Microsoft Dynamics 365

Priority Based Batch Scheduling (PBS)

Dynamics 365 FastTrack Architecture Insights

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Agenda

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

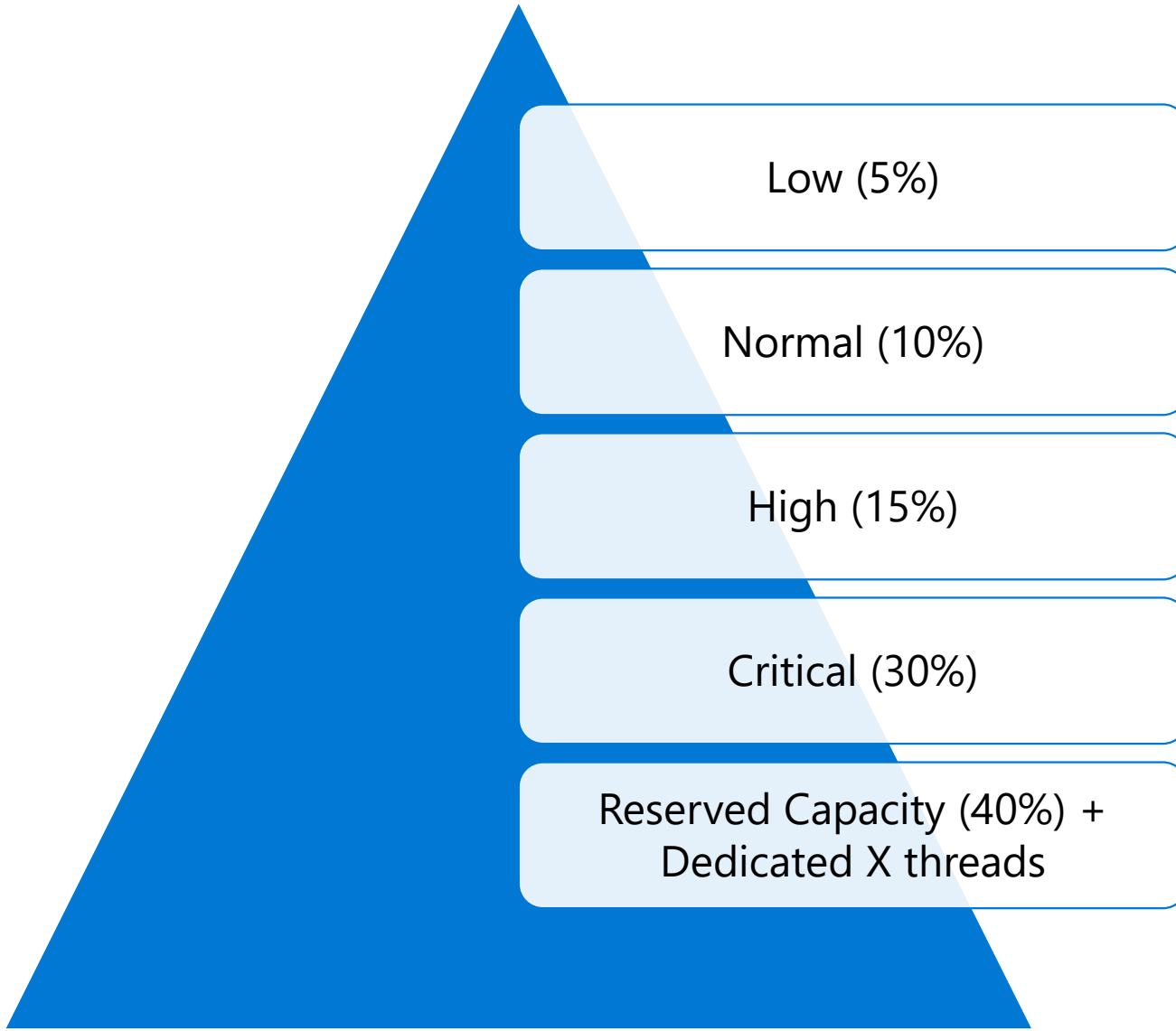
Overview

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 and Elastic addition of resources.

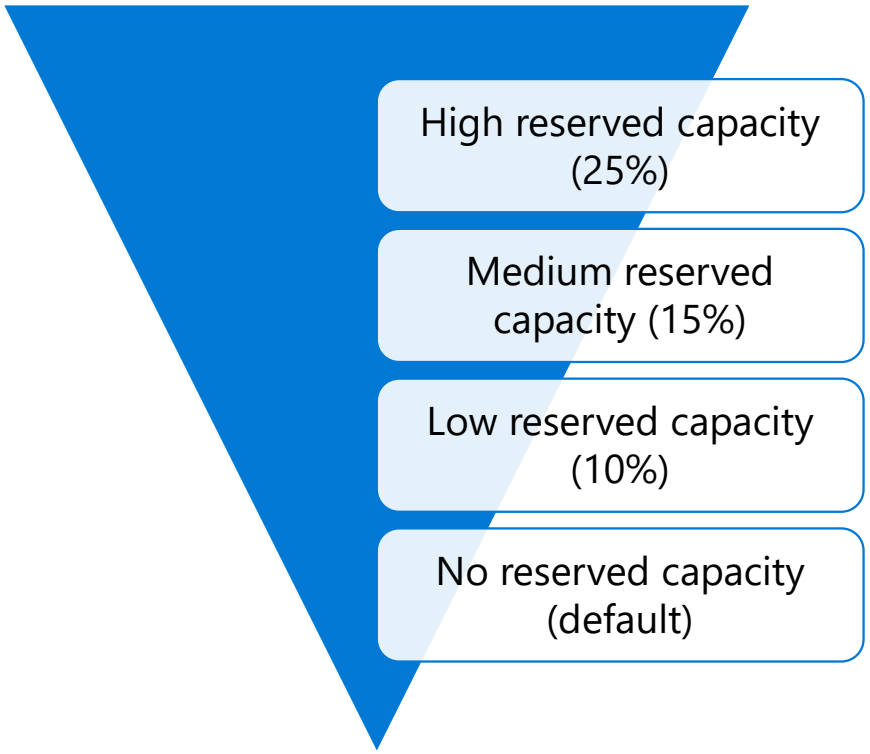
How does it work?

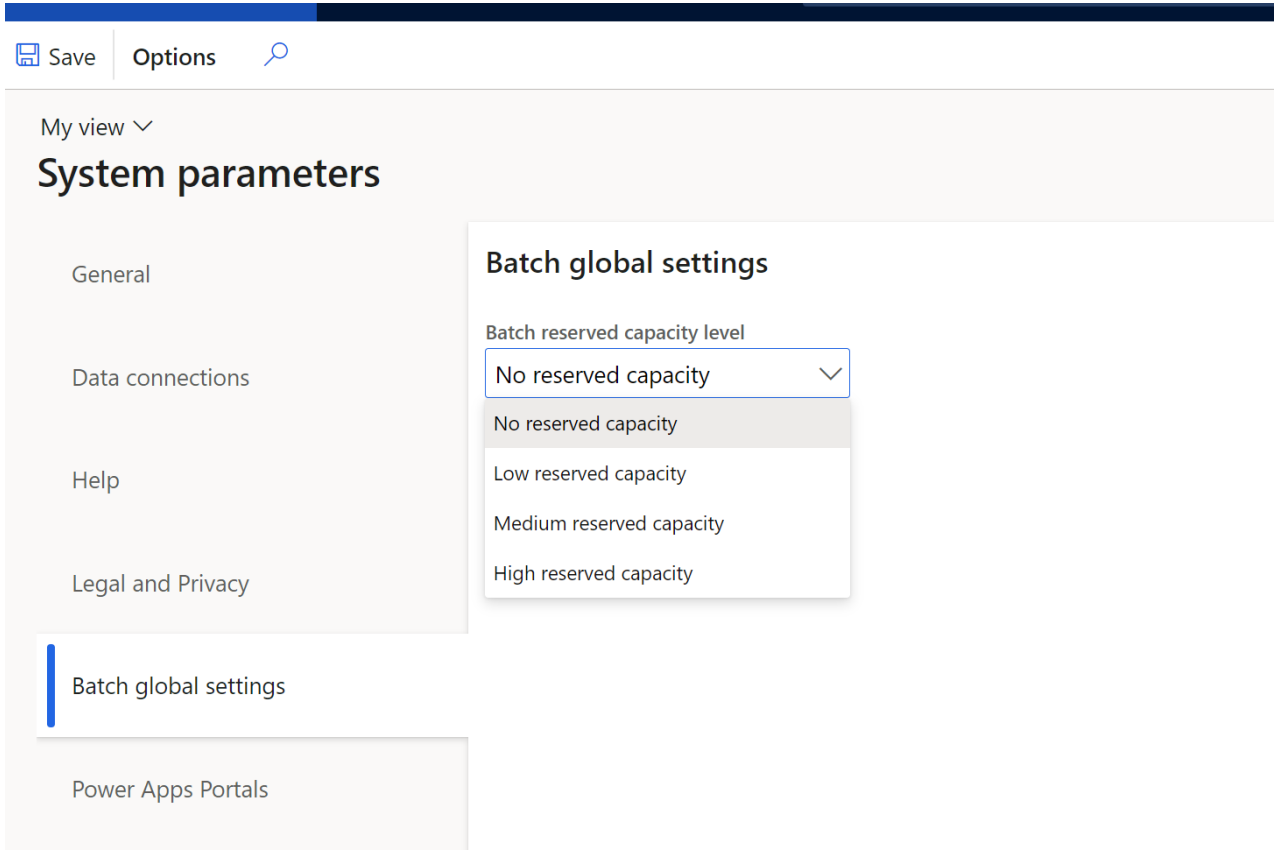
- Available batch servers in your environment
- # of threads
- Weight of each priority



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 this feature on

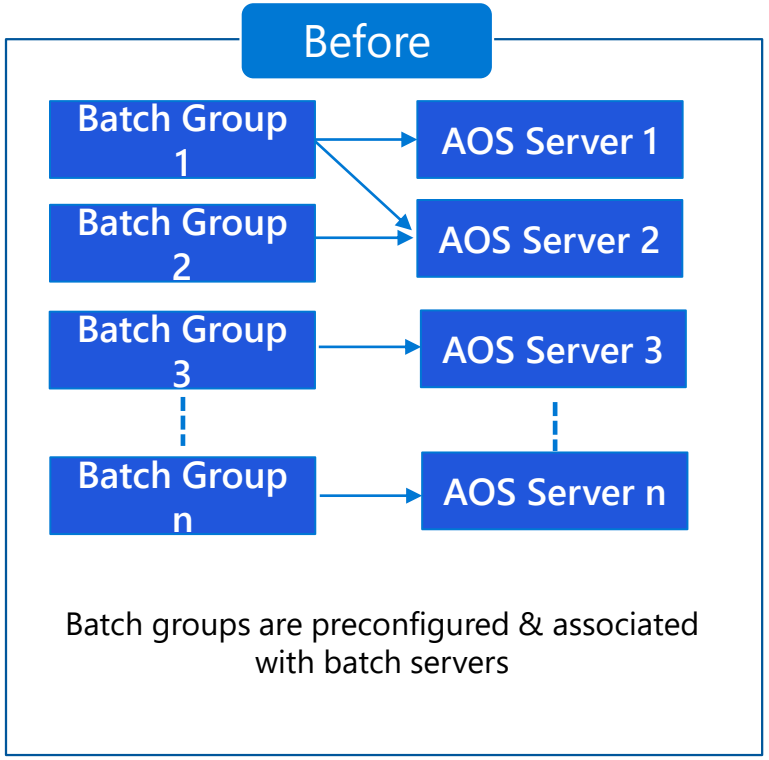
Why PBS

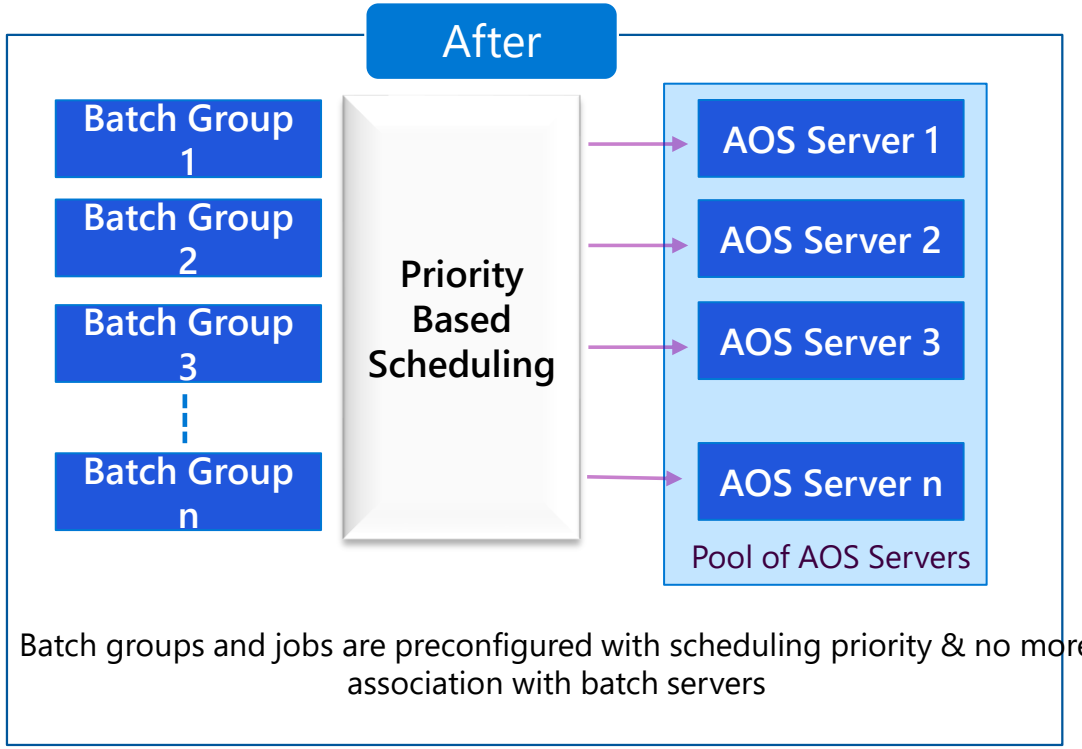
Advantages

Priorities introduced up to batch job level

Prerequisite for nZDT servicing

Removes stickiness of a batch job to a particular server



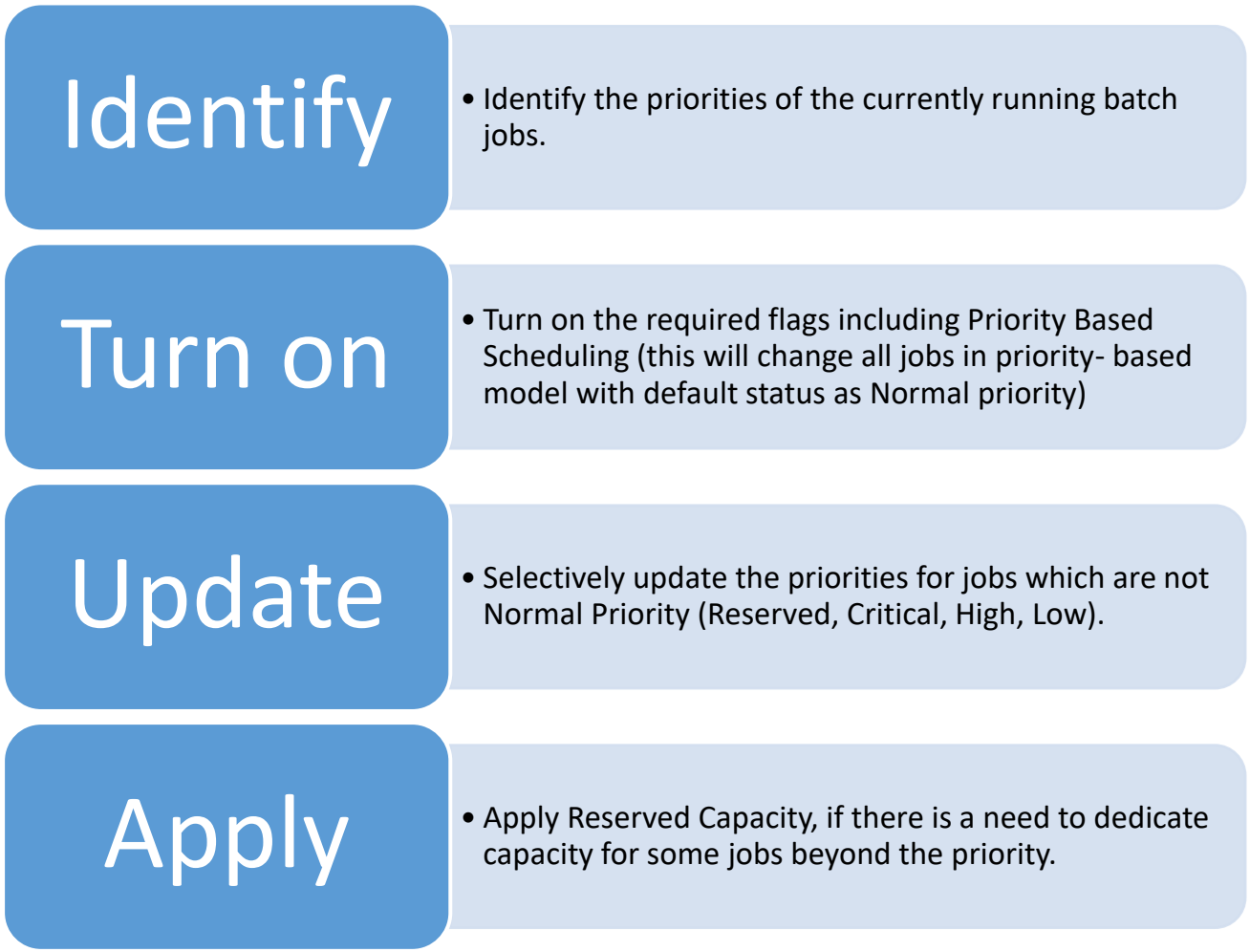


Best practices

- Configure more than one batch group to take advantage of priority-based batch scheduling and use different priorities at a batch-group level.
- Do not assign high or critical priority to all jobs and ensure that there is always a mix of jobs with different priorities around the clock
- 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

- This feature is available with version 10.0.25.
- This feature is enabled by default for all new instances with version 10.0.28.
- This feature will be enabled by default for all existing instances with version 10.0.29, Currently around than 53% of the production environments are PBS enabled and around 62% for Sandboxes
- when the feature is turned on the schedule priority will be set to Normal for all existing batch groups, it's important that you plan and update the scheduling priority for each batch group



Resources

- Priority-based batch scheduling - Finance & Operations | Dynamics 365 | Microsoft Learn
- Active batch periods - Finance & Operations | Dynamics 365 | Microsoft Learn
- Batch priority-based scheduling - Dynamics 365 Release Plan | Microsoft Learn
- Finance and Operations cross-app capabilities - Near-zero downtime - Dynamics 365 Release Plan | Microsoft Learn

Thank you