

Package ‘crew.aws.batch’

November 18, 2024

Title A Crew Launcher Plugin for AWS Batch

Description In computationally demanding analysis projects, statisticians and data scientists asynchronously deploy long-running tasks to distributed systems, ranging from traditional clusters to cloud services. The 'crew.aws.batch' package extends the 'mirai'-powered 'crew' package with a worker launcher plugin for AWS Batch. Inspiration also comes from packages 'mirai' by Gao (2023) <<https://github.com/shikokuchuo/mirai>>, 'future' by Bengtsson (2021) <[doi:10.32614/RJ-2021-048](https://doi.org/10.32614/RJ-2021-048)>, 'rrq' by FitzJohn and Ashton (2023) <<https://github.com/mrc-ide/rrq>>, 'clustermq' by Schubert (2019) <[doi:10.1093/bioinformatics/btz284](https://doi.org/10.1093/bioinformatics/btz284)>, and 'batchtools' by Lang, Bischl, and Surmann (2017). <[doi:10.21105/joss.00135](https://doi.org/10.21105/joss.00135)>.

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<https://github.com/wlandau/crew.aws.batch>

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Author William Michael Landau [aut, cre]
(<<https://orcid.org/0000-0003-1878-3253>>),
Eli Lilly and Company [cph, fnd]

Maintainer William Michael Landau <will.landau.oss@gmail.com>

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crew.aws.batch-package

crew.aws.batch: a crew launcher plugin for AWS Batch

Description

In computationally demanding analysis projects, statisticians and data scientists asynchronously deploy long-running tasks to distributed systems, ranging from traditional clusters to cloud services. The `crew.aws.batch` package extends the `mirai`-powered `crew` package with worker launcher plugins for AWS Batch. Inspiration also comes from packages `mirai`, `future`, `rrq`, `clustermq`, and `batchtools`.

crew_class_definition_aws_batch

AWS Batch definition class

Description

AWS Batch definition R6 class

Details

See `crew_definition_aws_batch()`.

IAM policies

In order for the AWS Batch crew job definition class to function properly, your IAM policy needs permission to perform the RegisterJobDefinition, DeregisterJobDefinition, and DescribeJobDefinitions AWS Batch API calls. For more information on AWS policies and permissions, please visit https://docs.aws.amazon.com/IAM/latest/UserGuide/access_policies.html.

Active bindings

job_queue See [crew_definition_aws_batch\(\)](#).
job_definition See [crew_definition_aws_batch\(\)](#).
log_group See [crew_definition_aws_batch\(\)](#).
config See [crew_definition_aws_batch\(\)](#).
credentials See [crew_definition_aws_batch\(\)](#).
endpoint See [crew_definition_aws_batch\(\)](#).
region See [crew_definition_aws_batch\(\)](#).

Methods

Public methods:

- [crew_class_definition_aws_batch\\$new\(\)](#)
- [crew_class_definition_aws_batch\\$validate\(\)](#)
- [crew_class_definition_aws_batch\\$register\(\)](#)
- [crew_class_definition_aws_batch\\$deregister\(\)](#)
- [crew_class_definition_aws_batch\\$describe\(\)](#)
- [crew_class_definition_aws_batch\\$submit\(\)](#)

Method `new()`: AWS Batch job definition constructor.

Usage:

```
crew_class_definition_aws_batch$new(  
  job_queue = NULL,  
  job_definition = NULL,  
  log_group = NULL,  
  config = NULL,  
  credentials = NULL,  
  endpoint = NULL,  
  region = NULL  
)
```

Arguments:

job_queue See [crew_definition_aws_batch\(\)](#).
job_definition See [crew_definition_aws_batch\(\)](#).
log_group See [crew_definition_aws_batch\(\)](#).
config See [crew_definition_aws_batch\(\)](#).
credentials See [crew_definition_aws_batch\(\)](#).
endpoint See [crew_definition_aws_batch\(\)](#).

region See `crew_definition_aws_batch()`.

Returns: AWS Batch job definition object.

Method `validate()`: Validate the object.

Usage:

```
crew_class_definition_aws_batch$validate()
```

Returns: NULL (invisibly). Throws an error if a field is invalid.

Method `register()`: Register a job definition.

Usage:

```
crew_class_definition_aws_batch$register(
  image,
  platform_capabilities = "EC2",
  memory_units = "gigabytes",
  memory = NULL,
  cpus = NULL,
  gpus = NULL,
  seconds_timeout = NULL,
  scheduling_priority = NULL,
  tags = NULL,
  propagate_tags = NULL,
  parameters = NULL,
  job_role_arn = NULL,
  execution_role_arn = NULL
)
```

Arguments:

`image` Character of length 1, Docker image used for each job. You can supply a path to an image in Docker Hub or the full URI of an image in an Amazon ECR repository.

`platform_capabilities` Optional character of length 1, either "EC2" to run on EC2 or "FARGATE" to run on Fargate.

`memory_units` Character of length 1, either "gigabytes" or "mebibytes" to set the units of the memory argument. "gigabytes" is simpler for EC2 jobs, but Fargate has strict requirements about specifying exact amounts of mebibytes (MiB). for details, read <https://docs.aws.amazon.com/cli/latest/reference/batch/register-job-definition.html> # no-lint

`memory` Positive numeric of length 1, amount of memory to request for each job.

`cpus` Positive numeric of length 1, number of virtual CPUs to request for each job.

`gpus` Positive numeric of length 1, number of GPUs to request for each job.

`seconds_timeout` Optional positive numeric of length 1, number of seconds until a job times out.

`scheduling_priority` Optional nonnegative integer of length 1 between 0 and 9999, priority of jobs. Jobs with higher-valued priorities are scheduled first. The priority only applies if the job queue has a fair share policy. Set to NULL to omit.

`tags` Optional character vector of tags.

`propagate_tags` Optional logical of length 1, whether to propagate tags from the job or definition to the ECS task.

parameters Optional character vector of key-value pairs designating parameters for job submission.

job_role_arn Character of length 1, Amazon resource name (ARN) of the job role.

execution_role_arn Character of length 1, Amazon resource name (ARN) of the execution role.

Details: The `register()` method registers a simple job definition using the job definition name and log group originally supplied to `crew_definition_aws_batch()`. Job definitions created with `$register()` are container-based and use the AWS log driver. For more complicated kinds of jobs, we recommend skipping `register()`: first call https://www.paws-r-sdk.com/docs/batch_register_job_definition/ to register the job definition, then supply the job definition name to the `job_definition` argument of `crew_definition_aws_batch()`.

Returns: A one-row tibble with the job definition name, ARN, and revision number of the registered job definition.

Method `deregister()`: Attempt to deregister a revision of the job definition.

Usage:

```
crew_class_definition_aws_batch$deregister(revision = NULL)
```

Arguments:

revision Finite positive integer of length 1, optional revision number to deregister. If NULL, then only the highest revision number of the job definition is deregistered, if it exists.

Details: Attempt to deregister the job definition whose name was originally supplied to the `job_definition` argument of `crew_definition_aws_batch()`.

Returns: NULL (invisibly).

Method `describe()`: Describe the revisions of the job definition.

Usage:

```
crew_class_definition_aws_batch$describe(revision = NULL, active = FALSE)
```

Arguments:

revision Positive integer of length 1, optional revision number to describe.

active Logical of length 1, whether to filter on just the active job definition.

Returns: A tibble with job definition information. There is one row per revision. Some fields may be nested lists.

Method `submit()`: Submit an AWS Batch job with the given job definition.

Usage:

```
crew_class_definition_aws_batch$submit(
  command = c("sleep", "300"),
  name = paste0("crew-aws-batch-job-", crew::crew_random_name()),
  cpus = NULL,
  gpus = NULL,
  memory_units = "gigabytes",
  memory = NULL,
  seconds_timeout = NULL,
  share_identifier = NULL,
```

```

    scheduling_priority_override = NULL,
    tags = NULL,
    propagate_tags = NULL,
    parameters = NULL
)

```

Arguments:

command Character vector with the command to submit for the job. Usually a Linux shell command with each term in its own character string.

name Character of length 1 with the job name.

cpus Positive numeric of length 1, number of virtual CPUs to request for each job.

gpus Positive numeric of length 1, number of GPUs to request for each job.

memory_units Character of length 1, either "gigabytes" or "mebibytes" to set the units of the memory argument. "gigabytes" is simpler for EC2 jobs, but Fargate has strict requirements about specifying exact amounts of mebibytes (MiB). for details, read <https://docs.aws.amazon.com/cli/latest/reference/batch/register-job-definition.html#no-lint>

memory Positive numeric of length 1, amount of memory to request for each job.

seconds_timeout Optional positive numeric of length 1, number of seconds until a job times out.

share_identifier Character of length 1 with the share identifier of the job. Only applies if the job queue has a scheduling policy. Read the official AWS Batch documentation for details.

scheduling_priority_override Optional nonnegative integer of length between 0 and 9999, priority of the job. This value overrides the priority in the job definition. Jobs with higher-valued priorities are scheduled first. The priority applies if the job queue has a fair share policy. Set to NULL to omit.

tags Optional character vector of tags.

propagate_tags Optional logical of length 1, whether to propagate tags from the job or definition to the ECS task.

parameters Optional character vector of key-value pairs designating parameters for job submission.

Details: This method uses the job queue and job definition that were supplied through `crew_definition_aws_batch()`. Any jobs submitted this way are different from the crew workers that the crew controller starts automatically using the AWS Batch launcher plugin. You may use the `submit()` method in the definition for different purposes such as testing.

Returns: A one-row tibble with the name, ID, and Amazon resource name (ARN) of the job.

See Also

Other definition: `crew_definition_aws_batch()`

crew_class_launcher_aws_batch
AWS Batch launcher class

Description

AWS Batch launcher R6 class

Details

See [crew_launcher_aws_batch\(\)](#).

IAM policies

In order for the AWS Batch crew plugin to function properly, your IAM policy needs permission to perform the `SubmitJob` and `TerminateJob` AWS Batch API calls. For more information on AWS policies and permissions, please visit https://docs.aws.amazon.com/IAM/latest/UserGuide/access_policies.html.

AWS arguments

The AWS Batch controller and launcher accept many arguments which start with "aws_batch_". These arguments are AWS-Batch-specific parameters forwarded directly to the `submit_job()` method for the Batch client in the `paws.compute` R package

For a full description of each argument, including its meaning and format, please visit https://www.paws-r-sdk.com/docs/batch_submit_job/. The upstream API documentation is at https://docs.aws.amazon.com/batch/latest/APIReference/API_SubmitJob.html and the analogous CLI documentation is at <https://docs.aws.amazon.com/cli/latest/reference/batch/submit-job.html>.

The actual argument names may vary slightly, depending on which : for example, the `aws_batch_job_definition` argument of the crew AWS Batch launcher/controller corresponds to the `jobDefinition` argument of the web API and `paws.compute::batch()$submit_job()`, and both correspond to the `--job-definition` argument of the CLI.

Verbosity

Control verbosity with the `paws.log_level` global option in R. Set to 0 for minimum verbosity and 3 for maximum verbosity.

Super class

`crew::crew_class_launcher` -> `crew_class_launcher_aws_batch`

Active bindings

`options_aws_batch` See [crew_launcher_aws_batch\(\)](#).

Methods

Public methods:

- [crew_class_launcher_aws_batch\\$new\(\)](#)
- [crew_class_launcher_aws_batch\\$validate\(\)](#)
- [crew_class_launcher_aws_batch\\$launch_worker\(\)](#)
- [crew_class_launcher_aws_batch\\$terminate_worker\(\)](#)

Method `new()`: Abstract launcher constructor.

Usage:

```
crew_class_launcher_aws_batch$new(  
  name = NULL,  
  seconds_interval = NULL,  
  seconds_timeout = NULL,  
  seconds_launch = NULL,  
  seconds_idle = NULL,  
  seconds_wall = NULL,  
  tasks_max = NULL,  
  tasks_timers = NULL,  
  reset_globals = NULL,  
  reset_packages = NULL,  
  reset_options = NULL,  
  garbage_collection = NULL,  
  crashes_error = NULL,  
  tls = NULL,  
  processes = NULL,  
  r_arguments = NULL,  
  options_metrics = NULL,  
  options_aws_batch = NULL  
)
```

Arguments:

`name` See [crew_launcher_aws_batch\(\)](#).
`seconds_interval` See [crew_launcher_aws_batch\(\)](#).
`seconds_timeout` See [crew_launcher_aws_batch\(\)](#).
`seconds_launch` See [crew_launcher_aws_batch\(\)](#).
`seconds_idle` See [crew_launcher_aws_batch\(\)](#).
`seconds_wall` See [crew_launcher_aws_batch\(\)](#).
`tasks_max` See [crew_launcher_aws_batch\(\)](#).
`tasks_timers` See [crew_launcher_aws_batch\(\)](#).
`reset_globals` See [crew_launcher_aws_batch\(\)](#).
`reset_packages` See [crew_launcher_aws_batch\(\)](#).
`reset_options` See [crew_launcher_aws_batch\(\)](#).
`garbage_collection` See [crew_launcher_aws_batch\(\)](#).
`crashes_error` See [crew_launcher_aws_batch\(\)](#).
`tls` See [crew_launcher_aws_batch\(\)](#).

processes See [crew_launcher_aws_batch\(\)](#).

r_arguments See [crew_launcher_aws_batch\(\)](#).

options_metrics See [crew_launcher_aws_batch\(\)](#).

options_aws_batch See [crew_launcher_aws_batch\(\)](#).

Returns: An abstract launcher object.

Method `validate()`: Validate the launcher.

Usage:

```
crew_class_launcher_aws_batch$validate()
```

Returns: NULL (invisibly). Throws an error if a field is invalid.

Method `launch_worker()`: Launch a local process worker which will dial into a socket.

Usage:

```
crew_class_launcher_aws_batch$launch_worker(
  call,
  name,
  launcher,
  worker,
  instance
)
```

Arguments:

`call` Character of length 1, a namespaced call to `crew::crew_worker()` which will run in the worker and accept tasks.

`name` Character of length 1, an informative worker name.

`launcher` Character of length 1, name of the launcher.

`worker` Positive integer of length 1, index of the worker. This worker index remains the same even when the current instance of the worker exits and a new instance launches. It is always between 1 and the maximum number of concurrent workers.

`instance` Character of length 1 to uniquely identify the current instance of the worker.

Details: The `call` argument is R code that will run to initiate the worker.

Returns: A handle object to allow the termination of the worker later on.

Method `terminate_worker()`: Terminate a local process worker.

Usage:

```
crew_class_launcher_aws_batch$terminate_worker(handle)
```

Arguments:

`handle` A process handle object previously returned by `launch_worker()`.

Returns: NULL (invisibly).

See Also

Other plugin_aws_batch: [crew_controller_aws_batch\(\)](#), [crew_launcher_aws_batch\(\)](#)

crew_class_monitor_aws_batch
AWS Batch monitor class

Description

AWS Batch monitor R6 class

Details

See [crew_monitor_aws_batch\(\)](#).

IAM policies

In order for the AWS Batch crew monitor class to function properly, your IAM policy needs permission to perform the SubmitJob, TerminateJob, ListJobs, and DescribeJobs AWS Batch API calls. In addition, to download CloudWatch logs with the `log()` method, your IAM policy also needs permission to perform the GetLogEvents CloudWatch logs API call. For more information on AWS policies and permissions, please visit https://docs.aws.amazon.com/IAM/latest/UserGuide/access_policies.html.

Active bindings

job_queue See [crew_monitor_aws_batch\(\)](#).
job_definition See [crew_monitor_aws_batch\(\)](#).
log_group See [crew_monitor_aws_batch\(\)](#).
config See [crew_monitor_aws_batch\(\)](#).
credentials See [crew_monitor_aws_batch\(\)](#).
endpoint See [crew_monitor_aws_batch\(\)](#).
region See [crew_monitor_aws_batch\(\)](#).

Methods

Public methods:

- [crew_class_monitor_aws_batch\\$new\(\)](#)
- [crew_class_monitor_aws_batch\\$validate\(\)](#)
- [crew_class_monitor_aws_batch\\$terminate\(\)](#)
- [crew_class_monitor_aws_batch\\$status\(\)](#)
- [crew_class_monitor_aws_batch\\$log\(\)](#)
- [crew_class_monitor_aws_batch\\$jobs\(\)](#)
- [crew_class_monitor_aws_batch\\$active\(\)](#)
- [crew_class_monitor_aws_batch\\$inactive\(\)](#)
- [crew_class_monitor_aws_batch\\$submitted\(\)](#)
- [crew_class_monitor_aws_batch\\$pending\(\)](#)

- [crew_class_monitor_aws_batch\\$runnable\(\)](#)
- [crew_class_monitor_aws_batch\\$starting\(\)](#)
- [crew_class_monitor_aws_batch\\$running\(\)](#)
- [crew_class_monitor_aws_batch\\$succeeded\(\)](#)
- [crew_class_monitor_aws_batch\\$failed\(\)](#)

Method `new()`: AWS Batch job definition constructor.

Usage:

```
crew_class_monitor_aws_batch$new(
  job_queue = NULL,
  job_definition = NULL,
  log_group = NULL,
  config = NULL,
  credentials = NULL,
  endpoint = NULL,
  region = NULL
)
```

Arguments:

`job_queue` See [crew_monitor_aws_batch\(\)](#).
`job_definition` See [crew_monitor_aws_batch\(\)](#).
`log_group` See [crew_monitor_aws_batch\(\)](#).
`config` See [crew_monitor_aws_batch\(\)](#).
`credentials` See [crew_monitor_aws_batch\(\)](#).
`endpoint` See [crew_monitor_aws_batch\(\)](#).
`region` See [crew_monitor_aws_batch\(\)](#).

Returns: AWS Batch job definition object.

Method `validate()`: Validate the object.

Usage:

```
crew_class_monitor_aws_batch$validate()
```

Returns: NULL (invisibly). Throws an error if a field is invalid.

Method `terminate()`: Terminate one or more AWS Batch jobs.

Usage:

```
crew_class_monitor_aws_batch$terminate(
  ids = NULL,
  all = FALSE,
  reason = "cancelled/terminated by crew.aws.batch monitor",
  verbose = TRUE
)
```

Arguments:

`ids` Character vector with the IDs of the AWS Batch jobs to terminate. Leave as NULL if `all` is TRUE.

all TRUE to terminate all jobs belonging to the previously specified job definition. FALSE to terminate only the job IDs given in the `ids` argument.

reason Character of length 1, natural language explaining the reason the job was terminated.

verbose Logical of length 1, whether to show a progress bar if the R process is interactive and `length(ids)` is greater than 1.

Returns: NULL (invisibly).

Method `status()`: Get the status of a single job

Usage:

```
crew_class_monitor_aws_batch$status(id)
```

Arguments:

`id` Character of length 1, job ID. This is different from the user-supplied job name.

Returns: A one-row tibble with information about the job.

Method `log()`: Get the CloudWatch log of a job.

Usage:

```
crew_class_monitor_aws_batch$log(id, start_from_head = FALSE)
```

Arguments:

`id` Character of length 1, job ID. This is different from the user-supplied job name.

`start_from_head` Logical of length 1, whether to print earlier log events before later ones.

Details: This method assumes the job has log driver "awslogs" (specifying AWS CloudWatch) and that the log group is the one prespecified in the `log_group` argument of `crew_monitor_aws_batch()`. This method cannot use other log drivers such as Splunk, and it will fail if the log group is wrong or missing.

Returns: A tibble with log information.

Method `jobs()`: List all the jobs in the given job queue with the given job definition.

Usage:

```
crew_class_monitor_aws_batch$jobs(
  status = c("submitted", "pending", "runnable", "starting", "running", "succeeded",
            "failed")
)
```

Arguments:

`status` Character vector of job states. Results are limited to these job states.

Details: The output only includes jobs under the job queue and job definition that were supplied through `crew_monitor_aws_batch()`.

Returns: A tibble with one row per job and columns with job information.

Method `active()`: List active jobs: submitted, pending, runnable, starting, or running (not succeeded or failed).

Usage:

```
crew_class_monitor_aws_batch$active()
```

Details: The output only includes jobs under the job queue and job definition that were supplied through `crew_monitor_aws_batch()`.

Returns: A tibble with one row per job and columns with job information.

Method `inactive()`: List inactive jobs: ones whose status is succeeded or failed (not submitted, pending, runnable, starting, or running).

Usage:

```
crew_class_monitor_aws_batch$inactive()
```

Details: The output only includes jobs under the job queue and job definition that were supplied through `crew_monitor_aws_batch()`.

Returns: A tibble with one row per job and columns with job information.

Method `submitted()`: List jobs whose status is "submitted".

Usage:

```
crew_class_monitor_aws_batch$submitted()
```

Details: The output only includes jobs under the job queue and job definition that were supplied through `crew_monitor_aws_batch()`.

Returns: A tibble with one row per job and columns with job information.

Method `pending()`: List jobs whose status is "pending".

Usage:

```
crew_class_monitor_aws_batch$pending()
```

Details: The output only includes jobs under the job queue and job definition that were supplied through `crew_monitor_aws_batch()`.

Returns: A tibble with one row per job and columns with job information.

Method `runnable()`: List jobs whose status is "runnable".

Usage:

```
crew_class_monitor_aws_batch$runnable()
```

Details: The output only includes jobs under the job queue and job definition that were supplied through `crew_monitor_aws_batch()`.

Returns: A tibble with one row per job and columns with job information.

Method `starting()`: List jobs whose status is "starting".

Usage:

```
crew_class_monitor_aws_batch$starting()
```

Details: The output only includes jobs under the job queue and job definition that were supplied through `crew_monitor_aws_batch()`.

Returns: A tibble with one row per job and columns with job information.

Method `running()`: List jobs whose status is "running".

Usage:

```
crew_class_monitor_aws_batch$running()
```

Details: The output only includes jobs under the job queue and job definition that were supplied through `crew_monitor_aws_batch()`.

Returns: A tibble with one row per job and columns with job information.

Method `succeeded()`: List jobs whose status is "succeeded".

Usage:

```
crew_class_monitor_aws_batch$succeeded()
```

Details: The output only includes jobs under the job queue and job definition that were supplied through `crew_monitor_aws_batch()`.

Returns: A tibble with one row per job and columns with job information.

Method `failed()`: List jobs whose status is "failed".

Usage:

```
crew_class_monitor_aws_batch$failed()
```

Details: The output only includes jobs under the job queue and job definition that were supplied through `crew_monitor_aws_batch()`.

Returns: A tibble with one row per job and columns with job information.

See Also

Other monitor: `crew_monitor_aws_batch()`

crew_controller_aws_batch

Create a controller with an AWS Batch launcher.

Description

Create an R6 object to submit tasks and launch workers on AWS Batch workers.

Usage

```
crew_controller_aws_batch(
  name = NULL,
  workers = 1L,
  host = NULL,
  port = NULL,
  tls = crew::crew_tls(mode = "automatic"),
  tls_enable = NULL,
  tls_config = NULL,
  seconds_interval = 0.5,
  seconds_timeout = 60,
  seconds_launch = 1800,
  seconds_idle = 300,
  seconds_wall = Inf,
```

```

retry_tasks = TRUE,
tasks_max = Inf,
tasks_timers = 0L,
reset_globals = TRUE,
reset_packages = FALSE,
reset_options = FALSE,
garbage_collection = FALSE,
crashes_error = 5L,
processes = NULL,
r_arguments = c("--no-save", "--no-restore"),
options_metrics = crew::crew_options_metrics(),
options_aws_batch = crew.aws.batch::crew_options_aws_batch(),
aws_batch_config = NULL,
aws_batch_credentials = NULL,
aws_batch_endpoint = NULL,
aws_batch_region = NULL,
aws_batch_job_definition = NULL,
aws_batch_job_queue = NULL,
aws_batch_share_identifier = NULL,
aws_batch_scheduling_priority_override = NULL,
aws_batch_parameters = NULL,
aws_batch_container_overrides = NULL,
aws_batch_node_overrides = NULL,
aws_batch_retry_strategy = NULL,
aws_batch_propagate_tags = NULL,
aws_batch_timeout = NULL,
aws_batch_tags = NULL,
aws_batch_eks_properties_override = NULL
)

```

Arguments

name	Name of the client object. If NULL, a name is automatically generated.
workers	Integer, maximum number of parallel workers to run.
host	IP address of the mirai client to send and receive tasks. If NULL, the host defaults to the local IP address.
port	TCP port to listen for the workers. If NULL, then an available ephemeral port is automatically chosen.
tls	A TLS configuration object from <code>crew_tls()</code> .
tls_enable	Deprecated on 2023-09-15 in version 0.4.1. Use argument <code>tls</code> instead.
tls_config	Deprecated on 2023-09-15 in version 0.4.1. Use argument <code>tls</code> instead.
seconds_interval	Number of seconds between polling intervals waiting for certain internal synchronous operations to complete, such as checking <code>mirai::status()</code>
seconds_timeout	Number of seconds until timing out while waiting for certain synchronous operations to complete, such as checking <code>mirai::status()</code> .

seconds_launch	Seconds of startup time to allow. A worker is unconditionally assumed to be alive from the moment of its launch until seconds_launch seconds later. After seconds_launch seconds, the worker is only considered alive if it is actively connected to its assign websocket.
seconds_idle	Maximum number of seconds that a worker can idle since the completion of the last task. If exceeded, the worker exits. But the timer does not launch until tasks_timers tasks have completed. See the idletime argument of mirai::daemon(). crew does not excel with perfectly transient workers because it does not micro-manage the assignment of tasks to workers, so please allow enough idle time for a new worker to be delegated a new task.
seconds_wall	Soft wall time in seconds. The timer does not launch until tasks_timers tasks have completed. See the walltime argument of mirai::daemon().
retry_tasks	TRUE to automatically retry a task in the event of an unexpected worker exit. FALSE to give up on the first exit and return a mirai error code (code number 19). TRUE (default) is recommended in most situations. Use FALSE for debugging purposes, e.g. to confirm that a task is causing a worker to run out of memory or crash in some other way.
tasks_max	Maximum number of tasks that a worker will do before exiting. See the maxtasks argument of mirai::daemon(). crew does not excel with perfectly transient workers because it does not micromanage the assignment of tasks to workers, it is recommended to set tasks_max to a value greater than 1.
tasks_timers	Number of tasks to do before activating the timers for seconds_idle and seconds_wall. See the timerstart argument of mirai::daemon().
reset_globals	TRUE to reset global environment variables between tasks, FALSE to leave them alone.
reset_packages	TRUE to unload any packages loaded during a task (runs between each task), FALSE to leave packages alone.
reset_options	TRUE to reset global options to their original state between each task, FALSE otherwise. It is recommended to only set reset_options = TRUE if reset_packages is also TRUE because packages sometimes rely on options they set at loading time.
garbage_collection	TRUE to run garbage collection between tasks, FALSE to skip.
crashes_error	Positive integer scalar. If a worker exits crashes_error times in a row without completing all its assigned tasks, then the launcher throws an informative error. The reason for crashes_error is to avoid an infinite loop where a task crashes a worker (through a segfault, maxing out memory, etc) but the worker always relauches. To monitor the resources of crew workers, please see https://wlandau.github.io/crew/articles/logging.html .
processes	NULL or positive integer of length 1, number of local processes to launch to allow worker launches to happen asynchronously. If NULL, then no local processes are launched. If 1 or greater, then the launcher starts the processes on start() and ends them on terminate(). Plugins that may use these processes should run asynchronous calls using launcher\$async\$eval() and expect a mirai task object as the return value.

<code>r_arguments</code>	Optional character vector of command line arguments to pass to Rscript (non-Windows) or Rscript.exe (Windows) when starting a worker. Example: <code>r_arguments = c("--vanilla", "--max-connections=32")</code> .
<code>options_metrics</code>	Either NULL to opt out of resource metric logging for workers, or an object from <code>crew_options_metrics()</code> to enable and configure resource metric logging for workers. For resource logging to run, the autometric R package version 0.1.0 or higher must be installed.
<code>options_aws_batch</code>	List of options from <code>crew_options_aws_batch()</code> . The job definition and job queue must be specified in <code>crew_options_aws_batch()</code> . <code>crew_options_aws_batch()</code> also allows you to request vCPUs, GPUs, and memory for the jobs.
<code>aws_batch_config</code>	Deprecated. Use <code>options_aws_batch</code> instead.
<code>aws_batch_credentials</code>	Deprecated. Use <code>options_aws_batch</code> instead.
<code>aws_batch_endpoint</code>	Deprecated. Use <code>options_aws_batch</code> instead.
<code>aws_batch_region</code>	Deprecated. Use <code>options_aws_batch</code> instead.
<code>aws_batch_job_definition</code>	Deprecated. Use <code>options_aws_batch</code> instead.
<code>aws_batch_job_queue</code>	Deprecated. Use <code>options_aws_batch</code> instead.
<code>aws_batch_share_identifier</code>	Deprecated. Use <code>options_aws_batch</code> instead.
<code>aws_batch_scheduling_priority_override</code>	Deprecated. Use <code>options_aws_batch</code> instead.
<code>aws_batch_parameters</code>	Deprecated. Use <code>options_aws_batch</code> instead.
<code>aws_batch_container_overrides</code>	Deprecated. Use <code>options_aws_batch</code> instead.
<code>aws_batch_node_overrides</code>	Deprecated. Use <code>options_aws_batch</code> instead.
<code>aws_batch_retry_strategy</code>	Deprecated. Use <code>options_aws_batch</code> instead.
<code>aws_batch_propagate_tags</code>	Deprecated. Use <code>options_aws_batch</code> instead.
<code>aws_batch_timeout</code>	Deprecated. Use <code>options_aws_batch</code> instead.
<code>aws_batch_tags</code>	Deprecated. Use <code>options_aws_batch</code> instead.
<code>aws_batch_eks_properties_override</code>	Deprecated. Use <code>options_aws_batch</code> instead.

IAM policies

In order for the AWS Batch crew plugin to function properly, your IAM policy needs permission to perform the `SubmitJob` and `TerminateJob` AWS Batch API calls. For more information on AWS policies and permissions, please visit https://docs.aws.amazon.com/IAM/latest/UserGuide/access_policies.html.

AWS arguments

The AWS Batch controller and launcher accept many arguments which start with "aws_batch_". These arguments are AWS-Batch-specific parameters forwarded directly to the `submit_job()` method for the Batch client in the `paws.compute` R package

For a full description of each argument, including its meaning and format, please visit https://www.paws-r-sdk.com/docs/batch_submit_job/. The upstream API documentation is at https://docs.aws.amazon.com/batch/latest/APIReference/API_SubmitJob.html and the analogous CLI documentation is at <https://docs.aws.amazon.com/cli/latest/reference/batch/submit-job.html>.

The actual argument names may vary slightly, depending on which: for example, the `aws_batch_job_definition` argument of the crew AWS Batch launcher/controller corresponds to the `jobDefinition` argument of the web API and `paws.compute::batch()$submit_job()`, and both correspond to the `--job-definition` argument of the CLI.

Verbosity

Control verbosity with the `paws.log_level` global option in R. Set to 0 for minimum verbosity and 3 for maximum verbosity.

See Also

Other plugin_aws_batch: [crew_class_launcher_aws_batch](#), [crew_launcher_aws_batch\(\)](#)

Examples

```
if (identical(Sys.getenv("CREW_EXAMPLES"), "true")) {
  controller <- crew_controller_aws_batch(
    aws_batch_job_definition = "YOUR_JOB_DEFINITION_NAME",
    aws_batch_job_queue = "YOUR_JOB_QUEUE_NAME"
  )
  controller$start()
  controller$push(name = "task", command = sqrt(4))
  controller$wait()
  controller$pop()$result
  controller$terminate()
}
```

```
crew_definition_aws_batch
```

Create an AWS Batch job definition object.

Description

Create an R6 object to manage a job definition for AWS Batch jobs.

Usage

```
crew_definition_aws_batch(
  job_queue,
  job_definition = paste0("crew-aws-batch-job-definition-", crew::crew_random_name()),
  log_group = "/aws/batch/job",
  config = NULL,
  credentials = NULL,
  endpoint = NULL,
  region = NULL
)
```

Arguments

<code>job_queue</code>	Character of length 1, name of the AWS Batch job queue.
<code>job_definition</code>	Character of length 1, name of the AWS Batch job definition. The job definition might or might not exist at the time <code>crew_definition_aws_batch()</code> is called. Either way is fine.
<code>log_group</code>	Character of length 1, AWS Batch CloudWatch log group to get job logs. The default log group is often <code>"/aws/batch/job"</code> , but not always. It is not easy to get the log group of an active job or job definition, so if you have a non-default log group and you do not know its name, please consult your system administrator.
<code>config</code>	Optional named list, <code>config</code> argument of <code>paws.compute::batch()</code> with optional configuration details.
<code>credentials</code>	Optional named list. <code>credentials</code> argument of <code>paws.compute::batch()</code> with optional credentials (if not already provided through environment variables such as <code>AWS_ACCESS_KEY_ID</code>).
<code>endpoint</code>	Optional character of length 1. <code>endpoint</code> argument of <code>paws.compute::batch()</code> with the endpoint to send HTTP requests.
<code>region</code>	Character of length 1. <code>region</code> argument of <code>paws.compute::batch()</code> with an AWS region string such as <code>"us-east-2"</code> . Serves as the region for both AWS Batch and CloudWatch. Tries to default to <code>paws.common::get_config()\$region</code> , then to <code>Sys.getenv("AWS_REGION")</code> if unsuccessful, then <code>Sys.getenv("AWS_REGION")</code> , then <code>Sys.getenv("AWS_DEFAULT_REGION")</code> .

Value

An R6 job definition object.

IAM policies

In order for the AWS Batch crew job definition class to function properly, your IAM policy needs permission to perform the RegisterJobDefinition, DeregisterJobDefinition, and DescribeJobDefinitions AWS Batch API calls. For more information on AWS policies and permissions, please visit https://docs.aws.amazon.com/IAM/latest/UserGuide/access_policies.html.

See Also

Other definition: [crew_class_definition_aws_batch](#)

crew_launcher_aws_batch

Create an AWS Batch launcher object.

Description

Create an R6 AWS Batch launcher object.

Usage

```
crew_launcher_aws_batch(
  name = NULL,
  seconds_interval = 0.5,
  seconds_timeout = 60,
  seconds_launch = 1800,
  seconds_idle = 300,
  seconds_wall = Inf,
  tasks_max = Inf,
  tasks_timers = 0L,
  reset_globals = TRUE,
  reset_packages = FALSE,
  reset_options = FALSE,
  garbage_collection = FALSE,
  crashes_error = 5L,
  tls = crew::crew_tls(mode = "automatic"),
  processes = NULL,
  r_arguments = c("--no-save", "--no-restore"),
  options_metrics = crew::crew_options_metrics(),
  options_aws_batch = crew.aws.batch::crew_options_aws_batch(),
  aws_batch_config = NULL,
  aws_batch_credentials = NULL,
  aws_batch_endpoint = NULL,
  aws_batch_region = NULL,
```

```

aws_batch_job_definition = NULL,
aws_batch_job_queue = NULL,
aws_batch_share_identifier = NULL,
aws_batch_scheduling_priority_override = NULL,
aws_batch_parameters = NULL,
aws_batch_container_overrides = NULL,
aws_batch_node_overrides = NULL,
aws_batch_retry_strategy = NULL,
aws_batch_propagate_tags = NULL,
aws_batch_timeout = NULL,
aws_batch_tags = NULL,
aws_batch_eks_properties_override = NULL
)

```

Arguments

name	Name of the launcher.
seconds_interval	Number of seconds between polling intervals waiting for certain internal synchronous operations to complete, such as checking <code>mirai::status()</code> .
seconds_timeout	Number of seconds until timing out while waiting for certain synchronous operations to complete, such as checking <code>mirai::status()</code> .
seconds_launch	Seconds of startup time to allow. A worker is unconditionally assumed to be alive from the moment of its launch until <code>seconds_launch</code> seconds later. After <code>seconds_launch</code> seconds, the worker is only considered alive if it is actively connected to its assign websocket.
seconds_idle	Maximum number of seconds that a worker can idle since the completion of the last task. If exceeded, the worker exits. But the timer does not launch until <code>tasks_timers</code> tasks have completed. See the <code>idletime</code> argument of <code>mirai::daemon()</code> . <code>crew</code> does not excel with perfectly transient workers because it does not micro-manage the assignment of tasks to workers, so please allow enough idle time for a new worker to be delegated a new task.
seconds_wall	Soft wall time in seconds. The timer does not launch until <code>tasks_timers</code> tasks have completed. See the <code>walltime</code> argument of <code>mirai::daemon()</code> .
tasks_max	Maximum number of tasks that a worker will do before exiting. See the <code>maxtasks</code> argument of <code>mirai::daemon()</code> . <code>crew</code> does not excel with perfectly transient workers because it does not micromanage the assignment of tasks to workers, it is recommended to set <code>tasks_max</code> to a value greater than 1.
tasks_timers	Number of tasks to do before activating the timers for <code>seconds_idle</code> and <code>seconds_wall</code> . See the <code>timerstart</code> argument of <code>mirai::daemon()</code> .
reset_globals	TRUE to reset global environment variables between tasks, FALSE to leave them alone.
reset_packages	TRUE to unload any packages loaded during a task (runs between each task), FALSE to leave packages alone.

reset_options	TRUE to reset global options to their original state between each task, FALSE otherwise. It is recommended to only set reset_options = TRUE if reset_packages is also TRUE because packages sometimes rely on options they set at loading time.
garbage_collection	TRUE to run garbage collection between tasks, FALSE to skip.
crashes_error	Positive integer scalar. If a worker exits crashes_error times in a row without completing all its assigned tasks, then the launcher throws an informative error. The reason for crashes_error is to avoid an infinite loop where a task crashes a worker (through a segfault, maxing out memory, etc) but the worker always relaunches. To monitor the resources of crew workers, please see https://wlandau.github.io/crew/articles/logging.html .
tls	A TLS configuration object from crew_tls().
processes	NULL or positive integer of length 1, number of local processes to launch to allow worker launches to happen asynchronously. If NULL, then no local processes are launched. If 1 or greater, then the launcher starts the processes on start() and ends them on terminate(). Plugins that may use these processes should run asynchronous calls using launcher\$async\$eval() and expect a mirai task object as the return value.
r_arguments	Optional character vector of command line arguments to pass to Rscript (non-Windows) or Rscript.exe (Windows) when starting a worker. Example: r_arguments = c("--vanilla", "--max-connections=32").
options_metrics	Either NULL to opt out of resource metric logging for workers, or an object from crew_options_metrics() to enable and configure resource metric logging for workers. For resource logging to run, the autometric R package version 0.1.0 or higher must be installed.
options_aws_batch	List of options from crew_options_aws_batch(). The job definition and job queue must be specified in crew_options_aws_batch(). crew_options_aws_batch() also allows you to request vCPUs, GPUs, and memory for the jobs.
aws_batch_config	Deprecated. Use options_aws_batch instead.
aws_batch_credentials	Deprecated. Use options_aws_batch instead.
aws_batch_endpoint	Deprecated. Use options_aws_batch instead.
aws_batch_region	Deprecated. Use options_aws_batch instead.
aws_batch_job_definition	Deprecated. Use options_aws_batch instead.
aws_batch_job_queue	Deprecated. Use options_aws_batch instead.
aws_batch_share_identifier	Deprecated. Use options_aws_batch instead.

aws_batch_scheduling_priority_override
 Deprecated. Use options_aws_batch instead.

aws_batch_parameters
 Deprecated. Use options_aws_batch instead.

aws_batch_container_overrides
 Deprecated. Use options_aws_batch instead.

aws_batch_node_overrides
 Deprecated. Use options_aws_batch instead.

aws_batch_retry_strategy
 Deprecated. Use options_aws_batch instead.

aws_batch_propagate_tags
 Deprecated. Use options_aws_batch instead.

aws_batch_timeout
 Deprecated. Use options_aws_batch instead.

aws_batch_tags
 Deprecated. Use options_aws_batch instead.

aws_batch_eks_properties_override
 Deprecated. Use options_aws_batch instead.

Value

An R6 AWS Batch launcher object.

IAM policies

In order for the AWS Batch crew plugin to function properly, your IAM policy needs permission to perform the SubmitJob and TerminateJob AWS Batch API calls. For more information on AWS policies and permissions, please visit https://docs.aws.amazon.com/IAM/latest/UserGuide/access_policies.html.

AWS arguments

The AWS Batch controller and launcher accept many arguments which start with "aws_batch_". These arguments are AWS-Batch-specific parameters forwarded directly to the submit_job() method for the Batch client in the paws.compute R package

For a full description of each argument, including its meaning and format, please visit https://www.paws-r-sdk.com/docs/batch_submit_job/. The upstream API documentation is at https://docs.aws.amazon.com/batch/latest/APIReference/API_SubmitJob.html and the analogous CLI documentation is at <https://docs.aws.amazon.com/cli/latest/reference/batch/submit-job.html>.

The actual argument names may vary slightly, depending on which : for example, the aws_batch_job_definition argument of the crew AWS Batch launcher/controller corresponds to the jobDefinition argument of the web API and paws.compute::batch()\$submit_job(), and both correspond to the --job-definition argument of the CLI.

Verbosity

Control verbosity with the paws.log_level global option in R. Set to 0 for minimum verbosity and 3 for maximum verbosity.

See Also

Other plugin_aws_batch: [crew_class_launcher_aws_batch](#), [crew_controller_aws_batch\(\)](#)

crew_monitor_aws_batch

Create an AWS Batch monitor object.

Description

Create an R6 object to list, inspect, and terminate AWS Batch jobs.

Usage

```
crew_monitor_aws_batch(
  job_queue,
  job_definition,
  log_group = "/aws/batch/job",
  config = NULL,
  credentials = NULL,
  endpoint = NULL,
  region = NULL
)
```

Arguments

job_queue	Character of length 1, name of the AWS Batch job queue.
job_definition	Character of length 1, name of the AWS Batch job definition.
log_group	Character of length 1, AWS Batch CloudWatch log group to get job logs. The default log group is often "/aws/batch/job", but not always. It is not easy to get the log group of an active job or job definition, so if you have a non-default log group and you do not know its name, please consult your system administrator.
config	Optional named list, config argument of paws.compute::batch() with optional configuration details.
credentials	Optional named list. credentials argument of paws.compute::batch() with optional credentials (if not already provided through environment variables such as AWS_ACCESS_KEY_ID).
endpoint	Optional character of length 1. endpoint argument of paws.compute::batch() with the endpoint to send HTTP requests.
region	Character of length 1. region argument of paws.compute::batch() with an AWS region string such as "us-east-2". Serves as the region for both AWS Batch and CloudWatch. Tries to default to paws.common::get_config()\$region, then to Sys.getenv("AWS_REGION") if unsuccessful, then Sys.getenv("AWS_REGION"), then Sys.getenv("AWS_DEFAULT_REGION").

IAM policies

In order for the AWS Batch crew monitor class to function properly, your IAM policy needs permission to perform the `SubmitJob`, `TerminateJob`, `ListJobs`, and `DescribeJobs` AWS Batch API calls. In addition, to download CloudWatch logs with the `log()` method, your IAM policy also needs permission to perform the `GetLogEvents` CloudWatch logs API call. For more information on AWS policies and permissions, please visit https://docs.aws.amazon.com/IAM/latest/UserGuide/access_policies.html.

See Also

Other monitor: [crew_class_monitor_aws_batch](#)

crew_options_aws_batch

AWS Batch options

Description

Options for the AWS Batch controller.

Usage

```
crew_options_aws_batch(  
    job_definition = "example",  
    job_queue = "example",  
    cpus = NULL,  
    gpus = NULL,  
    memory = NULL,  
    memory_units = "gigabytes",  
    config = list(),  
    credentials = list(),  
    endpoint = NULL,  
    region = NULL,  
    share_identifier = NULL,  
    scheduling_priority_override = NULL,  
    parameters = NULL,  
    container_overrides = NULL,  
    node_overrides = NULL,  
    retry_strategy = NULL,  
    propagate_tags = NULL,  
    timeout = NULL,  
    tags = NULL,  
    eks_properties_override = NULL,  
    verbose = FALSE  
)
```

Arguments

job_definition	Character of length 1, name of the AWS Batch job definition to use. There is no default for this argument, and a job definition must be created prior to running the controller. Please see https://docs.aws.amazon.com/batch/ for details. To create a job definition, you will need to create a Docker-compatible image which can run R and crew. You may wish to inherit from the images at https://github.com/rocker-org/rocker-versioned2 .
job_queue	Character of length 1, name of the AWS Batch job queue to use. There is no default for this argument, and a job queue must be created prior to running the controller. Please see https://docs.aws.amazon.com/batch/ for details.
cpus	Positive numeric vector, usually with a single element. Supply a vector to make cpus a retryable option (see the "Retryable options" section for details). cpus is the number of virtual CPUs to request per job. Can be NULL to go with the defaults in the job definition. Ignored if container_overrides is not NULL.
gpus	Positive numeric vector, usually a single element. Supply a vector to make gpus a retryable option (see the "Retryable options" section for details). gpus is the number of GPUs to request per job. Can be NULL to go with the defaults in the job definition. Ignored if container_overrides is not NULL.
memory	Positive numeric vector number, usually with a single element. Supply a vector to make memory a retryable option (see the "Retryable options" section for details). memory is the amount of random access memory (RAM) to request per job. Choose the units of memory with the memory_units argument. Fargate instances can only be certain discrete values of mebibytes, so please choose memory_units = "mebibytes" in that case. The memory argument can be NULL to go with the defaults in the job definition. Ignored if container_overrides is not NULL.
memory_units	Character string, units of memory of the memory argument. Can be "gigabytes" or "mebibytes". Fargate instances can only be certain discrete values of mebibytes, so please choose memory_units = "mebibytes" in that case.
config	Named list, config argument of paws.compute::batch() with optional configuration details.
credentials	Named list, credentials argument of paws.compute::batch() with optional credentials (if not already provided through environment variables such as AWS_ACCESS_KEY_ID).
endpoint	Character of length 1. endpoint argument of paws.compute::batch() with the endpoint to send HTTP requests.
region	Character of length 1. region argument of paws.compute::batch() with an AWS region string such as "us-east-2".
share_identifier	NULL or character of length 1. For details, visit https://www.paws-r-sdk.com/docs/batch_submit_job/ and the "AWS arguments" sections of this help file.
scheduling_priority_override	NULL or integer of length 1. For details, visit https://www.paws-r-sdk.com/docs/batch_submit_job/ and the "AWS arguments" sections of this help file.

parameters	NULL or a nonempty list. For details, visit https://www.paws-r-sdk.com/docs/batch_submit_job/ and the "AWS arguments" sections of this help file.
container_overrides	NULL or a nonempty named list of fields to override in the container specified in the job definition. Any overrides for the command field are ignored because crew.aws.batch needs to override the command to run the crew worker. For more details, visit https://www.paws-r-sdk.com/docs/batch_submit_job/ and the "AWS arguments" sections of this help file.
node_overrides	NULL or a nonempty named list. For more details, visit https://www.paws-r-sdk.com/docs/batch_submit_job/ and the "AWS arguments" sections of this help file.
retry_strategy	NULL or a nonempty named list. For more details, visit https://www.paws-r-sdk.com/docs/batch_submit_job/ and the "AWS arguments" sections of this help file.
propagate_tags	NULL or a logical of length 1. For more details, visit https://www.paws-r-sdk.com/docs/batch_submit_job/ and the "AWS arguments" sections of this help file.
timeout	NULL or a nonempty named list. For more details, visit https://www.paws-r-sdk.com/docs/batch_submit_job/ and the "AWS arguments" sections of this help file.
tags	NULL or a nonempty named list. For more details, visit https://www.paws-r-sdk.com/docs/batch_submit_job/ and the "AWS arguments" sections of this help file.
eks_properties_override	NULL or a nonempty named list. For more details, visit https://www.paws-r-sdk.com/docs/batch_submit_job/ and the "AWS arguments" sections of this help file.
verbose	TRUE to print informative console messages, FALSE otherwise.

Value

A classed list of options for the controller.

Retryable options

Arguments cpus, gpus, and memory are retryable options. Each of these arguments be a vector where each successive element is used during a retry if the worker previously exited without completing all its assigned tasks. The last element of the vector is used if there are more retries than the length of the vector. Control the number of allowable retries with `crashes_error` argument of the controller.

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