

Distributing Content using App Workspaces



Agenda

- Query Parameters
- App Workspaces
- Dedicated Capacities
- Publishing Apps
- Developing Template Apps



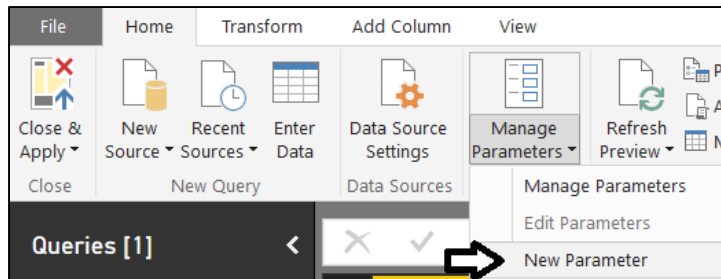
Query Parameters in Power BI Desktop

- What is a Query Parameter?
 - Configurable setting for PBIX file
 - Strongly-typed value to which you can apply restrictions
 - Can be referenced from a query
 - Can be referenced from DAX code in data model
 - Query parameters can be updated in Power BI Service
- Where are Parameters commonly used
 - To parameterize data source connection details
 - To filter rows when importing data
 - Commonly used together with Template Apps



Creating Query Parameters

- Parameters can be created using **Manager Parameters** menu



- Parameter properties

- Name
- Description
- Required
- Allowed Values
- Default Value
- Current Value

Parameters

New

Customer State

Name: Customer State

Description: This parameter is used in the Customers query to filter the customer rows which are loaded into the dataset for the Power BI Desktop project.

☒ Required

Type: Text

Allowed Values: List of values

1	CA
2	OR
3	WA
4	AZ
5	TX
*	

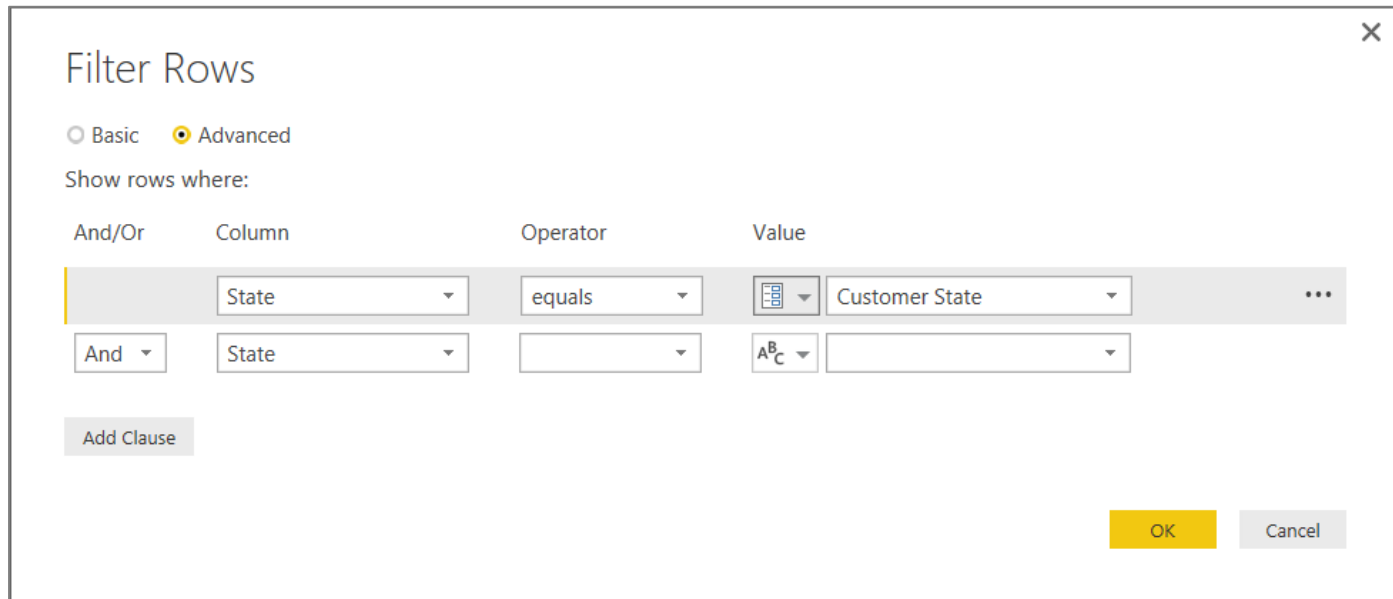
Default Value: CA

Current Value: CA

OK Cancel

Referencing Parameters in a Query

- Parameters can be referenced inside query
 - Next query execution uses current parameter value



The screenshot shows a 'Filter Rows' dialog box with a close button (X) in the top right corner. It has two tabs: 'Basic' (unselected) and 'Advanced' (selected). Below the tabs, it says 'Show rows where:'. There are two rows of filter criteria. The first row has a column 'State' with the operator 'equals' and the value 'Customer State'. The second row has a column 'State' with the operator 'AB_C' and an empty value field. There is an 'Add Clause' button at the bottom left and 'OK' and 'Cancel' buttons at the bottom right.

And/Or	Column	Operator	Value
	State	equals	Customer State
And	State	AB_C	



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App Workspace v1 with Office 365 Group

- Office 365 group provisions SharePoint team site
 - Accessible to workspace members users through Outlook Online
 - Provides conversations, files, calendar, OneNote Notebook, etc.

The screenshot displays the Outlook Online interface for a user named Ted Pattison. The top navigation bar includes 'Office 365' and 'Outlook'. The left sidebar shows a search bar for 'My First App Workspace' and a list of folders (Inbox, Sent Items, Drafts) and groups. The 'My First App Workspace' group is selected, showing a green profile picture with the initials 'MF'. The main content area displays a welcome message: 'The new My First App Workspace group is ready'. Below this, there is a section titled 'Welcome to the My First App Workspace group.' with instructions to use the group for sharing ideas, files, and important dates. At the bottom, there are two buttons: 'Start a conversation' and 'Add to the team site'.

GroupMail - tedp@pbirc x

Microsoft Corporation [US] | https://outlook.office.com/owa/?realm=pbircx.onmicrosoft.com&exsvurl=1&ll-cc=1033&modurl=0&path=/group/myfirstappworkspace@pbircx.onmicrosoft.com/...

Apps Google GitHub O365 Admin Power BI Azure Portal PowerApps OneDrive SPO Site PowerApps Admin Microsoft Flow Power Query SDK CPT Submit MVP Activity

Office 365 Outlook

Search My First App Workspace

MF My First App Workspace

Private group Not following 3 members

Conversations Files Calendar Notebook

New Reply all Forward

Seen conversations

My First App Workspace
The new My First App Workspace group is ready
Welcome to the My First App Workspace group. Use th... 4:32p

The new My First App Workspace group is ready
My First App Workspace;

MF My First App Workspace
Sun 4/29/2018 4:32 PM

Welcome to the My First App Workspace group.
Use the group to share ideas, files, and important dates.

Start a conversation
Read group conversations or start your own.

Add to the team site
Start sharing and collaborating on content in SharePoint.

Power BI App Workspaces - V2

- Power BI transitioning between workspace models
 - V2 app workspaces are currently default to create
 - Microsoft will soon force the migration from V1 to V2
- V1 workspaces built on top of Office 365 groups
 - Largely managed in Office 365 admin not Power BI
- V2 workspaces independent of Office 365 groups
 - Fully managed within Power BI admin portal
 - Provides more flexibility in assigning members



Workspace Is a Container for Resources

- Dashboard
 - Consolidated high-level view into reports and datasets
 - Provides great experience on mobile device (*e.g. iPhone, Android, tablet, etc.*)
- Report
 - Collection of one or more pages with tables & visualizations
 - Provides consumer with interactive control through filtering and bookmarks
- Dataset
 - In-memory data model containing one or more tables
 - Used to supply the underlying data to reports and dashboards
- Dataflows
 - Persistent data store used for more complex ETL requirements
 - Not required in most Power BI scenarios



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Power BI Licensing

- User-based licensing

Power BI (free)	Power BI Pro	Office 365 Enterprise E5
\$0.00 user/month	\$9.99 user/month	\$35.00 user/month
A cloud-based business analytics service that enables anyone to visualize and analyze data with greater speed, efficiency, and understanding. It ...	A cloud-based business analytics service that enables anyone to visualize and analyze data with greater speed, efficiency, and understanding. Power ...	The Office suite, plus email, instant messaging, HD video conferencing, 1 TB personal file storage and sharing, and advanced security, analytics and PSTN ...
Office 2016 desktop & mobile apps Not included	Office 2016 desktop & mobile apps Not included	Office 2016 desktop & mobile apps
Office 365 services	Office 365 services	Office 365 services
...

- Capacity-based Licensing

Power BI Premium P1	Power BI Premium P2	Power BI Premium P3	Power BI Premium EM3 (Month to Month)
\$4,995.00 instance/month	\$9,995.00 instance/month	\$19,995.00 instance/month	\$2,495.00 instance/month
Power BI capacity dedicated to your organization, unlocking unlimited content distribution and dependable performance. P1 offers 8 virtual cores ...	Power BI capacity dedicated to your organization, unlocking unlimited content distribution and dependable performance. P1 offers 16 virtual cores ...	Power BI capacity dedicated to your organization, unlocking unlimited content distribution and dependable performance. P1 offers 32 virtual cores ...	Embed Power BI content in your custom application, powered by 4 virtual cores of dedicated capacity. Some Premium features are disabled ...
Office 2016 desktop & mobile apps Not included	Office 2016 desktop & mobile apps Not included	Office 2016 desktop & mobile apps Not included	Office 2016 desktop & mobile apps Not included
Office 365 services	Office 365 services	Office 365 services	Office 365 services
...



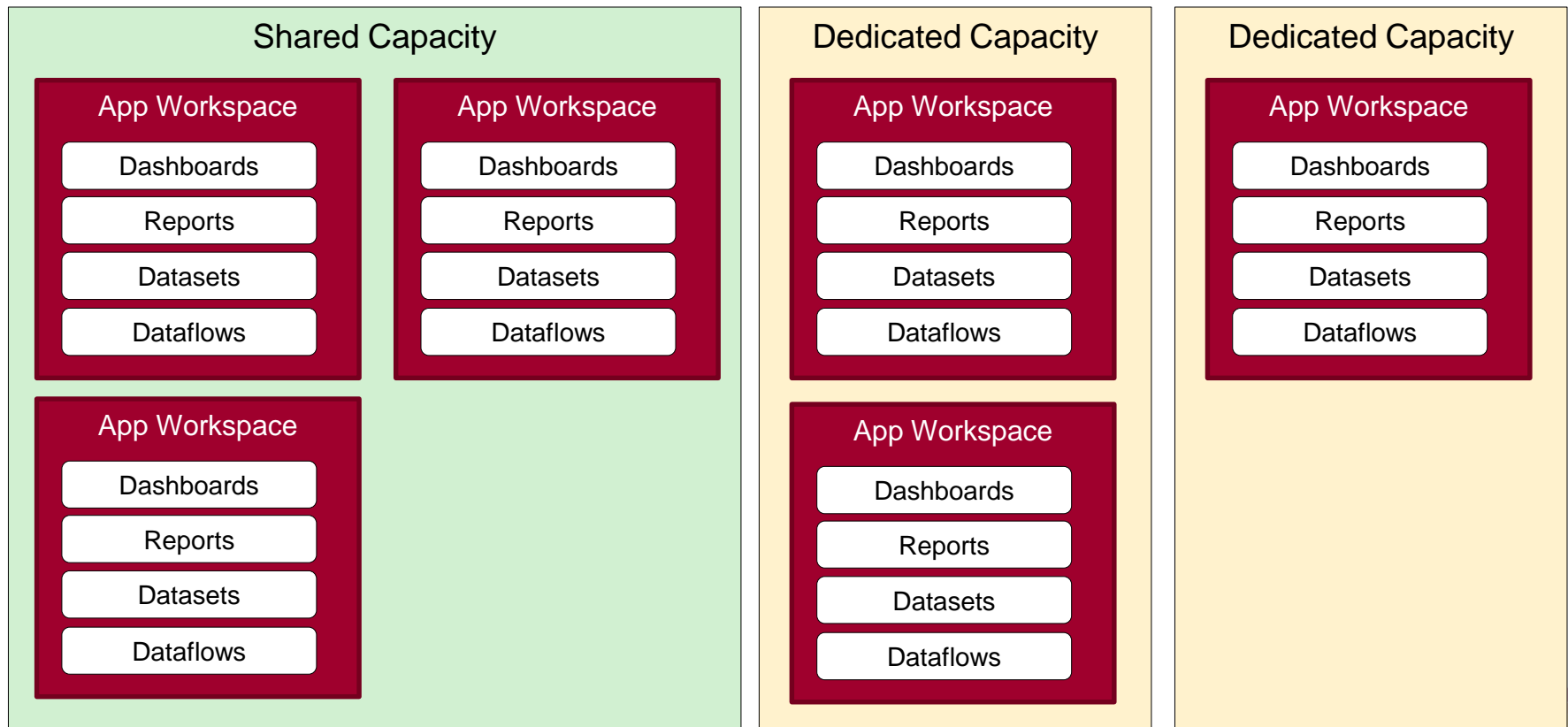
Dedicated Capacities

- Power BI workspaces run in two possible environments
 - Shared Capacities
 - Dedicated Capacities (*also known as premium capacities*)
- Dedicated capacity usually acts as dedicated resource
 - Premium capacity only used by single organization
 - PBIX file uploads not limited to 1GB
 - Data refresh frequency can exceed 8 times per day
 - Each premium capacity defines its own set of admins
 - *Dedicated capacity required to share with users w/o pro license*



Capacities and Workspace Associations

- Every Power BI workspace runs in the context of a capacity
 - By default, app workspaces and personal workspace run in **shared capacity**
 - Organizations have the option of purchasing **dedicated capacities**



Managing Premium Capacities

- Dedicated capacities managed in Power BI Admin portal

The screenshot shows the Power BI Admin portal interface. On the left is a navigation sidebar with options: Favorites, Recent, Apps, Shared with me, Workspaces, and My Workspace. The main content area is titled 'Admin portal' and contains a list of settings: Usage metrics, Users, Audit logs, Tenant settings, Capacity settings (selected), Embed Codes, and Organization visuals. The 'Capacity settings' section is active, showing tabs for 'Power BI Premium' and 'Power BI Embedded'. Under 'Power BI Premium', it displays 'V-CORES' as '8 of 8 used' with a yellow progress bar and '0 available'. A 'Set up new capacity' button is present. Below this is a table of 'PREMIUM CAPACITIES'.

CAPACITY NAME	CAPACITY ADMINS	ACTIONS	SKU	V-CORES	REGION	STATUS
P1	Charles Sterling, duryan		P1	8	East US 2	Active

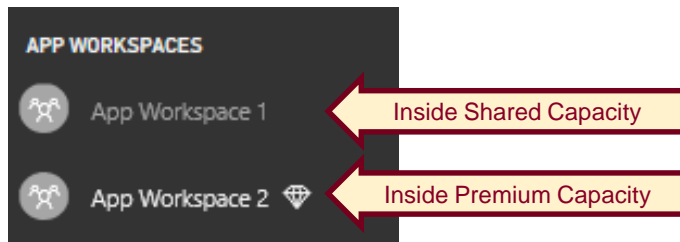
This screenshot shows the detailed configuration page for a 'Power BI Premium > P1' capacity. At the top right is a 'Settings' link. Below the header, 'USAGE IN THE LAST 7 DAYS' is shown with four metrics: CPU (Exceeded 80% utilization 0 times), Memory Thrashing (Exceeded 80% utilization 0 times), Memory Usage (Average: 2GB), and Direct Query (Exceeded 80% utilization 0 times). The 'CAPACITY SIZE' section states 'This capacity is a P1, which is 8 v-cores.' and includes a 'Change capacity size' button. The 'REGION' is 'East US 2'. Under 'USER PERMISSIONS', 'Capacity admins' are listed. The 'WORKSPACES (53)' section contains a table of assigned workspaces.

WORKSPACE NAME	WORKSPACE ADMINS	ACTIONS	STATUS
Adventure Works	View admins		Assigned
ChucksAADGroup	View admins		Assigned

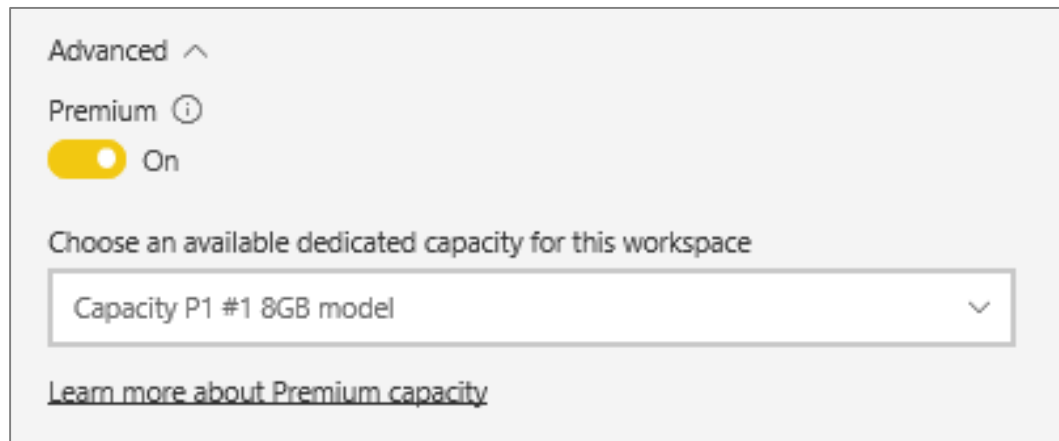
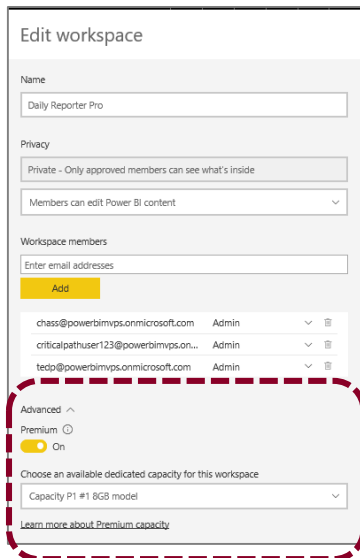
At the bottom right of the workspace table are links: 'Remove all' and 'Assign workspaces'.

Associating App Workspaces with a Capacity

- App Workspace in Premium Capacity has diamond icon

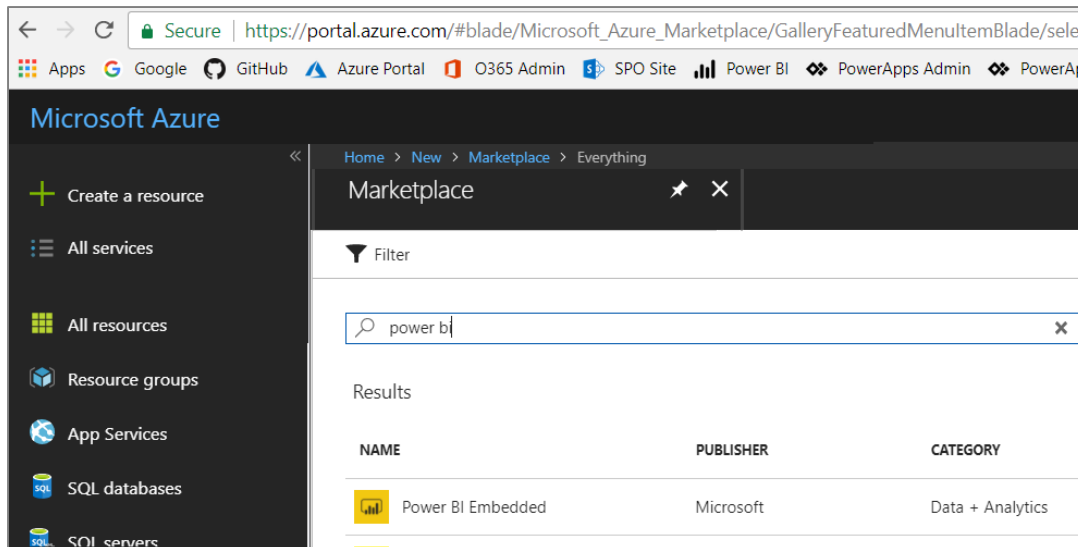


- App workspace moved into Premium capacity in Advanced settings



Creating the Power BI Embedded Service

- Power BI Embedded in an Azure on-demand service
 - Must be created in same location as Power BI Service for tenant
 - Can be created manually through the Azure portal
 - Can be created in automated fashion using PowerShell
 - Requires an Azure subscription *in same tenant*



The screenshot shows the 'Power BI Embedded' creation form. The form includes fields for Resource name, Subscription, Resource group, Power BI capacity administrator, Location, and Pricing tier. The 'Create' button is visible at the bottom.

Power BI Embedded

myfirstcapacity

Pay-As-You-Go

Create new Use existing

biz-app-summit-demos

Power BI capacity administrator (Select)

TedP@BizAppSummit.onmicrosoft.com

West US 2

A1 (1 V-Cores)

Create Automation options

Embedded Capacity Pricing Tiers

Home > myfirstcapacity

myfirstcapacity
Power BI Embedded

Search (Ctrl+/)

Overview
Activity log
Access control (IAM)
Tags
Diagnose and solve problems

SCALE

Pricing tier

SETTINGS

Quick Start
Power BI capacity administrators
Properties
Locks
Automation script

MONITORING

Diagnostics logs
Metrics
Alerts

Pause Move Delete

Essentials

Resource group (change)
biz-app-summit-demos
Status
Active
Location
West US 2
Subscription name (change)
Pay-As-You-Go
Subscription ID
63bf3c07-a58b-4940-ab25-a6a66dda26dc

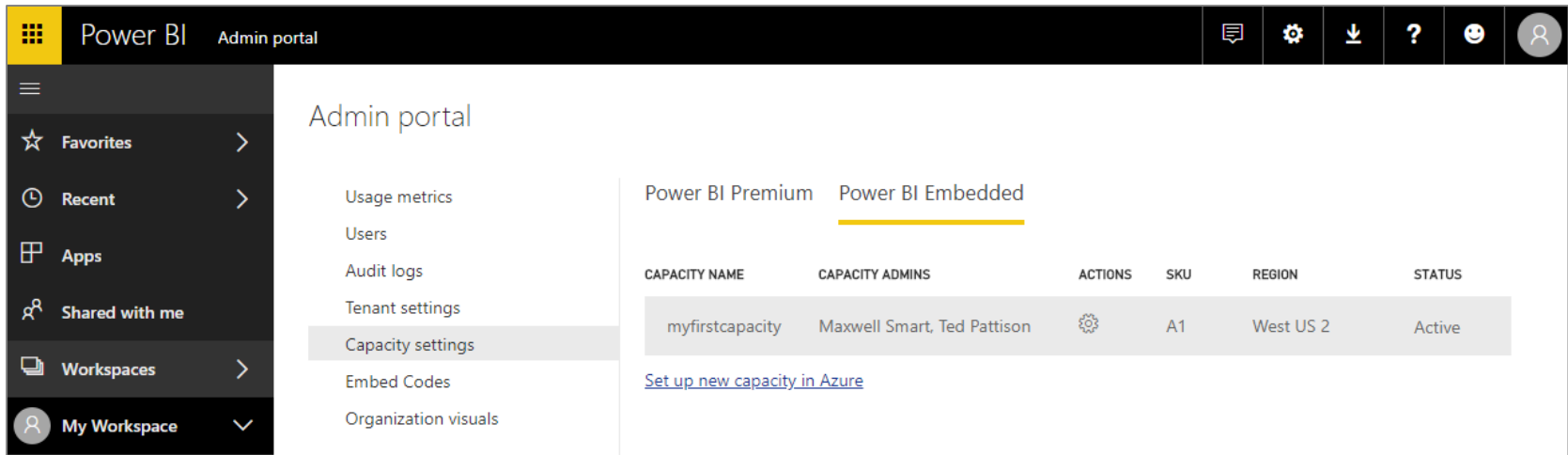
Resource name
myfirstcapacity
Pricing tier
A1

A1	A2	A3
1 V-Cores	2 V-Cores	4 V-Cores
Up to 3 GB Cache	Up to 5 GB Cache	Up to 10 GB Cache
Shared infrastructure	Shared infrastructure	Dedicated service
750.03 USD/MONTH (ESTIMATED)	1,494.03 USD/MONTH (ESTIMATED)	2,994.00 USD/MONTH (ESTIMATED)

A4	A5	A6
8 V-Cores	16 V-Cores	32 V-Cores
Up to 25 GB Cache	Up to 50 GB Cache	Up to 100 GB Cache
Dedicated service	Dedicated service	Dedicated service
5,994.04 USD/MONTH (ESTIMATED)	11,994.02 USD/MONTH (ESTIMATED)	23,994.45 USD/MONTH (ESTIMATED)

Managing Power BI Embedded Capacities

- Managing Power BI Embedded capacity done Azure portal
 - Use Azure portal to assign administrators & change pricing tier to scale
- Managing Power BI Embedded capacity in Power BI Admin portal
 - Power BI Admin portal to assign workspaces to capacities



The screenshot displays the Power BI Admin portal interface. The top navigation bar includes the Power BI logo, 'Admin portal', and several utility icons. A left-hand sidebar contains navigation options: Favorites, Recent, Apps, Shared with me, Workspaces, and My Workspace. The main content area is titled 'Admin portal' and features a list of administrative tasks on the left, including Usage metrics, Users, Audit logs, Tenant settings, Capacity settings (which is highlighted), Embed Codes, and Organization visuals. On the right, there are two tabs: 'Power BI Premium' and 'Power BI Embedded' (the active tab). Below the tabs is a table listing existing capacities.

CAPACITY NAME	CAPACITY ADMINS	ACTIONS	SKU	REGION	STATUS
myfirstcapacity	Maxwell Smart, Ted Pattison		A1	West US 2	Active

Below the table, there is a link: [Set up new capacity in Azure](#).



P SKUs (P is for Premium)

- All-in version which allows greatest flexibility
 - Used to provide free users with access to apps and content
 - Used to support 1st party and 3rd party embedding
 - The more you pay per month, the more resources you get

Name	Virtual cores	Memory (GB)	Peak renders/hr	Cost
P1	8	25	1-300	\$4,995/mo
P2	16	50	301-600	\$9,995/mo
P3	32	100	601-1,200	\$19,995/mo



EM SKUs (EM is for Embedded)

- SKUs for embedding into SaaS Applications
 - SaaS applications include SharePoint and Teams
 - Supports 1st party and 3rd party embedding
 - Does not provide user with access to PowerBI.com

Name	Virtual cores	Memory (GB)	Peak renders/hr	Cost
EM1	1	3	1-300	\$625/mo
EM2	2	5	301-600	\$1,245/mo
EM3	4	10	601-1,200	\$2,495/mo



A SKUs (A is for Azure)

- A SKU is a Platform-as-a-Service
 - Used by ISVs as the data visualization layer
 - Allows for PBI Embedding into Custom Applications
 - Only supports 3rd party embedding (i.e. App-Owns-Data model)

Name	Virtual cores	Memory (GB)	Peak renders/hour	Cost/hour
A1	1	3	300	~\$1
A2	2	5	600	~\$2
A3	4	10	1,200	~\$4
A4	8	25	2,400	~\$8
A5	16	50	4,800	~\$16
A6	32	100	9,600	~\$32



PBI Capacity SKU Decoder Ring

	P SKU	EM SKU	A SKU
Purchased through...	Office 365	Office 365	Azure
Supports Power BI embedding in custom applications	Yes	Yes	Yes
Supports 3 rd Party Embedding in custom applications	Yes	Yes	Yes
Supports 1 st Party Embedding in custom applications	Yes	Yes	Yes
Supports free users accessing content in Power BI portal	Yes	No	No
Supports free users accessing content in Power BI Mobile	Yes	No	No
Billing cycle	Monthly	Monthly	Hourly
Commitment	Monthly	Monthly/Yearly	None
Turn it off when your not using it	No	No	Yes



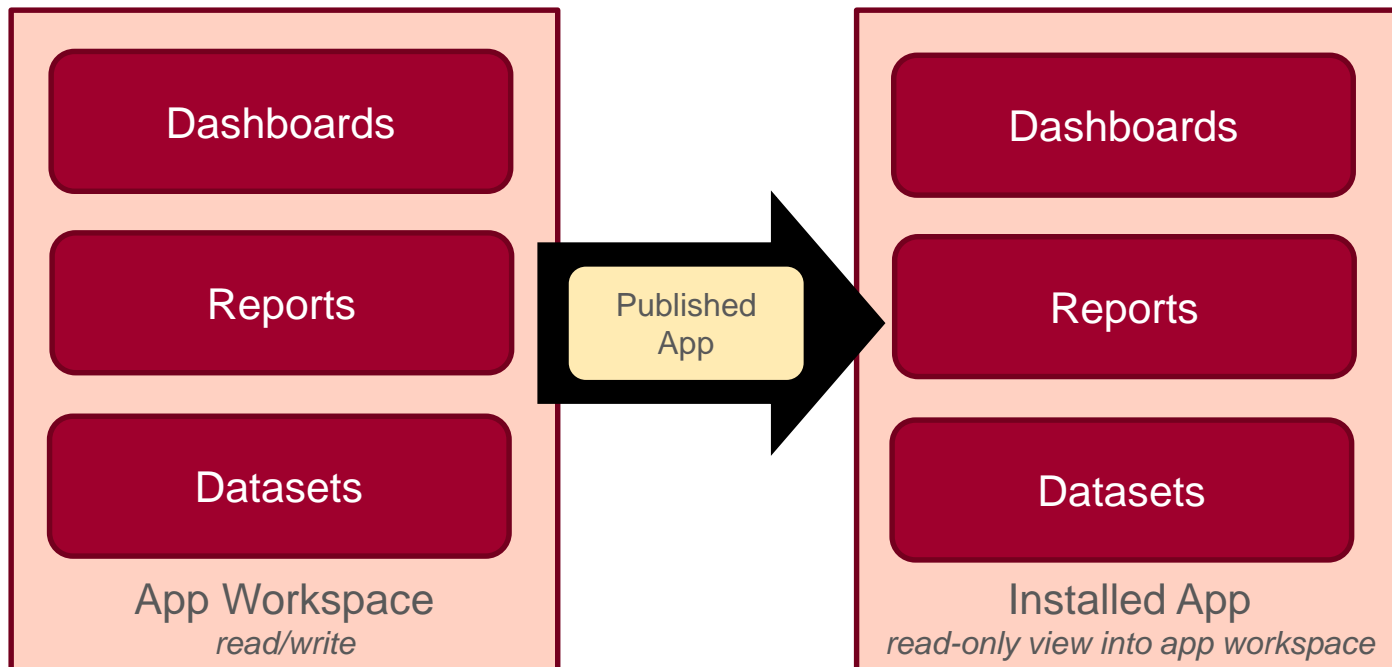
Agenda

- ✓ App Workspaces
- ✓ Dedicated Capacities
- Publishing Apps
- Developing Template Apps



Distributing a Custom Solution

- Strategies for sharing reports and dashboards
 - Dashboard sharing and report sharing
 - Read-only App Workspaces
 - Power BI Apps (supports staged updates)



Power BI Apps

Home

Favorites

Recent

Apps

Shared with me

Workspaces

Wingtip Sales

Wingtip Sales

Setup Navigation Permissions

Build your app

App name *
Wingtip Sales

Description *
An app for analyzing Wingtip sales performance

154 characters left



Wingtip Sales



Navigation

Permissions

New navigation builder



On

Add reports and dashboards to this app. Then organize the custom navigation pane so it's easy for people to find what they're looking for.

Navigation *

+ New



Wingtip Sales Analysis



Wingtip Sales Analysis

Dashboard details

Name *

[Reset](#)

Wingtip Sales Analysis

Dashboard link

[Open](#)

<https://app.powerbi.com/groups/828362e3-2876-4bec-a0fb-8e3bba93a922/dashboards/a1867beb-9f>



Wingtip Sales

Setup Nav Permissions

Access

If this app uses datasets from other workspaces, you may need to manage permissions manually to make sure everyone has access to the data. [Learn more](#)

Entire organization

Specific individuals or group

Enter email addresses

☐ Install this app automatically. [Learn more](#)

☒ Allow all users to connect to the app's underlying datasets using the Build permission. [Learn more](#)

☒ Allow users to make a copy of the reports in this app. [Learn more](#)



Wingtip Sales

Setup Navigation Permissions



Access

If this app uses datasets from other workspaces, you may need to manage permissions manually to make sure everyone has access to the data. [Learn more](#)

- ☒ Entire organization
- ☐ Specific individuals or group

Enter email addresses

- ☐ Install this app automatically. [Learn more](#)
- ☒ Allow all users to connect to the app's underlying datasets using the Build permission. [Learn more](#)
- ☒ Allow users to make a copy of the reports in this app. [Learn more](#)



Publish app

Cancel





You don't have any apps yet

Apps are collections of dashboards and reports in one easy-to-find place.

[Learn more about apps](#)



Get apps



Wingtip Sales

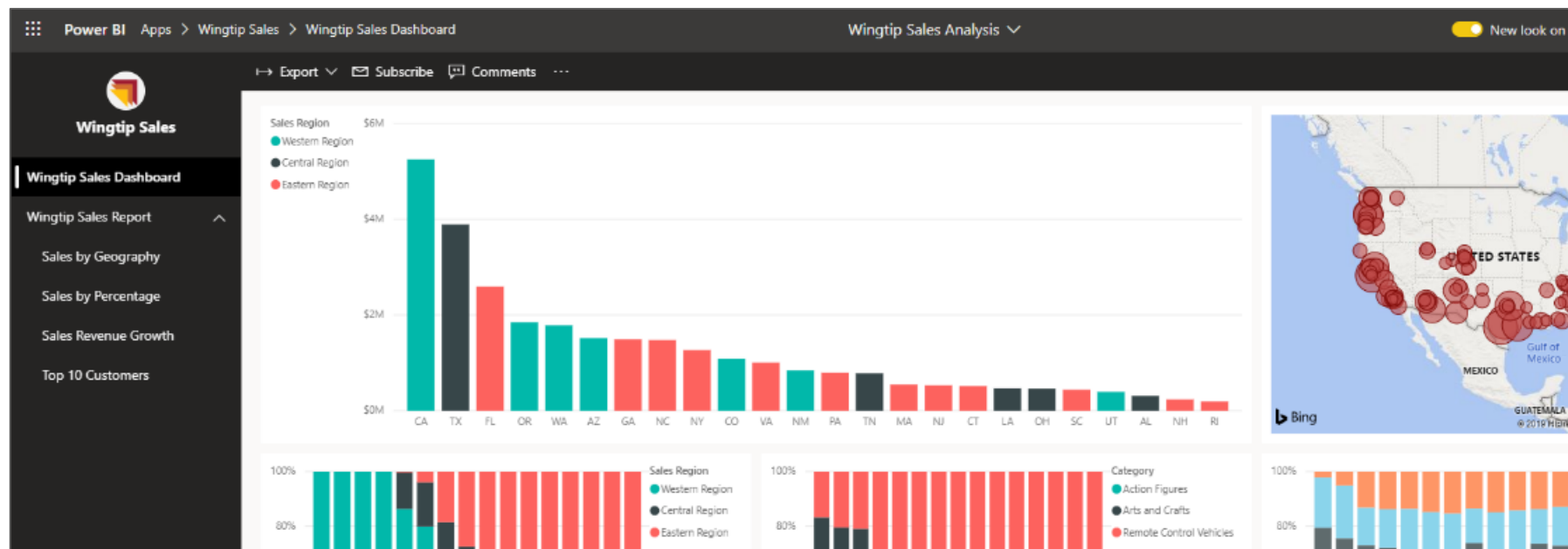
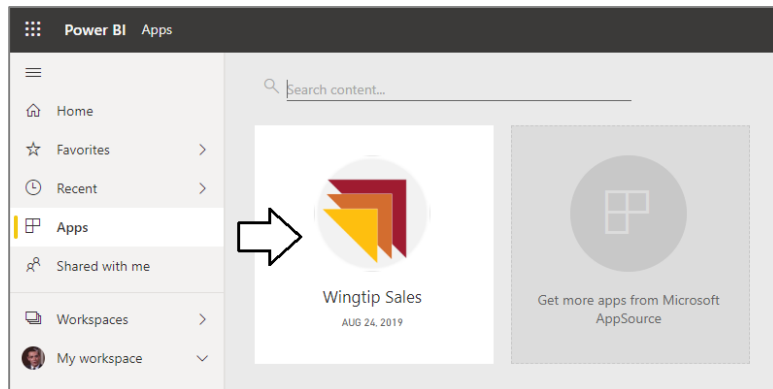
By Stu Dent
Power BI

An app for analyzing Wingtip
sales performanc



Get it now







DEMO

Publishing an App Workspace and Installing a Power BI App

Agenda

- ✓ App Workspaces
- ✓ Dedicated Capacities
- ✓ Publishing Apps
- Developing Template Apps



Summary

- ✓ App Workspaces
- ✓ Dedicated Capacities
- ✓ Publishing Apps
- ✓ Developing Template Apps



Template Apps


- Used to Clone Workspace Template
 - Template App created creating using app workspace
 - App workspace configured as template app
 - Installing template app involves cloning workspace content
 - Installing template app involves creating new workspace
 - Template app workspace content cloned into new workspace
- Who developed template apps?
 - Mainly used by Independent Software Vendors (ISVs)
 - Not as common to use within a corporate



Create a workspace

YOU'RE CREATING AN UPGRADED WORKSPACE
Enjoy new features, better sharing options, and improved security controls.
[Revert to classic](#) | [Learn more](#)

Workspace image

 [Upload](#) [Delete](#)

Workspace name


→ State Sales

Available

Description

→ An app template for state-level reporting

[Learn more about workspace settings](#)


→ Advanced 

Advanced ^

Contact list

☒ Workspace admins
☐ Specific users and groups

Workspace OneDrive

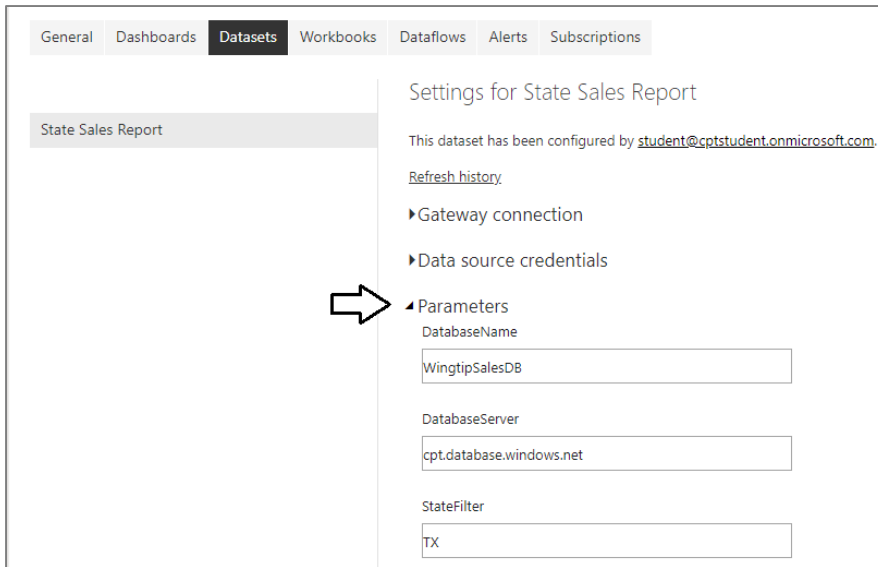
Dedicated capacity 

☐ Off

→ ☒ Develop a template app



Configuring Dataset Parameters



General Dashboards **Datasets** Workbooks Dataflows Alerts Subscriptions

State Sales Report

Settings for State Sales Report

This dataset has been configured by student@cptstudent.onmicrosoft.com.

[Refresh history](#)

- Gateway connection
- Data source credentials
- Parameters**

DatabaseName

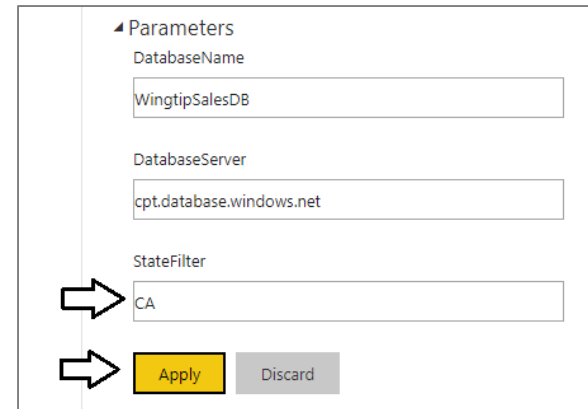
WingtipSalesDB

DatabaseServer

cpt.database.windows.net

StateFilter

TX



Parameters

DatabaseName

WingtipSalesDB

DatabaseServer

cpt.database.windows.net

StateFilter

CA

Apply Discard



Power BI State Sales

Home

Favorites

Recent

Apps

Shared with me

Workspaces

State Sales

Dashboards

TEMPLATE APP WORKSPACE Use this workspace to create apps for distribution to clients outside of your organization. [Learn more](#)

+ Create Settings Release Management Create app

Search content...

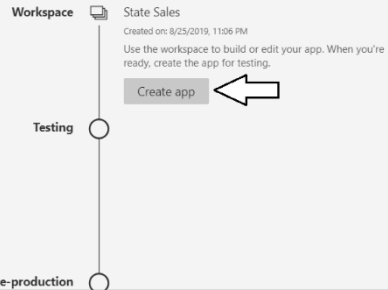
Showing 1 item

Dashboards Reports Workbooks Datasets Dataflows

NAME ↑	ACTIONS	OWNER	INCLUDED IN APP
<div>States Sales Dashboard</div>	<div></div>	State Sales	<div></div>

Release Management

Track the progress of your template app development lifecycle, and prepare it for release outside your organization. [Learn more](#)



State Sales A template app for state-level reporting

Branding Navigation Control Parameters Access

Build your app

App name *

State Sales

Description *

A template app for state-level reporting

160 characters left

Support site

Share where your users can find help



State Sales A template app for state-level reporting

Branding Navig  Control Parameters Access

If the app contains sensitive intellectual property, you may want to control the actions users installing it can perform in Power BI. [Learn more](#)


To allow an action, select its checkbox. To block an action, clear its checkbox. A filled checkbox means the action is partially allowed.

☒ View or edit a dataset model definition

- ☒ Connect to datasets using external model authoring tools

☒ Export or externally connect to data

- ☒ Connect to datasets from Power BI Desktop or Excel or other data tools
- ☒ Export summarized report data, shown in visuals
- ☒ Export underlying raw data

 Exporting datasets to .pbix is always blocked for users installing the app



Locking Parameter Values

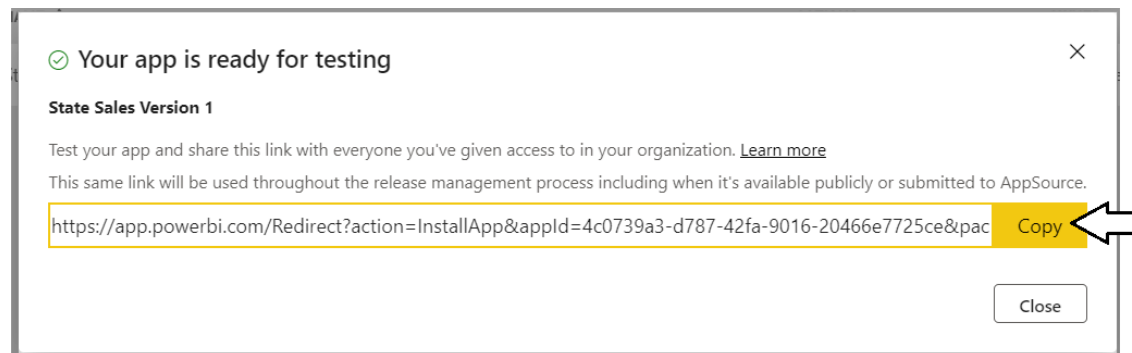
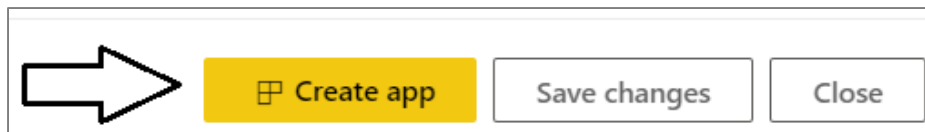
- XX



The image shows a configuration window with three sections: **StateFilter**, **DatabaseServer**, and **DatabaseName**. Each section has a 'Value *' field and a 'Required' checkbox. The 'Value *' fields are locked, indicated by a padlock icon on the right. Large white arrows point to the left and right sides of the 'DatabaseServer' and 'DatabaseName' value fields.

Parameter	Value	Required	Locked
StateFilter	CA	<input type="checkbox"/>	Yes
DatabaseServer	cpt.database.windows.net	<input type="checkbox"/>	Yes
DatabaseName	WingtipSalesDB	<input type="checkbox"/>	Yes





Install this Power BI app?



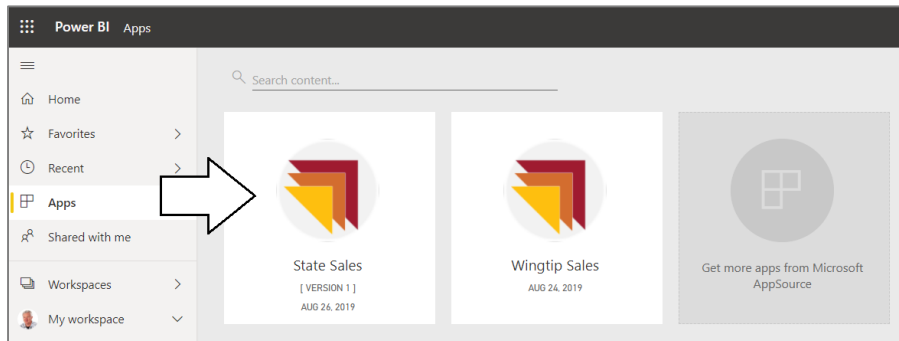
This app hasn't been listed on AppSource.

Apps may contain security or privacy risks. Only install apps from trusted authors and sources.

[Learn more](#)

Install

Cancel



Get started with your new app

Explore your app with sample data, go to the workspace to customize as needed and share with your organization, or connect your data to get up and running.

Connect your data

Connect to a data source to view your new app with your own data.



Connect

Explore with sample data

Open your new app to start exploring with sample data.



Explore app

Customize and share


Your app comes with a workspace, so you can customize and share it, just like an app you built yourself.




Edit workspace


[Don't show this again](#)




 Connect to State Sales ✕

StateFilter

 WA

 Next Cancel

 Connect to State Sales ✕

server
cpt.database.windows.net

database
WingtipSalesDB

Authentication method
Basic

User name
CptStudent

Password

Privacy level setting for this data source
Organizational

Sign in Cancel

