

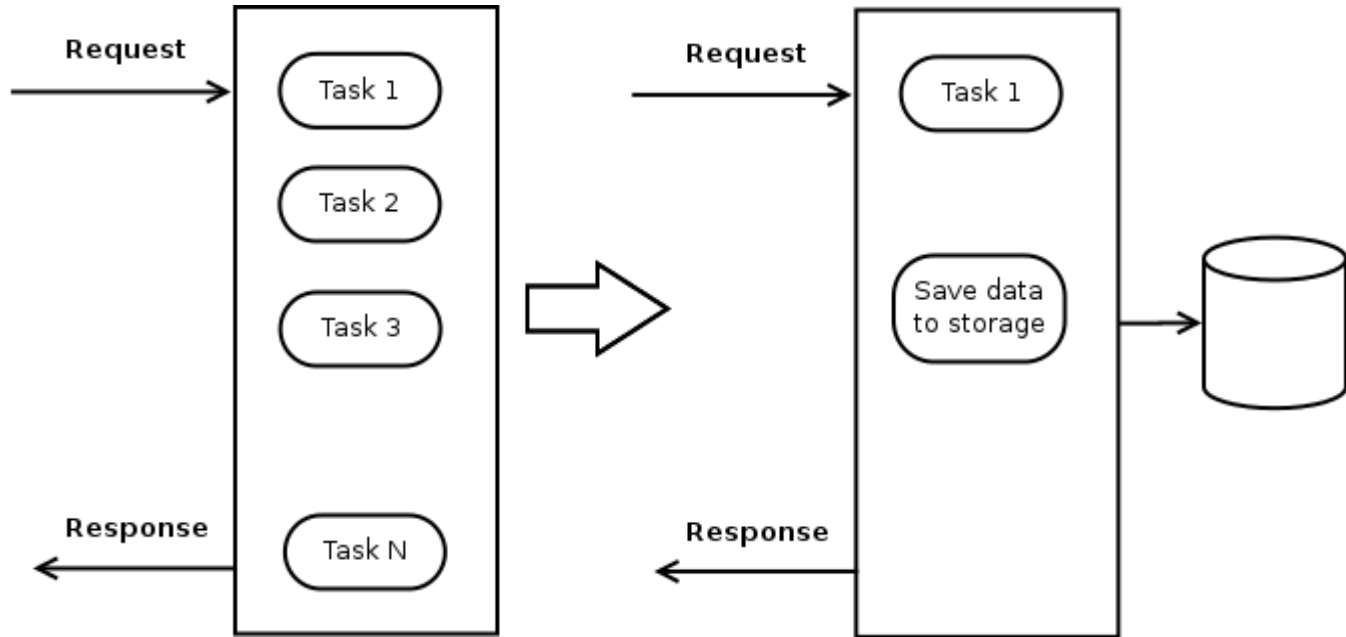
Lazy evaluation and asynchronous data processing in Drupal

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Problem / Motivation

- Performance
- Reliability
- Scalability

Process data later!



Storage - queue

- System Queue.
- Queue services (RabbitMQ, AWS SQS, Beanstalkd, OpenStack Marconi).
- Custom implementation.

Using different queues

Override default class

```
$conf['queue_default_class'] = 'RabbitMQQueue';
```

Use specific queue

```
$conf['queue_class_{queue_name}'] = 'AwsSqsQueue';
```

Add item to queue

```
function example_add_item_queue($data) {  
  $queue = DrupalQueue::get('example_queue');  
  $queue->createQueue();  
  $queue->createItem($data);  
}
```

Define handler

- `hook_cron_queue_info` (core).
- `hook_cron` (core).
- `hook_cronapi` (ultimate_cron, elysia_cron).

Processes management

Ultimate cron, Elysia cron:

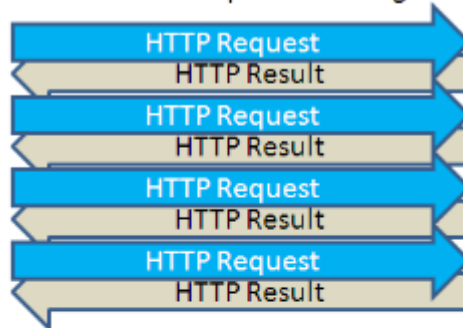
- job schedule;
- parallel execution of cron jobs;
- overview of cron jobs;
- log history of cron jobs;
- configuration per job

Queue handler

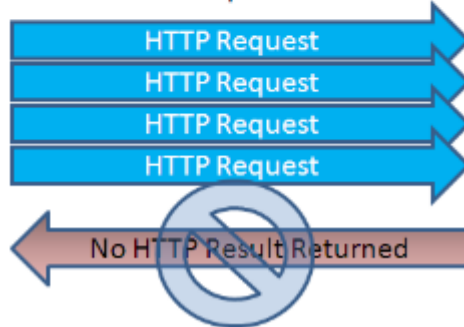
```
function example_queue_handler() {
  if (!lock_acquire('example_lock')) {
    watchdog('example', 'Queue process is already running.', array(), WATCHDOG_WARNING);
    return;
  }
  $queue = DrupalQueue::get('example_queue');
  $queue->createQueue();
  $item = $queue->claimItem();
  try {
    example_process_data($item->data);
    $queue->deleteItem($item);
    watchdog('example', 'Data have been processed');
  }
  catch (Exception $e) {
    watchdog_exception('example', $e);
  }
  lock_release('example_lock');
}
```

Parallel data processing - HTTPRL

Parallel HTTP Request - Blocking



Parallel HTTP Request - Non Blocking



HTTPRL example

```
function example_parallel_node_load_multiple($nids) {
    $nodes = array_fill_keys($nids, "");
    foreach ($nodes as $nid => &$node) {
        // Setup callback options.
        $callback_options = array(
            array(
                'function' => 'node_load',
                'return' => &$node, // Blocking mode is enabled.
                // Setup options array.
                'options' => array(
                    'domain_connections' => 2, // Use 2 threads for this request.
                ),
            ),
            $nid,
        );
        // Queue up the request.
        httpri_queue_background_callback($callback_options);
    }
    httpri_send_request(); // Execute request.
    return $nodes;
}
```

Links

RabbitMQ - <https://www.drupal.org/project/rabbitmq>

AWS SQS - https://www.drupal.org/project/aws_sqs

Beanstalkd - <https://www.drupal.org/project/beanstalkd>

Ultimate cron - https://www.drupal.org/project/ultimate_cron

Elysia cron - https://www.drupal.org/project/elysia_cron

HTTPRL - <https://www.drupal.org/project/httpri>

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