Azure Batches
Or:
The Good
The Batch
And The Ugly

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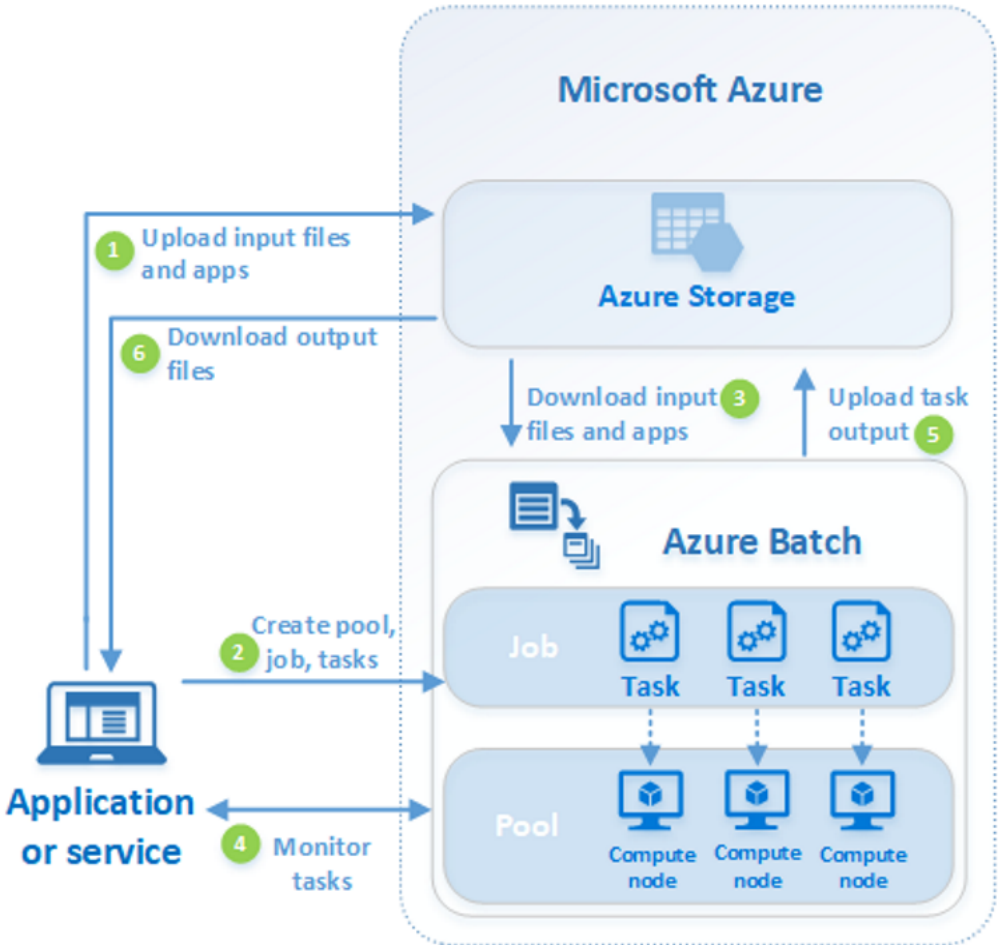
April 29, 2019

What is Batch?



[1]

[1] https://docs.microsoft.com/en-us/azure/batch/batch-technical-overview

When Should You Use Batch?

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- Trivially parallel tasks
  - Parameter sweeps
  - Same operation on many inputs
- When the time to spin-up a pool is not limiting

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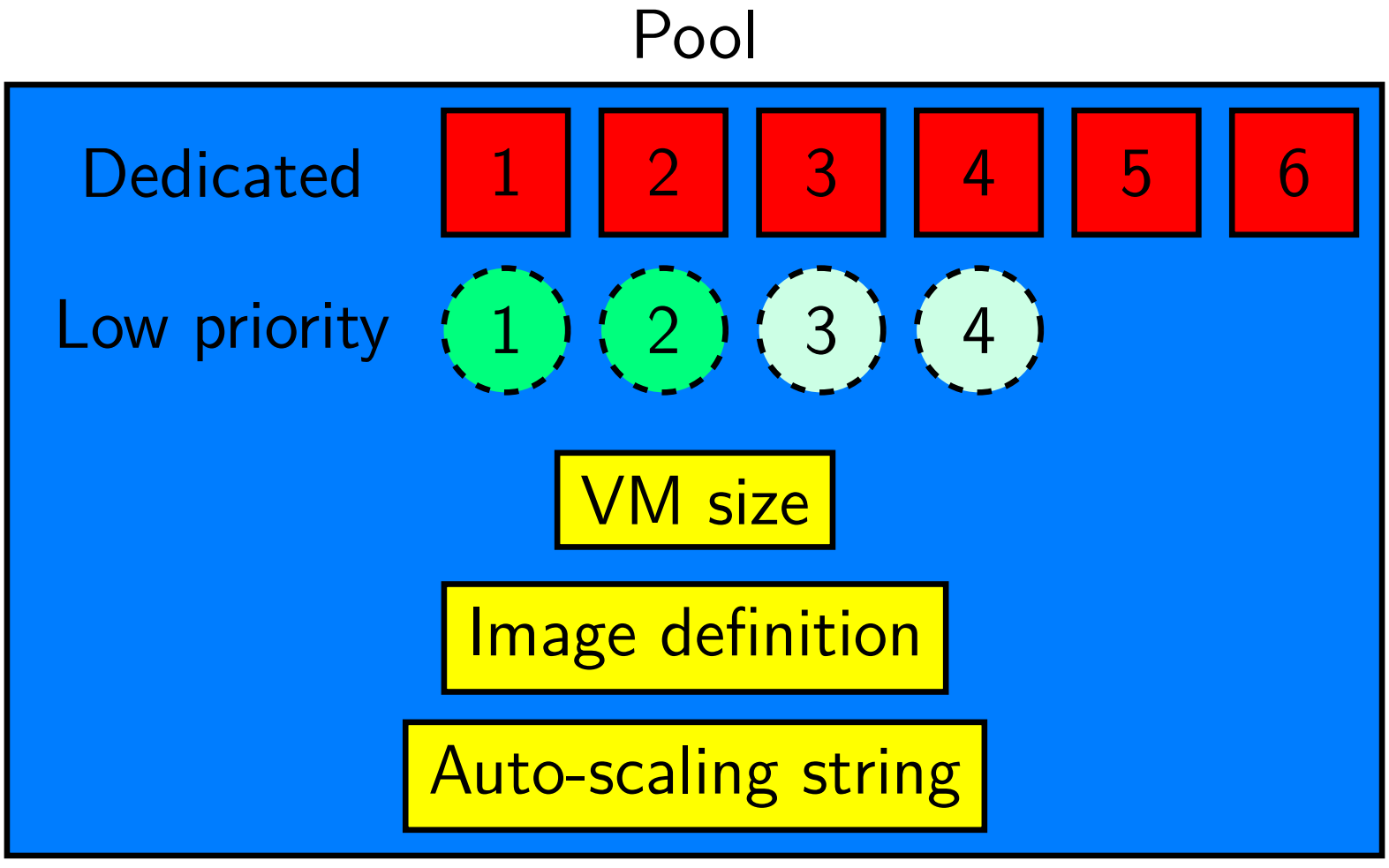
When Should You Not Use Batch?

- When you should be using HPC
- Fast or small number of tasks (when the spin-up time is limiting)

Anatomy of a Pool



Low Priority Nodes

H-series

The H-series is a new family specifically designed to handle high performance computing workloads such as financial risk
modeling, and genomic research. They are based on the Intel Xeon E5-2667 v3 Haswell 3.2 GHz (3.6 GHz with turbo) with
Two of the H-series configurations (H16r, H16mr) also carry a second low latency, high-throughput network interface (RD
computing workloads such as MPI applications.

ADD TO ESTIMATE	INSTANCE	CORE	RAM	TEMPORARY STORAGE	PAY AS YOU GO (LOW PRIORITY)	PAY AS YOU GO (NORMAL PRIORITY)	ONE Y (% SA
⊕	H8	8	56 GiB	1,000 GiB	$0.19/hour	$0.951/hour	$0.69
⊕	H8m	8	112 GiB	1,000 GiB	$0.255/hour	$1.274/hour	$0.92
⊕	H16r	16	112 GiB	2,000 GiB	$0.418/hour	$2.092/hour	$1.51
⊕	H16	16	112 GiB	2,000 GiB	$0.38/hour	$1.902/hour	$1.38
⊕	H16mr	16	224 GiB	2,000 GiB	$0.561/hour	$2.803/hour	$2.03
⊕	H16m	16	224 GiB	2,000 GiB	$0.51/hour	$2.549/hour	$1.84

PAY AS YOU GO (LOW PRIORITY)	PAY AS YOU GO (NORMAL PRIORITY)
$0.19/hour	$0.951/hour
$0.255/hour	$1.274/hour
$0.418/hour	$2.092/hour
$0.38/hour	$1.902/hour
$0.561/hour	$2.803/hour
$0.51/hour	$2.549/hour

Low Priority Nodes

NCv3 series

NCv3 series virtual machines is a new addition to the GPU product family offering the next generation of our popular NC
Customers can take advantage of these updated GPUs for traditional HPC workloads that will benefit from a performanc
sequencing, protein analysis, Monte Carlo simulations, and others. These new GPUs can provide 1.5 times the computati
other NC series, we offer a configuration, NC24r v3, with InfiniBand networking for workloads that require fast interconn
accelerate scale out capability as well as improved single instance performance.

ADD TO ESTIMATE	INSTANCE	CORE	RAM	TEMPORARY STORAGE	GPU	PAY AS YOU GO (LOW PRIORITY)	PAY AS YOU GO (NORMAL PRIORITY)	C
⊕	NC6 v3	6	112 GiB	736 GiB	1X V100	$0.765/hour	$3.825/hour	$
⊕	NC12 v3	12	224 GiB	1,474 GiB	2X V100	$1.53/hour	$7.65/hour	$
⊕	NC24r v3	24	448 GiB	2,948 GiB	4X V100	$3.366/hour	$16.83/hour	$
⊕	NC24 v3	24	448 GiB	2,948 GiB	4X V100	$3.06/hour	$15.30/hour	$

PAY AS YOU GO (LOW PRIORITY)	PAY AS YOU GO (NORMAL PRIORITY)
$0.765/hour	$3.825/hour
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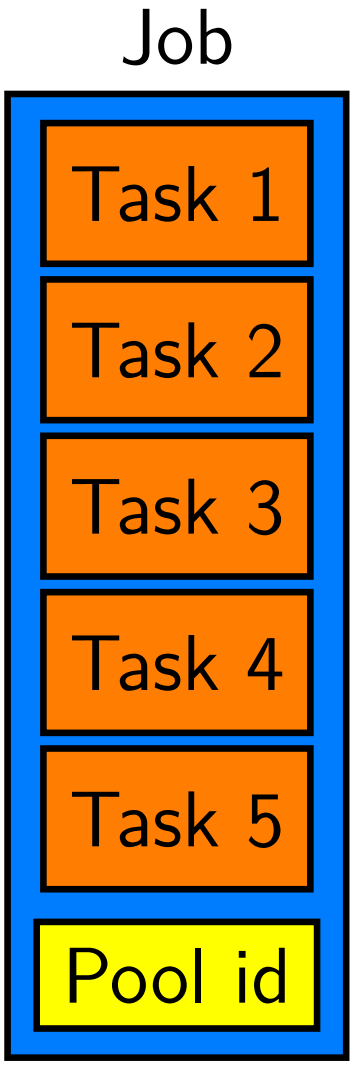
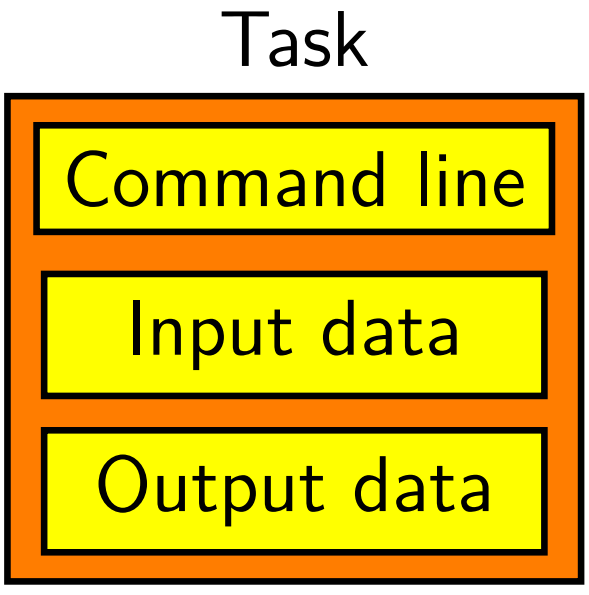
Jobs


Job
Task 1
Task 2
Task 3
Task 4
Task 5
Pool id


Task
Command line
Input data
Output data

Examples

- You will need,
  - An Azure storage account `https://portal.azure.com/#create/Microsoft.StorageAccount`
  - An Azure batch account `https://portal.azure.com/#create/Microsoft.BatchAccount`
- Clone the repo at `https://github.com/JimMadge/Azure-batch-examples.git`

Reflections

- Azure is confusing, many components, non-descriptive names, hard-to-navigate documentation
- There is no high-level API for intuitive, economic scripts
- There is no function to create the upload url!?!
- Debugging is painful, slow and relies on trial and error
- Someone should make a high-level interface `https://azure.github.io/batch-shipyard/`