## Pragmatic Works

#### Data Security in Power BI May 2018 – SQL Saturday - Dallas

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- @dataonwheels
- www.dataonwheels.com



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## Thank you Sponsors

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MAIN STREET



DØLLEMC

# Quest 🔉

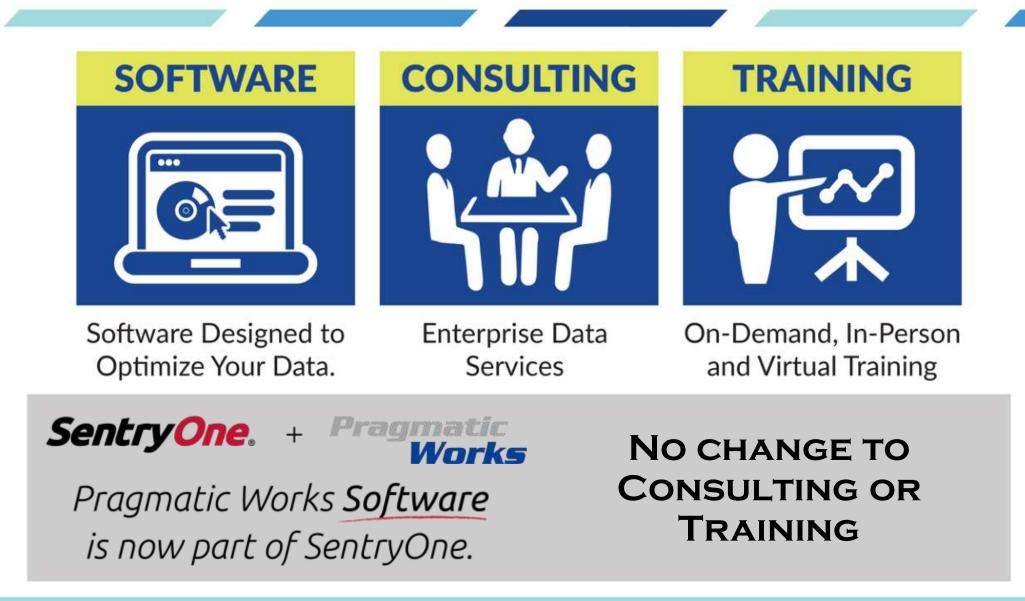
ITIMPACT

DISCOVER THE POWER OF YOUR DATA!

844-328-2636







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#### Something about me...

- At Pragmatic Works for over 3 years
- Married 25 years this summer
- 4 kids 22, 20, 18, 16
- Survived the Azure Infrastructure Exam 70-533
- Partner Cloud Solution Architect with Microsoft
- Blog: <u>www.dataonwheels.com</u>
- Linked In: <u>https://www.linkedin.com/in/dataonwheels</u> Connect with me





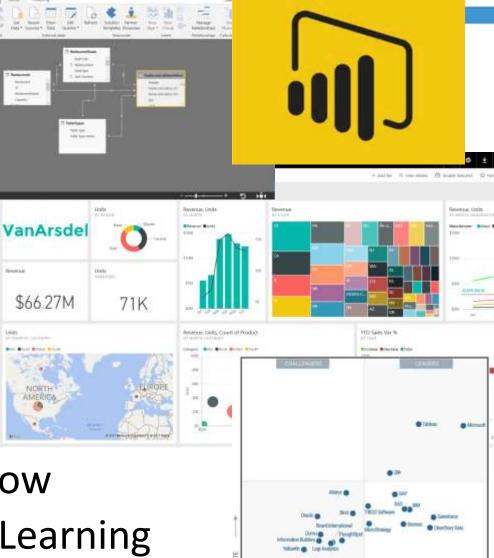
## The Case for Power BI What sets Power BI apart?

- Continual Improvement
- Real-time Dashboards
- Natural Language

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- Integration with Excel
- Custom Visualizations
- Integration with Power Apps and Flow
- Quick Insights with Azure Machine Learning

Power BI



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### Common Security Concerns

- Can I trust the cloud? Can I trust Azure?
- Who owns my data and access to it?
- Does a hybrid scenario expose my datacenter?
- Who can publish data to the cloud?





#### Data Compliance and Security in Power BI



#### Compliance





EU Model Clauses











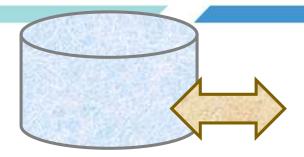
#### Microsoft Trust Center



#### Encryption

#### Data at Rest

Data Source	Metadata	Data
Live Connection (Analysis Services)	Nothing stored except database name encrypted in Azure SQL DB	Nothing Stored
Direct Query (SQL Server, Oracle, etc.)	Encrypted in Azure Blob Storage	Nothing Stored
Pushed or streamed data	Encrypted in Azure Blob Storage	Depending on version, encrypted in either Azure Blob Storage or Azure SQL Database
Data loaded into		
model (data may be refreshable or nonrefreshable)	Encrypted in Azure Blob Storage	Encrypted in Azure Blob Storage



#### Data in Transit

All data is encrypted using HTTPS to connect from the data source to the Power BI Service

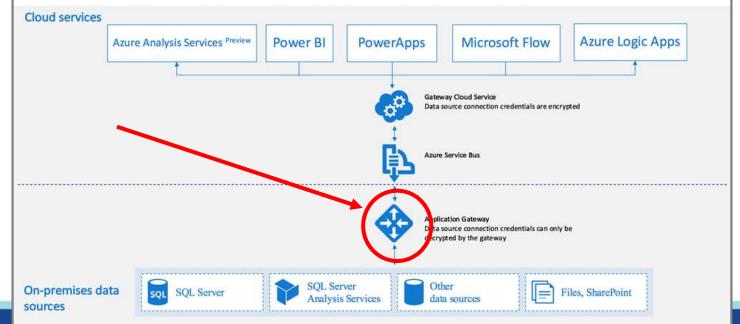
Data in Use Data is cached for all connection types including DirectQuery Cached data is encrypted and stored in an Azure SQL Database

#### On-premises Data Gateway

- All communication and data in transit is encrypted with HTTPS
- Data Source credentials encrypted in service, key maintained on-premises
- Outgoing ports only, gateway monitors service bus for requests
- No data is stored on the gateway and the gateway service account should not have access to data sources
- Gateway access is limited on the service

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#### On-premises data gateway One gateway for multiple cloud services and experiences



### Admin Portal and Tenant Settings

- Share content with external users
  - Recommend this is disabled
- Publish to web
  - Recommend this is disabled
- Export Data, Export to PowerPoint, Printing
  - Evaluate for you needed
- Content packs
  - Allow or disallow publishing for the entire organization





### PSA: Admin Portal and Tenant Settings

- Share content with external users
  - Recommend this is disabled
- Publish to web
  - Recommend this is disabled
- Where to disable these features
  - They are on by default





#### Row Level Security

- Row Level Security with Power BI
- Works in Workspaces with members with read permissions only
- Uses DAX expressions

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- Implemented in Power BI Desktop
- Row Level Security with Live Connections
- SQL Server Analysis Services only
- Uses EffectiveUserName through gateway
- Data Source connections require Admin access in SSAS



#### **Collaboration and Data Security**



#### Power BI Apps & App Workspaces

- Supports shared development
- Supports staged deployment
- Apps keep the content organized together unlike content packs
- Power BI Apps support deploying Read Only assets for distribution to Pro Users and Premium Users
- Can only add users to workspaces (no security groups)



#### Power BI Premium and Readonly Users

- Supports Readonly Using Apps
- Supports "unlimited" readonly, free users
- Contributors require Power BI Pro licenses
- Power BI Premium is "server based" thus providing additional security via physical separation of server assets.
- Entry level P1 \$5000/month



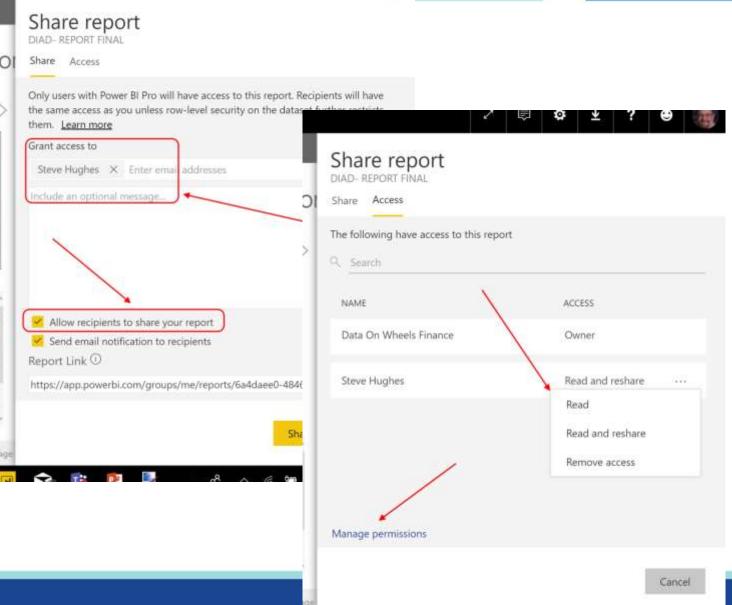
#### Groups, groups, groups

- Office 365 Supports 4 Types of Groups
  - Office 365 recommended by Microsoft, not necessarily admins
    - Used with Power BI Workspaces
    - Pro users can create from Power BI
    - Managed by user membership, does not support other groups
  - Distribution List email support
  - Mail-enabled Security Group like a typical AD Group with an email
  - Security Group a typical AD Group, no email



#### Sharing Discussion

- Why share?
  - Not bound to workspace and app scope
  - One off scenarios, validation, testing
- Sharing cannot be prevented within your organization
  - Any pro user can share content
- Sharing can be turned off for sharing outside your organization



Prograduation



### Guest Users, Email, Sharing "outside the walls"

- Significantly enhanced in January 2018 and March 2018
- Guest Users creation can be limited in Power BI Tenant Settings, Office 365 Security Settings, and Azure Active Directory Settings
- Email sharing "Share your Power BI content with anyone by email"
  - Done the same way as normal sharing
  - Email can be personal (e.g. @gmail.com) or a different organization
  - Power BI Apps can be shared the same way
- If you allow Power BI Pro users to share this way, you are giving them permission to create guest accounts in Azure Active Directory



### Auditing and Logging



#### Auditing Power BI

- Dashboard Usage Metrics
  - Newly released
  - Dashboard view
  - 90 days of data
  - Up to 24 hour lag in data
  - Available to the report designers
  - Views, viewers, shares
  - Customizable options

- Usage Metrics in Admin Portal
  - Subscription view
  - Only available to Power BI Admins
  - Users, groups, assets
  - Fixed view



#### Audit Logs in Office 365

- Some of the Power BI Activites Logged
  - Viewed Power BI Dashboard
  - Edited Power BI Dashboard
  - Shared Power BI Dashboard
  - Created Power BI Dashboard
  - Deleted Power BI Dashboard
  - Printed Power BI Dashboard
  - Exported Power BI tile data
  - Viewed Power BI Report
  - Deleted Power BI Report
  - Printed Power BI Report Page
  - Analyzed Power BI dataset

- Downloaded Power BI Report
- Exported Power BI report visual data
- Published Power BI Report
- Deleted Power BI datasets
- Created Power BI Group
- Added Power BI Group members
- Created organizational content pack
- Updated organization's Power BI settings
- Started Power BI trial
- Started Power BI extended trial

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#### Sample Log Content

#### • Parameters

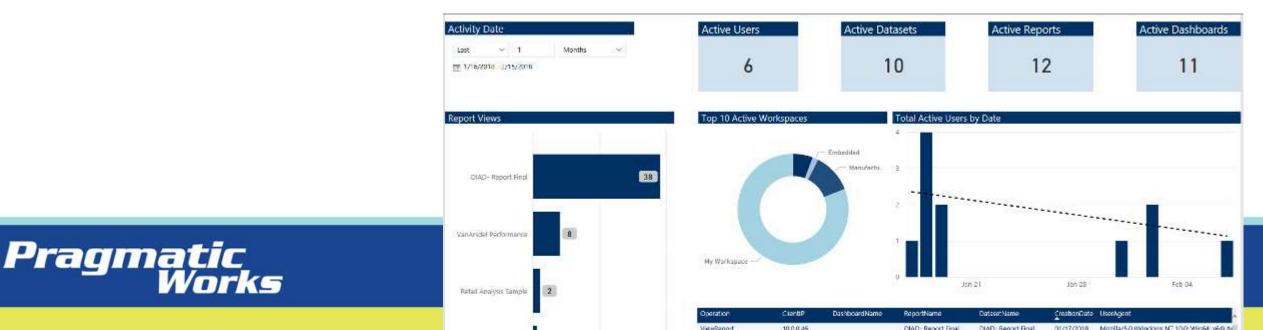
- Activities: "Created Power BI Dashboards"
- Date Range: 5/1/17 to 6/11/17
- Users: not set
- Results 4 results found

	Date 🔻	IP address	User	Activity	Item	Detail
	2017-06-08 10:29:14	174.30.246.192	steve@dataonwheels.com	Created Power BI dashboard	Power BI Mapping Dashboard	
	2017-05-19 13:43:23	167.220.152.7	mike.dostal@dataonwheels.com	Created Power BI dashboard	.VanArsdel With RLS	
	2017-05-09 11:14:54	63.239.226.253	steve@dataonwheels.com	Created Power BI dashboard	.VanArsdel2	
Pragma	2017-05-09 11:14:54	63.239.226.253	steve@dataonwheels.com	Created Power BI dashboard	.VanArsdel2	

**Filter** results

### Power BI Audit Log Analytics Solution

- Steve Howard, @AngryAnlaytics, Microsoft TSP
- Powershell -> CSV -> Power BI solution
- <u>http://angryanalyticsblog.azurewebsites.net/index.php/2018/02/16/</u> power-bi-audit-log-analytics-solution/



#### Report Usage

 Content creators can see report and dashboard usage metrics **Dashboard Usage Metrics** 

This report is automatically generated by Power BI to provide usage metrics for your dashboard. Usage data is retained for the last 90 days. Changes to your dashboard may take up to 24 hours to appear here. Learn more

#### Distribution methods

The Distribution Method slicer allows you to slice based on how the user obtained access to this dashboard. <u>Learn more</u>

Platforms

All

All



 Total views
 Total viewers
 Total shares

 6
 1
 (Blank)

Rank is calculated by comparing this dashboard against other dashboards in your organization. Learn more

 Total views rank
 Total shares rank

 2
 1

Total Dashboards in Organization

 1
 Views by user

Family Name

 String Name
 Given Name
 User Principal Name
 Views

Hughes

Steve

steve@dataonwheels.com

Shares per day

Views per day



#### Data Classification

- Labeling not security
- Requires processes and rules, but not automatically enforceable
- Only on dashboards
- Set up in Tenant Settings

	1y Workspace > My Vote Power BI нві	
··· ^	Ask a question about your data	
ł	Poll Responses by Question What is your favorite What monkey is the What is your favorite	





- Power BI manages data security very well
- Power BI is continually improving (e.g. tenant settings were released early in 2017, Premium later in 2017)
- Most roadblocks to Power BI use are internal politics not real issues with Power BI
- Power BI is not perfect still looking for that Read Only license



6	
WHEELS	

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- RESOURCES:
- www.dataonwheels.com Category: Power BI Data Security
  - https://dataonwheels.wordpress.com/category/power-bi-data-security/
  - 5 posts on Compliance and Encryption, Gateway, Sharing, Classification and Privacy Levels, and RLS
- Microsoft Trust Center https://www.microsoft.com/en-us/trustcenter
- Power BI Security https://powerbi.microsoft.com/enus/documentation/powerbi-admin-power-bi-security/
- Power BI Training <u>www.pragmaticworks.com</u>

#### • Audit Logging -

http://angryanalyticsblog.azurewebsites.net/index.php/2018/02/16/power-biaudit-log-analytics-solution/

