

Batch Job Scheduler Framework

Overview

Are you using Batch Apex jobs to process large volume of data in Salesforce? Does it take too long to run? Do you need to run some Batch jobs only when another Batch job is finished due to data dependencies? Batch Job Scheduler can help you to resolve these problems.

What is Batch Job Scheduler?

Batch Job Scheduler is a light weight Apex framework, it is designed to manage Batch Apex job execution in desired groups and sequences.

It provides the following benefits:

- Reduce total execution time - Executes up to 5 batch jobs simultaneously
- Manage data dependencies - Execute batch jobs in specific groups and orders
- Easy set up and maintenance - Configurations based and requires minimal code changes

How does it work?

Batch Job Scheduler works by creating Batch Job Scheduler record, which defines how frequent the batch job will run, e.g. every hour, every 2 day or monthly. Then create Batch job records under the Batch Job Scheduler record. Child Batch jobs under a batch job scheduler will be executed by batch group, batch jobs in Batch group 1 will finishes first, then proceed to executing batch job in Batch group 2, until the end.

The Daily scheduler below will run at 1am every day.

The screenshot shows the Salesforce interface for the Batch Job Scheduler. The navigation bar includes 'Batch Apex Sched...', 'Home', 'Scheduler Configuration', 'Batch Job Schedulers', and 'Batch Job Logs'. The main content area is titled 'Batch Job Scheduler Daily Batch Jobs'. Below the title, there are two tabs: 'Related' and 'Details'. The 'Details' tab is active, showing the following configuration:

Field	Value
Batch Job Scheduler Name	Daily Batch Jobs
Every Number of Day(s)	1
Preferred Start Hour	1AM
Preferred Start Minute	0
Created By	21/04/2019 1:07 PM
Last Modified By	22/04/2019 5:29 PM

Batch Job Scheduler Framework

The jobs below are created under the Daily batch scheduler above, therefore will be executed at 1am every day.

Batch Job Scheduler
Daily Batch Jobs

Related Details

Batch Apex Jobs (6+) New

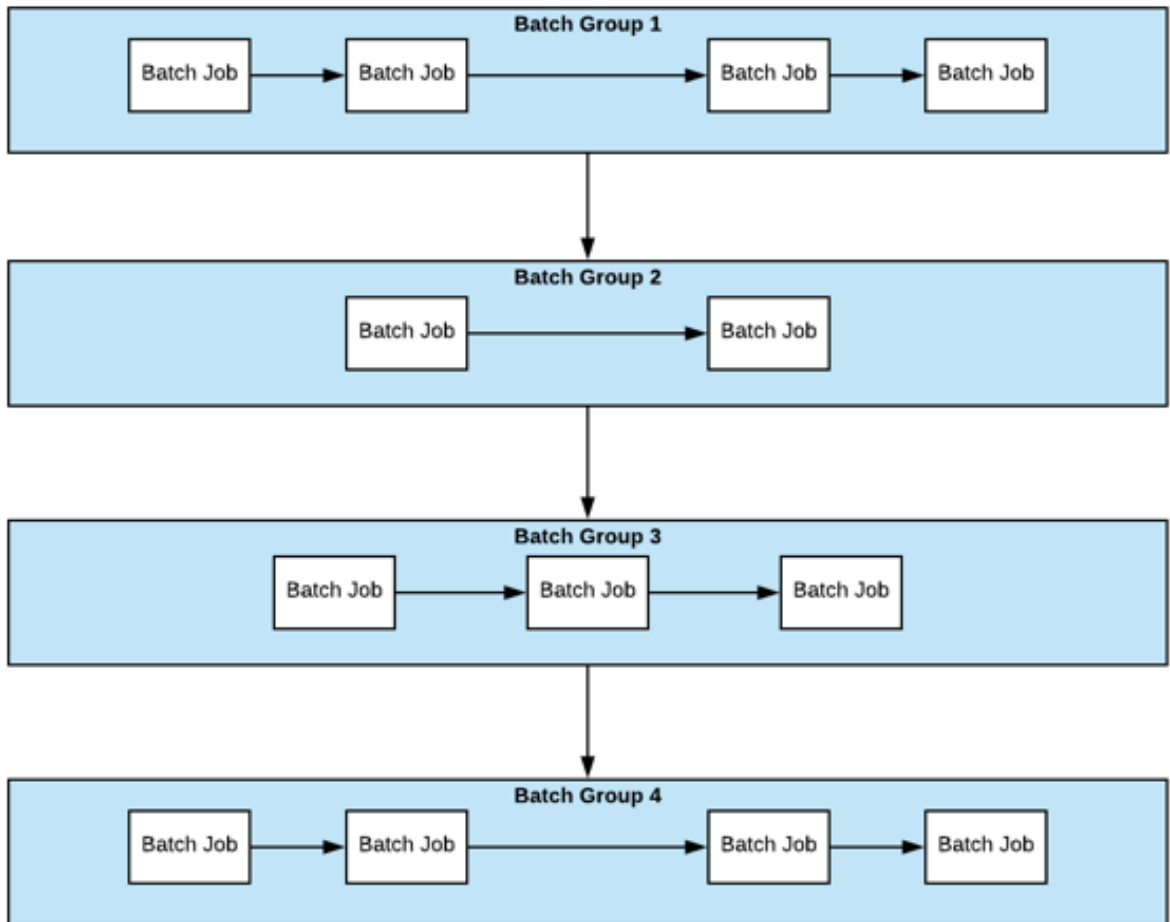
BATCH APEX JOB NO.	BATCH CLASS NAME	ENABLED	BATCH GROUP
JOB-000003	BatchJobTest01	<input checked="" type="checkbox"/>	1 ▼
JOB-000005	BatchJobTest03	<input checked="" type="checkbox"/>	1 ▼
JOB-000004	BatchJobTest02	<input checked="" type="checkbox"/>	1 ▼
JOB-000006	BatchJobTest04	<input checked="" type="checkbox"/>	2 ▼
JOB-000007	BatchJobTest05	<input checked="" type="checkbox"/>	2 ▼
JOB-000008	BatchJobTest06	<input checked="" type="checkbox"/>	2 ▼

[View All](#)

Batch Job Scheduler Framework

Batch Job Scheduler execution flow

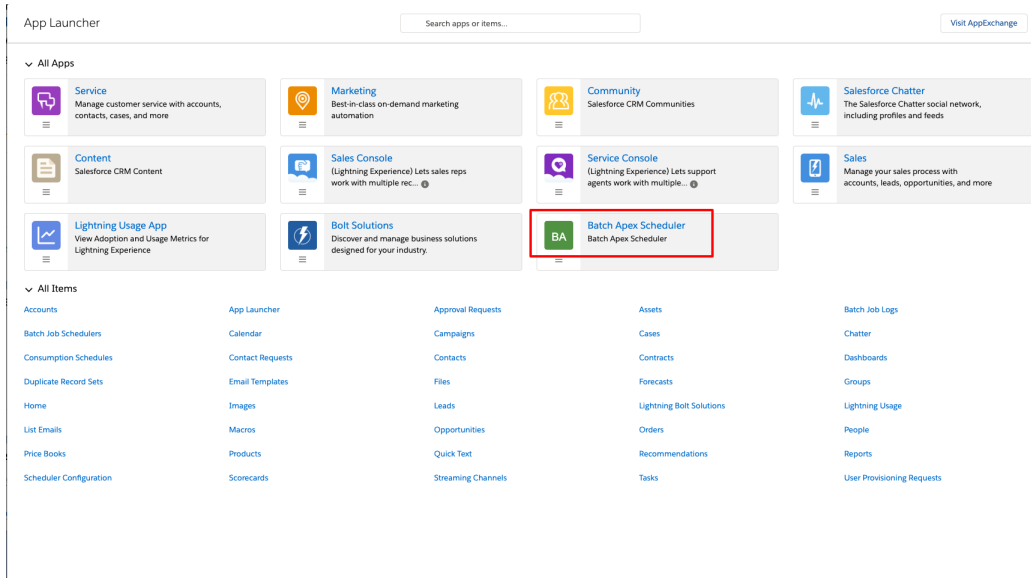
Batch Apex Scheduler Execution Flow



How to access Batch Job Scheduler

Batch Job Scheduler can be accessed from Batch Apex Scheduler app.

Batch Job Scheduler Framework



Batch Job Logs

Batch Job Scheduler framework logs batch job execution details, which can be viewed from Batch Job Logs tab.

The screenshot shows the "Batch Job Logs" page in Salesforce. The page title is "Batch Apex Sched..." and the breadcrumb navigation is "Home > Scheduler Configuration > Batch Job Schedulers > Batch Job Logs".

The page displays a table of 12 batch job logs. The table has the following columns: "BATCH JOB LOG NO.", "BATCH JOB NAME", "COMPLETED DATE", and "EXECUTION RESULT".

BATCH JOB LOG NO.	BATCH JOB NAME	COMPLETED DATE	EXECUTION RESULT
1	BatchJobTest03	21/04/2019 1:00 PM	JobItemsProcessed: 0 NumberOfErrors: 0 Status: Completed ExtendedStatus: null
2	BatchJobTest02	21/04/2019 1:00 PM	JobItemsProcessed: 0 NumberOfErrors: 0 Status: Completed ExtendedStatus: null
3	BatchJobTest01	21/04/2019 1:00 PM	JobItemsProcessed: 0 NumberOfErrors: 0 Status: Completed ExtendedStatus: null
4	BatchJobTest03	21/04/2019 2:00 PM	JobItemsProcessed: 0 NumberOfErrors: 0 Status: Completed ExtendedStatus: null
5	BatchJobTest01	21/04/2019 2:00 PM	JobItemsProcessed: 0 NumberOfErrors: 0 Status: Completed ExtendedStatus: null
6	BatchJobTest02	21/04/2019 2:00 PM	JobItemsProcessed: 0 NumberOfErrors: 0 Status: Completed ExtendedStatus: null
7	BatchJobTest01	21/04/2019 3:00 PM	JobItemsProcessed: 0 NumberOfErrors: 0 Status: Completed ExtendedStatus: null
8	BatchJobTest02	21/04/2019 3:00 PM	JobItemsProcessed: 0 NumberOfErrors: 0 Status: Completed ExtendedStatus: null
9	BatchJobTest03	21/04/2019 3:00 PM	JobItemsProcessed: 0 NumberOfErrors: 0 Status: Completed ExtendedStatus: null
10	BatchJobTest03	21/04/2019 4:00 PM	JobItemsProcessed: 0 NumberOfErrors: 0 Status: Completed ExtendedStatus: null
11	BatchJobTest01	21/04/2019 4:00 PM	JobItemsProcessed: 0 NumberOfErrors: 0 Status: Completed ExtendedStatus: null
12	BatchJobTest02	21/04/2019 4:00 PM	JobItemsProcessed: 0 NumberOfErrors: 0 Status: Completed ExtendedStatus: null

How to set up Batch Job Scheduler

- Step 1. Create Batch Apex class
- Step 2. Create Batch Job Scheduler record
- Step 3. Create Batch Job records
- Step 4. Schedule Batch Jobs

Step 1. Create Batch Apex class

In order to run Batch Apex jobs under BatchJobScheduler framework, the Batch Apex class needs to inherit from BatchJobBase class. It also needs little effort to update your existing Batch Apex class to work within the framework.

BatchJobBase class

```
global virtual with sharing class BatchJobBase {
    global Boolean ExecuteNextJob = false;
    global BatchJobScheduler batchJobScheduler;

    global virtual void finishBatch(Database.BatchableContext BC) {
        //.....
    }
}
```

BatchJobBase class has 2 properties and 1 method:

- ExecuteNextJob - Boolean property: Defines whether or not to execute next job. Set to false by default so it won't execute the next job when it is running out side of BatchJonScheduler framework
- BatchJobScheduler: Instance of BatchJobScheduler class
- finishBatch method: Chains up to next batch job.

Batch Job class code sample

```
global class BatchJobTest01 extends batchjobsch.BatchJobBase implements
Database.Batchable<sObject> {

    public BatchJobTest01() {

    }

    global Database.QueryLocator start(Database.BatchableContext BC) {
        return Database.getQueryLocator([SELECT Id
```

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```
FROM Account
WHERE LastModifiedDate = TODAY]);
}

global void execute(Database.BatchableContext BC, List<Account> scope) {
    for (Account account :scope) {
        account.Type = 'Customer - Direct';
    }
    update scope;
}

global void finish(Database.BatchableContext BC) {
    super.finishBatch(BC);
}
}
```

Step 2. Create Batch Job Scheduler record

There are 7 types of Batch job scheduler:

- Hourly Job - Batch jobs running hourly
- Daily Job - Batch jobs running daily
- Weekly Job - Batch jobs running weekly
- Monthly Job - Batch jobs running monthly
- Yearly Job - Batch jobs running annually
- Custom Job – Set your own Cron Expression
- Existing Job – Link to existing scheduled batch jobs

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New Batch Job Scheduler

Select a record type

- Daily Job
Daily batch jobs
- Custom Cron Expression Job
Jobs with custom cron expression
- Existing Scheduled Job
Link an existing Scheduled Apex job
- Hourly Job
Hourly batch jobs
- Monthly Job
Monthly batch jobs
- Weekly Job
Weekly batch jobs
- Yearly Job
Yearly batch jobs

A daily Batch Job Scheduler

New Batch Job Scheduler: Daily Job

Information

* Batch Job Scheduler Name	<input type="text" value="Daily Batch Jobs"/>	* Preferred Start Hour	<input type="text" value="1AM"/>
* Every Number of Day(s)	<input type="text" value="1"/>	* Preferred Start Minute	<input type="text" value="0"/>

Step 3. Create Batch Job records

Batch jobs are created under Batch Job Scheduler. All batch jobs will be executed when Batch Job Scheduler is running as per schedule setting.

Batch Job Scheduler is the parent Batch Job Scheduler

Batch Job Scheduler Framework

Batch Class Name is the Batch Apex class name, it must match the exact batch class name, where the batch class inherits from BatchJobClass super class.

New Batch Apex Job

Information

Batch Apex Job No. * Batch Group i

2 ▼

* Batch Job Scheduler Batch Size i

Daily Batch Jobs × 200

* Batch Class Name i

BatchApexJobTest9

Enabled

Step 4. Schedule Batch Jobs

To schedule / unscheduled batch jobs, navigate to Scheduler Configuration tab. Check / uncheck Schedule checkbox, then click on Apply Changes button.

The screenshot shows the Salesforce Batch Job Scheduler interface. At the top, there is a navigation bar with the Salesforce logo, a search bar, and utility icons. Below the navigation bar, the 'Scheduler Configuration' tab is active. The main content area displays a table titled 'Batch Job Schedulers' with columns for Job Name, Cron Trigger Id, Cron Expression, State, Times Triggered, Previous Fire Time, Next Fire Time, Start Time, End Time, and Scheduled. The 'Scheduled' column contains a checked checkbox for 'Hourly Batch Jobs' and an unchecked checkbox for 'Daily Batch Jobs'. A red box highlights the 'Scheduled' column headers and checkboxes. There are 'Apply Changes' buttons above and below the table.

Job Name	Cron Trigger Id	Cron Expression	State	Times Triggered	Previous Fire Time	Next Fire Time	Start Time	End Time	Scheduled
Hourly Batch Jobs	08e0d00002ckJOIAAK	0 0 Q/1 1/1 * ? *	WAITING	3	21/04/2019 3:00 PM	21/04/2019 4:00 PM	21/04/2019 12:29 PM		<input checked="" type="checkbox"/>
Daily Batch Jobs		0 0 1 1/1 * ? *		0					<input type="checkbox"/>