Embed Power BI Report into Web App

Andy Li

What if your app could put the power of analytics everywhere decisions are made?

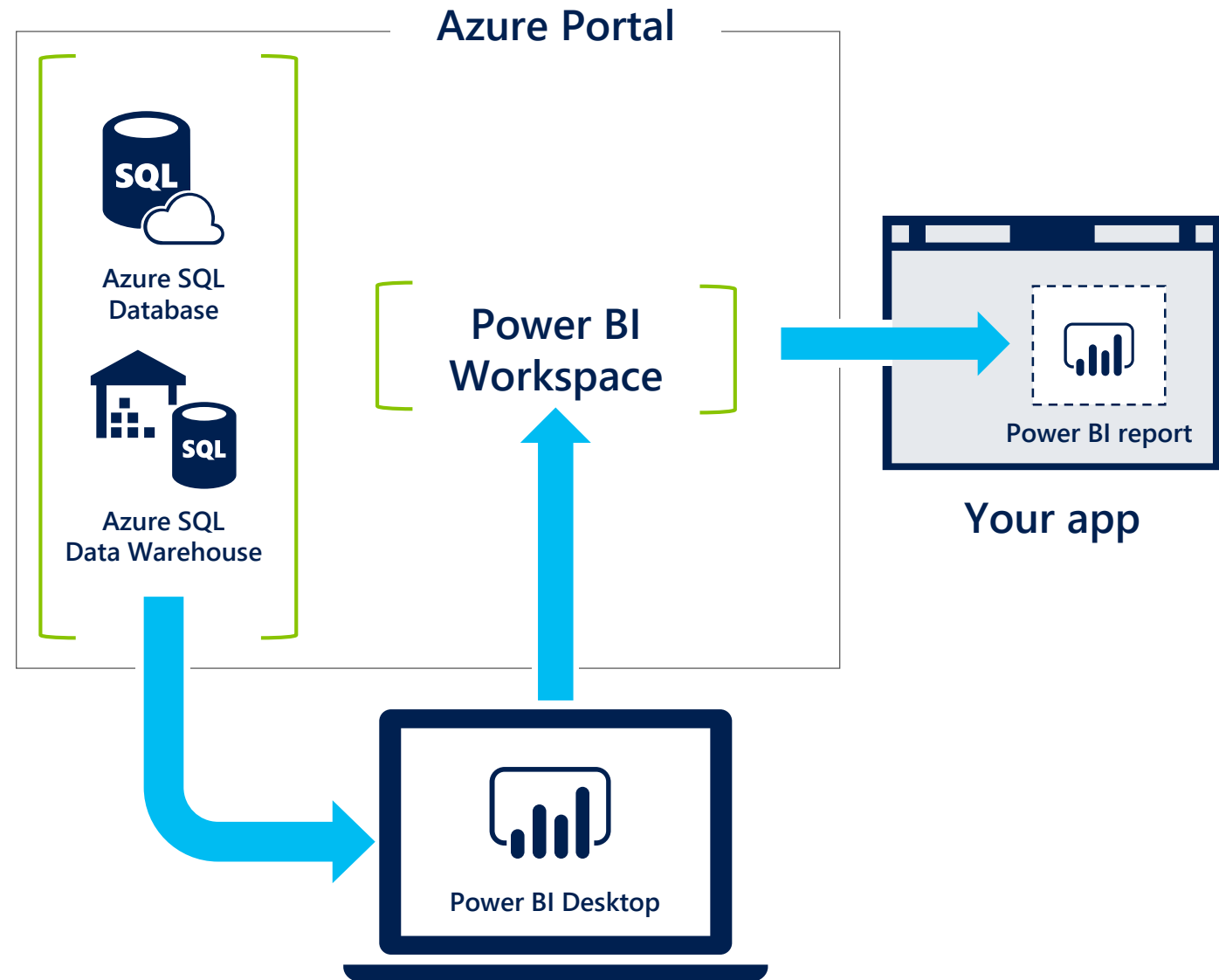Modern apps with data visualization built-in have the power to inform decisions in context— **for any user, on any device**
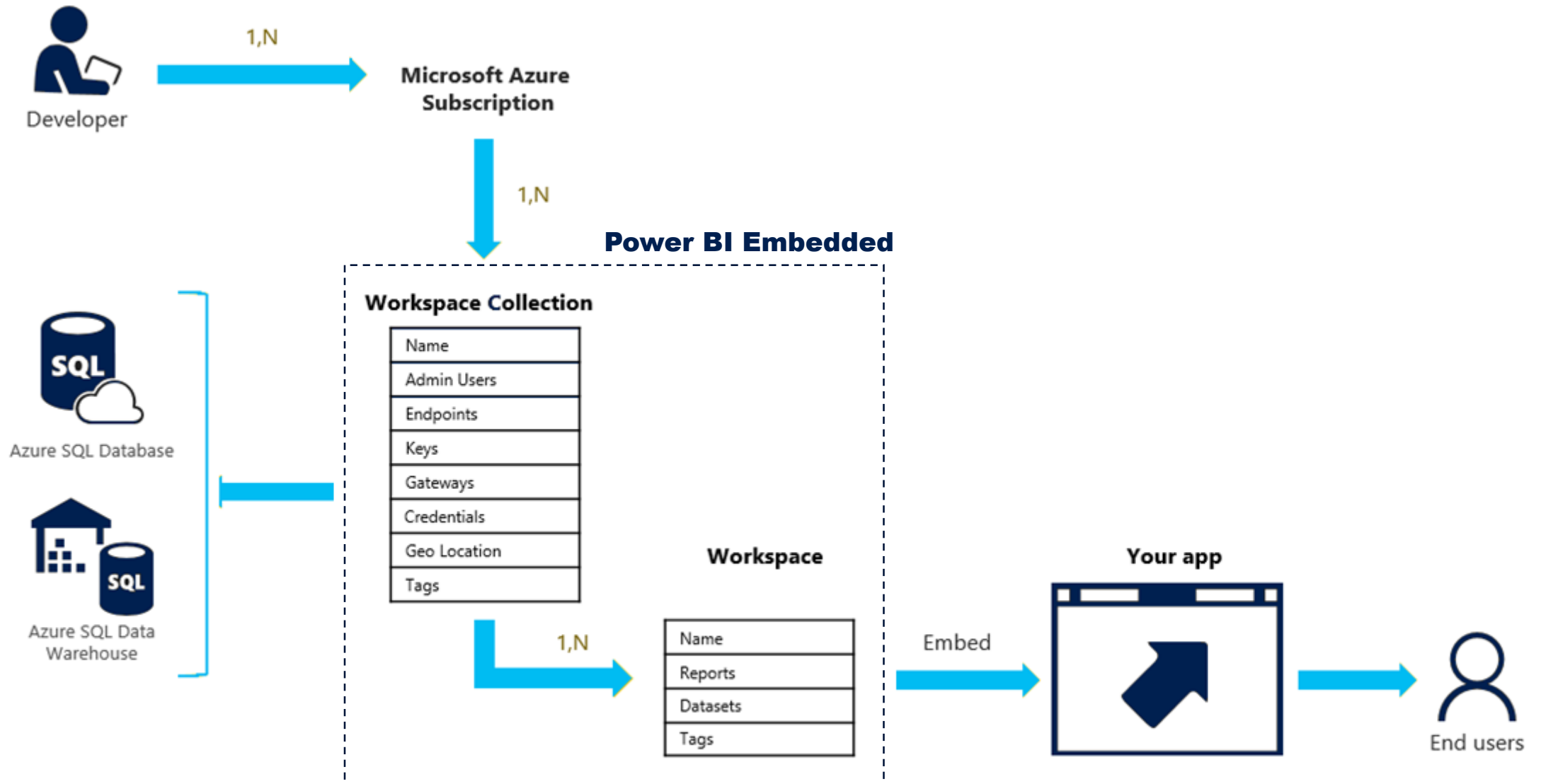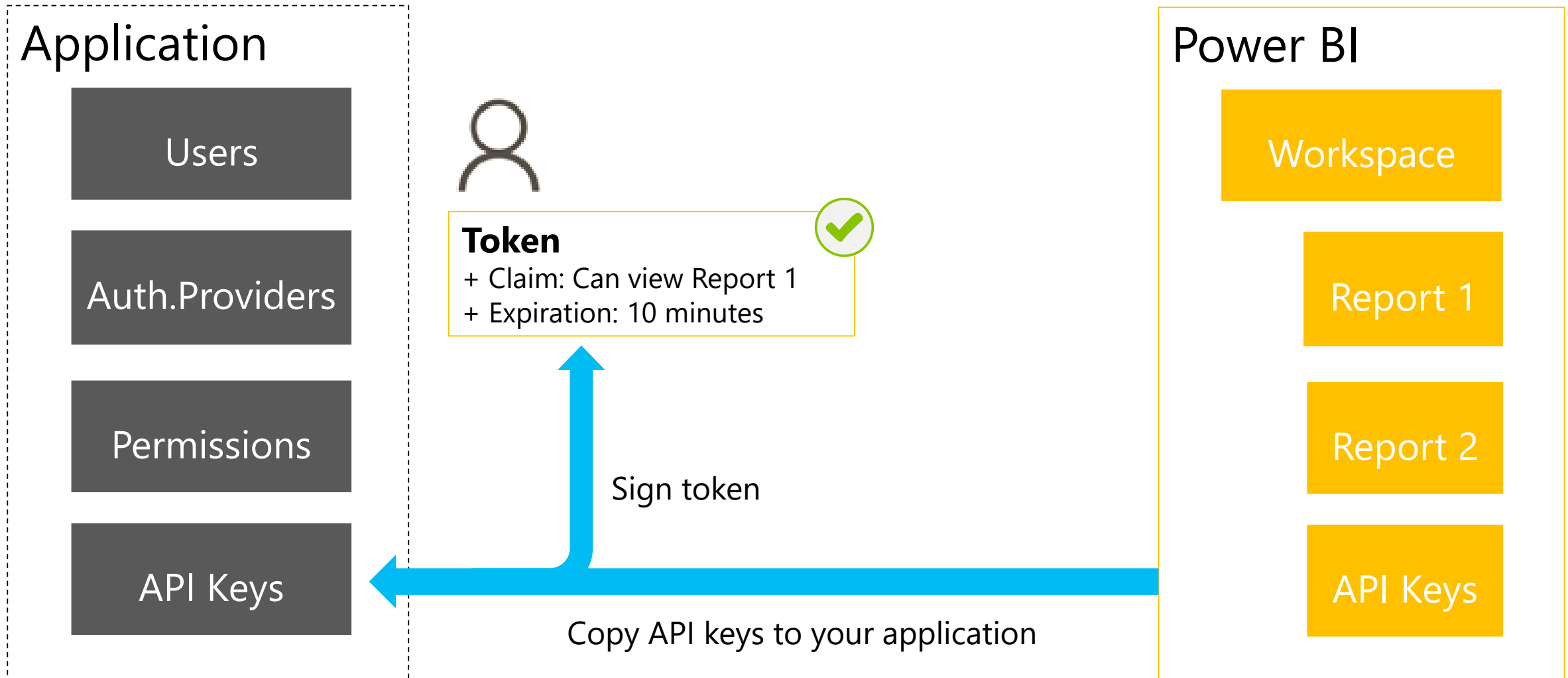
Manage in a familiar environment—**Azure**

- ✔ Manually or programmatically provision workspaces
- ✔ Create datasets and reports
- ✔ Embed reports in your app
- ✔ Control refresh behavior and credentials

Azure Portal

SQL
Azure SQL Database

SQL
Azure SQL Data Warehouse

Power BI Workspace

Power BI Desktop

Power BI report

Your app

Conceptual model

Authentication & Authorization

Application

- Users
- Auth.Providers
- Permissions
- API Keys

Token
+ Claim: Can view Report 1
+ Expiration: 10 minutes

Sign token

Copy API keys to your application

Power BI

- Workspace
- Report 1
- Report 2
- API Keys

Authentication & Authorization

Application

Users

Auth.Providers

Permissions

API Keys

Report 1

Power BI

Workspace

Report 1

Report 2

API Keys
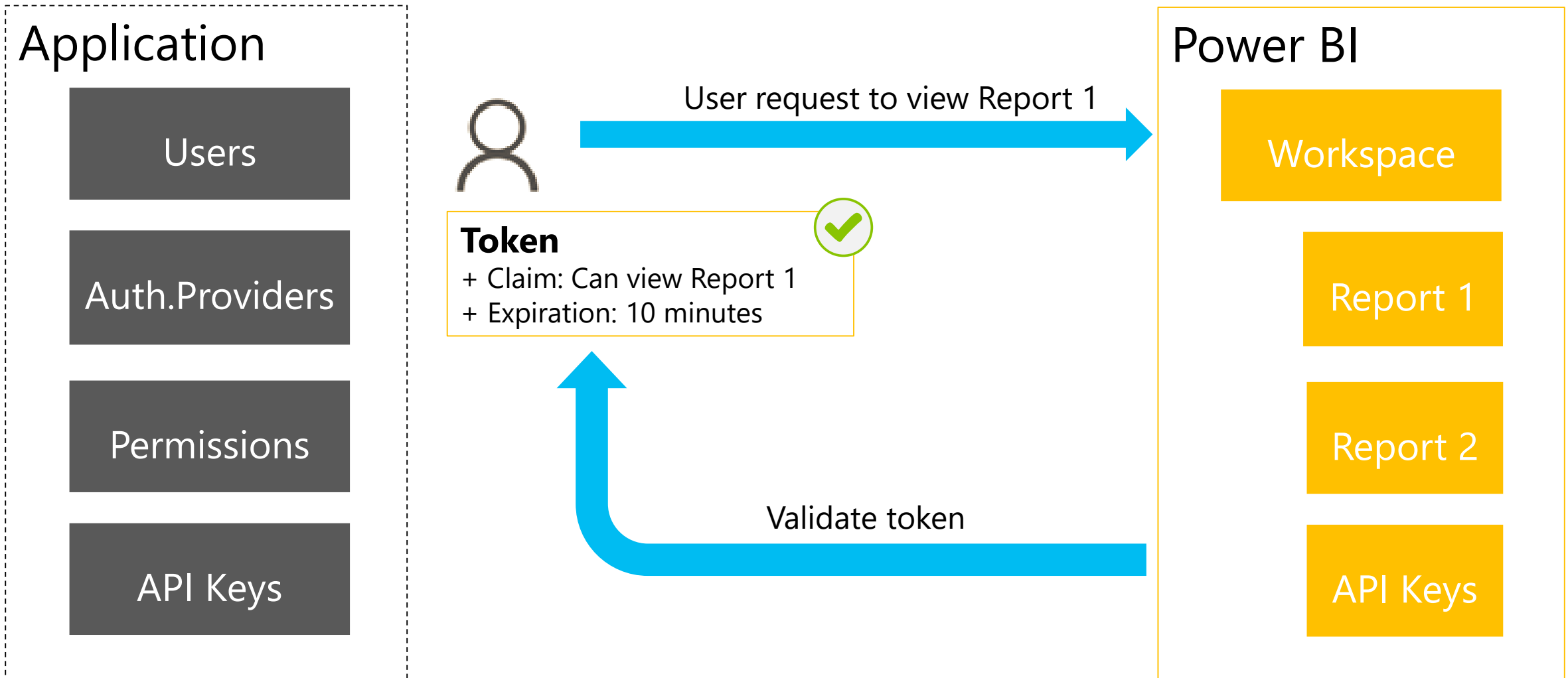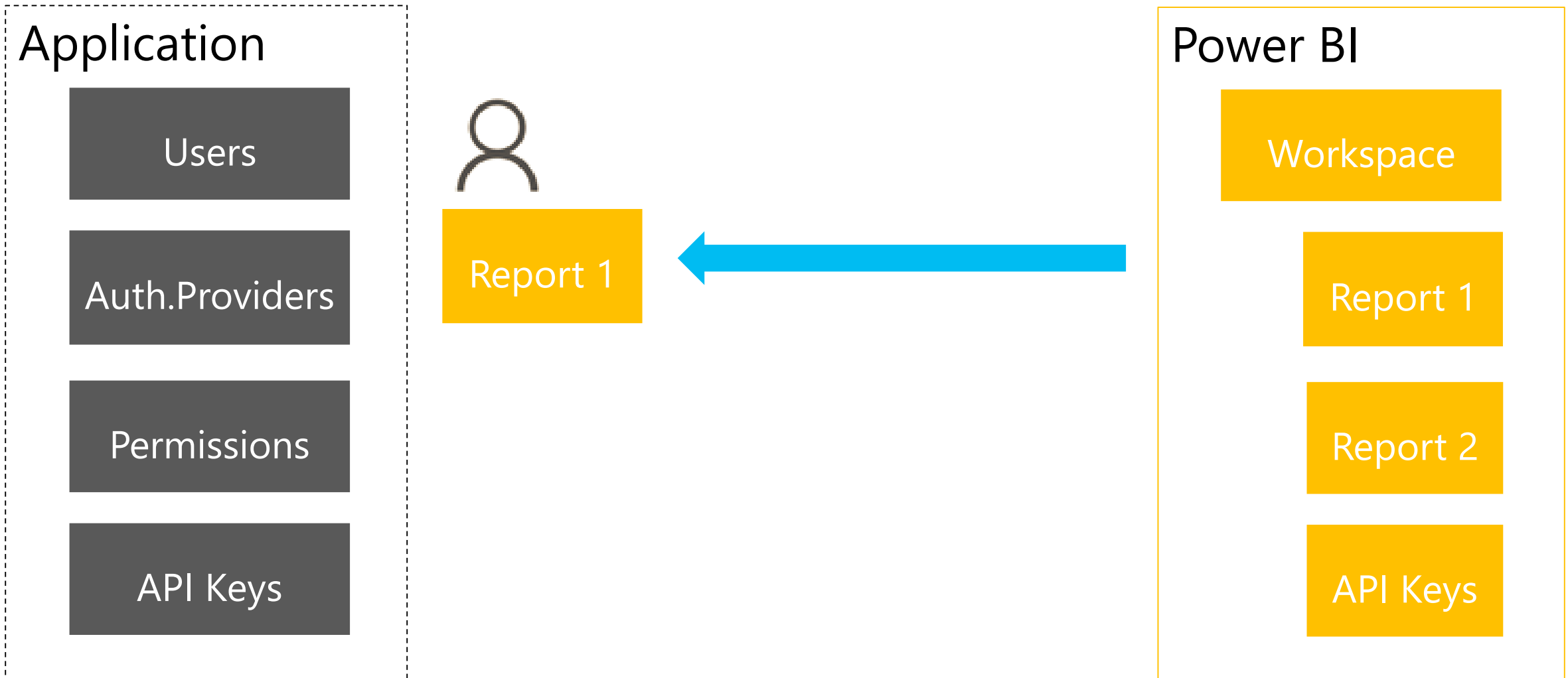
Keep visuals up to date without refreshing data using **DirectQuery**

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101010
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Azure SQL
Database

Azure SQL
Data Warehouse

Power BI report

Your app

✔ Connect directly to the source without moving your data

✔ Build visualizations over very large datasets
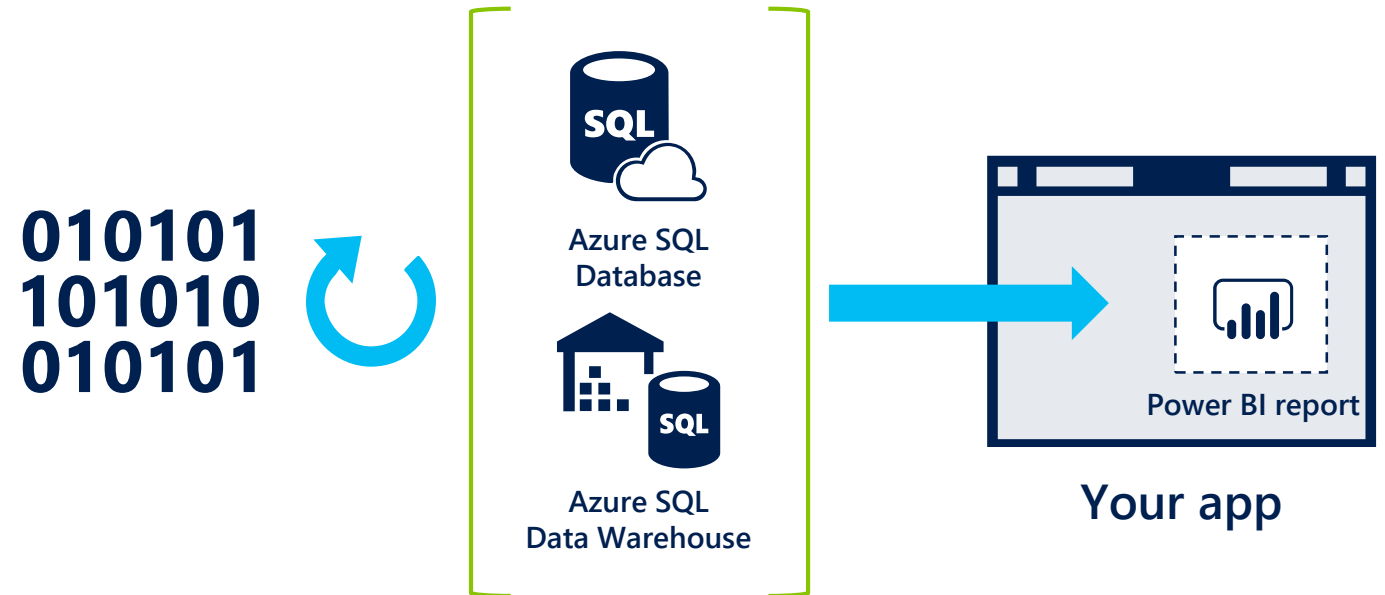
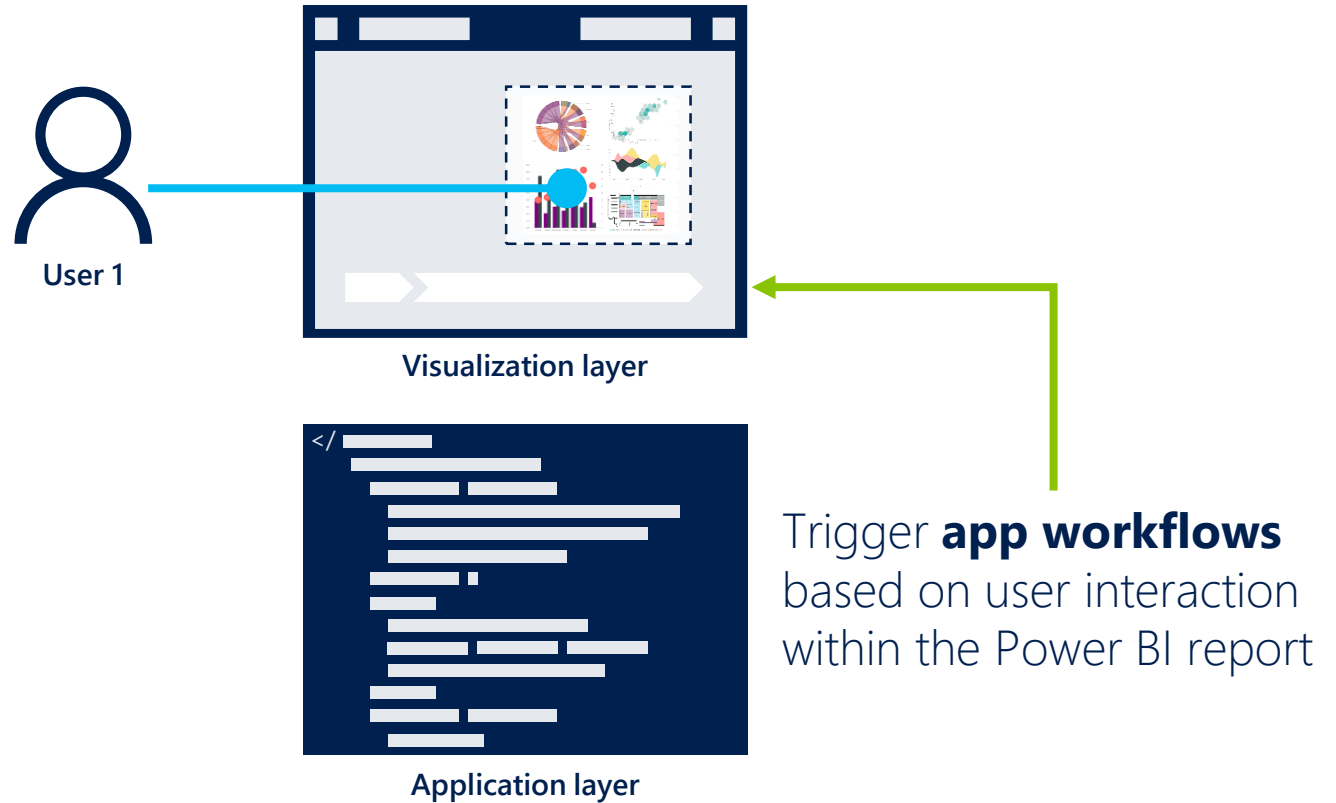# Make intelligent actions the norm with the **bidirectional JavaScript API**

✓ Provide secure bidirectional communication across the iframe boundary

✓ Integrate report actions into your app logic

✓ Customize report and page behavior, navigation, filtering and event handling

User 1

Visualization layer

Application layer

Trigger **app workflows** based on user interaction within the Power BI report

Control costs with **pay-as-you-go** consumption-based pricing

✔ Author interactive reports in Power BI Desktop for free

✔ Priced per report session

✔ Single report can have multiple pages and multiple charts

✔ ISV applications and Enterprise external facing apps only

Price per report session, per month	
0-100 sessions	Free
100+ sessions	$0.05/report session

What is one report session?

Every time a Power BI report is loaded inside your app.
A session is valid for 60 minutes .

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Query

Your data

Cache

Your users
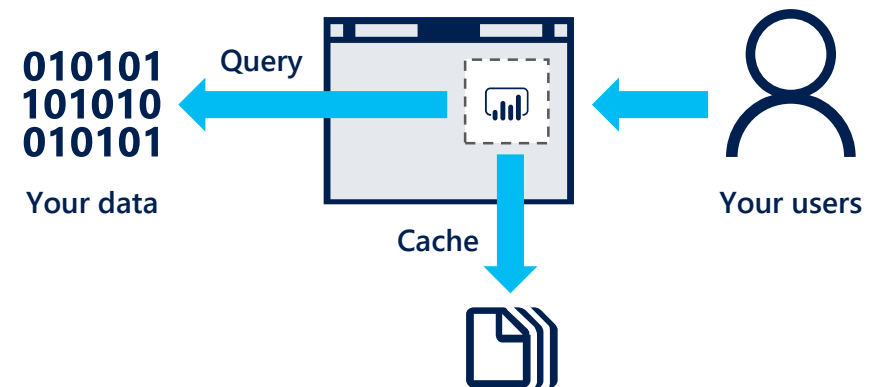
HOL 7 – Embed Power BI Report into Web App

💬 ⭐ 4 Emily Hart ▾
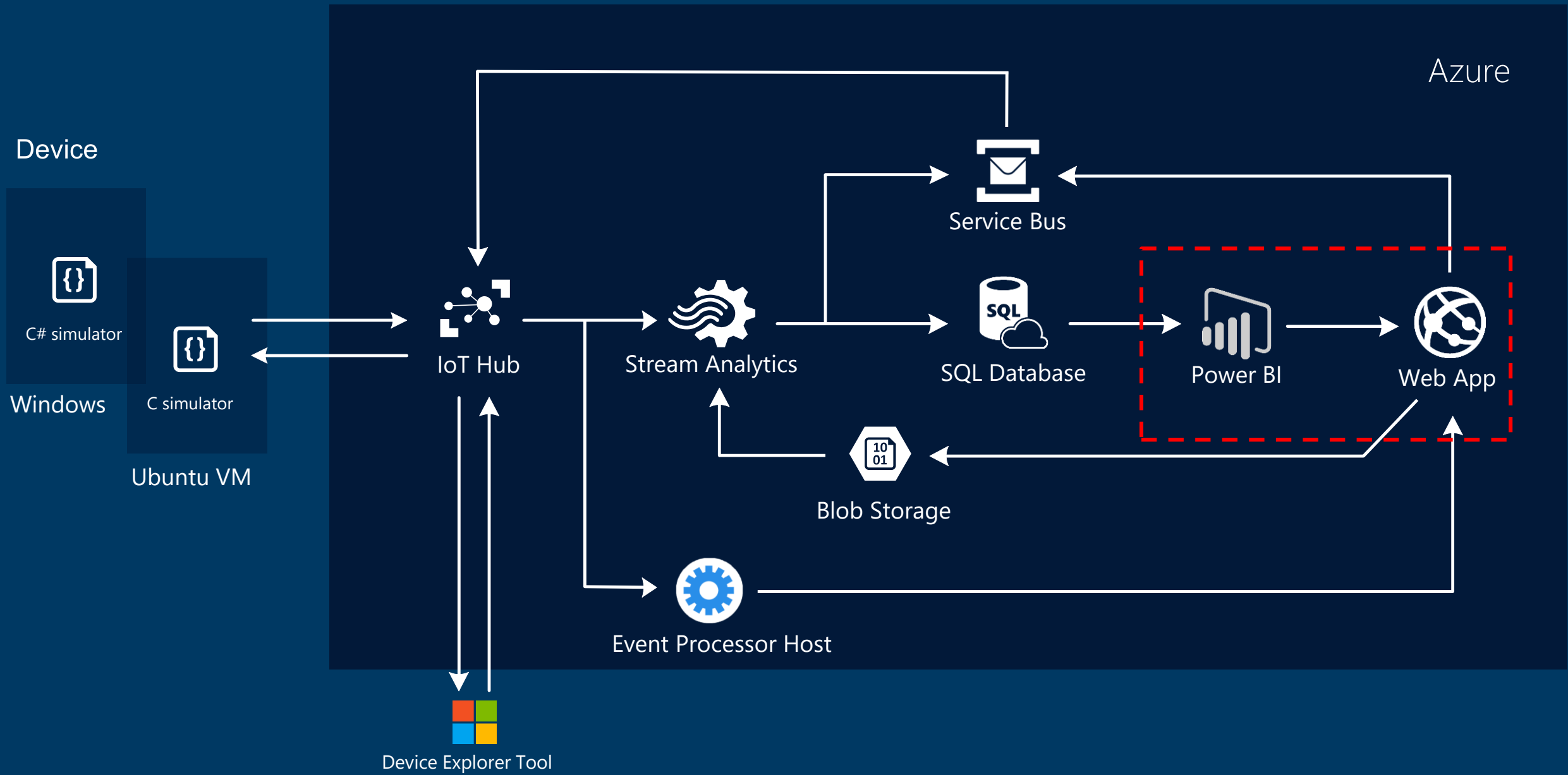
Wind Generator Analysis

| 2015 | 2016 |

2 百萬
Power

Id	Employee Name	Fan Radius	Hei
IOSTurbine	Walker	2.20	
LinuxTurbine	Andy	2.20	

Power 依據 WindGeneratorId
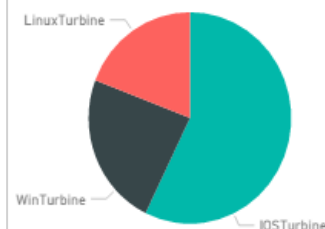
LinuxTurbine

WinTurbine

IOSTurbine

Power 依據 Month 與 WindGeneratorId
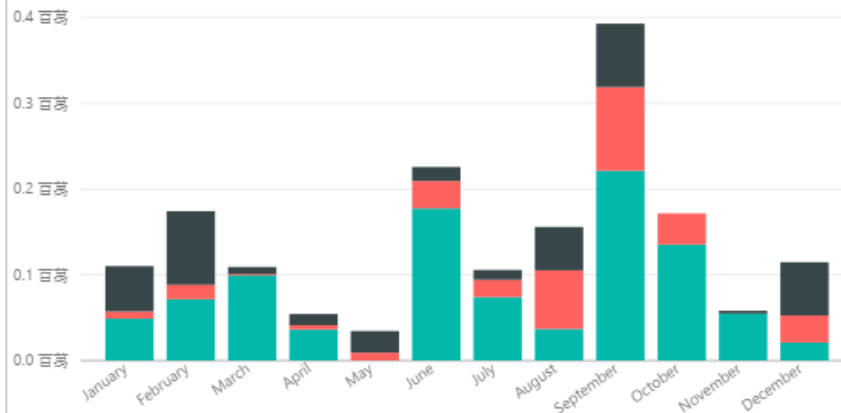
WindGeneratorId ● IOSTurbine ● LinuxTurbine ● WinTurbine

0.4 百萬
0.3 百萬
0.2 百萬
0.1 百萬
0.0 百萬

January February March April May June July August September October November December

Fan Radius 依據 Id

● IOSTurbine ● LinuxTurbine ● WinTurbine

Taiwan Strait

New Taipei City · T'aipei
Hsinchu · Taoyuan
Chunan
Changhua · T'aichung · Taroko N.P. · Hualien
Lalu Island · Kuang-fu
Chiai
Yushan N.P.
T'ainan
P'ingtung · T'ai-tung
Kaohsiung

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bing

Cp 的平均 依據 Month 與 WindGeneratorId

WindGeneratorId ● IOSTurbine ● LinuxTurbine ● WinTurbine

40
20
0

January February March April May June July August September October November December
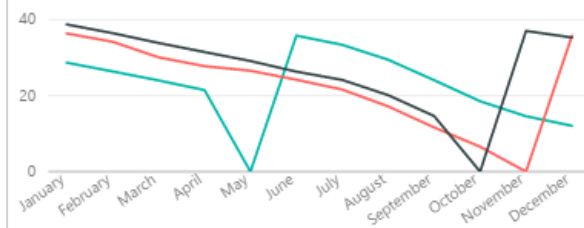
WinTurbine_Power, WinTurbine_WindSpeed 與 WinTurbine_Cp 依據 Month

● WinTurbine_Power ● WinTurbine_WindSpeed ● WinTurbine_Cp

100 千   100
50 千   50
0 千   0

January February March April May June July August September October November December
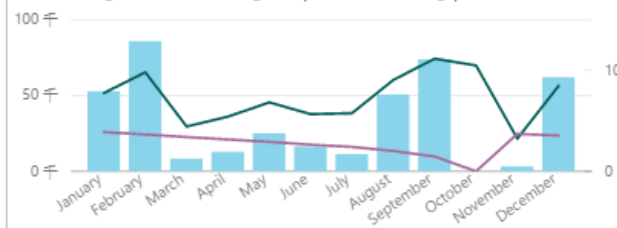
Summary

Page Navigation

| Previous Page | Next Page |

Settings

☑ Show Navigation
☐ Show Filter Pane

Filters

Clear All Filters

Add Filter

Target

Report ▾

Table

Column / Measure

Value

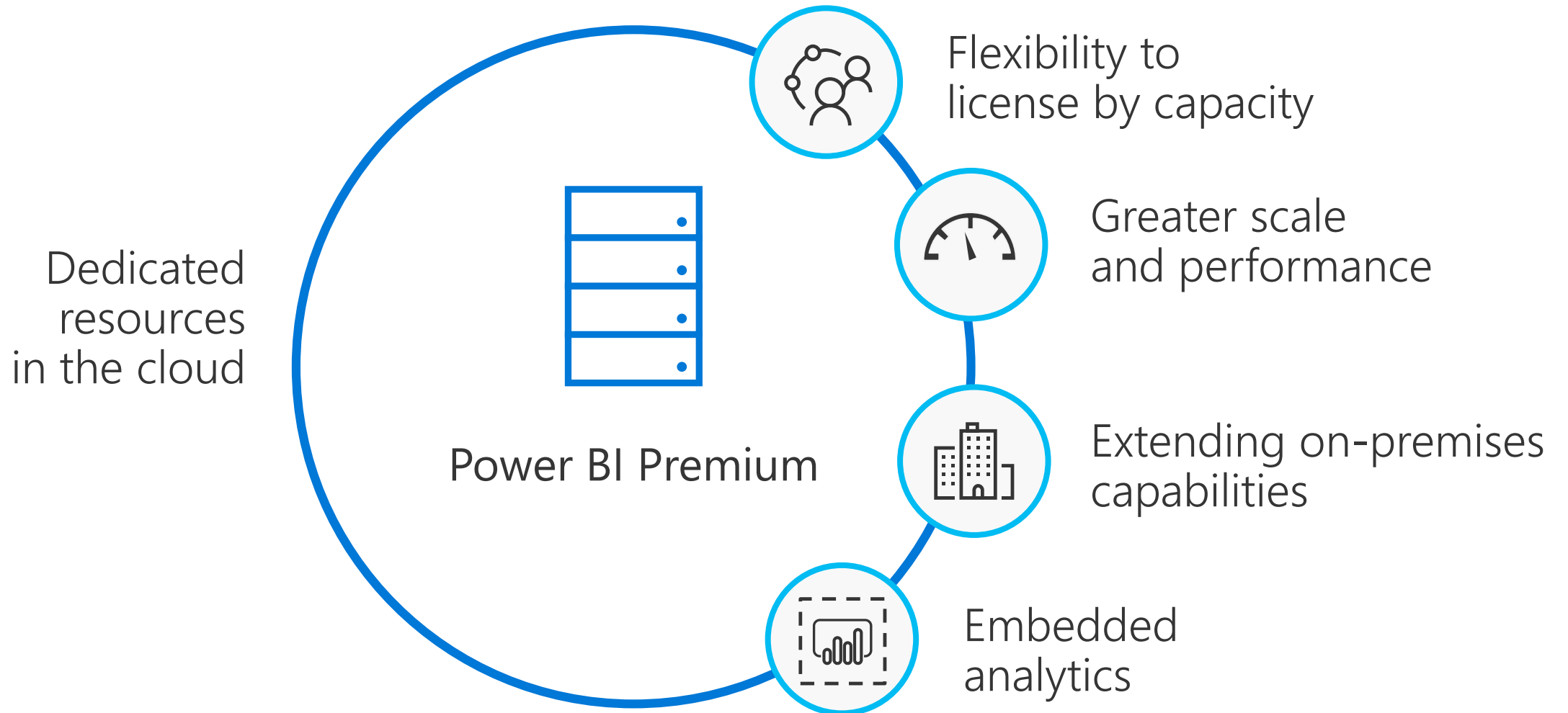**Add Filter**

Let's Go

You will learn how to

- Provision Power BI Embedded on Azure
- Embedded a Power BI Desktop solution into web app

Power BI Premium

Introducing Power BI Premium

Flexibility to
license by capacity

Greater scale
and performance

Dedicated
resources
in the cloud

Power BI Premium

Extending on-premises
capabilities

Embedded
analytics

Flexibility to license by capacity
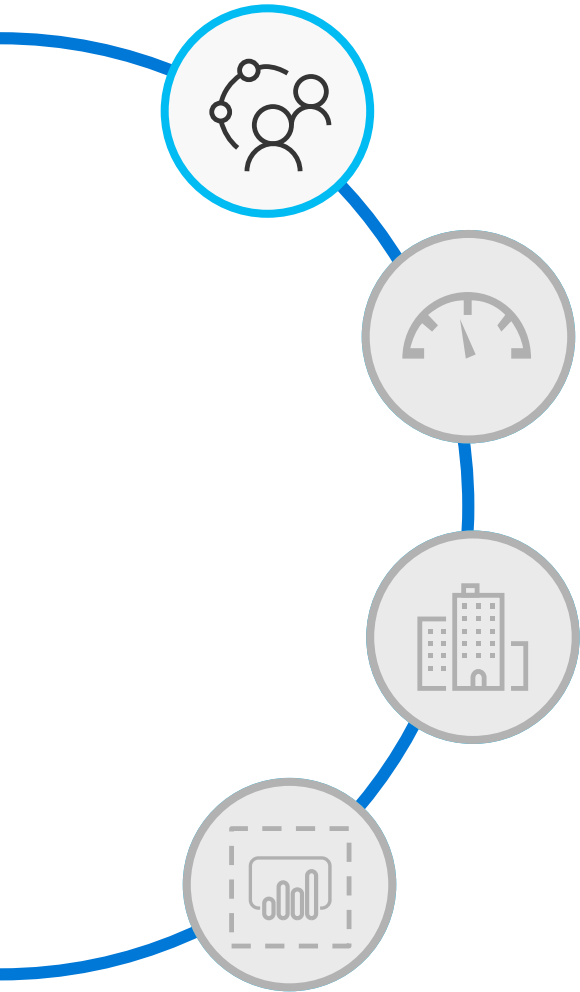
Extend read access to a broader set of people without requiring per user license

Tailor performance to the unique needs of your organization, department, or team

Scale as your requirements change.

Flexible content distribution

Power BI Premium

Assign **workspaces** to premium capacity

Publish Power BI **apps**

Consume apps throughout an organization
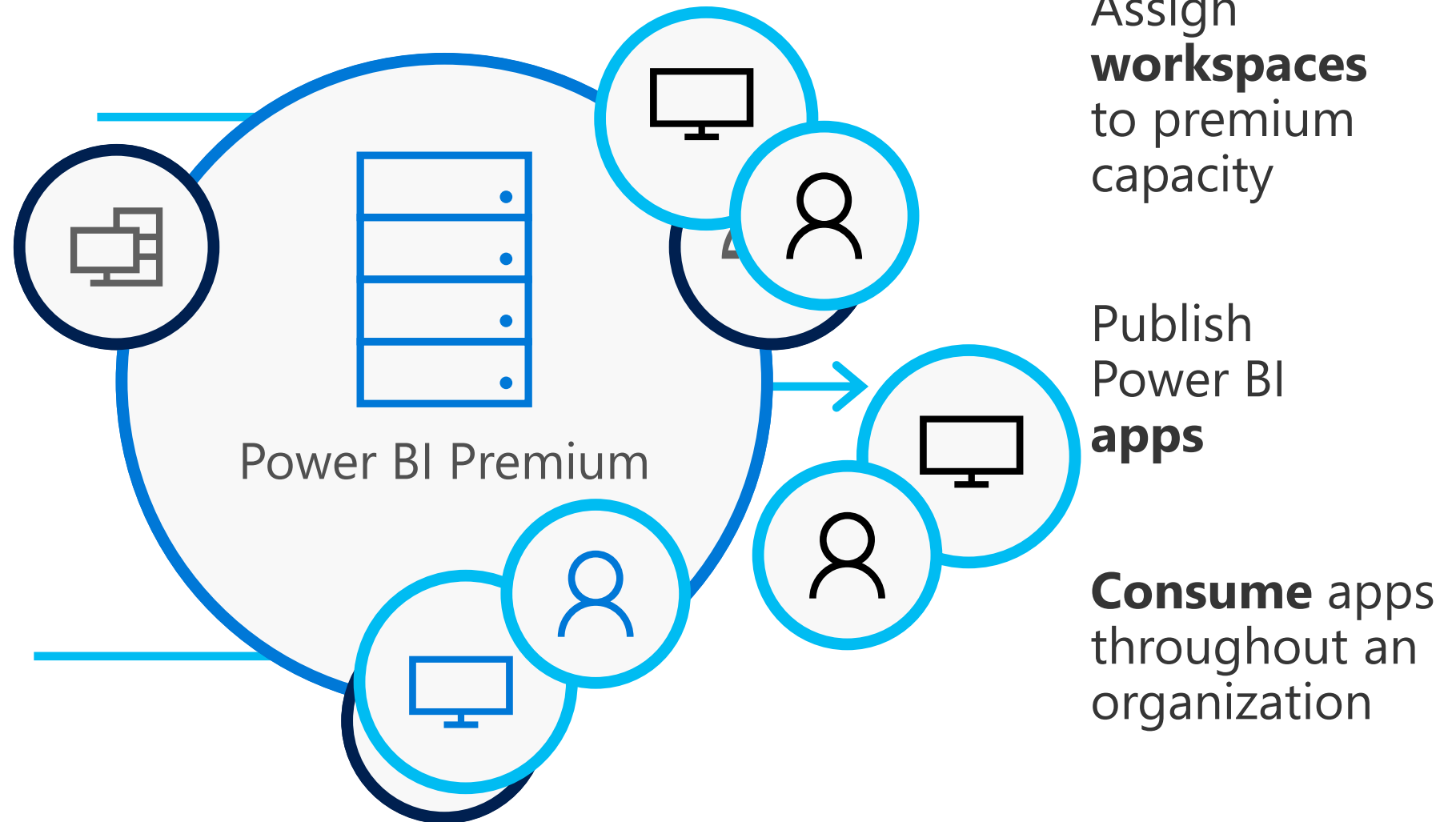
Greater scale and performance
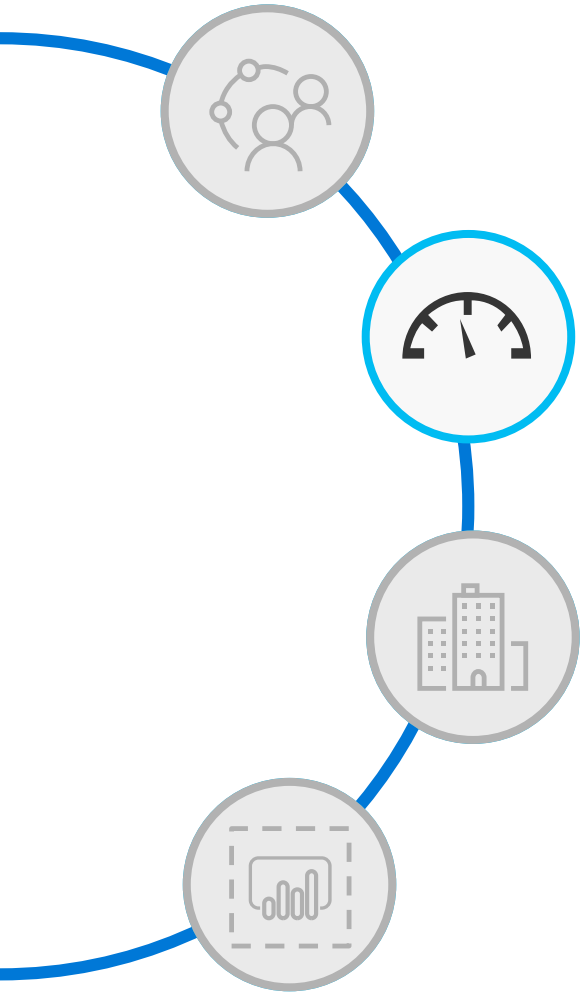
Dedicated hardware for exclusive use by the tenant fully managed by Power BI

Easily scale up as your usage grows

Performance and scale fully controlled by the admin

Extending on-premises capabilities
Power BI Report Server
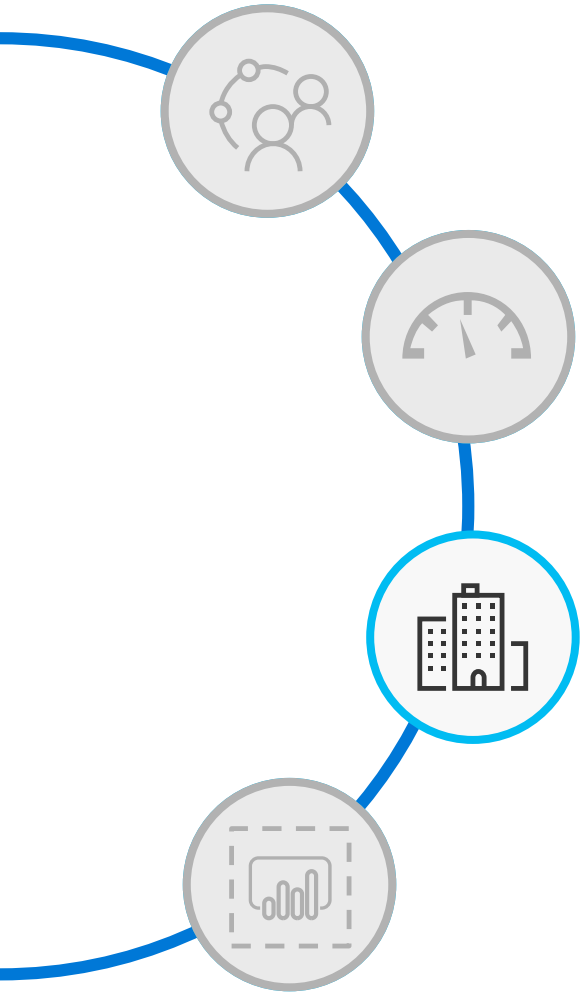
Flexibility to keep reports on-premises

Compatibility with SSRS reports

Concurrently deploy an equivalent number of cores on-premises

Embedded analytics
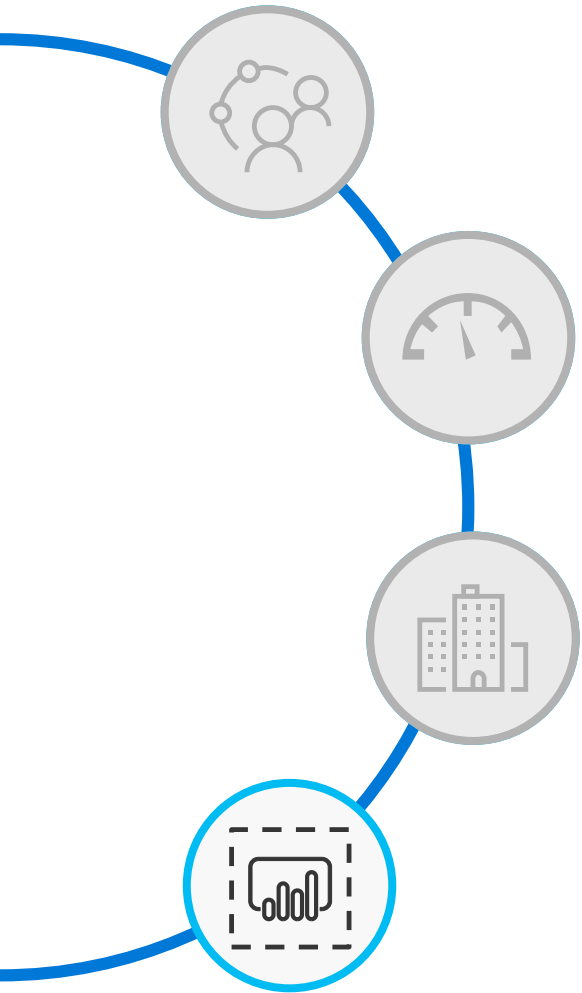
Full Power BI capabilities in your applications

Predictable pricing based on consumption of your apps

Open and extensible platform

Power BI Embedded Transition

**Today
(Power BI Embedded)**

- Metered on volume of sessions
- Billed based on session volume usage
- Purchased in Azure

**Future
(Power BI Premium)**

- Sold based on capacity
- EM3 node for embedded deployment at a lower price per month
- Purchased via Office portal at GA
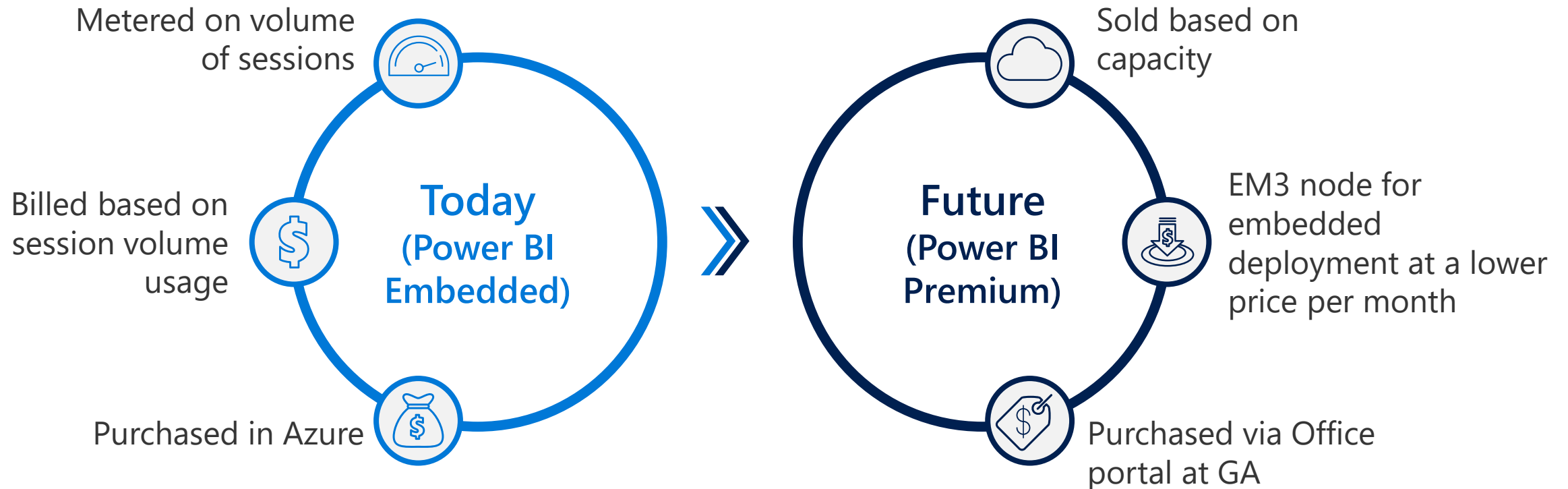
Power BI portfolio

Power BI Desktop	**Power BI Free**	**Power BI Pro**	**Power BI Premium**
Licensed by user	Licensed by user	Licensed by user	Licensed by capacity
Free report authoring and ad-hoc data exploration	Quick, easy-to-use self-service analytics for **personal use**	Quick, easy-to-use **self-service** analytics for users requiring **collaboration**, dashboard sharing, ad hoc analysis, and report publishing	An add-on to **Power BI Pro** for projects requiring **large scale data**, demanding **performance**, and the ability to distribute content without requiring per user licensing

How to acquire Power BI

	Power BI Pro +	**Power BI Premium**
Standalone	$9.99/user/month	Add on to Power BI Pro Includes **Power BI Report Server**
Office 365	Included in E5 Add on for E1/E3	*Concurrently deploy an equivalent number of cores on-premises*
SQL Server	Customers with SQL EE SA also have access to **Power BI Report Server** as a SA benefit	

Power BI portfolio

	Today	**Future**
Power BI Desktop Authoring and exploration	Connect to 70+ sources Data prep and mashup Report creation and exploration	

Power BI service

Power BI Free Personal use	→	Smaller capacity limits and data refresh rates Access only to select data sources Dashboard sharing limitations
Power BI Pro Self-service and collaboration	→	Larger capacity and data refresh rates Access to all data sources Full dashboard sharing (P2P), report publishing and collaboration

Power BI portfolio

		Today	Future
Power BI Desktop Authoring and exploration		Connect to 70+ sources Data prep and mashup Report creation and exploration	No changes
Power BI Free* Personal use	→	Smaller capacity limits and data refresh rates Access only to select data sources Dashboard sharing limitations	Performance equivalent to Pro Access to all data sources Single user - no dashboard sharing, distribution, or collaboration
Power BI Pro Self-service and collaboration	→	Larger capacity and data refresh rates Access to all data sources Full dashboard sharing (P2P), report publishing and collaboration	No changes
Power BI Premium Capacity & performance	→		Increased capacity limits, performance enhancements and enables distribution of content without requiring per user licensing On-premises report distribution

Power BI service (vertical label, left side)

*Starting June 1, 2017, existing active users of Power BI Free in the last 12 months dating back from May 2, 2017, will receive an extended Power BI Pro trial for 12 months

Power BI user license tiers

	Free	Pro ($10/user/month)
Connect to 70+ data sources	✔	✔
Publish to web	✔	✔
Peer-to-peer sharing	✖	✔
Enterprise distribution		
Apps	✖	✔
Email subscriptions	✖	✔
Embed APIs and controls	✖	✔
Collaboration		
Group workspaces	✖	✔
Analyze in Excel, analyze in Power BI Desktop	✖	✔
Support	Community	Phone and Email*

* For tenant administrators, phone support from Microsoft; for Pro users, email support from Microsoft.

Power BI capacity tiers

	Pro (shared, $10/u/m)	Premium (dedicated, $5k/m)
Total storage size	10 GB	100 TB
Refresh rate	8/day	48/day
Isolation with dedicated hardware	✗	✓ [1]
Enterprise distribution to Free users		
Apps	✗	✓ [2]
Email subscriptions	✗	✓ [3]
Embed APIs and controls	✗	✓ [3,4]
Performance		
Pin to memory	✗	✓ [3]
Incremental/dedicated refresh	✗	✓ [3]
Read-only replicas	✗	✓ [3]
Geo distribution	✗	✓ [3]
Power BI reports on-premises	✗	✓
Support	Phone and email [5]	Phone and email [6]

[1] EM3 SKU or higher.
[2] Basic user consumption in apps includes viewing content in web and mobile; using Q&A, Quick Insights, and Cortana; and exporting to Excel, CSV, and PowerPoint.
[3] Future enhancements coming to Power BI Premium post GA.
[4] Embedded SKUs only allow consumption through embedded APIs and controls, NOT apps or email subscriptions.
[5] For tenant administrators, phone support from Microsoft; for Pro users, email support from Microsoft.
[6] For Premium capacity administrators, phone support from Microsoft; for Pro users, email support from Microsoft; and for basic users, support from the community.

Collaboration vs. consumption

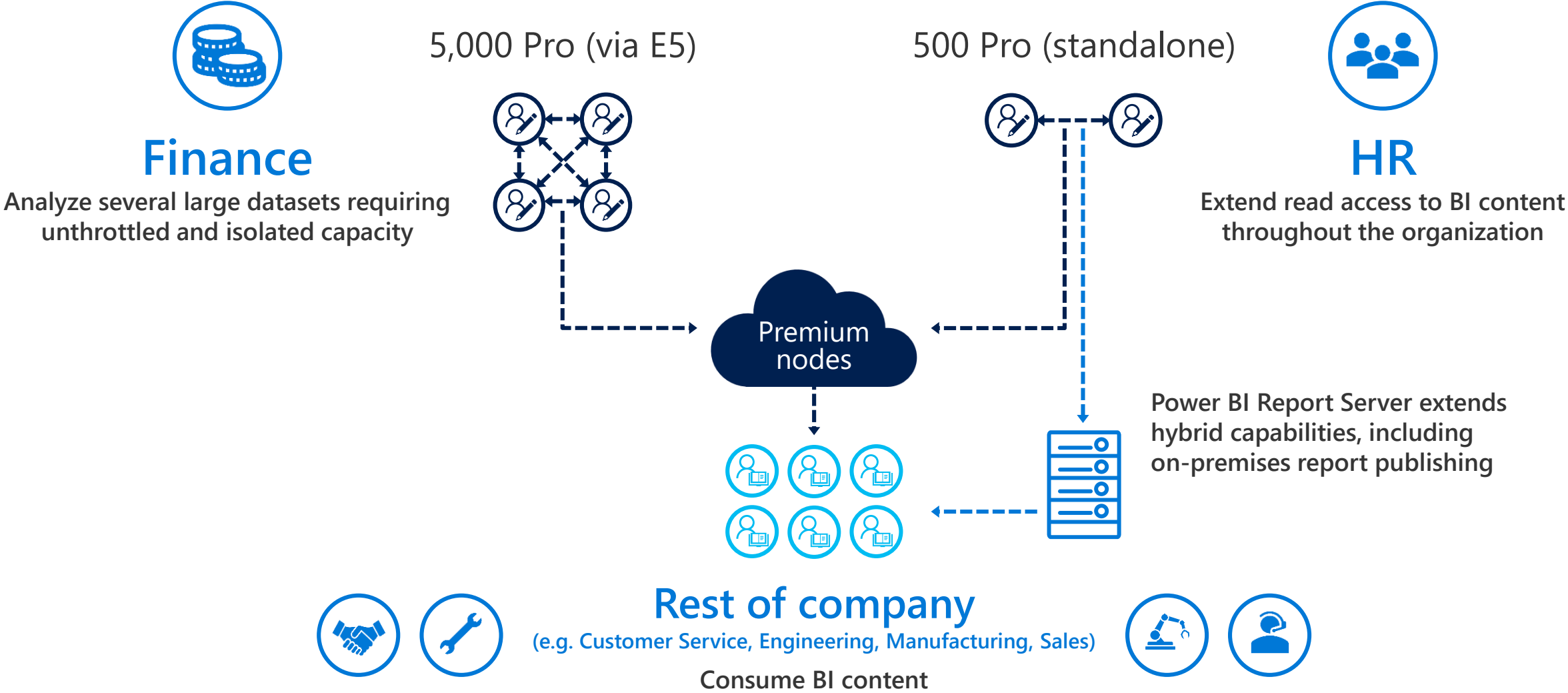|	**Pro** Self-service and collaboration—licensed per user	**Premium without Pro** Basic consumption—not licensed per user
Total storage size	10 GB	100 TB
Refresh rate	8/day	48/day
Isolation with dedicated hardware	✕	✔[1]
Enterprise distribution		
Apps	Create and consume	Consume only[2]
Collaboration		
Edit and save customized views	✔	✕ [3, 4]
Create personal dashboards (pin to new dashboards)	✔	✕ [3, 4]
Connect and analyze data in Excel or Power BI Desktop	✔	✕ [4]
Share and collaborate with Office 365 Groups and Microsoft Teams	✔	✕ [4]
Support	Phone and email[5]	Community[6]

[1] EM3 SKU or higher.
[2] Basic user consumption in apps includes viewing content in web and mobile; using Q&A, Quick Insights, and Cortana; and exporting to Excel, CSV, and PowerPoint.
[3] Future enhancements coming to Power BI Premium post GA.
[4] Collaboration capabilities can be enabled with a Power BI Pro license per user.
[5] For tenant administrators, phone support from Microsoft; for Pro users, email support from Microsoft.
[6] For Premium capacity administrators, phone support from Microsoft; for Pro users, email support from Microsoft; and for basic users, support from the community.

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Licensing Scenario

Pro user

Finance
Analyze several large datasets requiring unthrottled and isolated capacity

5,000 Pro (via E5)

500 Pro (standalone)

HR
Extend read access to BI content throughout the organization

Premium nodes

Power BI Report Server extends hybrid capabilities, including on-premises report publishing

Rest of company
(e.g. Customer Service, Engineering, Manufacturing, Sales)
Consume BI content

Reference

- Azure Power BI Embedded
  - https://azure.microsoft.com/en-us/services/power-bi-embedded
  - https://azure.microsoft.com/en-us/pricing/details/power-bi-embedded/
- Interact with Power BI reports
  - https://docs.microsoft.com/en-us/azure/power-bi-embedded/power-bi-embedded-interact-with-reports
  - http://azure-samples.github.io/powerbi-angular-client/#/scenario1
- Power BI Premium
  - White Paper
  - Pricing calculator