

# Oracle Applications Cloud

---

## **Best Practices for Scheduled Processes in Fusion Applications**

22B



Copyright © 2022, Oracle and/or its affiliates.

This software and related documentation are provided under a license agreement containing restrictions on use and disclosure and are protected by intellectual property laws. Except as expressly permitted in your license agreement or allowed by law, you may not use, copy, reproduce, translate, broadcast, modify, license, transmit, distribute, exhibit, perform, publish, or display any part, in any form, or by any means. Reverse engineering, disassembly, or decompilation of this software, unless required by law for interoperability, is prohibited.

The information contained herein is subject to change without notice and is not warranted to be error-free. If you find any errors, please report them to us in writing.

If this is software, software documentation, data (as defined in the Federal Acquisition Regulation), or related documentation that is delivered to the U.S. Government or anyone licensing it on behalf of the U.S. Government, then the following notice is applicable:

U.S. GOVERNMENT END USERS: Oracle programs (including any operating system, integrated software, any programs embedded, installed, or activated on delivered hardware, and modifications of such programs) and Oracle computer documentation or other Oracle data delivered to or accessed by U.S. Government end users are "commercial computer software," "commercial computer software documentation," or "limited rights data" pursuant to the applicable Federal Acquisition Regulation and agency-specific supplemental regulations. As such, the use, reproduction, duplication, release, display, disclosure, modification, preparation of derivative works, and/or adaptation of i) Oracle programs (including any operating system, integrated software, any programs embedded, installed, or activated on delivered hardware, and modifications of such programs), ii) Oracle computer documentation and/or iii) other Oracle data, is subject to the rights and limitations specified in the license contained in the applicable contract. The terms governing the U.S. Government's use of Oracle cloud services are defined by the applicable contract for such services. No other rights are granted to the U.S. Government.

This software or hardware is developed for general use in a variety of information management applications. It is not developed or intended for use in any inherently dangerous applications, including applications that may create a risk of personal injury. If you use this software or hardware in dangerous applications, then you shall be responsible to take all appropriate fail-safe, backup, redundancy, and other measures to ensure its safe use. Oracle Corporation and its affiliates disclaim any liability for any damages caused by use of this software or hardware in dangerous applications.

Oracle®, Java, and MySQL are registered trademarks of Oracle and/or its affiliates. Other names may be trademarks of their respective owners.

Intel and Intel Inside are trademarks or registered trademarks of Intel Corporation. All SPARC trademarks are used under license and are trademarks or registered trademarks of SPARC International, Inc. AMD, Epyc, and the AMD logo are trademarks or registered trademarks of Advanced Micro Devices. UNIX is a registered trademark of The Open Group.

This software or hardware and documentation may provide access to or information about content, products, and services from third parties. Oracle Corporation and its affiliates are not responsible for and expressly disclaim all warranties of any kind with respect to third-party content, products, and services unless otherwise set forth in an applicable agreement between you and Oracle. Oracle Corporation and its affiliates will not be responsible for any loss, costs, or damages incurred due to your access to or use of third-party content, products, or services, except as set forth in an applicable agreement between you and Oracle.

# Contents

<b>Get Help</b>	<b>i</b>
<hr/>	
<b>1 Get Started</b>	<b>1</b>
How do I make sure that scheduled processes run smoothly and quickly?	1
<b>2 Plan</b>	<b>3</b>
Why are scheduled processes running slow or not running at all?	3
Should I configure custom jobs and job definitions?	4
What are key security considerations for scheduled processes?	5
<b>3 Implement</b>	<b>7</b>
What setup and configuration do I need for scheduled processes?	7
How do I configure jobs and job definitions to meet my needs?	8
How do I give users access to scheduled processes?	9
How should I test and roll out scheduled processes for my users?	10
<b>4 Maintain</b>	<b>13</b>
How do I support users who are running scheduled processes?	13
How do I keep track of scheduled processes that were already submitted?	14
How does downtime affect scheduled processes that were already submitted?	15
Why are reports taking too long to run?	16



# Get Help

There are a number of ways to learn more about your product and interact with Oracle and other users.

## Get Help in the Applications

Use help icons [Help icon](#) to access help in the application. If you don't see any help icons on your page, click your user image or name in the global header and select [Show Help Icons](#).

## Get Support

You can get support at [My Oracle Support](#). For accessible support, visit [Oracle Accessibility Learning and Support](#).

## Get Training

Increase your knowledge of Oracle Cloud by taking courses at [Oracle University](#).

## Join Our Community

Use [Cloud Customer Connect](#) to get information from industry experts at Oracle and in the partner community. You can join forums to connect with other customers, post questions, suggest [ideas](#) for product enhancements, and watch events.

## Learn About Accessibility

For information about Oracle's commitment to accessibility, visit the [Oracle Accessibility Program](#). Videos included in this guide are provided as a media alternative for text-based topics also available in this guide.

## Share Your Feedback

We welcome your feedback about Oracle Applications user assistance. If you need clarification, find an error, or just want to tell us what you found helpful, we'd like to hear from you.

You can email your feedback to [oracle\\_fusion\\_applications\\_help\\_ww\\_grp@oracle.com](mailto:oracle_fusion_applications_help_ww_grp@oracle.com).

Thanks for helping us improve our user assistance!



# 1 Get Started

## How do I make sure that scheduled processes run smoothly and quickly?

Scheduled processes do tasks that are too complex or time-consuming to do manually, for example importing data or updating many records.

Scheduled processes are available across Oracle Fusion Cloud Applications and based on functionality from Oracle Enterprise Scheduler (ESS). Because many processes can run at the same time, think of the queue of submissions as a high-speed interstate.

If you're responsible for ensuring that the highway runs smoothly for your users, use the guidelines and tips in this best practices document to help you with each stage of the scheduled processes life cycle:

- **Plan:** Assess the processes your users need to run, figure out when and how often to run them, and determine what custom jobs are needed, if any.
- **Implement:** Configure any custom jobs, roll out your plan, and test.
- **Maintain:** After users start running processes, make sure that everything keeps going without issues.

This life cycle isn't linear or something you would go through only once. For example, you may need to revisit the planning phase at any time to adjust your plan.

**Note:** These best practices are offered for your reference only. They're not intended to represent the only approach, and might not produce the same results for everyone.

## Before You Start

A prerequisite for understanding these best practices is to be familiar with scheduled processes and jobs. You should already know the concepts and tasks covered in [Scheduled Processes](#) and [Enterprise Scheduler Job Definitions and Job Sets](#).

## Additional Information

You can find information about many of the predefined processes:

- Common features
  - See: [Where to Find Information About Common Scheduled Processes](#)
- CX Sales and B2B Service
  - See: [Where to Find Information About CX Sales Scheduled Processes](#)
  - See: [Where to Find Information About B2B Service Scheduled Processes](#)
  - See: [Where to Find Information About All Common CX Scheduled Processes](#)

- Financials
  - See: *Where to Find Information About Financials Scheduled Processes*
- Human Capital Management
  - See: *Where to Find Information About HCM Scheduled Processes*
- Project Management
  - See: *Where to Find Information About Scheduled Processes in Projects*
- Student Management
  - See: *Where to Find Information About Student Management Scheduled Processes*
- Supply Chain Management
  - See: *Where to Find Information About SCM Scheduled Processes*

For more best practices information, see *Additional Optimization Opportunities for Scheduled Processes*.



## 2 Plan

### Why are scheduled processes running slow or not running at all?

There's a limit to the number of scheduled processes that can run at the same time. That number depends on the setup for your cloud service. If you need more information, contact your help desk.

To manage the capacity and streamline batch processing, identify the scheduled processes that your users need to run, and plan out when and how often to run them.

You can find information about many of the predefined processes:

- Common features
  - See: *Where to Find Information About Common Scheduled Processes*
- CX Sales and B2B Service
  - See: *Where to Find Information About CX Sales Scheduled Processes*
  - See: *Where to Find Information About B2B Service Scheduled Processes*
  - See: *Where to Find Information About All Common CX Scheduled Processes*
- Financials
  - See: *Where to Find Information About Financials Scheduled Processes*
- Human Capital Management
  - See: *Where to Find Information About HCM Scheduled Processes*
- Project Management
  - See: *Where to Find Information About Scheduled Processes in Projects*
- Student Management
  - See: *Where to Find Information About Student Management Scheduled Processes*
- Supply Chain Management
  - See: *Where to Find Information About SCM Scheduled Processes*

Here are some things to do and keep in mind when you design your plan. Also, see the rest of this chapter for more details about planning. For more best practices information, see *Additional Optimization Opportunities for Scheduled Processes*.

### Avoid Having Too Many Processes Run at the Same Time

For processes that take more than a minute to finish, schedule them to run at a time when there are fewer scheduled submissions in the queue.

## Set Appropriate Frequency for Recurring Schedules

When you plan for a process to run on a recurring schedule, set an appropriate frequency, ideally with the longest intervals possible.

If running the process once a day would meet your business needs, don't plan to run it more frequently than that. If anyone attempts to run a process with an inappropriate frequency, such as every one or two seconds, they can adversely affect performance and prevent any process from running.

## Consider the Order to Run Processes In

Keep in mind which processes need to be run in a specific order.

If there's a process to calculate taxes that are deducted from a payroll, and another process to generate payroll, you should plan to schedule the tax process to run before the payroll process.

## Prevent Incompatible or Blocked Processes

Incompatible processes can't run at the same time. If a scheduled process has a Blocked status that means another process that's currently running is incompatible with the process and preventing the process from starting.

A process can be self-incompatible, which means it can't start if another submission for the same process is currently running.

Although blocked or incompatible processes can be resolved, consider incompatibilities when you plan. For example, if you know that certain employees need to run a process that is incompatible with a process that their manager runs, design your plan accordingly so that the employees and managers run their respective processes at different times.

### *Related Topics*

- [Resolve Blocked or Incompatible Processes](#)

## Should I configure custom jobs and job definitions?

You're encouraged to use the predefined scheduled processes as is. But, as part of your plan, determine if your organization has any business requirements that make it necessary to have custom scheduled processes.

If you have any business requirements, determine what jobs and job definitions you need to create, or what you need to do to configure predefined job definitions.

- It's best to create something completely new, instead of duplicating or editing the predefined job definitions. To create a new scheduled process, you would plan to create Oracle Analytics Publisher reports as the basis for custom jobs. Then, on the Manage Job Definitions tab of the Manage Enterprise Scheduler Job Definitions and

---

Job Sets page, you would create job definitions for those custom jobs. Users can then run those reports as a scheduled process from the Scheduled Processes work area.

- Only if you really need to, would you duplicate the predefined job definitions to create a custom copy that you can edit, mainly to update the parameters. There are many limitations to consider with the duplicate job definitions, and some predefined job definitions can't be duplicated anyway.

#### *Related Topics*

- [Create Job Definitions to Run Reports as Scheduled Processes](#)

## What are key security considerations for scheduled processes?

As part of your plan, determine the level of access individual users need to scheduled processes.

Plan your custom roles accordingly so that they contain the appropriate roles and privileges to assign to specific users, depending on what they need access to.

Here are key points of access that users might need:

- Access to the Scheduled Processes work area
- Ability to view, update, or cancel the processes that other users submitted
- Access to specific predefined and custom processes



# 3 Implement

## What setup and configuration do I need for scheduled processes?

After you've created a plan for scheduled processes, as described earlier in this best practices document, it's time to carry it out.

These are the key aspects of implementing the plan:

- Configure job definitions, if your organization needs any custom scheduled processes.
- Provide users access to submit and manage scheduled processes.
- Test and deploy your plan.

See the rest of this chapter for details about implementing your plan.

## Additional Information

You can find information about many of the predefined processes:

- Common features
  - See: [Where to Find Information About Common Scheduled Processes](#)
- CX Sales and B2B Service
  - See: [Where to Find Information About CX Sales Scheduled Processes](#)
  - See: [Where to Find Information About B2B Service Scheduled Processes](#)
  - See: [Where to Find Information About All Common CX Scheduled Processes](#)
- Financials
  - See: [Where to Find Information About Financials Scheduled Processes](#)
- Human Capital Management
  - See: [Where to Find Information About HCM Scheduled Processes](#)
- Project Management
  - See: [Where to Find Information About Scheduled Processes in Projects](#)
- Student Management
  - See: [Where to Find Information About Student Management Scheduled Processes](#)
- Supply Chain Management
  - See: [Where to Find Information About SCM Scheduled Processes](#)

For more best practices information, see [Additional Optimization Opportunities for Scheduled Processes](#).

# How do I configure jobs and job definitions to meet my needs?

Based on the analysis you did for your plan for scheduled processes, you may need custom jobs and job definitions to meet your organization's requirements. Here are some best practices to follow when you configure jobs and job definitions.

## Follow Oracle Analytics Publisher Best Practices When Creating Custom Jobs

When you create a custom Oracle Analytics Publisher report as the basis for a custom job, make sure to follow best practices for creating reports so that the custom scheduled process doesn't take too long to run.

If you properly design and create the reports, you ensure maximum performance and scalability, and you minimize the performance impact on resources for scheduled processes.

### Related Topics

*Performance Best Practices*

*Oracle Business Intelligence Publisher Performance Recommendations for Fusion Cloud Applications*

*Create Job Definitions to Run Reports as Scheduled Processes*

## Use Care When Duplicating Predefined Job Definitions

If you're duplicating a predefined job definition on the Manage Job Definitions tab, here are some best practices to consider:

- It's best if you have technical knowledge of Oracle Application Development Framework business components, and a basic understanding of what these are: view objects, view criteria, view accessors, bind variables, list of value definitions, return values from the list of values, and so on.
- Open every parameter and make sure that all the mandatory parameters are populated properly.
- Make sure not to delete any predefined parameters that are copied over.
- Test the duplicate carefully because it might not work exactly like the original.

### Related Topics

*Duplicate Job Definitions*

*ADF Business Components*

## Avoid Deleting List of Values Sources

List of values sources are used for parameters in job definitions. The sources determine the values that users can choose from when setting parameters as part of submitting a scheduled process.

On the Manage List of Values Sources tab of the Manage Enterprise Scheduler Job Definitions and Job Sets page, when you delete a list of values source, you won't be able to find it and manage it any more. But, it's not really gone. Any job definitions using that source can continue using it.

So after you delete a source, you can't create another one later with the same name, because the deleted one is technically still there, even though you won't be able to find it. To avoid confusion, it's recommended that you don't ever delete any list of values source. Just create new ones as needed, with unique names.

Related Topics

[Manage List of Values Sources](#)

## Use Appropriate Page Element for Parameters

On the Manage Job Definitions tab, when you define parameters for job definitions and select String as the data type, you can select a page element that gives users a list of options to choose from for the parameter.

Here are some best practices to consider for the page element:

- Select **Choice list** only if the list for the parameter will have 10 or fewer options, and test it out to make sure that would be the case. In fact, users would get an error if it turns out there are more than 500 options.
- Select **List of values** if there will be more than 10 options for the parameter. There's no limit to the number of possible options. But, if you know that there will be fewer than 10, use the choice list instead. The list of values includes a search, which doesn't make sense if there are only a few choices and they're already displayed.

Related Topics

[Define Parameters for Job Definitions](#)

## How do I give users access to scheduled processes?

By default, the Scheduled Processes work area is available only to users with roles that have the Manage Scheduled Processes (FND\_MANAGE\_SCHEDULED\_PROCESSES\_PRIV) privilege.

Here are a couple examples of these roles:

- Employee (ORA\_PER\_EMPLOYEE\_ABSTRACT)
- Contingent Worker (ORA\_PER\_CONTINGENT\_WORKER\_ABSTRACT)

It's recommended that you keep things that way, which means you should follow these best practices:

- Assign roles with the (FND\_MANAGE\_SCHEDULED\_PROCESSES\_PRIV) privilege only to users who need to run and manage scheduled processes. There's a limit to how many processes can run at the same time, so you want to make sure that users who don't need to run processes won't have access to the work area.
- Don't assign either of the two roles mentioned earlier directly to users. Instead, make a copy, edit it to provide appropriate access for your users, and assign the custom copy to users.
- In the Structure work area, always leave these default settings for the Scheduled Processes page entry:
  - **Show on Navigator** list has **EL Expression** selected
  - The EL expression is:

```
# { (securityContext.userGrantedResource['resourceType=FNDResourceType;  
resourceName=FND_Scheduled_Processes_Menu;action=launch']) }
```

Here are a couple more things to remember:

- In the Scheduled Processes work area, users can submit the processes they have access to and manage the processes they submitted themselves. Assign appropriate roles to users who also need to see and manage processes that others submitted.
- The custom job definitions you create or duplicate aren't available for anyone to run by default. Same goes with custom job sets. Add the privilege associated with the custom job definition or job set to a custom role, and assign the role only to users who need to run the custom scheduled process.

#### Related Topics

- [Configure the Navigator and Page Entries on the Home Page for Navigation](#)
- [Assign Roles for Access to Manage Scheduled Processes](#)
- [Create Job Definitions to Run Reports as Scheduled Processes](#)
- [Create Job Sets](#)
- [Edit Job Role and Abstract Role](#)
- [Assign Roles to an Existing User](#)

## How should I test and roll out scheduled processes for my users?

Before you roll out your plan for scheduled processes, test it out by submitting the processes to run according to the plan. And see if all the scheduled processes finish without any issues in a timely manner.

This testing should give you insight to your environment's capacity so that you don't risk affecting the performance. As your organization's needs change, your scheduled process needs may change too. It's a best practice to test your plan on an ongoing basis to ensure your scheduled processes are performing optimally.

When you're ready, communicate the plan to your organization so the users know when and how often to run which scheduled processes. Also inform them of some things to keep in mind when they submit processes:

- **Verify parameters before submitting a process:** When users submit a process with parameters, they should pay special attention to what they enter for the parameters. After they submit the process, they can't change



the parameter settings, even if the process has not started running. What they can do is cancel the process and submit it again with the parameter values they want.

- **Consider regional time zones when scheduling processes:** Scheduled processes run according to the time zone in the regional settings of the user preferences. When users submit a process, they can select a different time zone, and that time zone overrides the regional settings. Be aware that time changes, such as Daylight Saving Time (DST) can affect scheduled processes, and users must take that into account when scheduling processes.

For example, if users want to schedule a process to run on the day that a DST time change occurs, they should select a time zone that observes that time change. Some time zones have a different date when DST starts (Asia/Amman - 30th Oct). In this case, they must cancel the old schedule and create a new one.

- **Consider making a note of the process ID:** After users click the Submit button, they get a process ID for their submission. If users ever need to find this exact submission later, recommend that they make a note of the ID. This is especially the case if they submit a process to run on a recurring schedule. If they want to change or cancel the schedule later, they must act on this original submission, and the quickest way to find it is by process ID. But, without the ID, they can still use the search on the Scheduled Processes work area to find the submission, for example by submission time.

#### *Related Topics*

- [Submit Scheduled Processes and Process Sets](#)
- [Cancel or Make Changes to Scheduled Processes](#)



# 4 Maintain

## How do I support users who are running scheduled processes?

As your users proceed to submit and manage scheduled processes, you need to support them by performing maintenance tasks and ensuring that the queue of scheduled processes keeps moving.

Make sure you have a custom role with the ESS Administrator Role (ESSAdmin) so that you can view, update (includes changing process priority), and cancel processes that other users have submitted, not just yours.

See the rest of this chapter for details about supporting your users.

### Additional Information

You can find information about many of the predefined processes:

- Common features
  - See: *Where to Find Information About Common Scheduled Processes*
- CX Sales and B2B Service
  - See: *Where to Find Information About CX Sales Scheduled Processes*
  - See: *Where to Find Information About B2B Service Scheduled Processes*
  - See: *Where to Find Information About All Common CX Scheduled Processes*
- Financials
  - See: *Where to Find Information About Financials Scheduled Processes*
- Human Capital Management
  - See: *Where to Find Information About HCM Scheduled Processes*
- Project Management
  - See: *Where to Find Information About Scheduled Processes in Projects*
- Student Management
  - See: *Where to Find Information About Student Management Scheduled Processes*
- Supply Chain Management
  - See: *Where to Find Information About SCM Scheduled Processes*

For more best practices information, see *Additional Optimization Opportunities for Scheduled Processes*.

## How do I keep track of scheduled processes that were already submitted?

To make sure that the scheduled processes your users submit run smoothly, constantly keep track of the submissions.

Here are some key things you can do in the Scheduled Processes work area to track and get information about the submitted processes:

- Use the saved searches to see the processes that were submitted within a specific time frame, for example in the last hour or 24 hours.
- Select specific processes in the search results to get details about the process:
  - **Status Details tab:** More information about the current status of the scheduled process, for example to see incompatibilities for a blocked process.
  - **Process Details tab:**
    - A log, if available, to see the stages the process has gone through, information or error messages, and other information about how the process ran or is running.
    - Parameter values that users submitted the process with. For example, parameters often determine the amount of data to work on, so parameter values might explain why a process is running for a long time.

Keep the following best practices in mind as you monitor scheduled processes.

### Related Topics

[View Status and Other Details for Scheduled Processes](#)

[Cancel or Make Changes to Scheduled Processes](#)

[Statuses of Scheduled Processes](#)

## Track the Amount of Traffic in the Queue

In the Scheduled Processes work area, regularly check how many processes are currently running or waiting to run. Pay attention to processes with these statuses.

- **Ready:** That might mean that the maximum number of processes running at the same time was already reached. So new submissions are now in the queue.
- **Wait:** That might also mean the limit has been reached, but usually it means that the process is scheduled to run in the future.
- **Blocked:** Check the Status Details tab to see what incompatibility is preventing the process from running, and take any appropriate action.

### Related Topics

- [Resolve Blocked or Incompatible Processes](#)

## Change the Priority of Processes in the Queue

When there are many processes in the queue, consider changing their priority, especially processes with the Wait status. This way you make sure the more important processes run first.

## Monitor Processes Running a Long Time

Keep an eye on processes that have had Running status for days, or even weeks. You might need to investigate if there's a business reason holding up the process, or consider if you might need to cancel those and resubmit.

If you have many processes to cancel, you might be able to cancel some or all of them in bulk. But before you do that, select each one and see its details to make sure you really want to cancel it.

## Cancel and Reschedule Processes for Inactivated Users

If a user is inactive, for example because he or she left the company, the processes they submitted on a recurring schedule won't run.

For security reasons, it's best that you cancel that submission and schedule a new one if still needed. The same situation applies to users who are locked or failed to authenticate.

## How does downtime affect scheduled processes that were already submitted?

When the application goes down in maintenance mode, no scheduled processes will run during the downtime. Take note of when maintenance will happen so that you can prepare and plan ahead.

It's a good idea to ensure that you and your users follow these best practices:

- Avoid submitting long-running processes before the downtime.
- In general, put on hold any processes that are still running before the downtime, then release them after the downtime is over. If you know the reasons for the downtime, here are additional considerations:
  - **Release update:** You don't need to put all processes on hold, but it's recommended.
  - **Cloning or migration:** No need to put processes on hold, since processes will be deleted from the target environment.
  - **Oracle Analytics Publisher server bounce:** You don't need to put all processes on hold.
- Avoid submitting any processes during the downtime.

Here's what happens before, during, and after the maintenance period:

- Starting three hours before, and during the entire downtime, you will see a message in the Scheduled Processes work area about the maintenance. Don't submit any processes while you still see this message.
- During a grace period of five minutes before the downtime starts, any processes that are still running might be automatically paused. But if they're not, then those processes end with a Canceled status after the grace period.
- No processes run during the downtime. If a process was submitted on a recurring schedule and was supposed to run during the downtime, it doesn't run at the scheduled time but right after the downtime ends.
- Any processes that were automatically paused during the downtime resume running after the downtime ends.

#### *Related Topics*

- [Cancel or Make Changes to Scheduled Processes](#)
- [Statuses of Scheduled Processes](#)

## Why are reports taking too long to run?

Scheduled processes based on Oracle Analytics Publisher reports might take too long to run because of something going on with the reports themselves. When users submit these processes, they're essentially running Analytics Publisher reports.

Many predefined scheduled processes are based on Analytics Publisher reports. All the custom jobs definitions that were created brand new (not created by duplicating or editing predefined job definitions) are also based on reports. Predefined or custom job definitions based on Analytics Publisher reports have the BIPJobType job type.

So if there are performance issues with the scheduled processes queue, check if there are processes based on reports that are taking too long to run, for example 30 minutes or even multiple hours. Usually that means the SQL queries are slow in fetching data. If the problematic processes are for custom reports, revisit and tune the custom reports. In general, if you have custom reports running as scheduled processes, keep an eye on them regularly to make sure they don't take too long and prevent other processes in the queue from running in a timely manner. You should also monitor the report performance using tools from Analytics Publisher.

#### *Related Topics*

- [Performance Best Practices](#)
- [Oracle Business Intelligence Publisher Performance Recommendations for Fusion Cloud Applications](#)