

Priority Based Batch Scheduling (PBS)

Dynamics 365 FastTrack Architecture Insights

Ajay Kumar Singh, Sr. R&D Solutions Architect
Harsh Birla, Sr. R&D Solutions Architect



Agenda

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- Background
 - Limitation of current batch runtime
 - Overview
 - What is Priority Based Batch Scheduling
 - How does it work?
 - Why PBS
 - Demo
 - Call to action



Background

Limitation of current batch runtime

- High contention around batch table (improved slightly by [batch contention reduction feature](#))
- No way to prioritize batch jobs
- Batch servers are not evenly utilized, it was more 'admin' driven setup to organize batch groups and assign batch servers.
- No way to reserve capacity exclusively for certain business critical batch jobs
- Runtime is tightly-coupled with underlying infrastructure, as a result
 - *nZDT servicing*: can't do
 - *Elastic compute*: Can't add/remove compute nodes on-demand

Overview

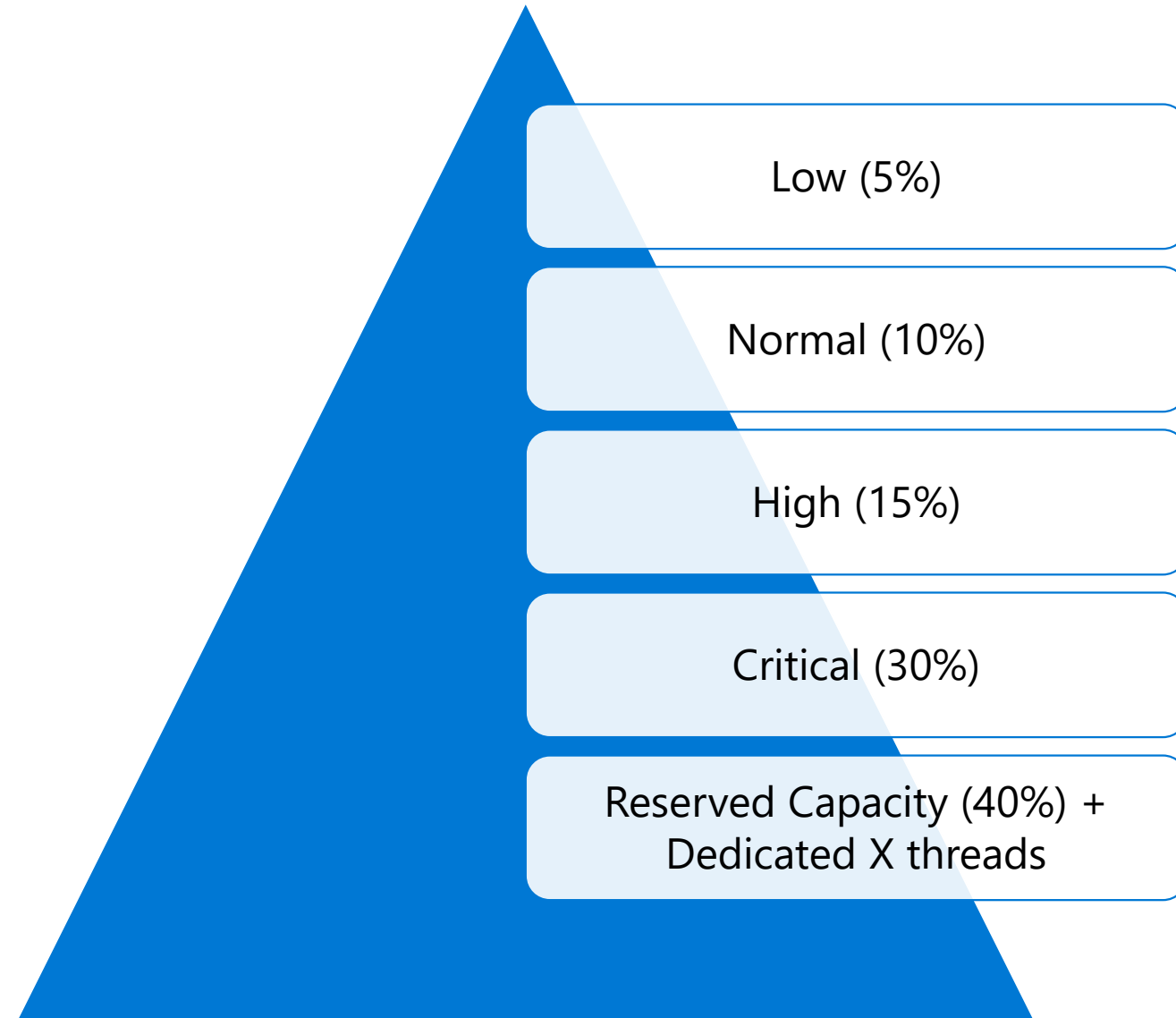


What is Priority Based Scheduling

- No need to assign batch servers to batch groups anymore.
- Priority Based Scheduling allows to define priorities for batch groups
- Additional ability to override the priority for specific batch jobs on top of batch groups
- Provides an ability to align business processes with their priorities, more business-driven decision making
- The available values for the scheduling priority are **Low**, **Normal**, **High**, **Critical**, and **Reserved**.
- The polling logic takes into consideration the priorities and identifies the next task to be run on one of the available batch servers. This allows to eliminate the tight coupling between the batch group and physical infrastructure giving the below key benefits
 - A non-available server results in less tasks being picked but the job will not be entirely blocked.
 - This makes it possible to have nZDT servicing.

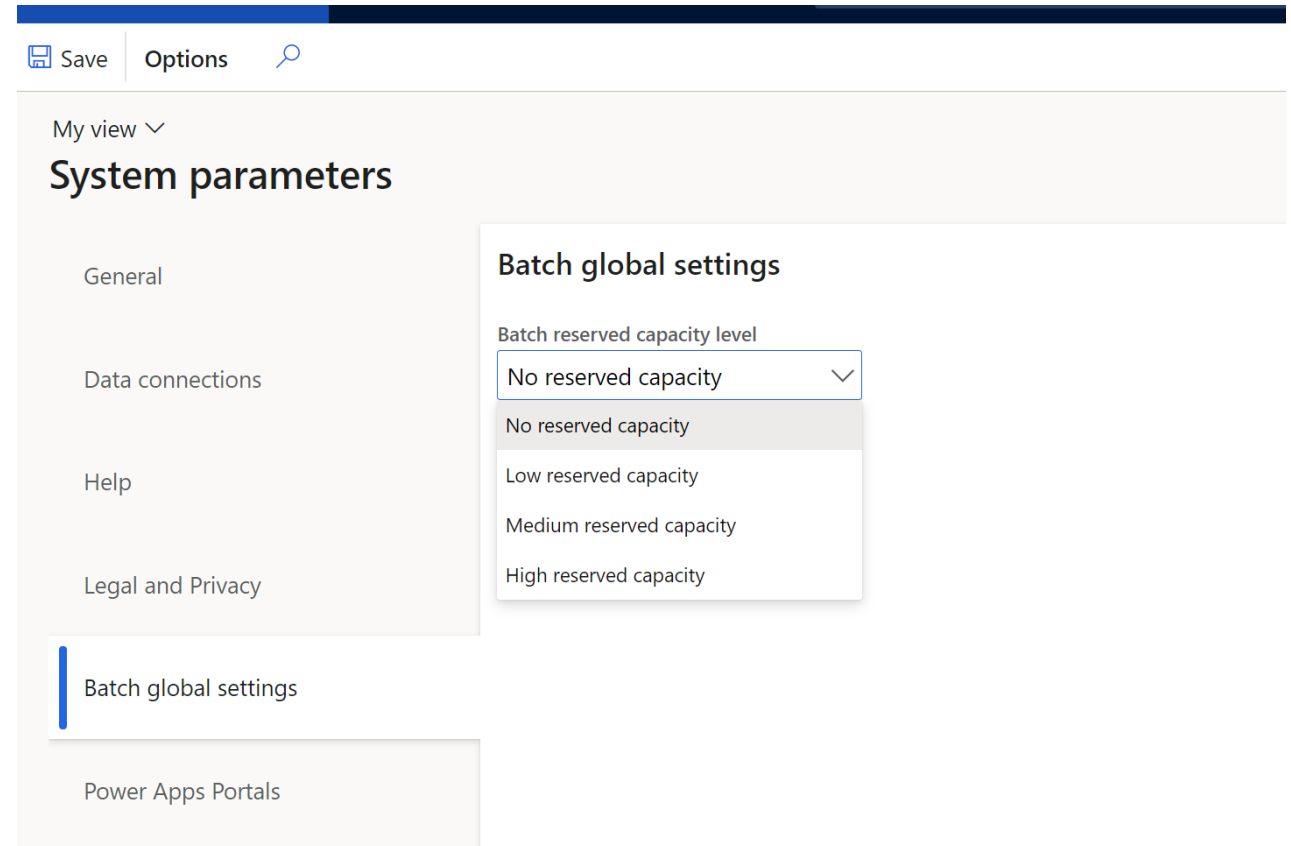
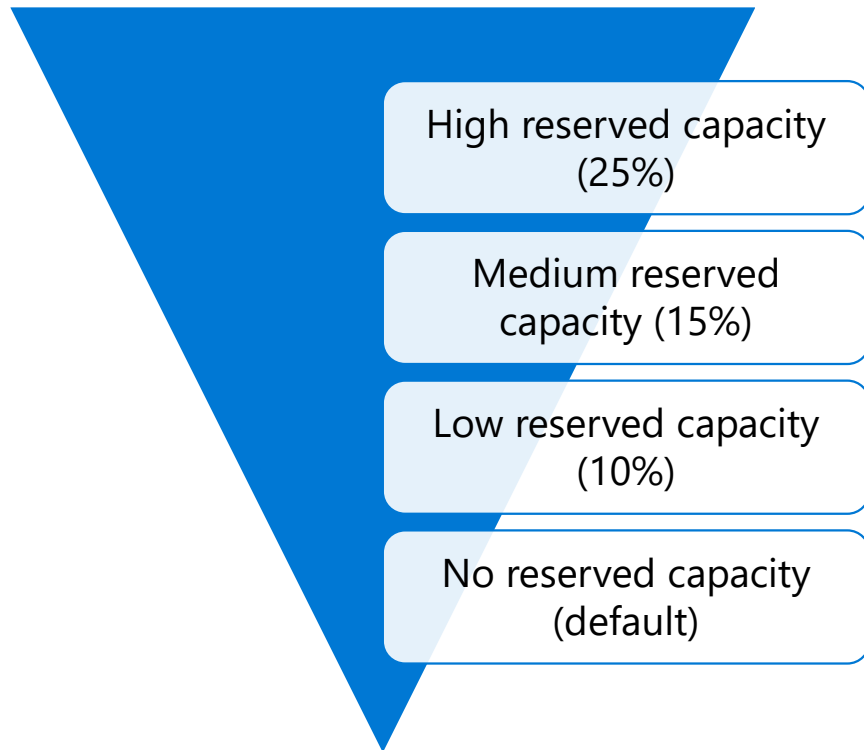
How does it work?

- Available batch servers in your environment
- # of threads
- Weight of each priority



Batch reserved capacity level

- You can setup reserved capacity level to use batch jobs that have Reserved capacity priority



Pre-requisites for PBS

- Batch contention reduction feature
- Batch load balancing flight must be enabled
- BatchJobEnhanced form is used by default (no more "*Switch to Legacy*" button)
- All existing batch groups are assigned 'Normal' priority when you turn-n this feature



Why PBS

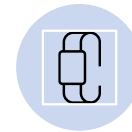
Advantages



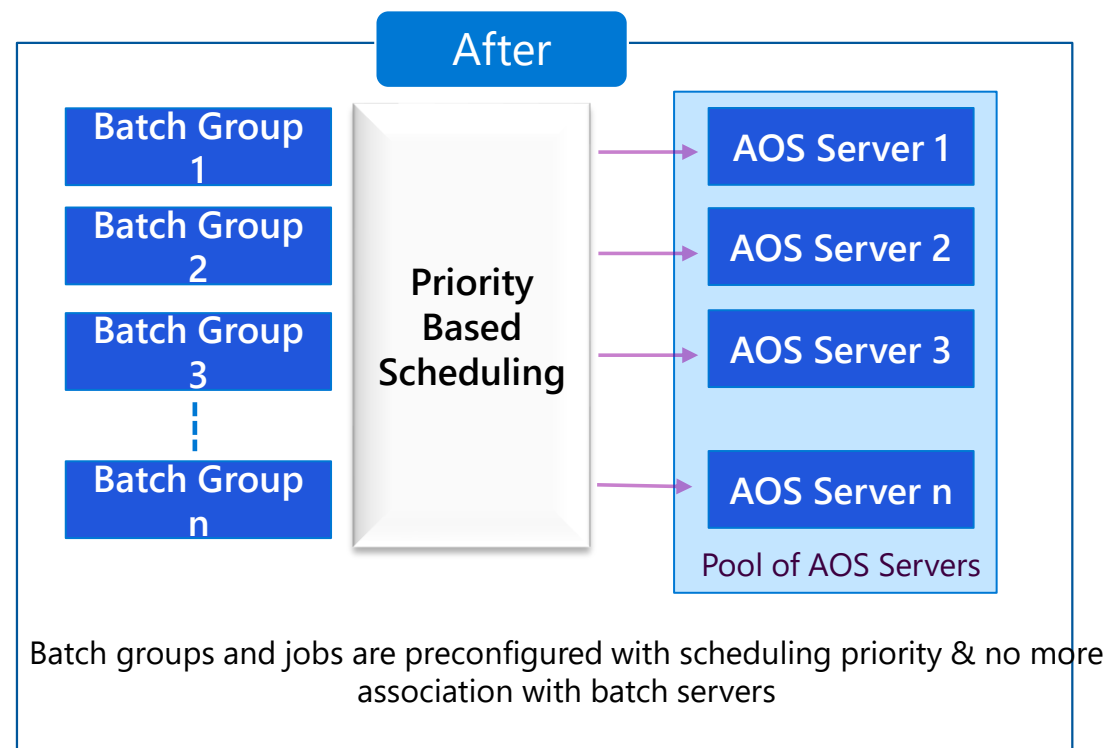
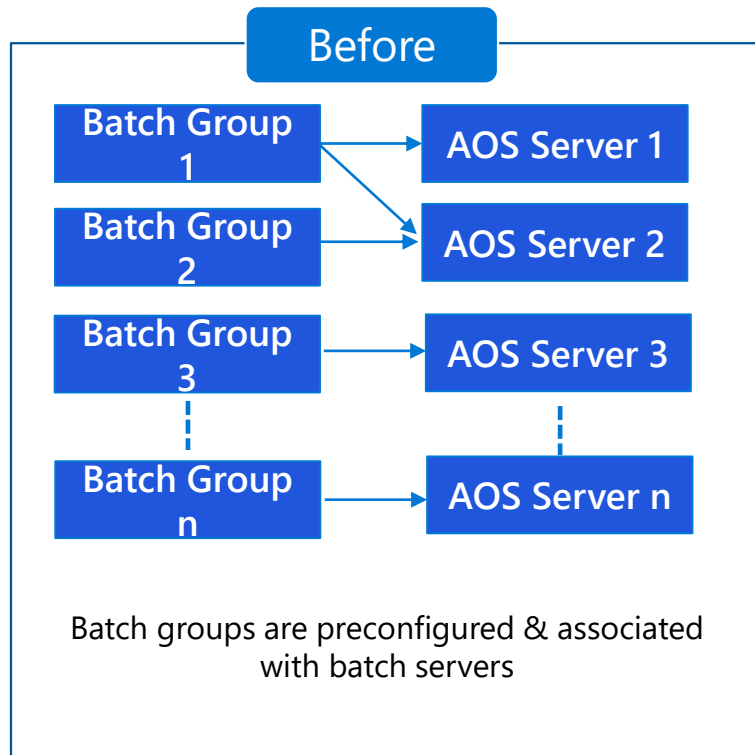
Priorities introduced up to batch job level



Prerequisite for nZDT servicing



Removes stickiness of a batch job to a particular server



Demo

Best practices

- Do not assign high or critical priority to all jobs.
- Reserved queue when used with Reserved Capacity will give the experience as having dedicated resources for a batch job.
- If Reserved Capacity (in batch global settings) is set to anything but None, certain number of threads are reserved to only run tasks from Reserved queue. Set this to None if there are no batch groups or tasks assigned to Reserved Queue to avoid reducing the overall available capacity.
- Priorities are not used to stack rank tasks against each other, instead they determine the probability with which a task will be picked for execution.

Call to action

PBS is going to be GAed with 10.0.25
[Platform updates for version 10.0.25 of Finance and Operations apps \(April 2022\) - Finance & Operations | Dynamics 365 | Microsoft Docs](#)

Identify

- Identify the priorities of the currently running batch jobs.

Turn on

- Turn on the required flags including Priority Based Scheduling (this will change all jobs in priority-based model with default status as Normal priority)

Update

- Selectively update the priorities for jobs which are not Normal Priority (Reserved, Critical, High, Low).

Apply

- Apply Reserved Capacity, if there is a need to dedicate capacity for some jobs beyond the priority.

Thank you