Publishing Platform for Retail

Version 1.0

Hardware Recommendation White Paper

August 2022

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Contents

Change history

August 2022

- Initial document release.

Performance metrics

Overview

Publishing Platform for Retail (PPR) is a solution that lets you create, manage, and print shelf-edge signages, labels, tags, and electronic shelf signs for retail stores. This document describes the tests that are executed to analyze the performance of PPR pertaining to the recommended hardware and load.

Recommended hardware

Unit of hardware defines the smallest unit of hardware which is equivalent to **Microsoft Azure B2s server (2 vCPUs, 4GB RAM)**.

Sample use cases with throughput and response time

- A single print request of a **batch containing 100 signs** with **1UP color template including image** using the **Data In Database** method. The rendering method is GDIPlus, and the target is print queue.
  - Optimum throughput: 860 signs per minute
  - Response time per request (1 batch containing 100 signs): approximately 6.6 seconds

  Note: If the user intends to increase the load, then the maximum recommendations are the following:

  - Maximum throughput: 1230 signs per minute
  - Response time per request (1 batch containing 100 signs): approximately 8.0 seconds
- A single print request of a **batch containing 1 sign** with **1UP black-and-white label template** using the **Data In Call** method. The rendering method is GDIPlus, and the target is the printer IP address.
  - Optimum throughput: 180 signs per minute
  - Response time per request (1 batch containing 1 sign): approximately 1.2 seconds

  Note: If the user intends to increase the load, then the maximum recommendations are the following:

  - Maximum throughput: 246 signs per minute
  - Response time per request (1 batch containing 1 sign): approximately 2.3 seconds

Scalability (based on PPR version 10.6)

If there is a further requirement for printing more signs per minute, then the application servers and database must be scaled up horizontally.

Benchmarking

Multiple rounds of performance tests were done on the following metrics in different Azure models by horizontal and vertical scaling:

- CPU utilization
- Memory utilization
- Response time

- Throughput
- Azure cost per sign in U.S. dollars

Test results

The following test results are based on PPR version 10.6 on the recommended hardware:

Publishing Services—Data in Call method

Server hardware	Total signs printed per minute	Average response time (minutes)	CPU utilization per server[1]	Available memory (MB per server)	App server cost per 100k signs printed[2]
2 vCPUs, 4GB RAM	198	517	45%	2014	$0.33
(2 vCPUs, 4GB RAM) x 3 under load balancer	552	551	51.3%	1943	$0.99

Publishing Services—Data in Database method

Server hardware	Total signs printed per minute	Average response time (seconds)	CPU utilization per server[1]	Available Memory (MB per server)	App Server Costing (per 100k signs print)[2]
2 vCPUs, 4GB RAM	870	5.9	70%	2022	$0.07
(2 vCPUs, 4GB RAM) x 3 under load balancer	2470	7.7	70%	2091	$0.22

Notes:

- [1] Using 90th percentile data
- [2] Calculated considering the monthly cost of the Azure machine used for printing 24 hours a day, 7 days a week

Observations

Notes:

- Better throughput is achieved when a request contains multiple signs than when a request that contains a single sign.
- Better response time is achieved when publishing using the **Data in Call** method than using the **Data in Database** method.

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