parameters to meet your organizations business rules for planning, prioritize these business rules, and address a low cost to a parameter with low priority. All these cost parameters are taken into account when planning a task.

Scheduler will calculate the cost of adding a task to the day trip of a service representative at different positions and compare the options. The option with the lowest cost will be the option presented to the planner. This will be done for each qualified service representative.

When using Auto-assign the option with the lowest cost is used to plan the task automatically.

Options

You can set these options in any sequence.

Step	Option	Description
1.	Description	A description of the cost parameter.
2.	Value	Edit the cost value.

Window to Promise tab

The Window to Promise concept has two objectives: from the service supplying side (your organization) and from the service demanding side (customer). The service supplying sides objective is to make the time slot in which a task needs to be planned as large as possible, to create the most efficient trip. However the service demanding sides objective is to reduce this time slot to be as small as possible, to create the most efficient personal planning and reduce the inconvenience of waiting for a service representative. The time slot is defined by time bounds: Start Time and End Time. The purpose of the Window To Promise is to adjust the default time bounds to the biggest time slot that is acceptable to offer to the customer.

Use the Window to Promise setup screen to adjust the time slots you want to offer to your customer. By default a set of time slots is created.

Options

Perform these steps in sequential order.

Step	Option	Description
1.	Name	Time slot name.
2.	Start Time	Time slot is bound to start.
3.	End Time	Time slot is bound to end.
4.	Description	A description of the time slot.

Profile Options

The following profile options are unique to Oracle Scheduler.

Profile Options

You can set these options in any sequence.

Step	Option	Description
1.	CSR: Auto commit	The amount of tasks that will be saved to the database during the auto-assign scheduling process.

Step	Option	Description
2.	CSR: Create location	To call upon the location finder when a task has no geocode to create one. **Note :** A task must have a geocode when using Oracle Scheduler to be able to schedule it.
3.	CSR: Extension of time bounds	The number of minutes the time bounds of a task are extended to find schedule advises outside the task time bounds.
4.	CSR: Maximum calculation time	The maximum number of milliseconds Oracle Scheduler can calculate schedule advise.
5.	CSR: Maximum number of schedule advises	The maximum number of service representatives to calculate a schedule advise for.
6.	CSR: Maximum overtime	The maximum number of minutes a service representative can be scheduled to work overtime.
7.	CSR: Maximum time difference between appointment time and scheduled time	The maximum time in minutes a task can be scheduled from it's appointment in time.
8.	CSR: Plan scope	Default number of schedulable days.
9.	CSR: Calculation type of TDS	Set the calculation type of the Time Distance Server (TDS): 1 = fastest, 2 = shortest, 3 = cost based.
10.	CSR: Log Activated	To display internal S cheduler log messages on the server window.
11.	CSR: Functional class 0 delay factor	The calculated travel time is multiplied with the functional class 0 delay factor.
12.	CSR: Functional class 1 delay factor	The calculated travel time is multiplied with the functional class 1 delay factor.
13.	SR: Functional class 2 delay factor	The calculated travel time is multiplied with the functional class 2 delay factor.
14.	CSR: Functional class 3 delay factor	The calculated travel time is multiplied with the functional class 3 delay factor.
15.	CSR: Functional class 4 delay factor	The calculated travel time is multiplied with the functional class 4 delay factor.