

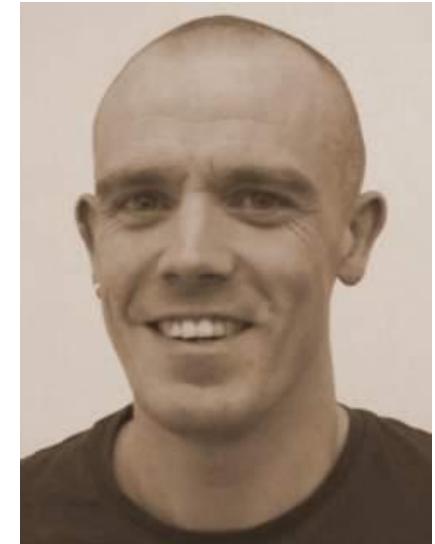
Power BI



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Just Thorning Blindbæk

- ▶ Konsulent i justB
- ▶ Underviser hos Orange Man
- ▶ Initiativtager til MsBIP
- ▶ Arbejdet med Microsoft BI i 10 år
- ▶ Stærkt fokus på front-end
 - Analysis Services
 - Reporting Services
 - PerformancePoint Services
 - Excel og PowerPivot
 - Power BI
- ▶ just@blindbaek.dk / blog.justB.dk / [@justblindbaek](https://twitter.com/justblindbaek)



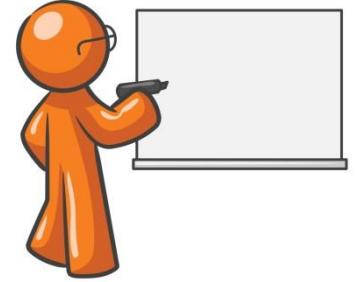
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SSAS
MAESTRO
by Microsoft

Microsoft
CERTIFIED
IT Professional

Microsoft
CERTIFIED
Trainer

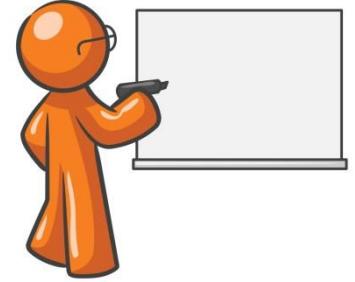
Agenda



- ▶ Hybrid Scenarier
- ▶ Ny licens model
- ▶ Deployment og Apps
- ▶ Embedded Power BI
- ▶ Vigtigste nye features

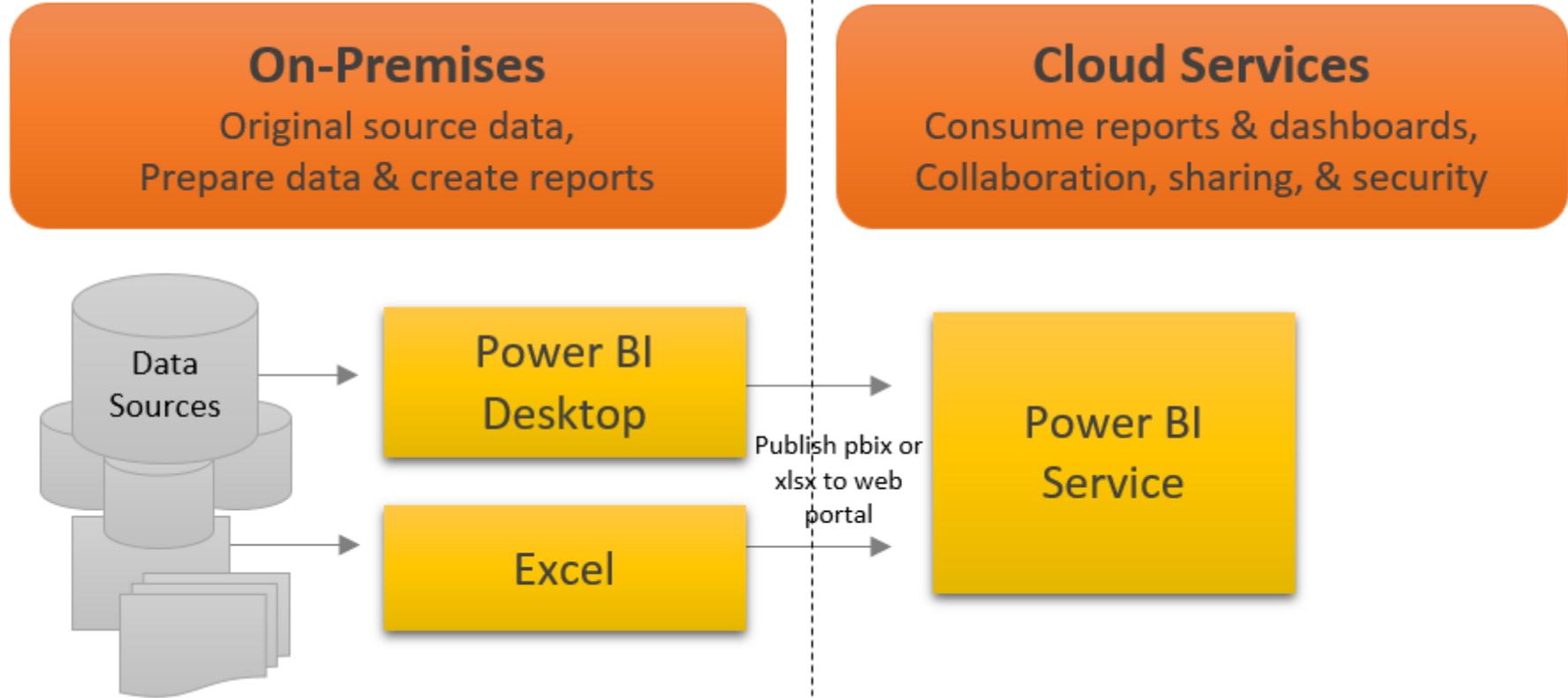
Hybrid Scenarier

Hybrid eller on-premises only?



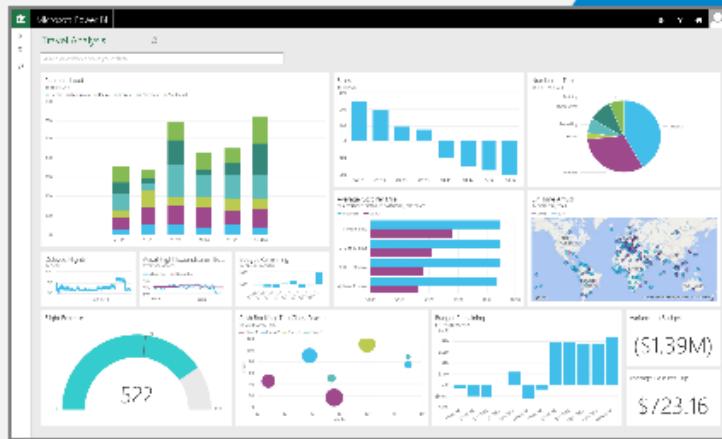
- ▶ Power BI Service
- ▶ Power BI Report Server
- ▶ Fileshare – Power BI Desktop only

Power BI Service



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Live Power BI
reports &
dashboards



Live connection

Cloud

Direct
query

Scheduled
refresh

On-premises

Import data

On-premises
Data Gateway

SQL Server
Analysis Services

Data
Source

Data
Source



Live Query

- ▶ Row level security with EffectiveUserName property
- ▶ Sources
 - ▶ SQL Server Analysis Services Tabular
 - ▶ SQL Server Analysis Services Multidimensional
 - ▶ Azure Analysis Services (Tabular)

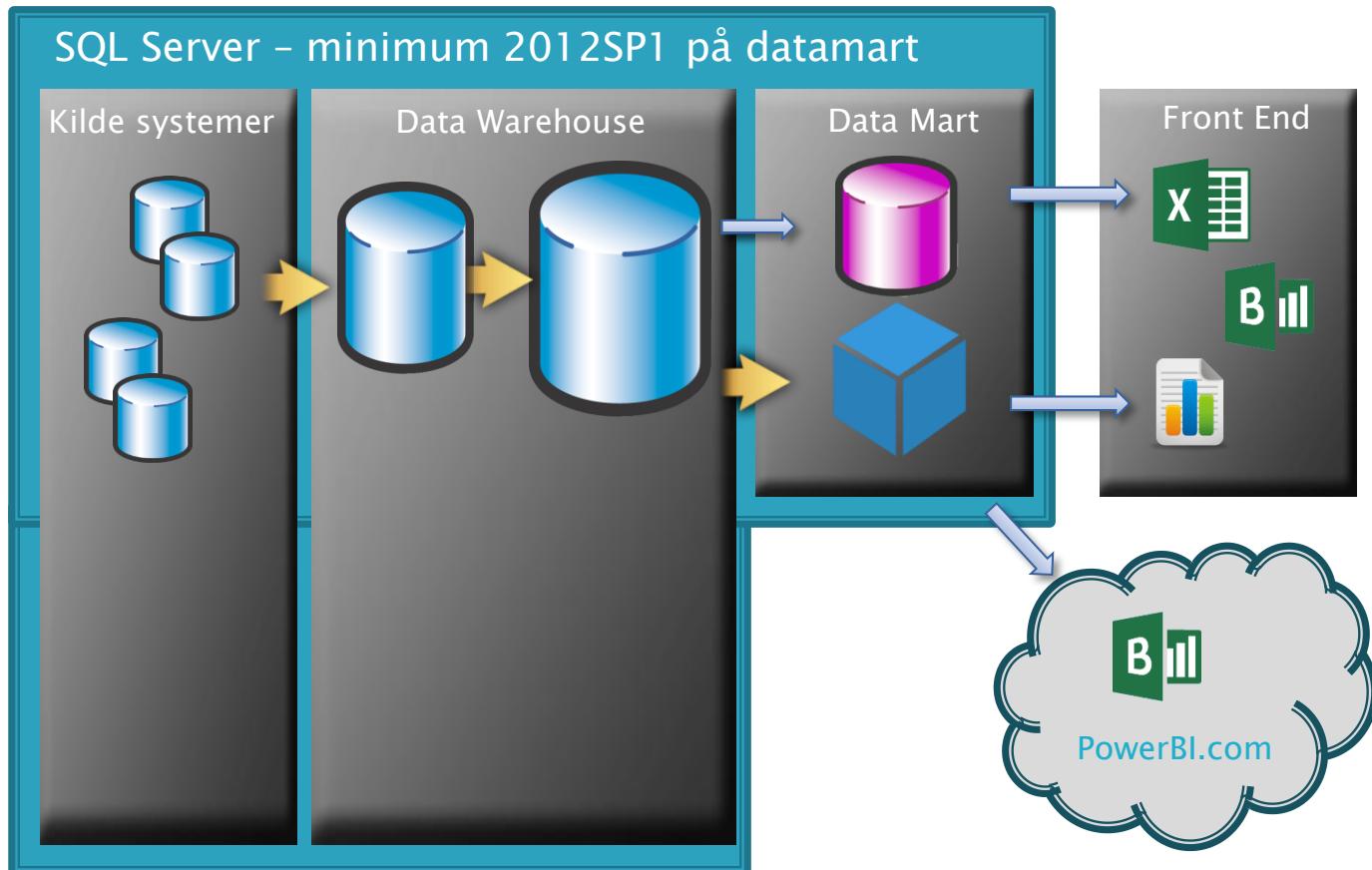
Direct Query

- ▶ Scenario: Near-real time data
- ▶ No row-level security
- ▶ Sources
 - SQL Server
 - SAP HANA
 - Oracle
 - Teradata

Import data

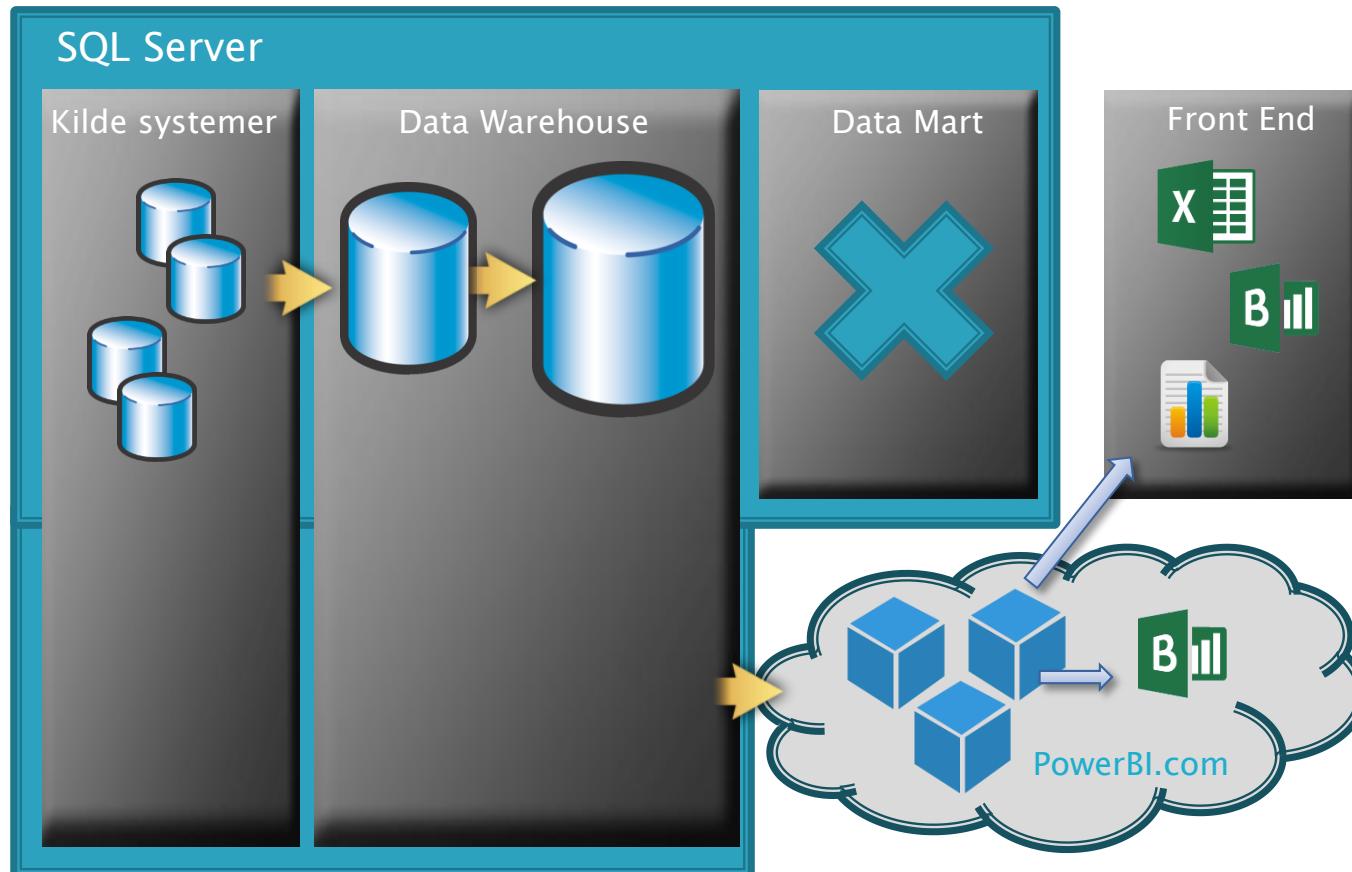
- ▶ Scheduled refresh
- ▶ Sources
 - ▶ SQL Server
 - ▶ Analysis Services
 - ▶ SAP Hana, SAP BW
 - ▶ Oracle, Teradata, IBM DB2, IBM Informix Database, Sybase, MySQL
 - ▶ ODBC
 - ▶ SharePoint lists
 - ▶ Web og OData
 - ▶ File (CSV, XML, Text, Excel, Access)

Power BI Service, live connection



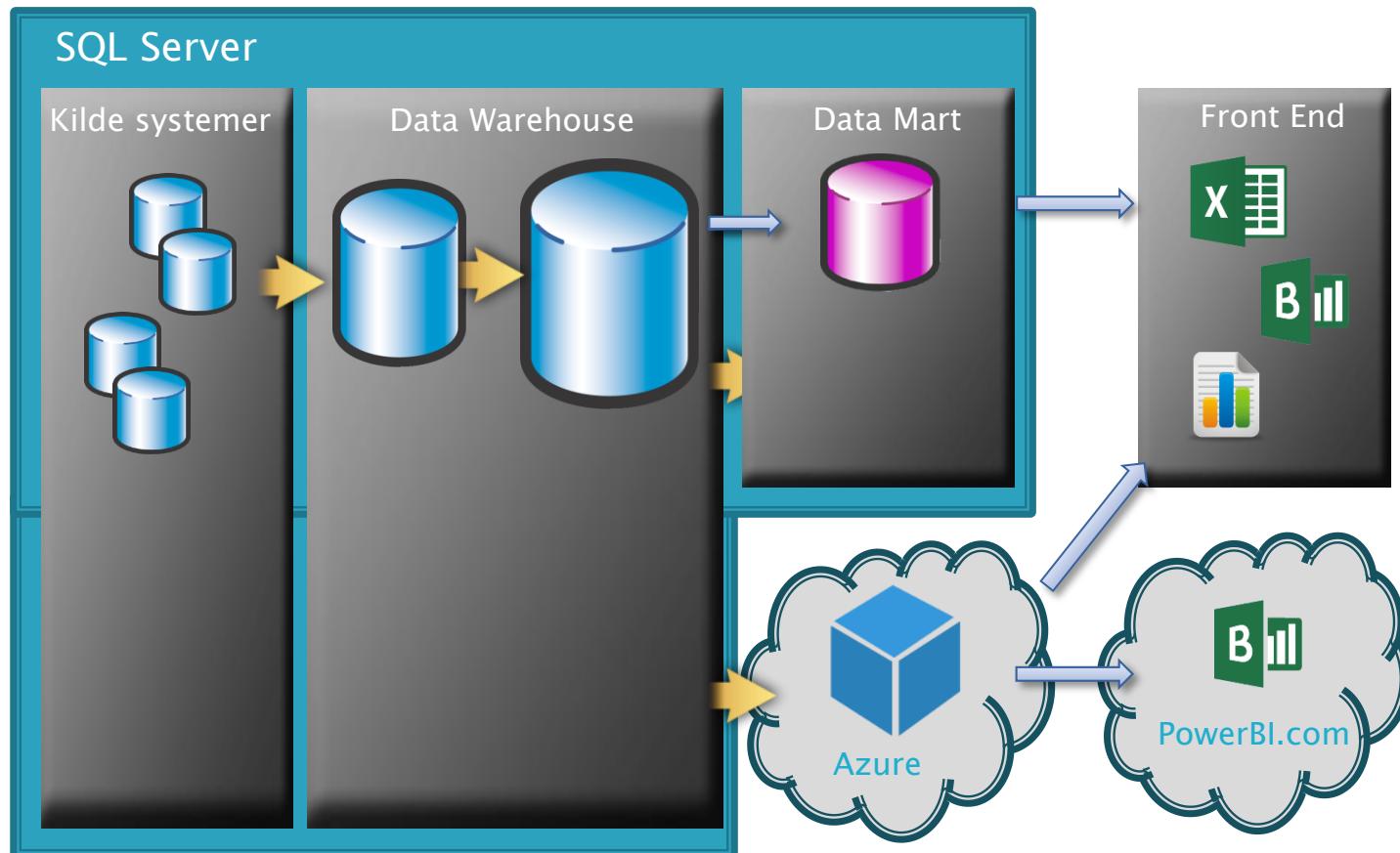
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Power BI Service, import data



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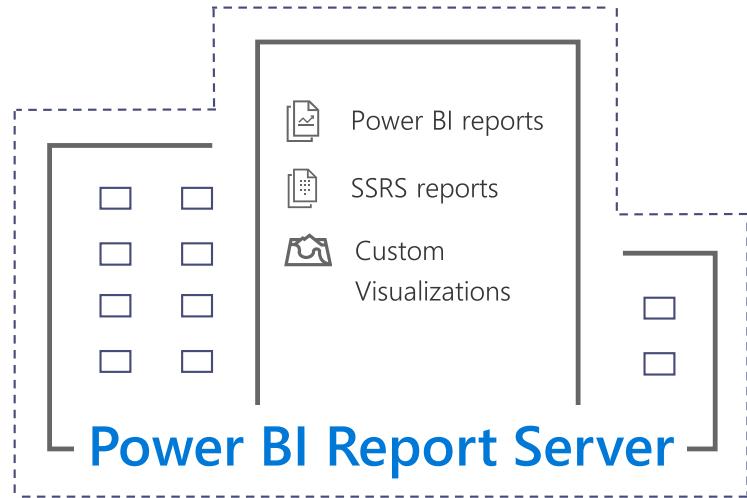
Power BI Service, Azure Tabular



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Power BI Report Server

Self-service BI and enterprise reporting in one solution



Keep Power BI reports on-premises



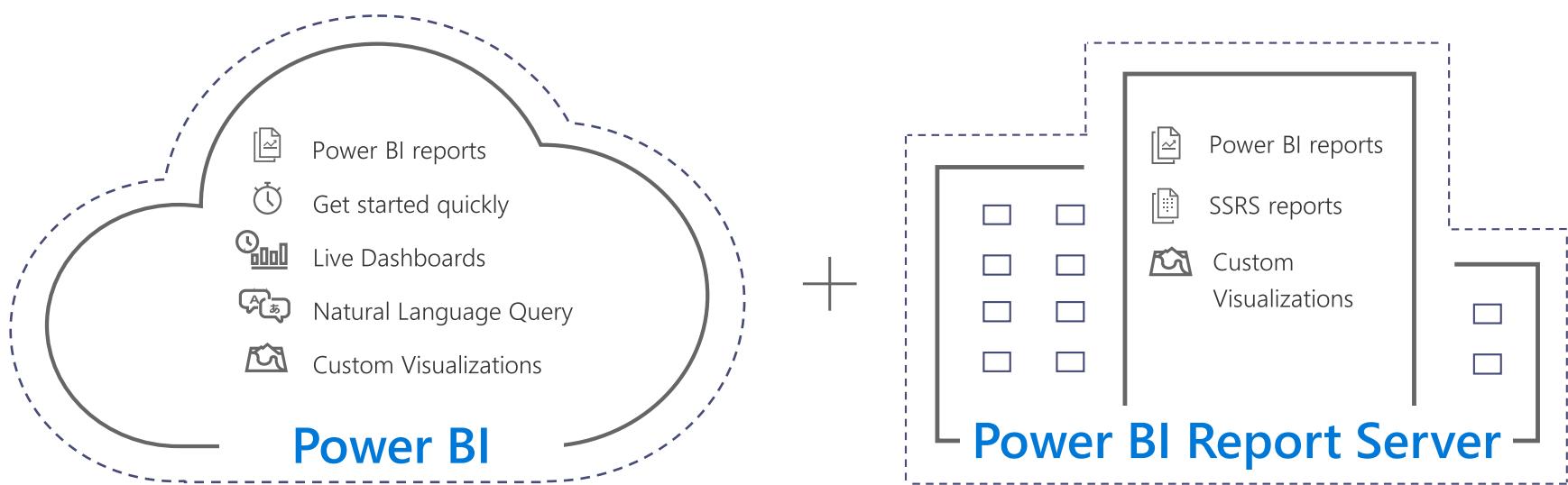
Compatible with SSRS



Move to the cloud on your terms

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Power BI: extending on-premises capabilities



How to acquire Power BI Report Server

Power BI Premium



Power BI Premium includes rights to concurrently deploy **Power BI Report Server** on-premises

SQL Server

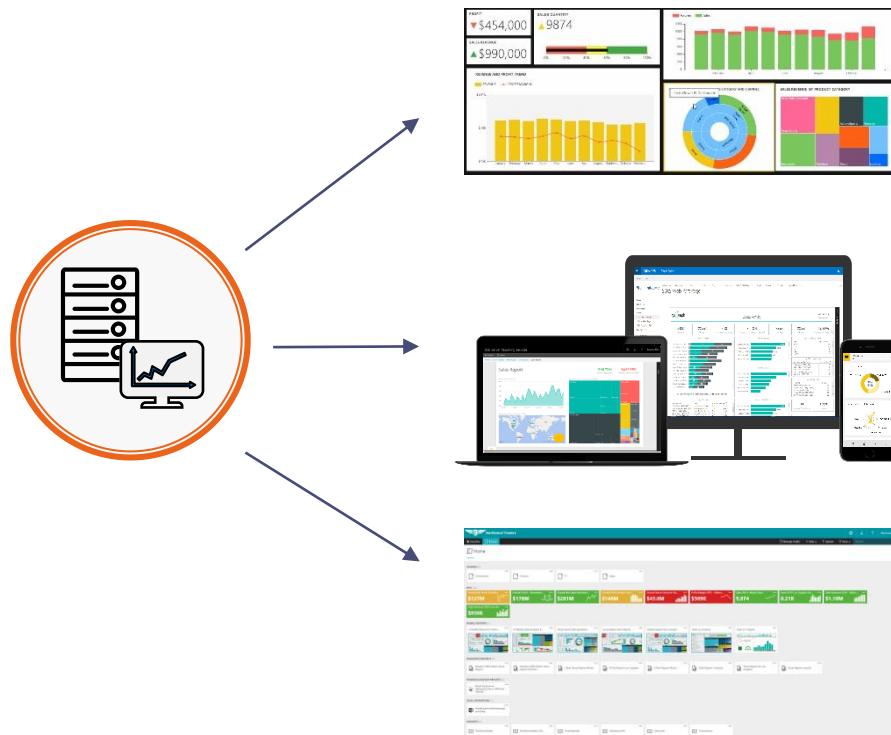


Customers with SQL EE SA also have access to **Power BI Report Server** as a SA benefit

* **Power BI Pro** license required to publish Power BI Reports to Power BI Report Server

Compatible with SSRS

Built on proven SQL Server Reporting Services technology



Publish SSRS reports

Create and publish precisely-formatted, paginated, modern reports

Consume in multiple ways

Modern browsers, mobile app or embed into apps

Benefit from an enterprise-ready solution

Manage permissions, enable security, set up alerts, and access reports in one modern web portal

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Create compelling interactive reports

Using Power BI Desktop



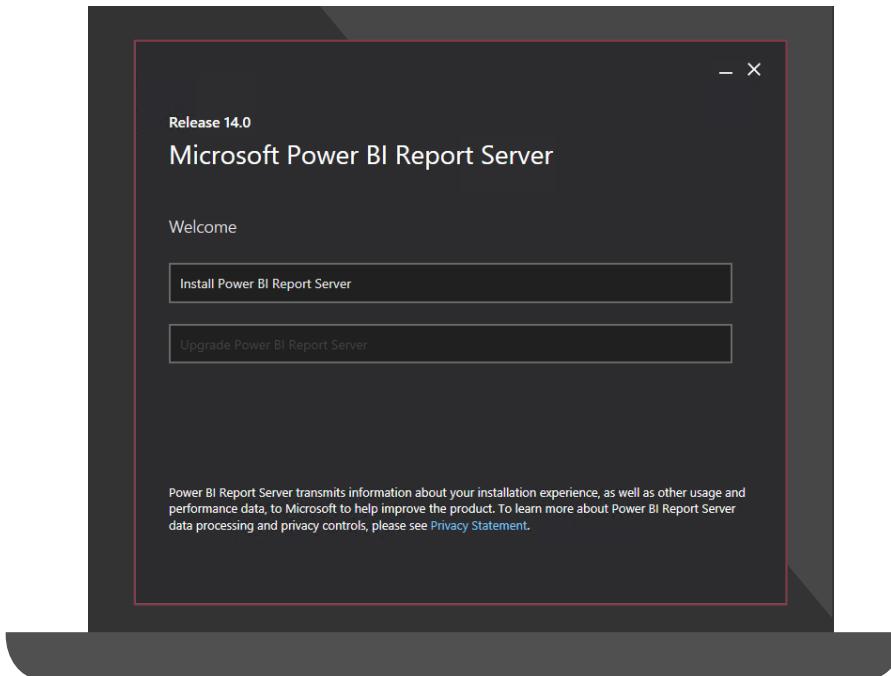
Connect to Analysis Services models
(Tabular or Multidimensional)

Connect directly to additional data sources
in a future update

Explore and visualize your data on a freeform
canvas with a variety of built-in and
custom visuals

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Install in minutes



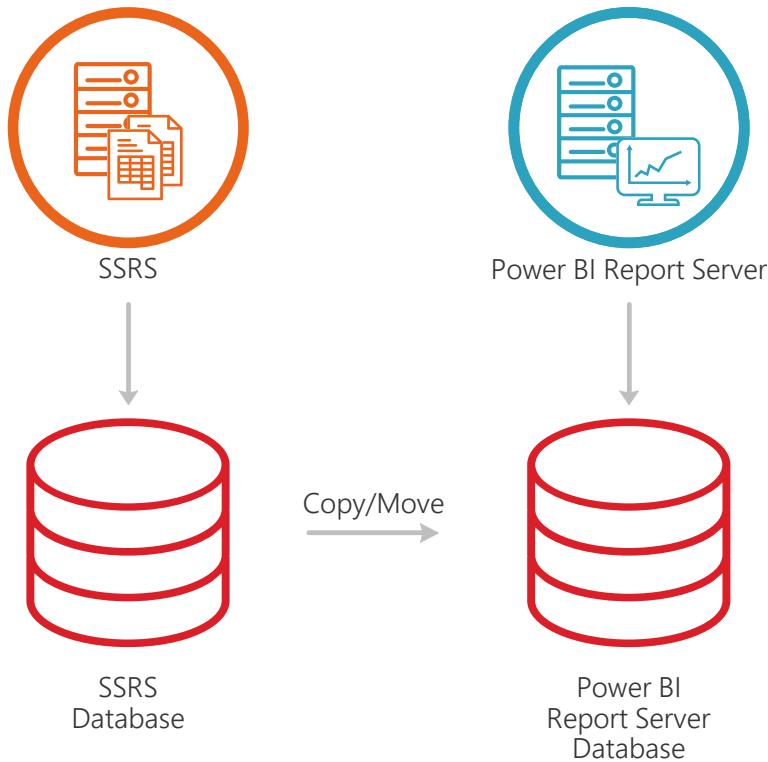
Easy standalone installation and set up

Zero impact on database ETL processes

Requirements

- Windows Server 2012+
- SQL Server Database Engine (2008 SP4+)
- SQL Server Analysis Services (2012)

Migrate from SSRS (Native mode)



Three Step Migration

White paper coming soon!

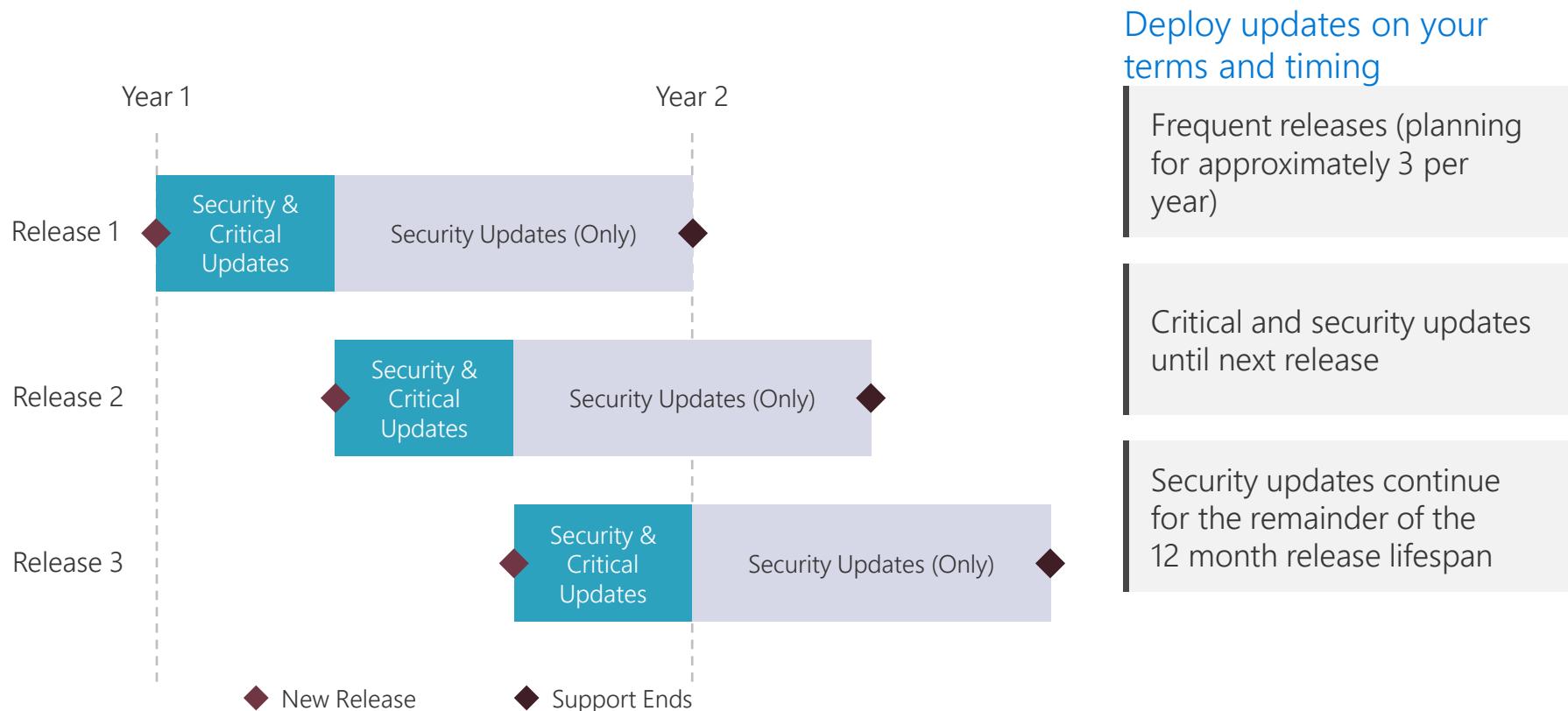
1. Clone the database hosting all your SSRS reports
2. Set up Power BI Report Server using the installation wizard
3. Connect Power BI Report Server to the cloned database via Report Server Configuration Manager

Compare reporting options

	SQL Server Reporting Service	Power BI Report Server	Power BI Service
	On-premises	On-premises	Cloud
		✓	✓
	Real-time Power BI Dashboards		✓
	Content packs / Apps		✓
	Q&A		✓
	Quick Insight		✓
	Built-in embedded analytics services	Planned	✓
	Paginated reports	✓	✓
	Mobile BI	✓	✓
	Lifecycle	Fixed Lifecycle Policy	Modern Lifecycle Policy Fully Managed Service

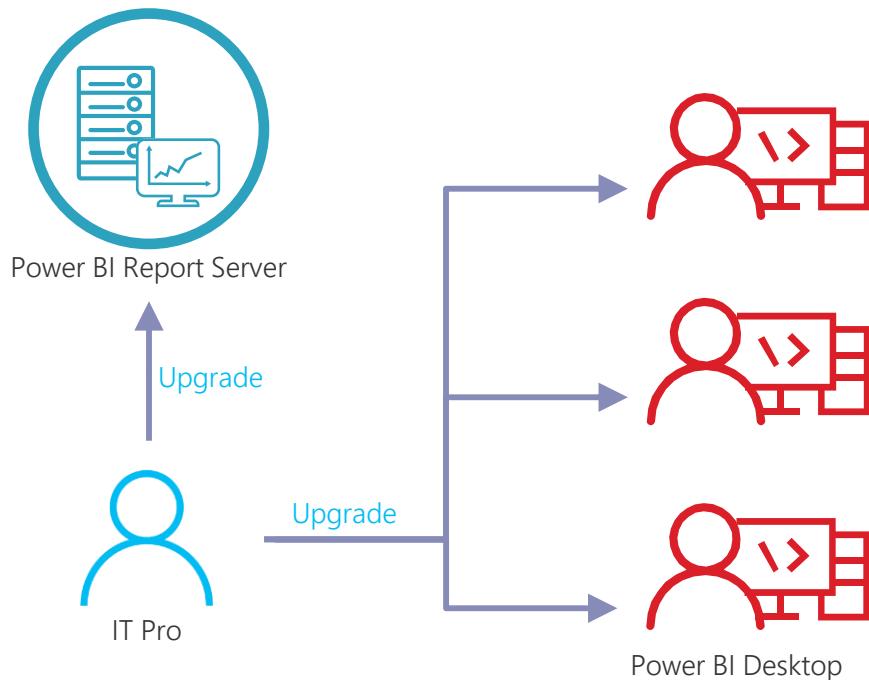
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Modern Lifecycle Policy



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Updating Power BI Desktop + Report Server

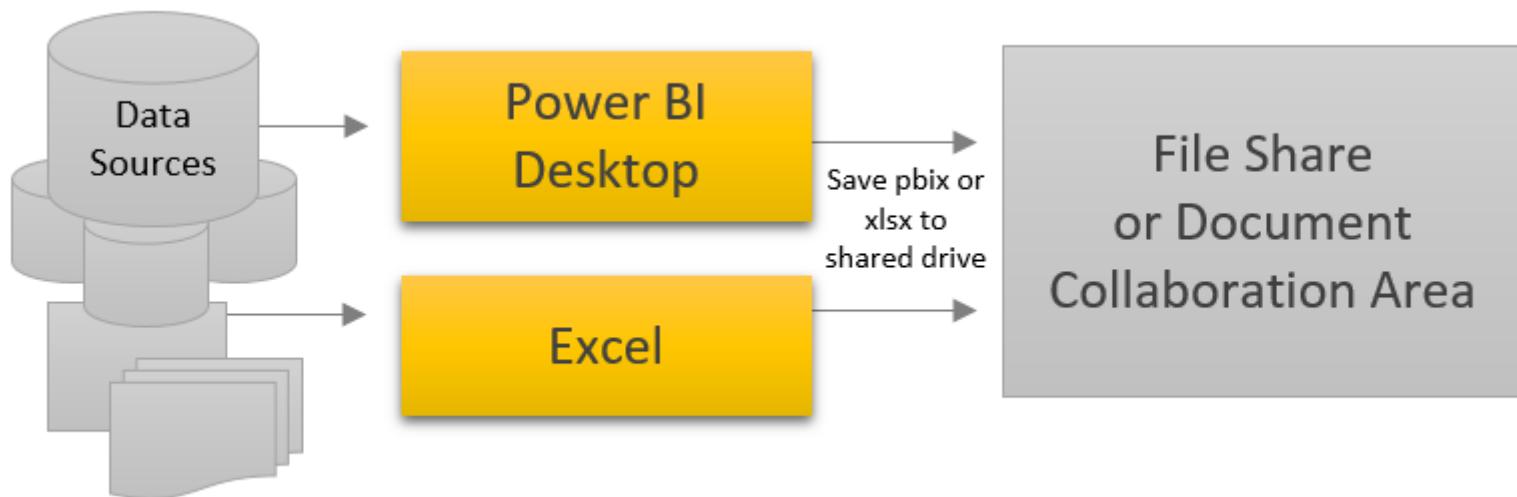


Power BI Report Server
and Power BI Desktop
release concurrently

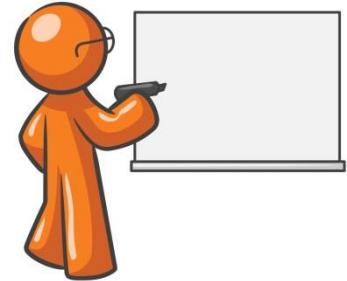
Must be upgraded
simultaneously

On-premises file share

- ▶ Licensing: Free!
- ▶ No web rendering
- ▶ Opens reports in Power BI Desktop



Power BI license



Power BI service

Power BI Desktop

Authoring and exploration

Today

Connect to 70+ sources
Data prep and mashup
Report creation and exploration

Future

Power BI Free

Personal use



Smaller capacity limits and data refresh rates
Access only to select data sources
Dashboard sharing limitations

Power BI Pro

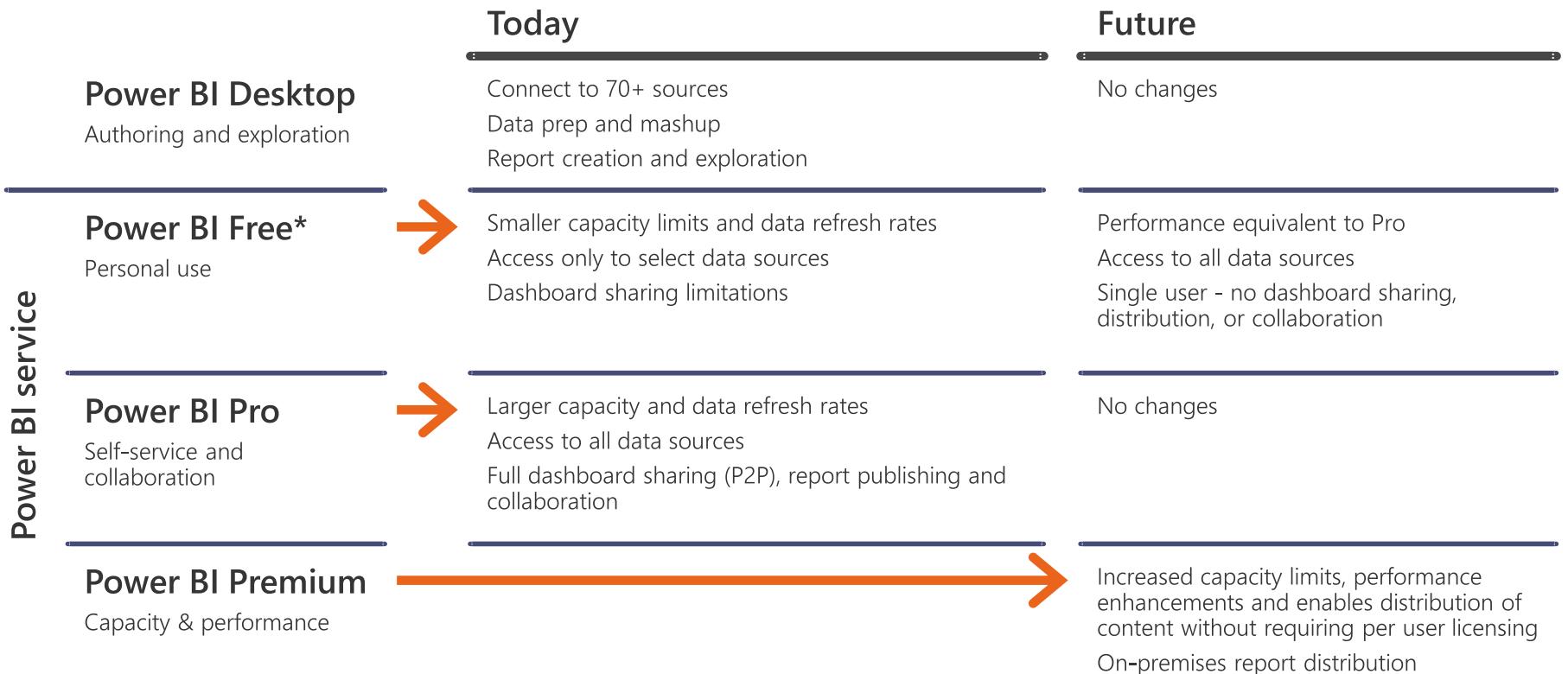
Self-service and collaboration



Larger capacity and data refresh rates
Access to all data sources
Full dashboard sharing (P2P), report publishing and collaboration

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Power BI license



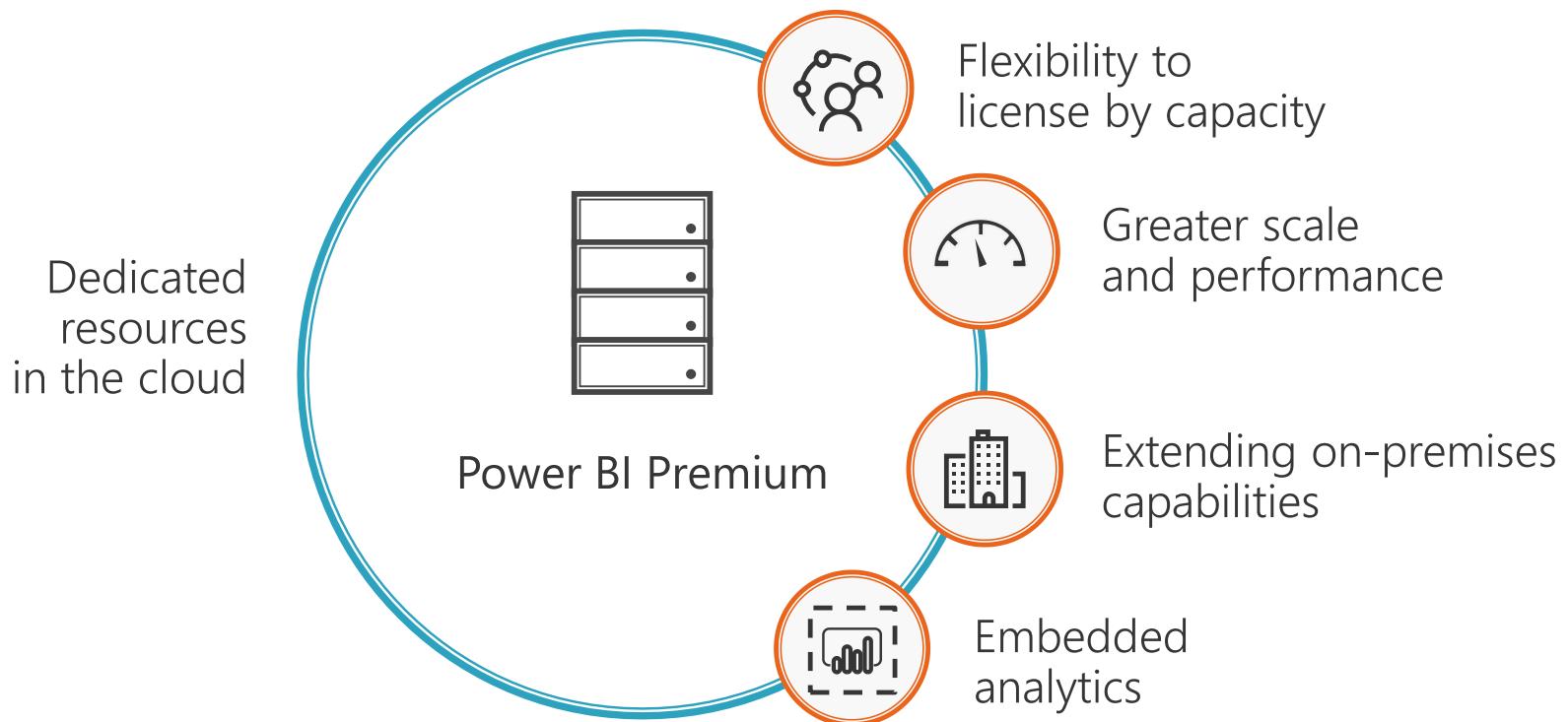
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Power BI user license tiers

	Free (Basic)	Pro (\$10/user/month)
Connect to 70+ data sources	✓	✓
Publish to web	✓	✓
Peer-to-peer sharing	✗	✓
Enterprise distribution		
Apps	✗	✓
Export to PowerPoint, CSV	✗	✓
Email subscriptions	✗	✓
Embed APIs and controls	✗	✓
Collaboration		
Group workspaces	✗	✓
Analyze in Excel, analyze in Power BI Desktop	✗	✓

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Introducing Power BI Premium

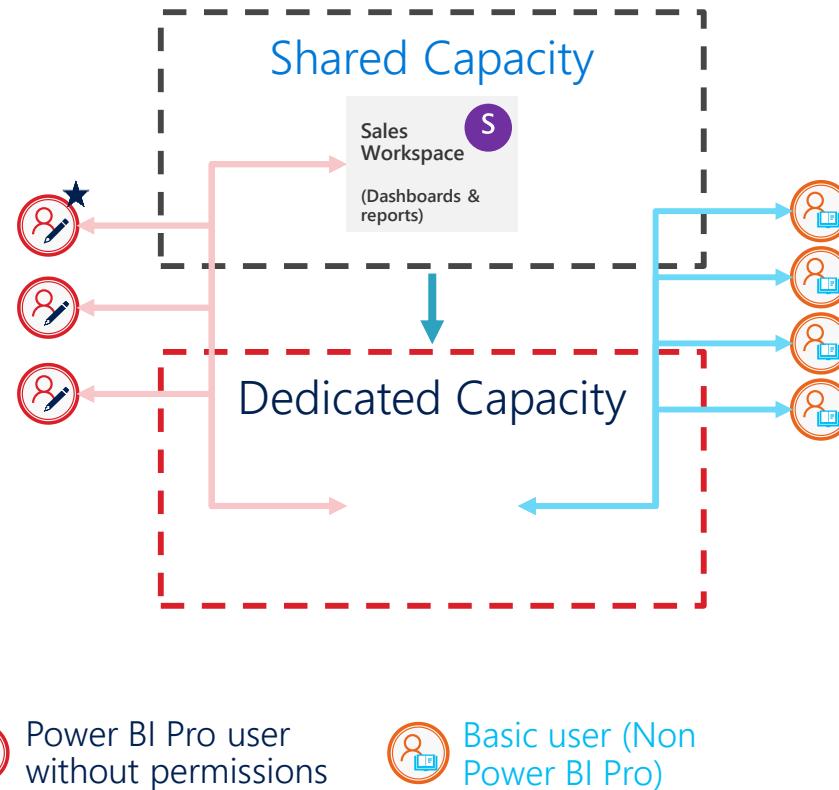


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Distribute insights across the organization

Power BI Pro users have access to a sales workspace in shared capacity

Power BI Pro user with assignment permissions designates the workspace as Premium (dedicated capacity)



Non Power BI Pro users are not able to access sales workspace in shared capacity

Content running on dedicated capacity can be distributed to all users via a Power BI App

Power BI Pro user with permissions

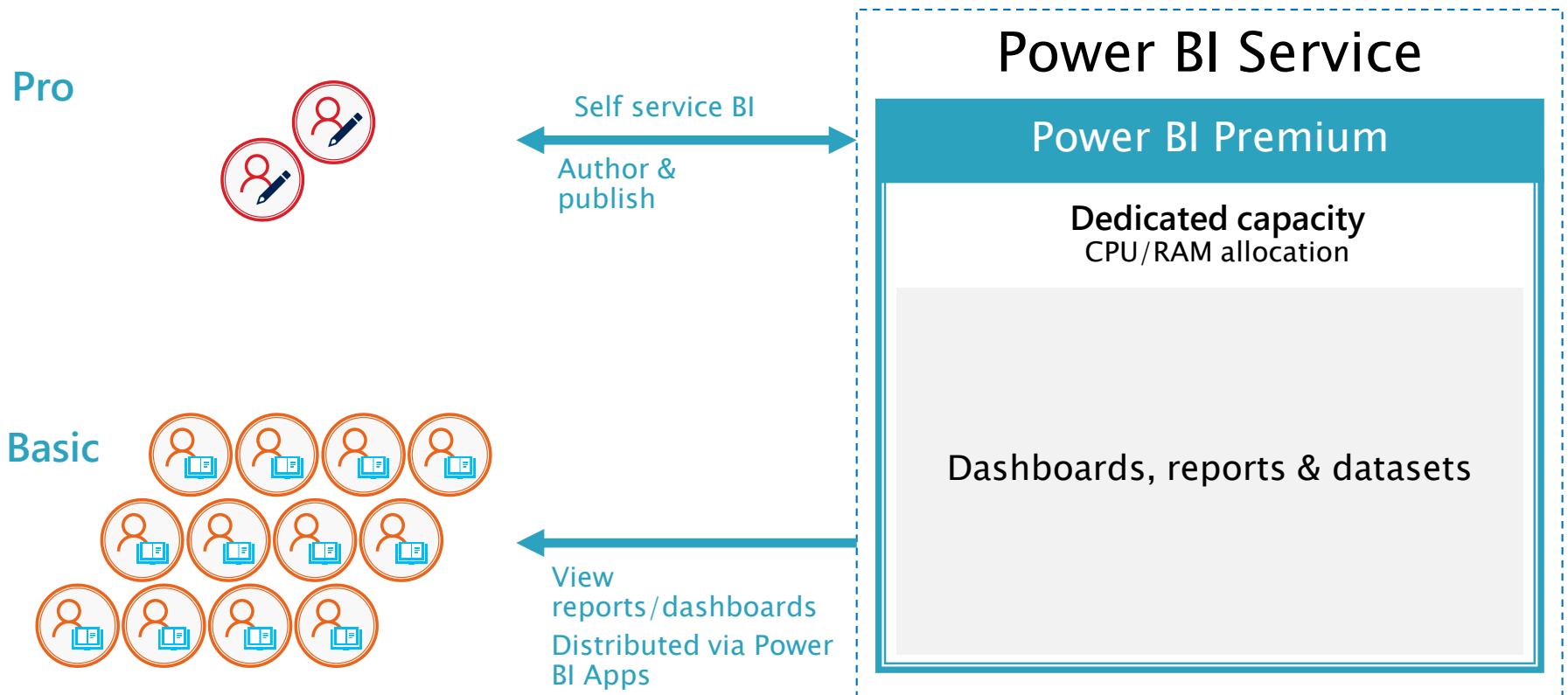
Power BI Pro user without permissions

Basic user (Non Power BI Pro)

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Distribute to all users

Scale to meet your BI user needs



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Permissions

Two levels of assignment permissions

Capacity admins



- Add capacity
- Assign admins
- Granting workspace permissions
- Bulk assign workspaces to capacity
- Remove workspaces from capacity
- Monitor capacity usage

Power BI Pro user with assignment permissions



- Assign workspaces to capacity
- Grant other Pro users access to their capacity workspace

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Management

Assign admins and capacity owners

Power BI Admin portal

Capacity settings

Purchase Power BI Premium to manage your capacity settings. [Learn more](#)

Buy

Search content...

Capacity name	Status	Admins	Actions
Friendly name	Active	Tim Levin, Benjamin Bruebard Kelmer, Ben Nelson, Ben Wallace +1 more	Settings
Capacity C	Assigned	Tim Gunn	Settings
Capacity D	Expiring	Ben Horin	Settings
Capacity E	Disabled	Ben Nelson	Settings
Capacity F name is really long long long...	Suspended	Ben Nelson	Settings
Capacity G	Resumed	Ben Koller	Settings

All administrative actions for Power BI Premium in one place – the Power BI admin portal

Manage the capacity owner list



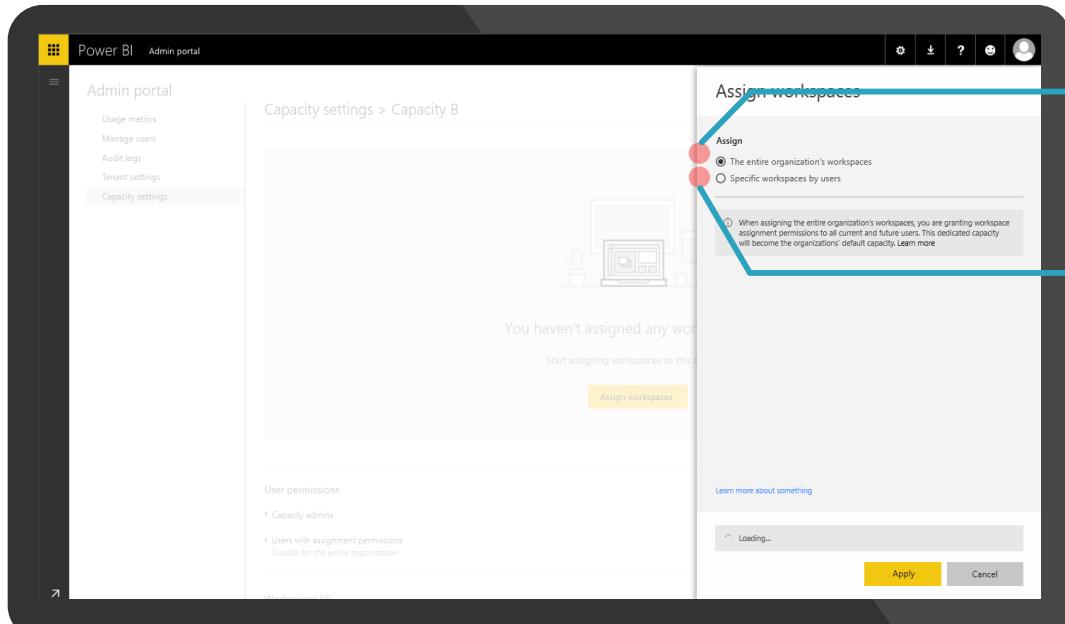
Capacity admin



Pro user with assignment permissions

Workspaces

Assign workspaces



Migrate the entire organization workspaces

Migrate specific users' workspaces to capacity



Capacity admin



Pro user with assignment permissions

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Workspaces

Remove workspaces



When a workspace is removed, it is moved to the shared capacity

A screenshot of the Power BI Admin portal. The left sidebar shows 'Admin portal' with options: Usage metrics, Manage users, Audit logs, Tenant settings, and Capacity settings (which is selected). The main area is titled 'Workspaces (1278)'. It has a search bar, a table header with columns 'Workspace name', 'Status', and 'Workspace admins', and a single row for 'Workspace A' (status 'Assigned', admin 'Lya Kochavi'). On the right, there's a button 'Assign workspaces' and a modal window titled 'Actions' with the option 'Remove workspace from this capacity.' A red circle highlights the 'X' button in this modal. A blue arrow points from the text 'When a workspace is removed, it is moved to the shared capacity' to the 'X' button.

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Workspaces

Grant workspace permissions

The screenshot shows the Power BI Admin portal interface. On the left, there's a sidebar with options like 'Usage metrics', 'Manage users', 'Audit logs', 'Tenant settings', and 'Capacity settings'. The 'Capacity settings' option is highlighted with a red circle and a blue arrow pointing to it from the text above. Below the sidebar, there's a summary box with green status indicators: 'Memory pressure peak utilization is good', 'Query peak utilization is good', and 'Snapshot peak utilization is good'. Underneath this, there's a section titled 'Admins and contributors' with a link to 'Capacity admins'. Another red circle and blue arrow point to the link 'Users with assignment permissions' under 'Capacity admins'. This link is described as 'Enable for a subset of the organization'. The main content area is titled 'Workspaces (1278)' and shows a table with columns: 'Workspace name', 'Status', 'Workspace admins', and 'Actions'. The table lists five workspaces: 'Workspace A', 'Workspace B name is super dupe...', 'Workspace C', 'Workspace D', and 'Workspace E', all of which are assigned and have multiple admins listed. There's also a search bar and a 'Sort by' dropdown.

Grant permissions to add additional workspaces to an instance of Power BI Premium for:

- The entire organization
- Specific users



Capacity

Monitor capacity usage

The screenshot shows the Power BI Admin portal interface. On the left, a sidebar lists 'Admin portal' sections: Usage metrics, Manage users, Audit logs, Tenant settings, and Capacity settings (which is selected). The main content area is titled 'Capacity settings > Capacity B'. A yellow banner at the top states: 'Some usage KPIs are over the safe zone: x, x, and x. Consider purchasing more capacity. [Buy capacity](#)'. Below this, there's a section for 'Usage by work (12.1.17-19.1.17)' with three cards: 'Query resources' (OPU peak utilization (>80%) is poor, 16 times in the last week), 'Memory thrashing' (peak utilization (<60%) is good, 3 times in the last week), and 'Direct query' (peak utilization (>80%) is poor, 18 times in the last week). Another section for 'Snapshot resources' shows a single card: 'Snapshot peak utilization (>80%) is marginal, 10 times in the last week'. At the bottom, there's a 'User permissions' section with 'Capacity admins' and 'Users with assignment permissions' (with a note: 'Enable for the entire organization'). The 'Workspaces' section shows 1278 items.

Easily visualize the usage of your dedicated capacity from the Power BI admin portal



Capacity admin



Pro user with assignment permissions

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Capacity

Move content from shared to dedicated capacity



A screenshot of the Power BI service interface. On the left, the navigation pane shows 'Contoso Sales' selected. In the center, a list of workbooks and datasets is displayed. A blue arrow points from the 'Contoso Sales' entry in the navigation pane to the 'Edit workspace' dialog box. Another blue arrow points from the 'Premium' toggle switch in the 'Edit workspace' dialog to the 'Premium' status indicator in the workspace list. The 'Edit workspace' dialog includes fields for Name (Contoso Sales), Viewing access (Private - only approved members can see what's inside), Editing access (Members can edit Power BI content), Members (Add), Premium (On), and Workspace capacity (Studio 44). Buttons for Save and Cancel are at the bottom.

Easy to identify
workspaces with Premium

Easily move content from
Capacity to Shared and
back again

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Power BI capacity tiers

	Power BI Pro (shared capacity)	Power BI Premium (dedicated capacity)
Dataset size	1 GB	Not restricted ¹
Refresh rate	8/day	Not restricted
Collaboration		
Edit & save customized views	✓	✗
Create personal dashboards (pin to new dashboards)	✓	✗ 2
Export & analyze data in Excel or Power BI Desktop	✓	✗ 2
Share & view Excel workbooks with Excel Web App Support	✓	✗ 2
Export to PowerPoint	✓	✗ 2
Share dashboards & collaborate with Office 365 Groups	✓	✗ 2
Integrate content with Microsoft Teams	✓	✗ 2
Isolation with dedicated hardware	✗	✓
Enterprise distribution to all users		
Apps	✗	✓ 3
Email subscriptions	✗	✓ 1
Embedded API and controls	✗	✓ 1,4
Performance		
Pin to memory	✗	✓ 1
Incremental/dedicated refresh	✗	✓ 1
Read-only replicas	✗	✓ 1
Geo distribution	✗	✓ 1
Publish Power BI reports on-premises	✗	✓

¹ Future enhancements coming to Power BI Premium post GA

² Collaboration capabilities can be enabled with a Power BI Pro license per user

³ Basic user consumption in apps includes viewing content in web and Mobile, using Q&A, Quick Insights, and Cortana

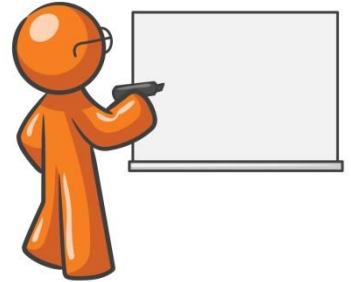
⁴ Embedded SKU only allow consumption through embedded APIs and controls, NOT Apps or Email subscriptions

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Power BI licensing

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

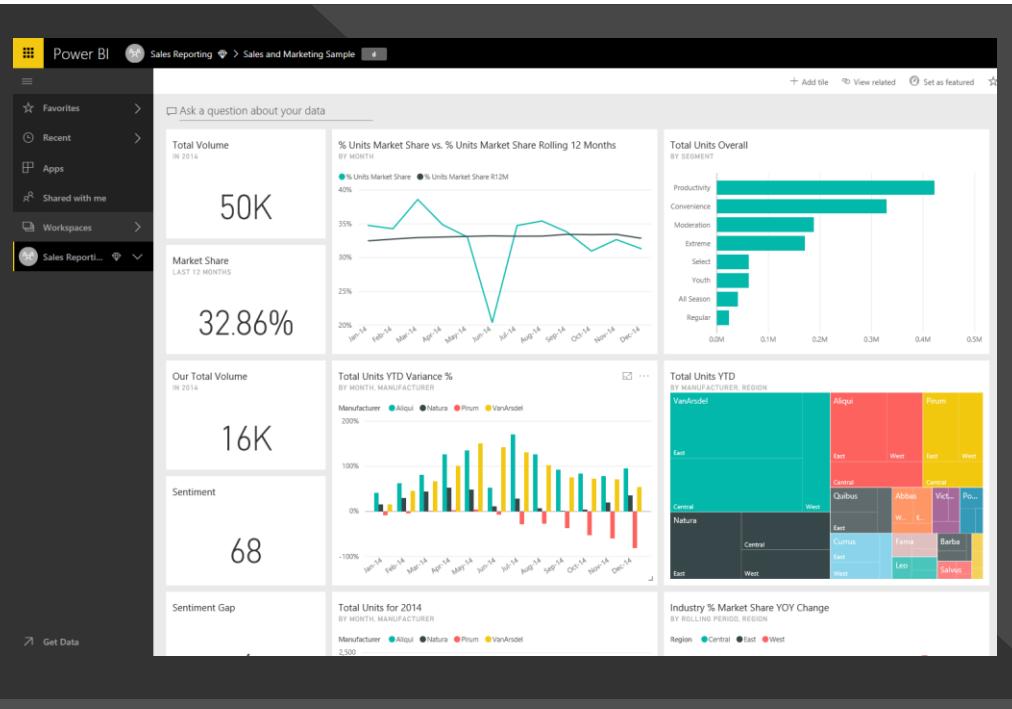
Deployment og Apps



- ▶ Content packs → Power BI Apps
- ▶ Group workspace → App workspace
- ▶ New content workflow
- ▶ Environments
- ▶ Roadmap

Power BI Apps

Distribute to all users

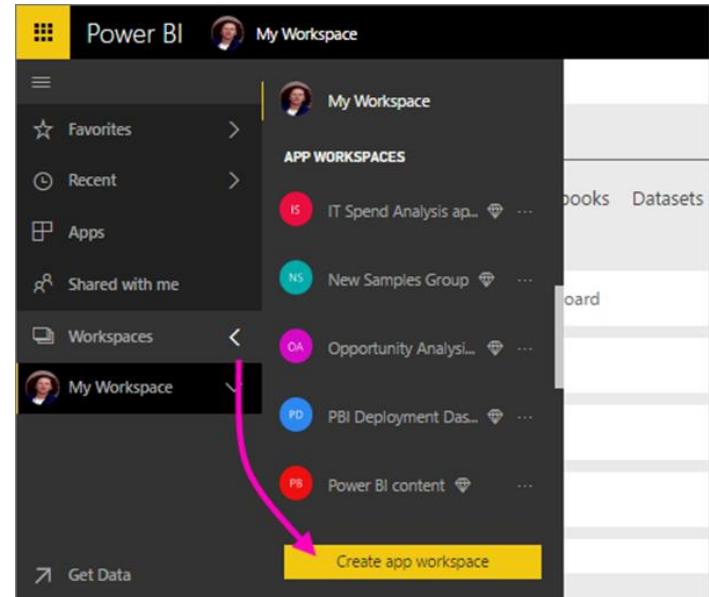


1. Begin publishing new app
2. Package reports, determine what to publish, dashboards and more to specific groups and users
3. Confirm permissions
4. Publish an app
5. Consumers see shared apps in their workspace

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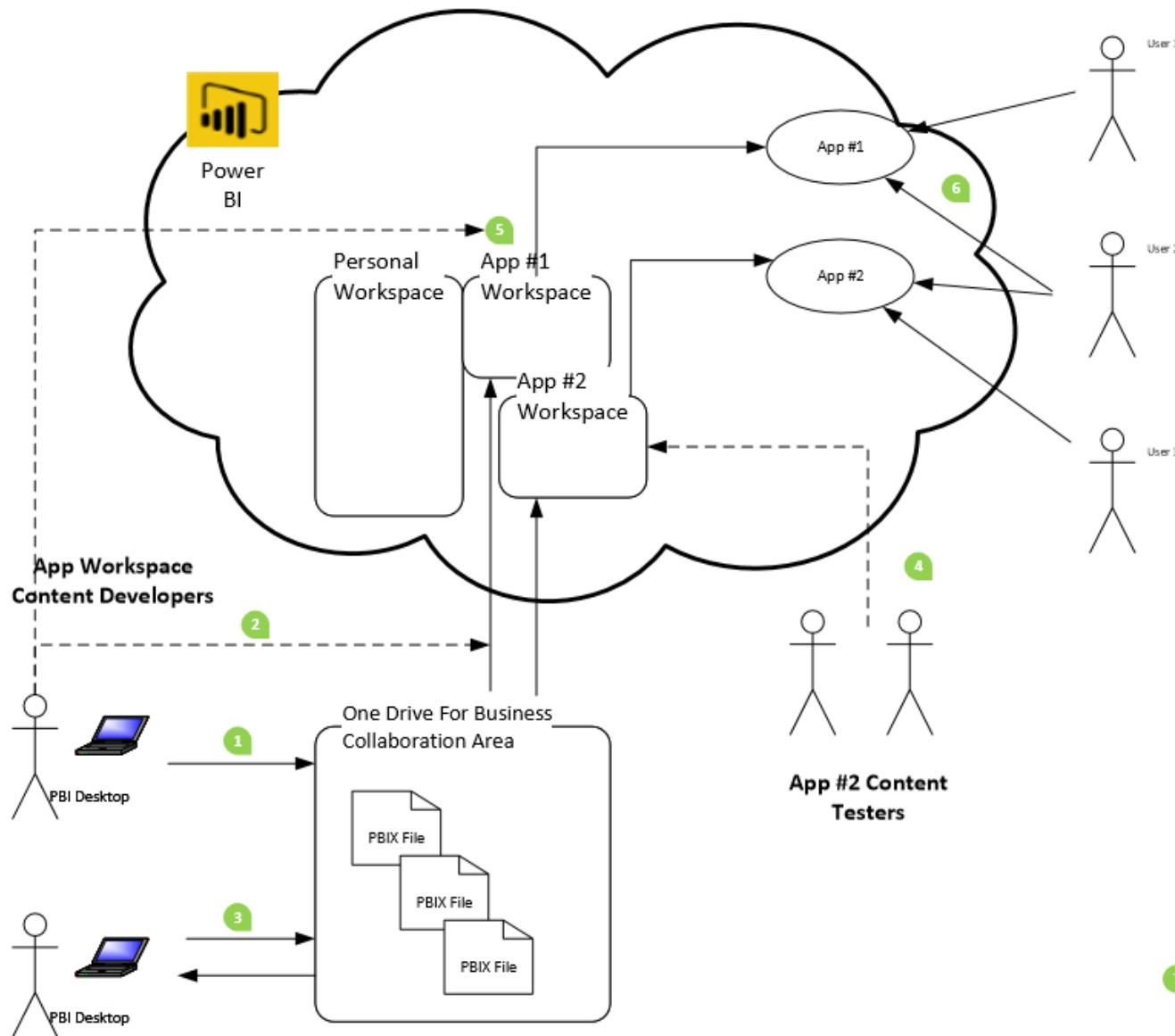
App workspace

- ▶ The workspace is the staging area for an app
- ▶ Serves as the container for the content in the app
- ▶ All existing group workspaces can serve as app workspaces
- ▶ Apps are 1:1 with workspaces



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Power BI Content Workflow



Pre-Requisite

OneDrive, UNC file path, or even a source control repository should be setup to store PBIX files. App Workspaces should also be created to align with app content delivery

- 1 A report author will use the Power BI Desktop to develop content. The PBIX file should be saved to a OneDrive location (or UNC file path) that is designated for your Power BI Content. This ensures multiple authors have access to the source files.
- 2 If the report author is happy with the result, they can publish from the OneDrive location to an App Workspace in Power BI to start creating the dashboard.
- 3 As the OneDrive location is shared with other content developers , another report author on the team can collaborate and make additional changes on the report. Steps 1&2 can be repeated as often as necessary
- 4 Within the App workspace, users can be dedicated as “read only” to that workspace so that they can perform testing/QA function on the content. They can then collaborate with report authors and steps 1-3 can be repeated as necessary.
- 5 Once the content has been verified, the report authors at that time can publish an App from the app workspace for distribution to the end users. Apps can be distributed by active directory groups. Note that all content in the app workspace is distributed with the app.
- 6 At the time of publishing, the author can copy the url and send to the users, or the users can go to the Power BI App Source to retrieve the app. End users do not have permission to modify app content.
- 7 As report changes are necessary, steps 1-5 can be repeated without effecting the end user's app. The report authors can republish the app to promote changes to end users when they are ready.

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Content Workflow

- 1) User A develop a report in Power BI desktop
- 2) User A publish to App Workspace
- 3) User B changes report and republish
- 4) User C test report in App Workspace
- 5) User A or B create App and publish
- 6) User D subscribe to App

Step 1-4 can be repeatet without affecting the end users. App is first updated with update in step 5

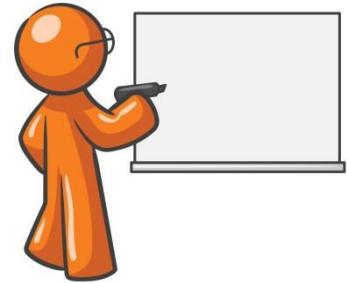
Environments

- ▶ Power BI desktop acts as Dev environment
- ▶ Power BI workgroup acts as Test environment
- ▶ Power BI Apps is the output for Production

Apps Roadmap

- ▶ Create workspaces without creating other artifacts like O365 groups in the background
- ▶ Directly push Apps to end users
- ▶ Selective publish from workspace
- ▶ Copy between workspaces
- ▶ Alert and e-mail subscriptions
- ▶ External sharing

Embedded Power BI



Power BI Embedded is converging with Power BI

Unlocking Power BI for ISVs

All Power BI service capabilities can be used in apps
Unified API for integrating and embedding Power BI

Scale and performance

Increased capacity and model sizes, faster refresh rates, performance isolation, and other capabilities

Predictable costs

Licensed by capacity units delivering predictable costs

Application architecture stays unchanged

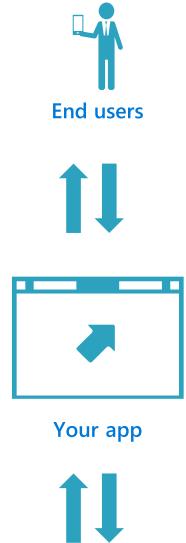
Application provisioning changes



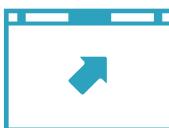
Power BI



Power BI Embedded



End users



Your app



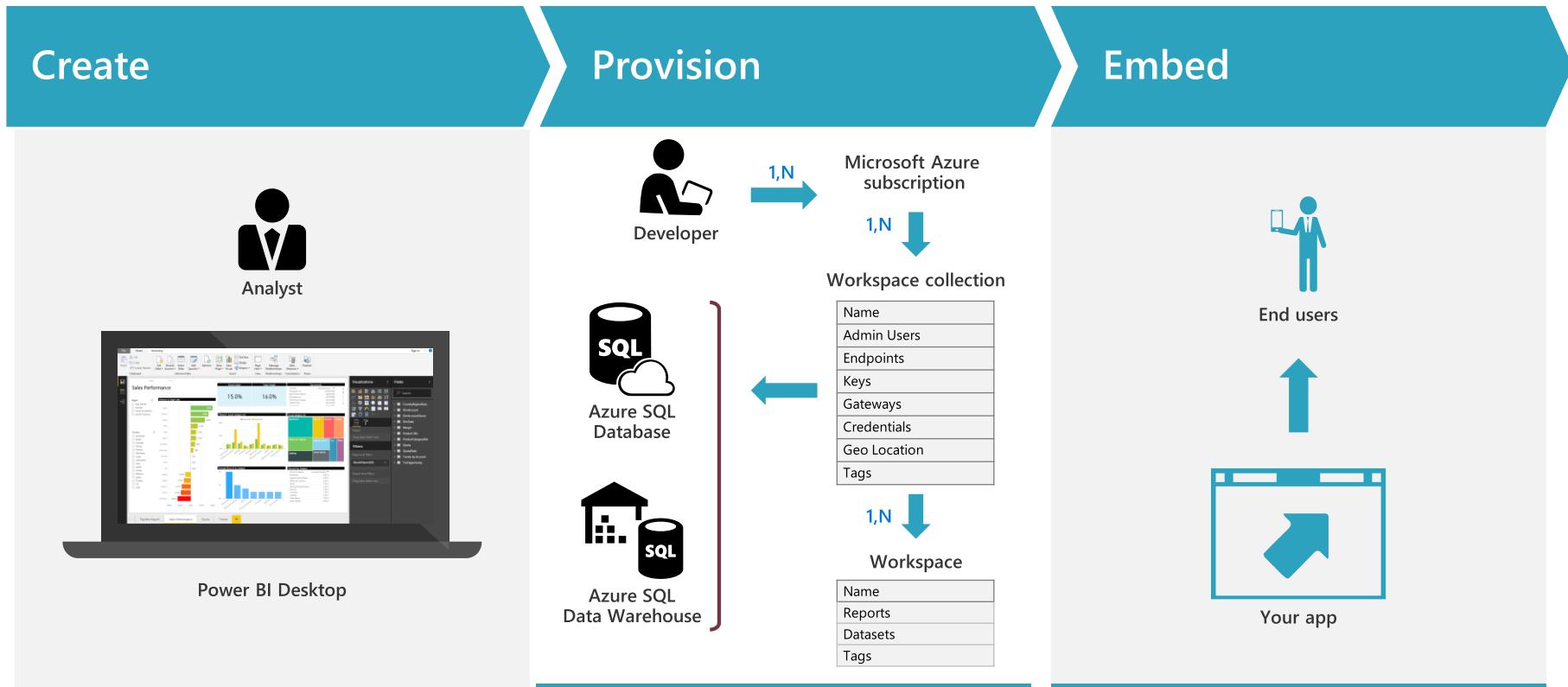
Application Developer



Analyst

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Power BI Embedded: Current Experience



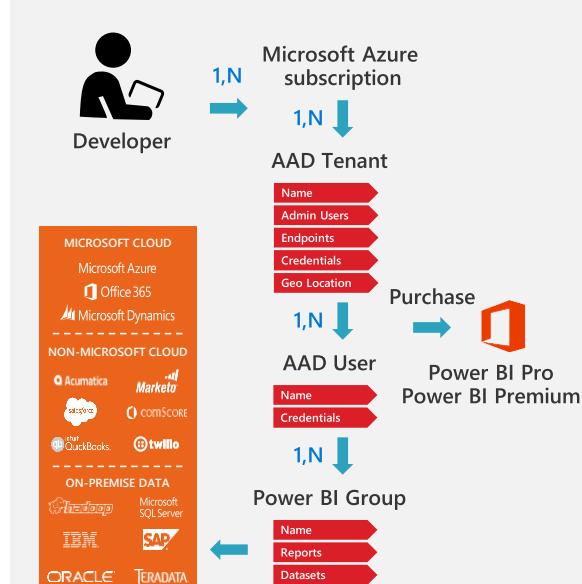
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Power BI: New Experience

Create



Provision



Embed



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Create experience

Today with Power BI Embedded

Create reports with Power BI Desktop

Future experience with Power BI

Create reports with Power BI Desktop



Connect to all data sources available in Power BI

Direct Query available for Cloud and on premise data sources

Cached models with refresh

Create

Provision

Embed

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Provision experience

Today with Power BI Embedded

Provision in Azure Workspace collection as security boundary

Provision in Azure Workspace as report containers

Purchase Power BI Embedded

Future experience with Power BI

Provision in Azure AAD Tenant/User as security boundary

Provision in Power BI Groups as report containers

Purchase Pro license(s) for development
Purchase Power BI Premium for testing and production environments



Publish reports directly from Power BI Desktop to the relevant group (container)

Setup Gateway for on-premise data sources

Setup refresh for cached models

Setup tenant level admin settings

Create

Provision

Embed

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Embed experience

Today with Power BI Embedded

Embed using Power BI Embedded APIs

Manage users access rights with Embed tokens

Future experience with Power BI

Embed using Power BI APIs

Manage users access rights with Embed tokens



Embed dashboards

Create

Provision

Embed

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Control costs with capacity-based pricing

POWER BI DESKTOP *Authoring & Exploration*

Free

POWER BI PRO *Admin | Content publishing | Development*

\$9.99/user/month*

POWER BI PREMIUM *Testing | Deployment*

Node***	Virtual cores	Deployment option	Price per month**	Availability
Power BI Premium EM1	1	PaaS	\$625	July 2017
Power BI Premium EM2	2	PaaS	\$1,245	July 2017
Power BI Premium EM3	4	PaaS	\$2,495	June 2017
Power BI Premium P1	8	PaaS & SaaS	\$4,995	June 2017

*Power BI Pro available through 2-month trial and included in MSDN subscription benefits

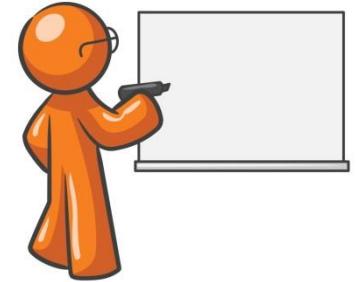
**Yearly commitment

***EM1, EM2, EM3 SKUs do not include Power BI Report Server

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

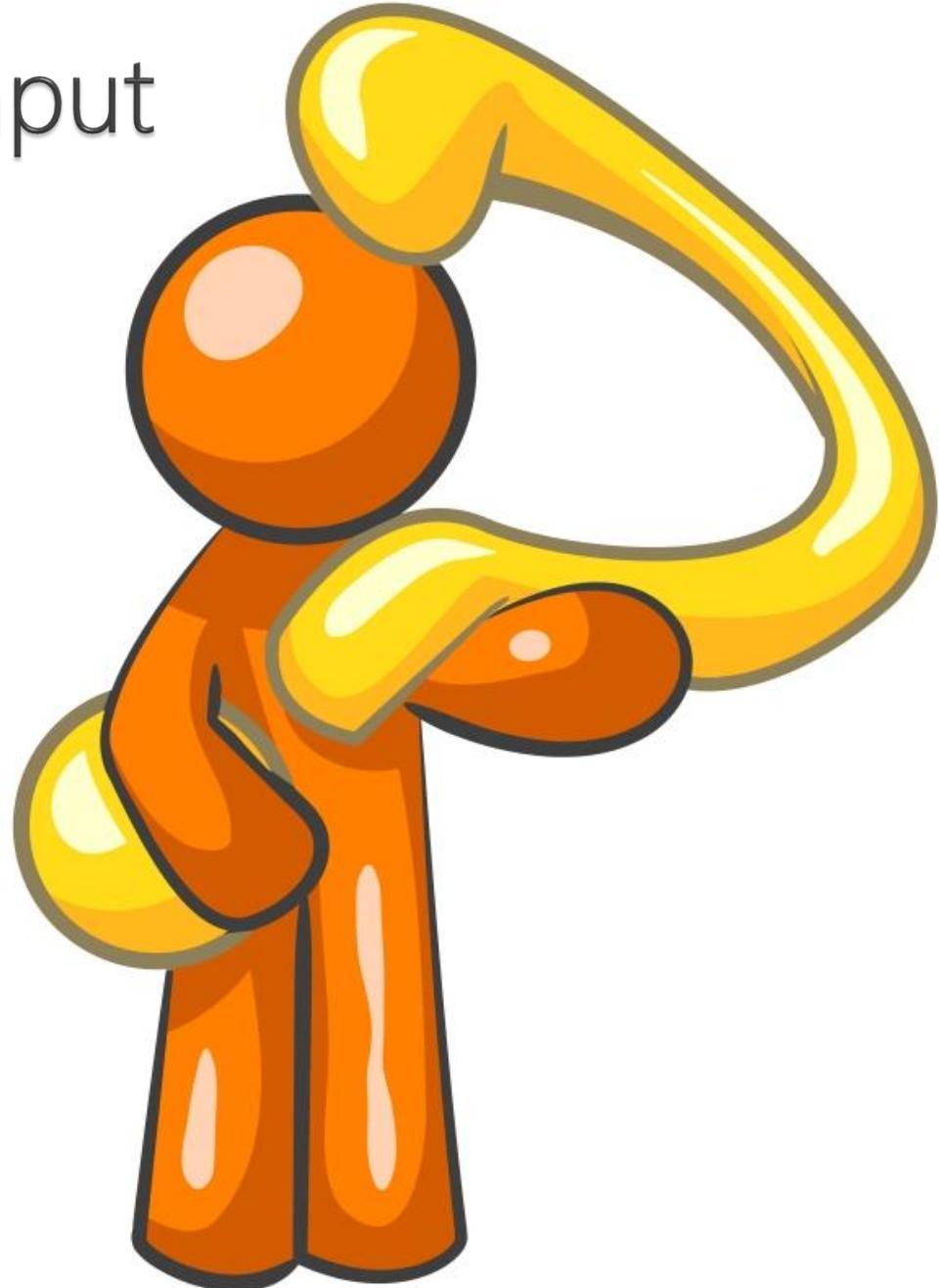
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Viktigste nye features



- ▶ Report
 - New matrix visual
 - Numeric range slicer (Preview)
 - Relative date slicer (Preview)
 - Report theming (Preview)
- ▶ Analytics
 - Quick measures
 - Report level measures for live connections to tabular models
- ▶ Data Connectivity
 - Connect to datasets in the Power BI service (Preview)
- ▶ Service
 - Usage metrics

Questions and input



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