



Deltek

Deltek Costpoint® 8.1

Process Execution Modes

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Overview

This guide describes the different ways in which you can execute processes and reports in Deltek Costpoint 8.

Benefits of a Web Application

Costpoint 8 is a Web application. According to Wikipedia:

“In software engineering, a web application or **webapp** is an application that is accessed via web browser over a network such as the Internet or an intranet. It is also a computer software application that is coded in a browser-supported language (such as HTML, JavaScript, Java, etc.) and reliant on a common web browser to render the application executable. ("Web Application," 2009, para. 1)

To access and work within Costpoint 8, all you need is a Web browser and a workstation powerful enough to run the browser. All application (business) processing is done on the server.

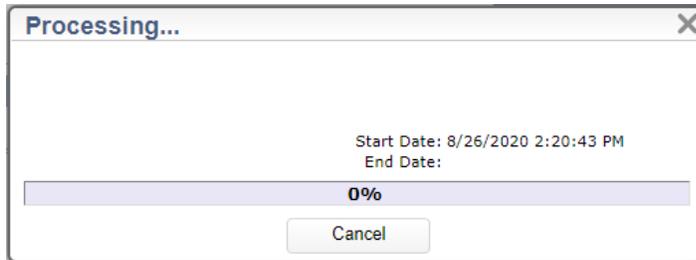
Whenever you run a process, the process is executed on the application server, not on your workstation. An application server is usually a cluster of servers, utilizing load balancing and failover algorithms, that provides high reliability and workload distribution for many users.

In contrast, older versions of Costpoint were Windows applications that processed data on the user's workstation. Multiple users corresponded to multiple applications accessing a common database residing on the database server. While a process was running, the user interface was locked until the process was completed.

Processing Jobs in Interactive Mode

In Costpoint 8, when you run a process or report in interactive mode, your experience is similar to that of older Costpoint versions. A process starts immediately, and your screen is locked during process execution.

A progress status window provides detailed information about the status and percent complete of the process.



The process is executing on the application server, and the workstation is displaying the status of the server-side process.

Clicking the **Cancel** button initiates a cancel request.

Note: Cancel requests are not processed immediately. Clicking **Cancel** sends a message to the application code that runs the process. Based on its business logic, the application chooses to accept, process, or (in some rare cases) ignore the cancel request.

The fact that your workstation is locked during an interactive process is an obvious disadvantage of the interactive mode.

Processing Jobs in Batch Mode

In addition to the interactive mode previously described, Costpoint offers two additional ways to execute processes and reports—background mode and job server mode—collectively known as batch modes.

Both of these modes allow you to submit a process to be executed, and then continue using your workstation for other tasks. But there are important differences between the two approaches:

- **Background:** When you submit a process, it runs immediately on the application server. You do not need to start or configure a job server to use this option.
- **Job Server:** When you submit a process, you schedule it to run sometime in the future, on a specially configured process server.

Note: You have several options to monitor process execution status, which are described in the [Monitor Batch Mode Processes](#) section. An administrator can also set up email notifications, which are described in the [Set Up Email Notification for Batch Processes](#) section.

Submit a Process in Background Mode

To submit a process in background mode:

1. From the application screen for a process, click the drop-down arrow next to the **Action**  icon or the **Print**  icon.
2. Select **Batch Mode** to display the Submit Batch job screen.

3. Select **Execute Now** in the **Execution Options** field.
4. Leave the fields in the **Scheduled Jobs** area blank.
5. (Optional) Select the **Notify When Job Is Completed** option if you want to be notified by email after the process completes.
6. Click **Submit**.

The process begins executing immediately on the application server. You can perform other Costpoint tasks immediately because the process you started runs in the background and does not lock your workstation.

Submit a Process in Job Server Mode

You can submit a job for processing by a Job Server in either of two ways:

- Directly from the process or report application screen.
- From the Submit Job to Queue (PMMSPRQ) application screen.

From the Process or Report Screen

To submit a process from the process or report screen:

1. From the application screen for a process, click the drop-down arrow next to the **Action**  icon or the **Print**  icon.
2. Select **Batch Mode** to display the Submit Batch job screen.

3. Select a value in the **Execution Options** field.
 - **Submit to Job Queue Now:** Execute the job as soon as you click **Submit**.
 - **At Specific Date/Time:** Execute the job at a future date and time. To use this option, you must also specify an execution date and time in the **Start Date** and **Start Time** fields. The job server must be active at the specified future date and time for the job to execute.
 - **Hold For Release:** Submit the job to the queue but delay its execution. You can later release the job from the Manage Job Queues (PMMQUE) screen or the Update Job Status (PMMCMPS) screen.
4. (Optional) Select the **Notify When Job Is Completed** check box if you want to be notified by email after the process completes.
5. Select the **Job Queue** that the process will go to.

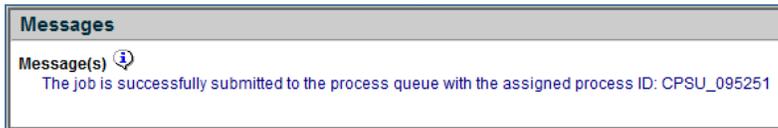
Attention: Refer to the [Job Server Overview](#) section for details about job queues.

6. If you selected **At Specific Date/Time**, enter a **Start Date** and **Start Time** for the process to run.
7. Enter a **Priority** for the job to help determine how quickly the job is processed in relation to other jobs in the queue. Priorities only work for sequential queues.

Attention: Refer to the [Manage Job Servers](#) section for details about priorities.

8. Click **Submit**.

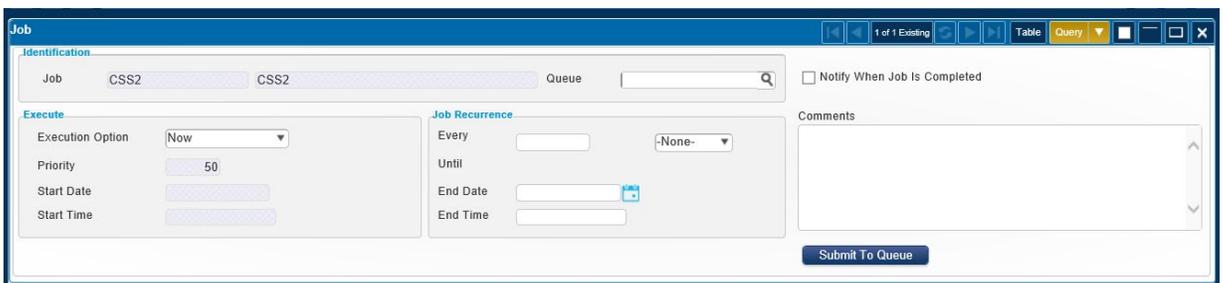
A confirmation message displays. The process is assigned a temporary name (job ID) so that it can be identified and managed along with other jobs running on the Job Server.



From the Submit Job to Queue Screen

To submit a process from the **Submit Job to Queue** screen:

1. Click **Administration » Job Management » Job Management Processing » Submit Job to Queue**.



2. Select a job to process.
3. Select the **Queue** that the process will go to.

Attention: Refer to the [Job Server Overview](#) section for details about job queues.

4. Select a value in the **Execution Options** field:
 - **Now:** Execute the job as soon as you click **Submit to Queue**.
 - **Start Time/Date:** Execute the job at a future date and time. To use this option, you must also specify an execution date and time in the **Start Date** and **Start Time** fields. The job server must be active at the specified future date and time for the job to execute.
 - **Hold For Release:** Submit the job to the queue but delay its execution. You can later release the job from the Manage Job Queues (PMMQUE) screen or the Update Job Status (PMMCMPS) screen.
5. Enter a **Priority** for the job to help determine how quickly the job is processed in relation to other jobs in the queue.

Priorities only work for sequential queues.

Attention: Refer to the [Manage Job Servers](#) section for details about priorities.

6. If you selected **At Specific Date/Time**, enter a **Start Date** and **Start Time** for the process to run.
7. (Optional) Select the **Notify When Job Is Completed** check box if you want to be notified by email after the process completes.
8. (Optional) Enter notes about the job you are processing.

9. Click **Submit to Queue**.

You also have the option to submit a recurring job, which will run automatically in the future on a recurring schedule.

To submit a recurring process:

1. Perform steps 1 to 8 above.
2. In the **Job Recurrence** section, enter the frequency of the recurrence in the **Every** field and select a unit of time (Minutes, Hours, Days, Weeks, Months) from the drop-down.

For example, for a job that should run every 12 hours, enter **12** in the **Every** field and select **Hours**.
3. Enter an **End Date** and **End Time**, representing when the job should stop running automatically on the recurring schedule.
4. Click **Submit to Queue**.

Job Server Overview

The Job Server is Costpoint's job scheduling subsystem. Any set of Costpoint processes or reports can be grouped into collections called jobs. Once defined, jobs can be scheduled for execution at a specific time or set up to recur at specific time intervals.

Job Server

In Costpoint 8, a Job Server is a service rather than a physical computer; although, you can dedicate specific hardware resources to a Job Server if needed. You can create multiple Job Servers to distribute work among several different dedicated physical servers.

By default, all Job Servers run on the physical server or cluster where Costpoint is deployed as a Web application. In a cluster configuration, the Job Server automatically uses all available servers in the cluster and benefits from the cluster's load-balancing and fail-over features.

To use a dedicated physical server, the administrator must select an appropriate destination server for the Job Server entry in the Start/Stop Job Server (PMSERVER) application. The Job Server service can be moved from one dedicated server to another, or back to the default system/cluster.

Job

For the purposes of this discussion, a job is set of Costpoint functions made up of Costpoint reports, computation functions, or postings. A job can consist of one or many individual actions and/or reports. A job is the basic block (or work set) that can be scheduled for execution by a Job Server. Jobs are scheduled by submitting them to job queues.

Temporary Job

When an action or report is started in Batch mode using the Job Server, Costpoint creates a temporary job, containing just one step (one report, computation function, or posting). This temporary job has an assigned name so that it can be identified and managed along with other jobs running on the Job Server.

Job Group

A Job Group is an optional code that logically groups jobs together under a user-defined category (for example, by department or accounting function). If you set up Job Groups, you can use them to narrow your queries in the Jobs screen (for example, searching for only HR department jobs) or include only selected Job groups on the Job Report screen.

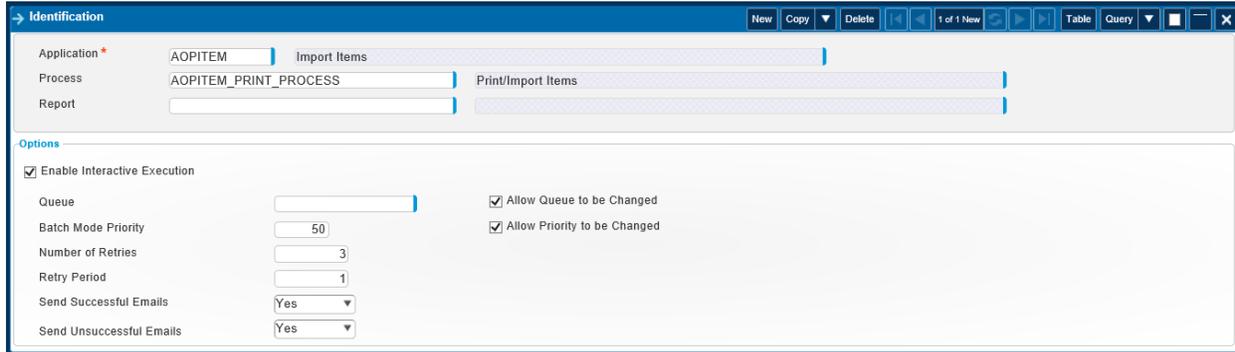
Job Queue

To start a job, you must submit it to a job queue. Queues are assigned to a particular Job Server and provide a means for job scheduling and execution. Queues can be sequential or non-sequential:

- **Sequential queue:** Jobs run sequentially, meaning that the next job will not start until the previous job completes.
- **Non-sequential queue:** Jobs run in parallel whenever they are scheduled to run.

Configure Batch Job Rules

The Costpoint administrator can configure how processing and reporting applications are executed. Configuration is done using the Configure Application Batch Job Settings (PMMSETNG) application. The path to this application is **Administration » Job Management » Job Management Controls » Configure Application Batch Jobs Settings**.



The administrator can:

- Set up defaults for some process execution options to make the user’s experience easier
- Determine how a particular process or report will execute.

The administrator can make these specifications at the application level or for a particular process or report. Process- or report-level settings take precedence over application-level settings. If process/report entries are missing, then configuration is set at the application level. By default, if no configuration is done at the application level, all of the execution options are available in the Submit Batch Jobs dialog.

The options on this screen are:

- **Enable Interactive Execution:** Allows users to execute the application, process, or report in interactive mode. This check box is selected by default. You can enable interactive execution even if you provide batch mode information below.
- **Queue:** Select the **Queue** that the process will go to.

By default a user can change the queue that a job goes to, but not if you clear the **Allow Queue to be Changed** check box, which forces the job to go to a particular queue each time it is run.

Attention: To understand the benefits of this approach, see the [Overcome Single Application Locking](#) section.

- **Allow Queue to be Changed:** Select this check box to make users unable to send the job to a different queue than the one specified on this screen.
- **Batch Mode Priority:** Enter a **Priority** for the job to help determine how quickly the job is processed in relation to other jobs in the queue. Priorities only work for sequential queues.

Attention: Refer to the [Manage Job Servers](#) section for details about priorities.

- **Allow Priority to be Changed:** Select this check box to make users unable to change the priority that is established on this screen (for example, unable to make their jobs a higher priority than other jobs in the queue).

- **Number of Retries:** Enter the number of times you want the Job Server to try to process a job before the job fails.

Attention: Refer to the [Overcome Single User Application Locking](#) section for more information.

- **Retry Period:** Enter the time (in minutes) between retry attempts.
- **Send Successful Emails:** Indicate whether or not you want users to receive an email message when the job is successfully executed.

Attention: Refer to the [Set Up Email Notifications for Batch Processes](#) section for more information.

- **Send Unsuccessful Emails:** Indicate whether you want users to receive an email message when the job fails.

Attention: Refer to the [Set Up Email Notifications for Batch Processes](#) section for more information.

Manage Job Servers

Job Servers are created and managed using the Start/Stop Job Server (PMSEVER) application. The path to this application is **Administration » Job Management » Job Management Processing » Start/Stop Job Server**.

Create a Job Server

Creating a new Job Server is simple. All you need to do is provide a name for the Job Server and specify the destination server where the Job Server will run.

Server Name *	Status	Destination Server *	Daily Shutdown Time	Daily Restart Time
ALICESERVER	Not Running	Default Server or Cluster		
AMARSERVER	Not Running	Default Server or Cluster		
AMJOBSEVER	Not Running	Default Server or Cluster		
BORIS	Not Running	Default Server or Cluster		
CATH	Running	Default Server or Cluster		

In the **Destination Server** field, you can select **Default Server or Cluster** or you can select a dedicated server if you have configured and deployed dedicated servers using the Costpoint Configuration Utility.

By using a dedicated server, you ensure that the Job Server and all of the jobs run within it have exclusive access to an application server hardware resource. However, it is important to remember that all running processes still share the same database.

Attention: For more information about dedicated servers, see the [Deltek Costpoint 8.1 Configuration Utility guide](#).

When you first create a new Job Server, its status is **Not Running**. To start the server, select the server row and click **Start**.

In order to have a Job Server process jobs, you must assign a Job Queue(s) to the Job Server because the Job Server will only process jobs in Job Queues that are assigned to it.

Job Queue	Process Sequentially	Job Queue *	Active for Server	Process Sequentially
AMARQ	Y	QC_QUEUE	<input checked="" type="checkbox"/>	Y
AMLDRLLUR	N	Q_ALICE	<input checked="" type="checkbox"/>	N
AOPUTLJE_QUE	Y	PROJ1	<input checked="" type="checkbox"/>	Y
APPPURVR_QUE	Y	Q1	<input checked="" type="checkbox"/>	Y
APPUPPWP_QUE	Y	GLRJEQUE	<input checked="" type="checkbox"/>	Y
BORISQ	N	PANK_PDRMCAT	<input type="checkbox"/>	Y
CQUEUE	N			
CSS1	Y			
DM01	Y			
FRANK2	Y			

Set Job Priorities

The Job Server system lets you assign priorities to jobs, but only to jobs in sequential job queues. Jobs submitted to sequential queues are run in sequence, and the next job cannot be started until the previous job is completed.

Jobs submitted to non-sequential queues are immediately run in parallel, using the application server's multi-threaded architecture.

In sequential queues, submitted jobs are sorted by priority and submission time, with the higher priority jobs run first. A job's priority is specified using the numbers 1 to 99, with 1 being the highest priority.

An administrator can define a default priority for a specific job, and disable/enable a user's ability to change the job priority in the Manage Users (SYMUSR) and Configure Application Batch Job Settings (PMMSETNG) applications.

Monitor the Status of Jobs

You can monitor the status of submitted jobs using the Manage Job Queues (PMMQUE) and Update Job Status (PMMCMPMS) applications. Both of these applications let you run a query to find one or more submitted jobs.

Job	Description	Status *	Start Date	Start Time	Priority	Recur Every	Recurring Timeframe *	End Date	End Time	Submitting User	Submitted Date/Time
BORISTEST3	BORISTEST	Hold			50		None			CPSUPERUSER	08/26/2020 02:2
BORISTEST	BORISTEST	Scheduled	08/26/2020	02:45:00 PM	50		None			CPSUPERUSER	08/26/2020 02:2

Buttons: Cancel Job, Scheduled Job Steps

Select a job row and click the **Scheduled Job Steps** link to display the status of each task in the job.

Sequence	Status	Name	Started Date/Time	End Date/Time	Application Name	Parameter ID	Report Name	Action Name
2	SCHEDULED	Print Employee Labor Summary Report			LDRELSUM	FRANK1		Test Action 1

Buttons: Job Step Details, Close

Select a task row and click the **Job Step Details** link to open a detailed execution status window that displays application-level details about that task.

Cancel Jobs

You can cancel an executing job by selecting a job row for the Scheduled Jobs screen and clicking the **Cancel** button. The Job Cancel action sends a cancel request to the currently running task and ensures that the next task in the sequence does not run.

Note: Cancel requests are not processed immediately. Clicking **Cancel** sends a message to the application code that runs the process. Based on its business logic, the application chooses to accept, process, or (in some rare cases) ignore the cancel request.

Review and Purge Job History

View the Print/Purge Job History (PMPPURGE) report to see detailed information about job processing steps. Because job history tables can contain a great deal of data, Deltek recommends filtering the report by selecting appropriate date ranges.

To print or purge job history:

1. Click **Administration » Job Management » Job Management Utilities » Print/Purge Job History**.
2. Select one of the following actions:
 - To print the report, click the drop-down arrow next to the **Print**  icon and select **Purge Job History Report**.
 - To purge history, click the drop-down arrow next to the **Action**  icon and select **Purge Job History**.

```
BEGIN the processing of Job ID '33184' (03/06/2009 12:29:46 PM)
  Processing 1 of 3 tasks
    Function Parameter '33184-01'(Application:'PCRMOCST')
      Started: (03/06/2009 12:29:46 PM)
      Completed: (03/06/2009 12:30:00 PM)
  Processing 2 of 3 tasks
    Function Parameter '33184-01'(Application:'PCPWIPV')
      Started: (03/06/2009 12:30:00 PM)
      Completed: (03/06/2009 12:30:14 PM)
  Processing 3 of 3 tasks
    Function Parameter '33184-02'(Application:'PCRMOCST')
      Started: (03/06/2009 12:30:14 PM)
      Completed: (03/06/2009 12:30:27 PM)
END the processing of Job ID '33184' (03/06/2009 12:30:27 PM)
```

Monitor Batch Mode Processes

When a process is started in Interactive mode, the application screen is locked and a progress bar displays the status of the executing process. But when a process is started in Batch mode, it runs in the background and the current status of the process execution is hidden.

To monitor background tasks, click the **View Action and Report Status** toolbar button: .

This button is a shortcut to the View Action and Report Status (SYQJSTAT2) screen, which provides a window into all actions and reports submitted by the current user that are completed or still running on the Costpoint application server.

Job Step Details								Form	Query
Application Name	Report Name	Action Name	Submitting User	Client IP Address	Server Name	Company	Execut Mett		
Print Employee Labor Summary Report		Test Action 1	CPSUPERUSER	::1	DEServer	1	Batch		
Print Employee Labor Summary Report		Test Action 1	CPSUPERUSER	::1	DEServer	1	Batch		
Manage Word Templates		Create Definition File	CPSUPERUSER	::1	DEServer	1	Interactiv		
Rebuild Global Settings		Reload Settings	CPSUPERUSER	::1	DEServer	1	Interactiv		
Rebuild Global Settings		Reload Settings	CPSUPERUSER	::1	DEServer	1	Interactiv		
Rebuild Global Settings		Reload Settings	CPSUPERUSER	::1	DEServer	1	Interactiv		
Rebuild Global Settings		Reload Settings	CPSUPERUSER	::1	DEServer	1	Interactiv		
Rebuild Global Settings		Reload Settings	CPSUPERUSER	::1	DEServer	1	Interactiv		
Manage Word Templates		Create Definition File	CPSUPERUSER	::1	DEServer	1	Interactiv		
Manage Word Templates		Create Definition File	CPSUPERUSER	::1	DEServer	1	Interactiv		
Manage Word Templates		Create Definition File	CPSUPERUSER	::1	DEServer	1	Interactiv		
Manage Word Templates		Create Definition File	CPSUPERUSER	::1	DEServer	1	Interactiv		
Rebuild Global Settings		Reload Settings	CPSUPERUSER	::1	DEServer	1	Interactiv		
Rebuild Global Settings		Reload Settings	CPSUPERUSER	::1	DEServer	1	Interactiv		
Rebuild Global Settings		Reload Settings	CPSUPERUSER	::1	DEServer	1	Interactiv		
Rebuild Global Settings		Reload Settings	CPSUPERUSER	::1	DEServer	1	Interactiv		
Rebuild Global Settings		Reload Settings	CPSUPERUSER	::1	DEServer	1	Interactiv		
Rebuild Global Settings		Reload Settings	CPSUPERUSER	::1	DEServer	1	Interactiv		
Rebuild Global Settings		Reload Settings	CPSUPERUSER	::1	DEServer	1	Interactiv		
Rebuild Global Settings		Reload Settings	CPSUPERUSER	::1	DEServer	1	Interactiv		
Rebuild Global Settings		Reload Settings	CPSUPERUSER	::1	DEServer	1	Interactiv		
Rebuild Global Settings		Reload Settings	CPSUPERUSER	::1	DEServer	1	Interactiv		

[Restartable Job Details](#) [Scheduled Job History](#)

Administrators can also use another version of the same application (SYQJSTAT), which provides exactly the same functionality, but is not filtered by the current user. The administrator version displays actions and reports submitted by all users or by any specified user.

To find and display data about processes:

1. Click the **View Action and Report Status**  toolbar button.
2. Enter filtering options (described below).
3. Click the **Execute**  button on the toolbar to populate the Job Steps Detail screen with requested data.

Filter Data

A main selection window provides filtering options. Because a great deal of data exists about completed and running processes, it is important to filter this data.

Monitor Batch Mode Processes

Records can be filtered by user ID, application, start and end date, job status, and execution method.

The **Job Status** area contains the following options:

- **Scheduled:** Display all jobs that are have been submitted to the Job Server and are waiting to be processed
- **Active:** Display all jobs that are currently being processed by the job server and those that are scheduled but have not started
- **Completed:** Display all jobs that have been processed successfully
- **Failed:** Display all jobs that were not processed successfully due to an error
- **Hold:** Display all scheduled jobs that have been postponed for a later date and time
- **Suspended:** Display all active jobs that have are waiting to be retried
- **Cancel Requested:** Display all scheduled jobs that have been cancelled, but for which the cancellation has not yet been accepted
- **User Cancelled:** Display all jobs that have been cancelled by a user and have stopped running

The **Execution Method** drop-down list contains the following options, all of which are ways in which Costpoint jobs are executed:

- All
- API (through an externally accessible API (Web Service calls))
- Batch (Background mode)
- Batch API (batch through API)
- Scheduled Job (Job Server mode)
- Interactive

Display Detailed Data about a Job

When you click **Execute** , you populate the Job Steps Detail screen with requested data.

Job Step Details								Form	Query
	Application Name	Report Name	Action Name	Submitting User	Client IP Address	Server Name	Company	Execu	Met
<input type="checkbox"/>	Print Employee Labor Summary Report		Test Action 1	CPSUPERUSER	::1	DEServer	1	Batch	
<input type="checkbox"/>	Print Employee Labor Summary Report		Test Action 1	CPSUPERUSER	::1	DEServer	1	Batch	
<input type="checkbox"/>	Manage Word Templates		Create Definition File	CPSUPERUSER	::1	DEServer	1	Interactiv	
<input type="checkbox"/>	Rebuild Global Settings		Reload Settings	CPSUPERUSER	::1	DEServer	1	Interactiv	
<input type="checkbox"/>	Rebuild Global Settings		Reload Settings	CPSUPERUSER	::1	DEServer	1	Interactiv	
<input type="checkbox"/>	Rebuild Global Settings		Reload Settings	CPSUPERUSER	::1	DEServer	1	Interactiv	
<input type="checkbox"/>	Rebuild Global Settings		Reload Settings	CPSUPERUSER	::1	DEServer	1	Interactiv	
<input type="checkbox"/>	Rebuild Global Settings		Reload Settings	CPSUPERUSER	::1	DEServer	1	Interactiv	
<input type="checkbox"/>	Manage Word Templates		Create Definition File	CPSUPERUSER	::1	DEServer	1	Interactiv	
<input type="checkbox"/>	Manage Word Templates		Create Definition File	CPSUPERUSER	::1	DEServer	1	Interactiv	

Monitor Batch Mode Processes

To see more information about a process:

1. Select the process.
2. Click **Form**.

The screenshot shows a web-based form titled 'Actions/Reports'. It contains several sections:

- Application Name:** Print Employee Labor Summary Rej
- Report Name:** [Empty]
- Action Name:** Test Action 1
- Client IP Address:** [Empty]
- Server Name:** DEServer
- Submittal Information:**
 - Submitting User:** CPSUPERUSER
 - Company:** 1
 - Execution Method:** Scheduled Job
 - Priority:** 50
 - Restartable:** N
- Status:** Completed
- Submitted Date/Time:** 07/06/2020 11:39:09 AM
- Started Date/Time:** 07/06/2020 11:39:34 AM
- End Date/Time:** 07/06/2020 11:40:04 AM
- Percent Complete:** 100%
- Cancelled By:** CPSUPERUSER
- Job Step:** [Empty]

You can also purge job detail from this screen, but Deltek highly recommends that you archive data before purging.

To purge job detail, click the drop-down next to the **Action**  icon, and select **Purge Displayed Rows**.

Display Detailed Data about the Tasks in a Job

If task is a part of the Job Server job, you may want to review the status of all of the tasks within a job (for example, if a job fails or is cancelled and you want to see which tasks completed before the job ended).

To view the status of the tasks in a job:

1. Select a job with an Active status from either the table view or form view.
2. Click **Scheduled Job History**.

The screenshot shows a window titled 'Scheduled Job History'. It displays job details for 'KCTEST6' and a table of 'Scheduled Job Steps'.

Sequence	Status	Name	Started Date/Time	End Date/Time	Application Name	Parameter ID	
1	COMPLETED	Print Unbilled Analysis Report	05/06/2020 03:57:46 AM	05/06/2020 03:57:50 AM	BLRUNBIL	KCTES4	Unbilled f
2	COMPLETED	Print Unbilled Analysis Report	05/06/2020 03:57:51 AM	05/06/2020 03:57:53 AM	BLRUNBIL	KCTES4	Unbilled f
3	COMPLETED	Print Unbilled Analysis Report	05/06/2020 03:57:54 AM	05/06/2020 03:57:59 AM	BLRUNBIL	KCTES4	Unbilled f

Display Restartable Process Details

Some complex Costpoint processes contain a sequence of steps that must all be completed. If such a process is interrupted for any reason (cancellation or failure), subsequent execution must continue from the interrupted step, and cannot start from the beginning. We call these restartable processes.

These processes use the POST_SEMAPHORE table to track execution progress by recording information about each step as it is completed. The POST_SEMAPHORE table accumulates status information for each step, including application ID, action ID, step number/description, posting sequence number, and start and end date times.

If, according to the POST_SEMAPHORE table, the process has not yet performed the first step that updates database tables, it can be restarted from the beginning.

However, if the process has already updated database tables, it must be restarted from the last completed step so that database tables are not left in an inconsistent state.

To display restartable process details:

1. Click the **Restartable Job Details** link to display the status information for each step.
2. Run the process that failed or was cancelled.

You can do this through Interactive or Batch mode.

- Run in Interactive mode.
 - If the application has not made updates to database tables, it will run from the beginning.
 - If the application has already made updates to database tables, a dialog box displays. Click **OK** to resume the job at the point where it failed.



- Run in Batch Mode.

Running the process in batch mode will make this decision automatically, without displaying a dialog box.

 - If the application has not made updates to database tables, it will run from the beginning.
 - If the application has already made updates to database tables, it will resume the job at the point where it failed.

Cancel a Job

A user can only cancel a process (Interactive or Batch) that they started. An administrator can cancel any process.

To cancel a job:

1. Select a job with an Active status from either the table view or form view.
2. Click **Cancel Job**.

This has the same effect as clicking the **Cancel** button on the progress dialog box in Interactive mode.

Note: Cancel requests are not processed immediately. Clicking **Cancel Job** sends a message to the application code that runs the process. Based on its business logic, the application chooses to accept, process, or (in some rare cases) ignore the cancel request.

Set Up Email Notifications for Batch Processes

Batch processes are run in the background, and something that is invisible can easily be forgotten. Also, it is not practical to check the status of a running process all the time. This is why email notification is a very useful feature.

You can set up email notifications at both the user and administration levels.

For Users

If you, as a user, want to receive email notifications about batch jobs, select the **Notify When Batch Job is Completed** check box in the Configure User Preferences (UPMUSRPR) application screen. The path to this screen is **Administration » System Administration » System Administration Controls » Configure User Preferences**.

When you enable notifications, emails are sent to you after the batch process or report is completed. If the job is composed of multiple tasks, then an email is sent for each individual task and another email for overall job completion.

Regardless of the whether you have chosen to receive emails on the Configure User Preferences screen, you can opt to receive an email for a specific job. If you select **Notify When Job Is Completed** on the Submit Batch Job screen, an email is sent after the job is completed.

For Administrators

Administrators can set up email address lists so that an email will go out to a user or group of users after a task is completed (successfully or unsuccessfully), regardless of the user who submitted the job for execution. The administrator sets up these lists on the Configure System Settings (SYMSETNG) application screen.

To set up email lists for batch job notifications:

1. Click **Administration » System Administration » System Administration Controls » Configure System Settings**.
2. Click the Batch Job tab.
3. If you want to send emails when a job completes successfully, select **Send Successful Emails**, and enter a list of recipients in the field below.
Separate email addresses with semi-colons.
4. If you want to send emails when a job fails, select **Send Unsuccessful Emails**, and enter a list of recipients in the field below.
Separate email addresses with semi-colons.
5. If you want to fine-tune these settings at the application or process/report level, go to the Configure Application Batch Job Rules (PMMSETNG) application.

The path to this screen is Administration » Job Management » Job Management Controls » Configure Application Batch Jobs Settings.

Any settings that you make here will take precedence over the **Send Successful Emails** and **Send Unsuccessful Emails** settings you entered in Steps 1 through 4. However, both applications share the same recipient lists.

Overcome Single User Application Locking

For various application design reasons, some processes and reports in Costpoint are “single-user,” meaning that only one instance of the process or report can run at a time. If one instance of a single-user process is running, all other interactive or batch attempts to run this process will be suspended.

There are two scenarios in which a single-user process can execute:

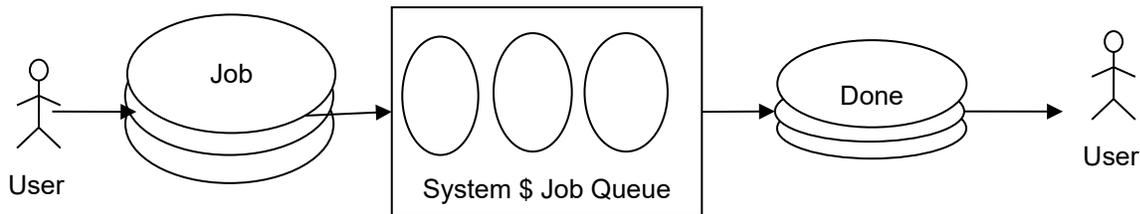
- A single-user process executed in Interactive mode
- A single-user process executed in Batch mode

The following sections describe the two scenarios and ways to optimize user access to these processes.

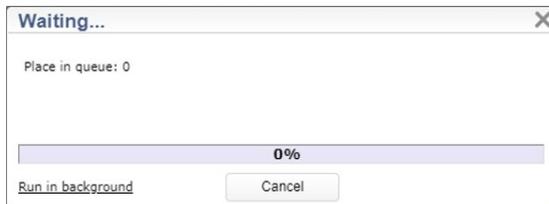
Single-User Process: Interactive Execution

Starting with Costpoint 8.1, all interactive executions of single-user processes are actually not interactive. Any interactively executed single-user process is automatically redirected to a sequential system queue. If several users start the same process simultaneously, their instances will be queued in the system queue and run in sequence. Only the first process will run instantly while the following will wait in the queue for the previous process to complete.

System queues are application-scoped. They are automatically created as needed and are named using the following rule: **\$ sign + application id**.



When you run the single-user process interactively, the dialog box will be different. “Place in queue” information will display the order of execution for your process in the system queue. Place 0 means that the process will run immediately. Since the process is running in the background anyway, you can click **Run in background** and continue with your other work.

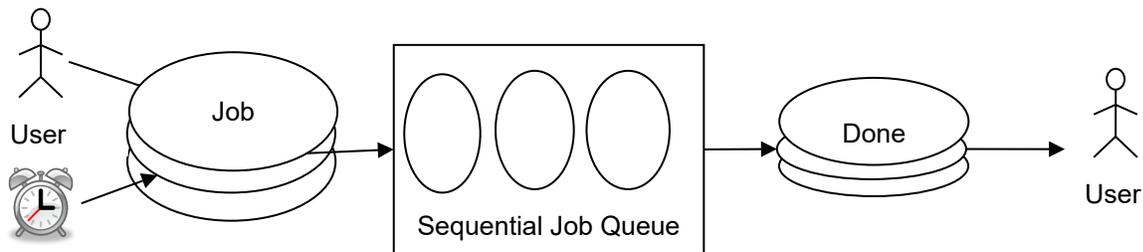


Use a Sequential Queue to Overcome Single-User Process Limitations

Note: Starting with Costpoint 8.1, this method is not needed anymore because Interactive Execution mode uses the same technique on a system level to run single-user jobs in sequence. Nevertheless, if you have set up jobs and job queues in previous versions of Costpoint, you can still use this approach.

One of the ways to mitigate these problems is to use a sequential queue on a Job Server. A sequential queue is a queue that forces submitted jobs to execute in sequence. The execution of the next job waits until a previous job completes.

Assume that a user submits a job to a queue, or the scheduler determines that the execution time is **Now** for an already submitted job. Jobs are placed in the queue according to their scheduled time. The first job in the queue runs first. All others wait in the queue for the current job to complete, and then run in sequence.



The notion of using a sequential queue is well-known and widely used by existing Costpoint customers. Costpoint 8 makes this option more attractive by providing administrators with a way to enforce the policy that selected applications can only be executed through predefined queues. Administrators can make sure single-use processes are executed via sequential queues, thereby avoiding the locking problem.

Rules are configured using the Configure Application Batch Job Settings (PMMSETNG) application.

Options

Enable Interactive Execution

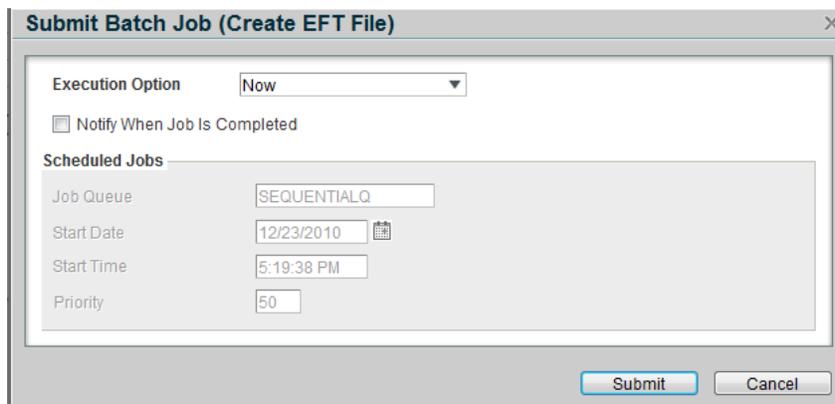
Queue	<input type="text"/>	<input checked="" type="checkbox"/> Allow Queue to be Changed
Batch Mode Priority	<input type="text"/>	<input type="checkbox"/> Allow Priority to be Changed
Number of Retries	<input type="text" value="3"/>	
Retry Period	<input type="text" value="1"/>	
Send Successful Emails	<input type="text" value="-None-"/>	
Send Unsuccessful Emails	<input type="text" value="-None-"/>	

To set up sequential job queue rules:

1. Click **Administration » Job Management » Job Management Controls » Configure Application Batch Job Settings**.
2. Select an application.
3. Select a process or report.

4. Clear the **Enable Interactive Execution** check box.
5. Select a **Queue** that is an existing sequential queue.
6. Clear the **Allow Queue to be Changed** check box.

Now, when a user submits this process or report as a background job, the Submit Batch Job screen does not allow the user to choose a queue. Instead, the job goes automatically to the sequential queue designated for this process or report.



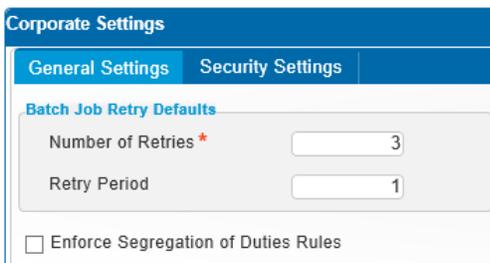
Use Retry Logic to Overcome Single-User Process Limitations

Note: Starting with Costpoint 8.1 and the introduction of system queues for interactive execution, the probability for single-user process locking is significantly reduced. Nevertheless, the retry feature is fully functional to resolve rare situations in which locking may occur.

If the use of a sequential queue is not desirable or feasible, an administrator should consider using Retry logic.

When a process is locked because another instance of the process is already running, Retry functionality will move this process to a retry list and try to run it in the future using the same execution method. How often and how many times the process will be retried depends on configuration settings.

Default retry settings are configured at the system level. Setting up system-level Batch Job Retry parameters enables the Retry functionality. The path to these settings is **Administration » System Administration » System Administration Controls » Configure System Settings » Company Settings tab » Corporate Settings**.



Number of Retries is the number of retry attempts made before a process fails. **Retry Period** is the time (in minutes) between retry attempts

Overcome Single User Application Locking

These settings can be fine-tuned at the process or report level using the Configure Application Batch Job Settings (PMMSETNG) application. The path to this screen is **Administration » Job Management » Job Management Controls » Configure Application Batch Jobs Settings**. Use this screen to set up special retry rules for a specific process or report.

Options

Enable Interactive Execution

Queue Allow Queue to be Changed

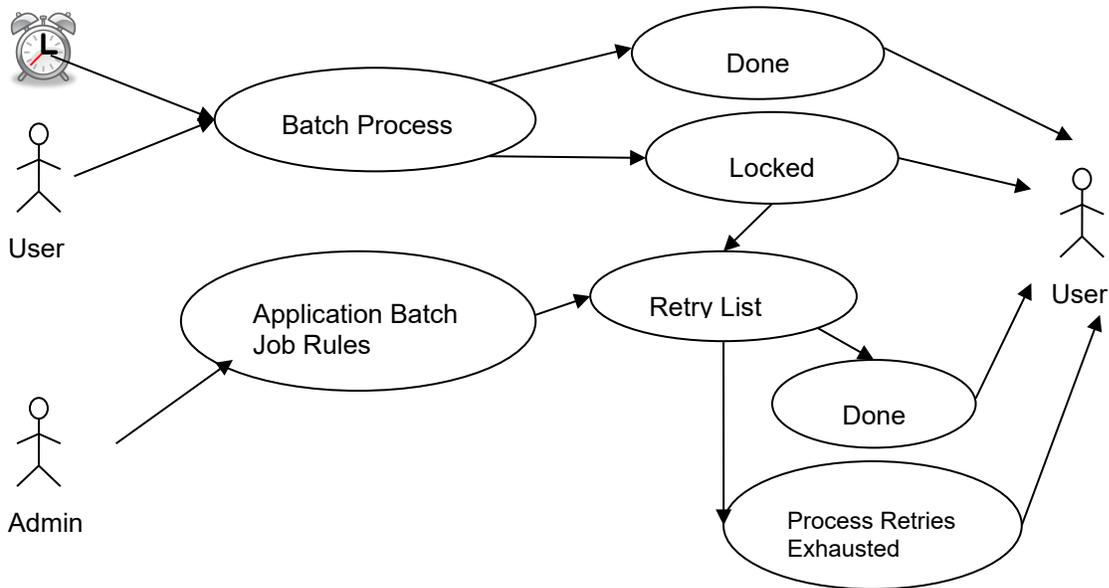
Batch Mode Priority Allow Priority to be Changed

Number of Retries

Retry Period

Send Successful Emails

Send Unsuccessful Emails



References

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