Microsoft

How to plan capacity for embedded analytics with Power BI Premium

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Introduction

Power BI Premium offers app developers/ISVs a predictable and affordable embedded analytics offering with one API surface and a consistent set of Power BI capabilities. Power BI Premium addresses the challenges of enterprise deployment workloads as well app developers/ISV multi-tenant solutions. Power BI Premium provides an affordable entry point for app developers/ISVs, and allows businesses to expand in a cost effective manner.

This paper provides guidance for the app developer/ISV to determine the most appropriate capacity for its businesses. This guidance is specific for embedded analytics for app developers/ISVs who leverage a multi-tenant system. Pricing information for organizational BI systems can be estimated through the Capacity Calculator. Additional documentation and guidance is available online.

Licensing requirements for embedded analytics

Two elements are required to take embedded analytics to production. First, Power BI Pro licenses are required for administration, content publishing, and development. Then, Power BI Premium is required for testing and deployment.

Development

Development requires a Power BI Pro license for each developer on the team. Anyone using the Power BI APIs is required to have a Power BI Pro license. Power BI Pro licenses contain all APIs and can be used to develop a full proof of concept.

Pre-production and production

For testing and deployment, Power BI Premium must be acquired. Power BI Premium enables full testing of the solution with embed tokens that allow multi-user access to the embedded Power BI reports and dashboards. When deploying to a production environment, options include using the same Power BI Premium capacity used for pre-production or a dedicated capacity for pre-production and another for production.

How much capacity do I need?

Calculating how much capacity is needed is based on multiple parameters like the specific data models used, the number and complexity of queries, the hourly distribution of the usage of your SaaS application, the data refresh rates, and other usage patterns that are hard to predict.

This paper serves as guidance when planning capacity. Capacity estimation is not an exact science and performance cannot be guaranteed.

APP DVELOPER/ISVS SHOULD USE THE GUIDANCE IN THIS PAPER. PLAN ON PROVISIONING ENOUGH CAPACITY TO COMFORTABLY HANDLE PEAK USAGE. IF SUFFICIENT CAPACITY IS NOT RESERVED, CORES COULD BECOME OVERLOADED AND PERFORMANCE WILL SUFFER.

Dedicated capacity nodes: the v-Cores

Purchase enough capacity support the workload.

POWER BI PREMIUM *Embedded Capacity Options*	Node	Virtual cores	Backend cores	Frontend cores
	Power BI Premium EM1[1]	1	.5 core; 3 GB RAM	.5
	Power BI Premium EM2[1]	2	1 core; 5 GB RAM	1
	Power BI Premium EM3	4	2 cores; 10 GB RAM	2

1. Backend cores are shared

Power BI Premium planning for app developers/ISVs for embedded analytics

Plan on provisioning enough capacity to comfortably handle peak usage. Because embedded analytics is a solution for report rendering and data querying, app developer/ISV capacity calculations are based on a **page renders' range** at peak hour.

We do not include data refresh as a parameter for the peak hour load. To keep data fresh without affecting performance, run data refresh during off-peak hours.

What is a page render?

A page render is counted any time Power BI visuals are loaded on a page. A page refresh counts as a page render, as does any other page interactivity, like slice and dice, filtering, etc. Typically, multiple queries running on the backend cores[1] translate to a page render.

The load generated on the cores depends on the number of visual elements contained on a page. A typical page contains up to 10 visual elements.

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[1] You can learn more about cores in the Power BI Premium white paper.

Estimate your capacity

POWER BI PREMIUM	Node	Virtual cores	Deployment option	Price per month[1]	Max page renders at peak hour	2017 availability
	Power BI Premium EM1[2]	1	PaaS	$625	1-300	July
	Power BI Premium EM2[2]	2	PaaS	$1,245	301-600	July
	Power BI Premium EM3[2]	4	PaaS	$2,495	601-1,200	June/July[3]
	Power BI Premium P1	8	PaaS & SaaS	$4,995	1,201-2,400	June
	Power BI Premium P2	16	PaaS & SaaS	$9,995	2,401-4,800	June
	Power BI Premium P3	32	PaaS & SaaS	$19,995	4,801-9,600	June

1. Yearly commitment

2. Only allows consumption through embedded APIs and controls. Power BI Report Server not included.

3. Enterprise Agreement: June 1; Web Direct & CSP: 2nd half of July

Preliminary information. Microsoft makes no warranties, express or implied.

Examples

To help estimate the page renders at peak hour, here are some examples:

Example 1

The ISV knows that the SaaS App with embedded Power BI handles 100 users in the peak hour. It is assumed that these users will trigger a total of 250 page renders for that hour because each user will load a report and interact with it 2.5 times during the peak hour. Per the above table, the ISV should choose Power BI Premium EM1.

Example 2

The ISV reading its telemetry data knows the App usage patterns of the application with Power BI embedded reports. The ISV assumes there is potential for 100,000 monthly page renders. A month consists of 220 hours of work which is spread across 22 days with 10 hours of work in a day.

By dividing the expected page renders in a month by the hours in a month, we show that an average hour handles 455 page renders. From telemetry data, the ISV knows the ratio between peak and average use is 4:1. Using this ratio they calculate page renders at the busiest hour in the month as 1820, for which the ISV should choose Power BI Premium P1.

Capacity monitoring

Once in production, Power BI Premium CPU, memory, and direct query utilization can be monitored through the Power BI admin portal, under Power BI Premium settings. For more information, see Managing Capacity.