

# Executing a Job from the Azure Portal

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# Module Overview



## **Understanding Azure Batch concepts:**

- Compute pool and nodes
- Jobs and tasks

## **Executing the app via the portal**



# Compute Pools and Nodes

## Pool

A group of nodes

## Node

A Virtual Machine (VM)



# Compute Pools and Nodes

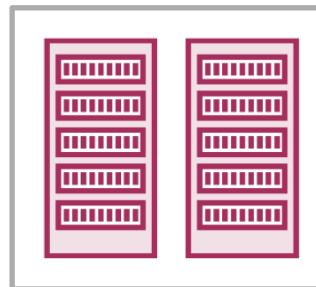
Pool 1



Pool 2



Pool N



# Compute Pool Features

**Same operating  
system image**  
(standard / custom)

**Same virtual  
machine (VM) size**

**Pool size fixed or  
auto-scale**

**Dedicated and/or  
low-priority VMs**

**VMs allocated to  
virtual network**



# Choosing a Virtual Machine Image

## Pre-configured

Out-of-the-box

No need to apply patches/updates

Custom drivers/software via pool  
config

## Custom

Needs to be created

Requires patching/updates

Simpler pool config

Operating System can be configured –  
e.g. security hardening

Copy large data once



# Choosing a Virtual Machine Size



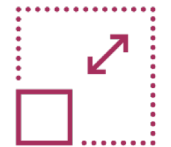
Almost all are supported, but most GPU VMs require a quota increase



Application requirements



Tasks per node



Differing task loads

# Pool Size



Fixed size provides immediate response



Auto-scaling dynamically adds and removes nodes as required



Auto-scaling can save time and money



Auto-scaling is highly configurable via an auto-scale formula



# Low-priority VMs

## Cost

Much lower as it is  
surplus Azure capacity

## Availability

May not be allocated or  
may be preempted

## Usage

Time is flexible  
Job is highly distributed



# Jobs and Tasks

## Job

An HPC workload of one or more tasks

## Task

A single operation executed in parallel with other tasks



A task is a command-line statement that is executed



# Jobs and Tasks

## Pool

A group of nodes

**Executes a job**

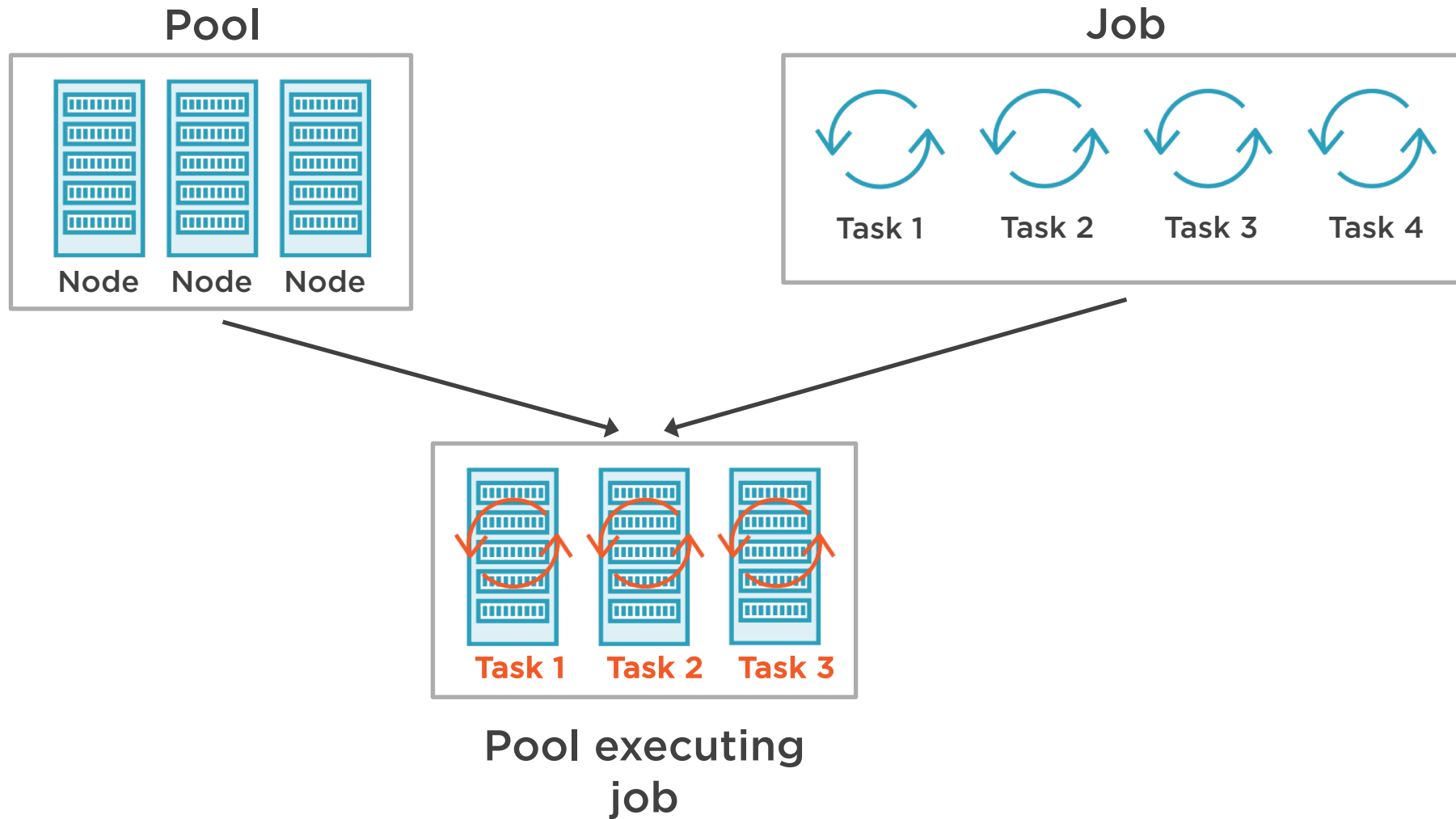
## Node

A Virtual Machine (VM)

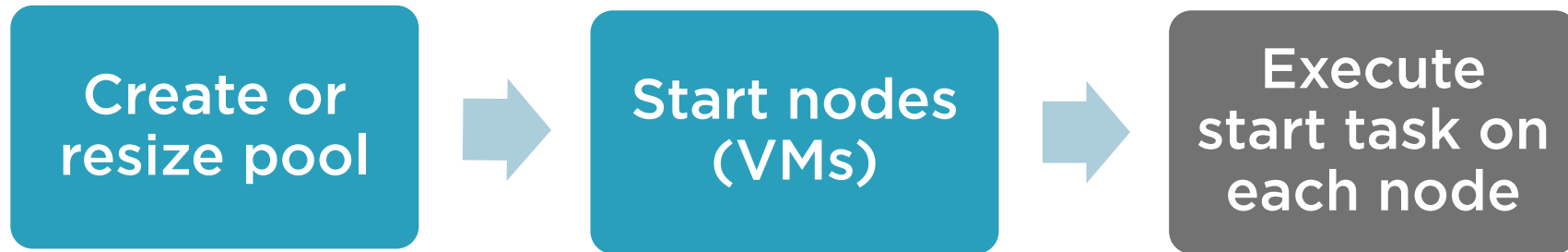
**Executes one or more tasks**



# Execution of Jobs and Tasks



# Start Task



The start task sets up the node for its lifetime  
e.g. installing drivers or custom applications



# Job Preparation and Release Tasks



The preparation/release task sets/cleans up the node for one job execution

e.g. downloading/deleting common data used by multiple tasks



# Task Features

Resource files

Environment  
variables

(Elevated) user  
identity

Maximum retries

Maximum wall  
clock time

Task  
dependencies





# Application Installation Options

## Resource Files

Upload into storage  
Unzip in start task

## Application Package

Upload via Batch  
Supports versioning

## Docker Container

Includes dependencies  
Upload into container registry





**GLOBOMANTICS**

Opened an investment banking arm

Have a portfolio of options

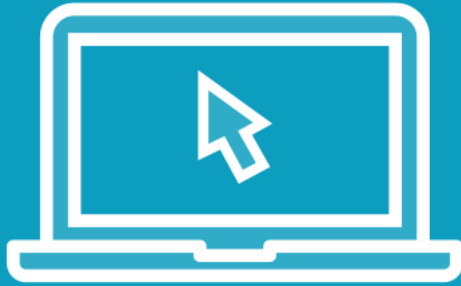
Pricing using Monte Carlo simulations

Need to accelerate via parallel batch processing

Azure Batch to the rescue!



# Demo



Introducing the Option Pricer application

Uploading the application

Uploading the input data

Creating a pool

Creating a job and task

Executing the job

Retrieving the results



# Summary



Compute pool consists of nodes

Job consists of tasks

Nodes execute tasks in parallel

Everything can be configured through the Azure portal



# Files and Directories

