SumProduct

NEWSLETTER #68 - July 2018
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It's all about milestones...

We carry on as we carry on every month! Excel gets a makeover as we go over the half year and there's also a milestone mark for our online News articles and my MVP status too. There's the usual Power Query tips and Power BI updates (been nothing new on Power Pivot for some time now) too. We also continue our A to Z of Excel Functions (under the **COSH** a bit this month) and Keyboard Shortcuts series too – and highlight a key issue about referring to other worksheets in Excel formulae.

Until next month (that's another milestone!).

Liam Bastick, Managing Director, SumProduct

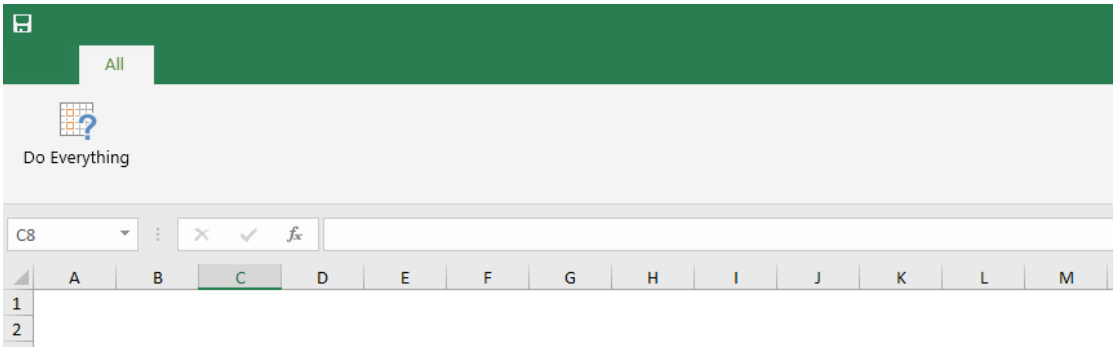
Office 365 Updates

In Microsoft's recent blog, https://www.microsoft.com/en-us/microsoft-365/blog/2018/06/13/power-and-simplicity-updates-to-the-office-365-user-experience/, the software giant has announced new updates coming shortly, which will include the following changes:

- **A new, updated version of the Ribbon** is designed to help users focus on their work and collaborate naturally with others. Users who prefer to dedicate more screen space to the commands will still be able to expand the ribbon to the classic three-line view. The first application to get this new experience will be the web version of Word and then it will start to roll out to select consumer users today on Office.com. Select Insiders will then see the simplified Ribbon in Outlook for Windows in July.

  Microsoft has stressed that for users of Excel, PowerPoint and Word they want to be careful with any changes that might disrupt users' working regimes. They concede they aren't yet ready to bring the simplified Ribbon to these versions - but when it does happen, users will always be able to revert back to the classic Ribbon with one click.

  We thought the new Ribbon might look something like this for Excel:



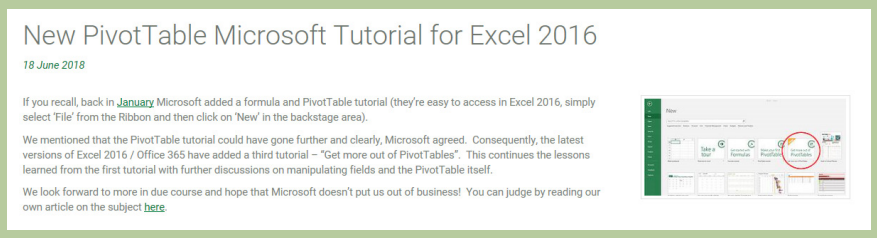
  The 'Save' icon would be a graphic only (as AutoSave would be permanently switched on) and 'Do Everything' would launch Clippy… Perhaps not!

- **New colours and icons** will appear as scalable graphic so that they better render on screens of any size. These new colours and icons will first appear in the web version of Word for Office.com. Then, select Insiders will see them in Word, Excel, and PowerPoint for Windows. In July, they will go to Outlook for Windows, and in August they will begin rolling out to Outlook for Mac
- **Search** will become a much more important element of the user experience, providing access to commands, content, and people. With "zero query search," simply placing your cursor in the search box will bring up recommendations powered by Artificial Intelligence and the Microsoft Graph.

  Commercial users can already see this experience in action in Office.com, SharePoint Online, and the Outlook mobile application, and it will start rolling out to commercial users of Outlook on the web in August.

News Reaches 200

No, that doesn't mean the number of readers reached! Our website, started in late 2009, has now generated its 200th news story (on a PivotTable tutorial of all things – please see below). Who'd have thought we'd make it to 200? Our *ad hoc* series of news was always meant to be that – *ad hoc* - but we keep finding ourselves with something to report. Quite a landmark we think you will agree!



New PivotTable Microsoft Tutorial for Excel 2016

18 June 2018

If you recall, back in January Microsoft added a formula and PivotTable tutorial (they're easy to access in Excel 2016, simply select 'File' from the Ribbon and then click on 'New' in the backstage area).

We mentioned that the PivotTable tutorial could have gone further and clearly, Microsoft agreed. Consequently, the latest versions of Excel 2016 / Office 365 have added a third tutorial – "Get more out of PivotTables". This continues the lessons learned from the first tutorial with further discussions on manipulating fields and the PivotTable itself.

We look forward to more in due course and hope that Microsoft doesn't put us out of business! You can judge by reading our own article on the subject here.

Amsterdam Excel Summit

The fifth annual Amsterdam Excel Summit has been and gone. Our own Liam Bastick was in attendance presenting on simulations and what-if? analysis, along with many other European and US-based Excel MVPs including organisers Jan Karel Pieterse and Tony de Jonker. There was also an insightful presentation from Microsoft's Israel product team, Tamar Tzruya Bar Zakai and Avital Nevo.

Next summits are in Bulgaria and Slovenia later in the year. SumProduct is also in negotiations to have further events in London, Australia, New Zealand and Fiji next year. But more on all of these things in a future newsletter!

MVP 2018/19

SumProduct is pleased to announce that our MD, Liam Bastick, has been re-awarded Microsoft's Most Valuable Professional (MVP) award for Excel for 2018/19. This award recognises exceptional technical community leaders from around the world who voluntarily share their high quality, real world expertise with others. Microsoft MVPs are a highly select group of experts representing technology's best and brightest who share a deep commitment to community and a willingness to help others.

Worldwide, there are over 100 million participants in technical communities; of these participants, there are fewer than 4,000 active Microsoft MVPs. In Excel, c.100 people have received this award.

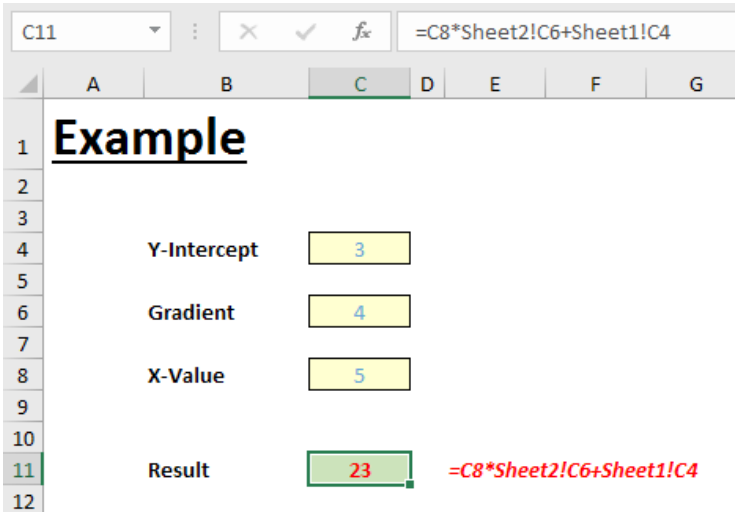
Microsoft's MVP Award evaluates technical expertise and voluntary community contributions for the past year, considering the quality, quantity and level of impact of contributions. It's a difficult award to attain and just as difficult to retain. This is Liam's eighth consecutive award.

More regular readers may recall Sydney director Tim Heng is also an Excel MVP. He remains one until next June too as he was not evaluated in this cycle. It means we remain Double Trouble for Microsoft!

At SumProduct, you can rely on our experience and willingness to help.

Formulae Referencing Current Worksheet

Here's an issue most of us notice everyday but don't really *notice*. Imagine you are working in the worksheet 'Sheet1' of a particular workbook and you write a formula such as:



That's right. Instead of using cell references on this worksheet, part-way through the calculation you have linked to another sheet ('Sheet2') and then linked back to this sheet again afterwards. The result is

=C8*Sheet2!C6+Sheet1!C4

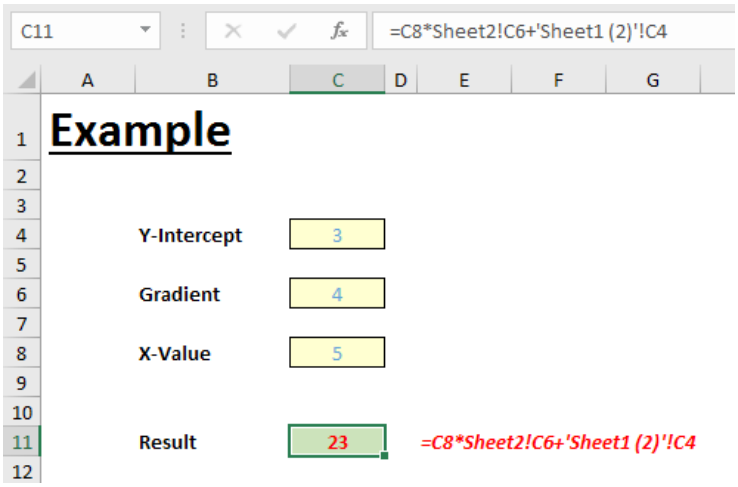
Let's be honest, we have all produced formulae such as this over the years. As model auditors though, we have a problem with this calculation – in particular the 'Sheet1' reference. The formula

=C8*Sheet2!C6+C4

is not only shorter but it's easier to understand too. Now we *know* it is a reference to a cell on this worksheet and that makes it easier to check and follow.

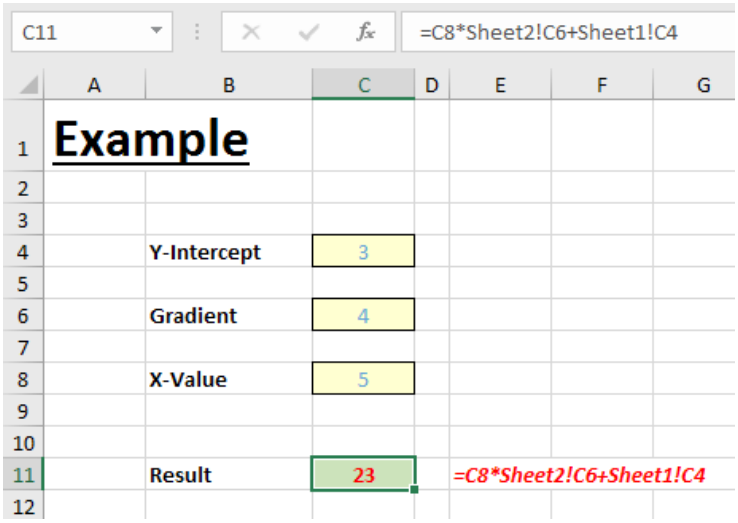
But there's more to it than that.

Let me make a copy of 'Sheet1' as the formula is presently written. Copying the worksheet creates a new worksheet 'Sheet1 (2)' *viz*.



Amazing, yes. We can rename the sheet, the formula will update and other than the fact the formula is longer than it needs to be necessarily (a bit like this sentence), it doesn't appear to be a big deal. However, let's now copy the worksheet a different way…

In this instance, we are going to insert a new blank worksheet (say, 'Sheet4') and then simply copy and paste the entire 'Sheet1' worksheet in using **CTRL + C** and then **CTRL + V**:



The first thing you will notice is that the gridlines returned, but more importantly, take a look at the formula:

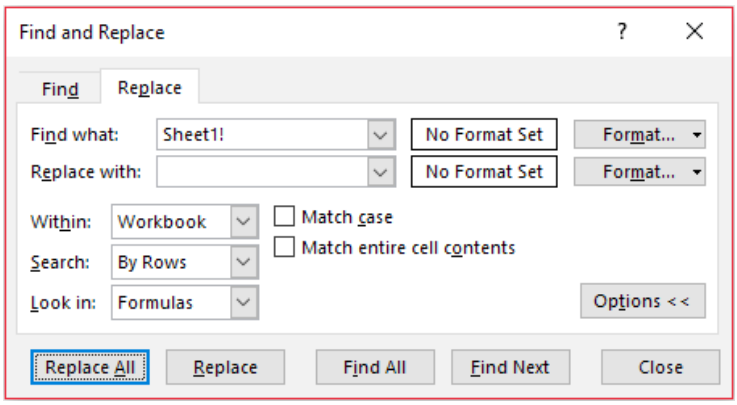
=C8*Sheet2!C6+Sheet1!C4

This is not referring to 'Sheet4' as expected. An end user may think it is correct too given the (correct) cell reference to 'Sheet2'. You might argue that the formula is "ok" – just ensure the worksheet is copied correctly – but exactly how do you enforce the former method of sheet copying in a workbook when others may use it?

This Excel behaviour is quite dangerous as it catches out accomplished modellers too. For example, we have seen highly experienced analysts build a template forecast sheet for a given business unit and then have it reviewed by model auditors – seemingly a very prudent course of action. Once checks have been completed, the sheet has been copied over and over again for a multitude of business units only to have certain calculations all reference the template sheet – something not picked up at the review stage.

Get into the practice of always removing sheet references to the current worksheet – then this cannot happen.

Excel's built-in functionality 'Find and Relace' (**CTRL + H**) may be used (ensure 'Workbook' is selected as the 'Within:' category and that 'Formulas' is selected from the 'Look in:' drop down:



If you cannot see all of these options, click on the 'Options' button in the bottom right-hand corner of the dialog box.

Alternatively, you may use a macro instead. This is particularly useful if a worksheet is hidden and / or protected.

```
Sub RemoveCurrentWorksheetReferencesFromFormulae()

Dim ws As Worksheet
Dim VisibleStatus As Variant
Dim ProtectStatus As Boolean
Dim ws_NameReplace As String
Dim ws_NameReplace2 As String
Dim dummyvariable As Variant
```

```
Dim NameSwap As String
NameSwap = ""


'Speed up calculations by switching calculation and screen updating off
Dim InitialCalc As Variant
InitialCalc = Application.Calculation
Application.Calculation = xlCalculationManual
Application.ScreenUpdating = False

'Reset Find/Replace behaviour to look at sheet only (not workbook)
Set dummyvariable = Worksheets(1).Range("A1:A1").Find("Dummy", LookIn:=xlValues)

'Error handling - if there's a problem, skip to the next worksheet
On Error GoTo NextWorksheet

'Repeat the following code for each worksheet in the workbook
For Each ws In ActiveWorkbook.Sheets

    'Store whether worksheet is hidden or not, and unhide if necessary
    VisibleStatus = ws.Visible
    ws.Visible = xlSheetVisible
    ws.Activate

    'Store whether worksheet is protected or not, and unprotect if necessary
    ProtectStatus = ws.ProtectContents
    ws.Unprotect ""

     'Create variables to store the name of the worksheet in two different formulae forms - with/
without space
    ws_NameReplace = "'" & ws.Name & "'!"
    ws_NameReplace2 = ws.Name & "!"

    'Replace if sheet name has a space
    ws.Cells.Replace What:=ws_NameReplace, Replacement:=NameSwap, _
        LookAt:=xlPart, SearchOrder:=xlByRows, MatchCase:=False, _
        SearchFormat:=False, ReplaceFormat:=False
    'Replace if sheet name does not have a space
    ws.Cells.Replace What:=ws_NameReplace2, Replacement:=NameSwap, _
        LookAt:=xlPart, SearchOrder:=xlByRows, MatchCase:=False, _
        SearchFormat:=False, ReplaceFormat:=False

    'Rehide the worksheet if it's hidden
    ws.Visible = VisibleStatus
```

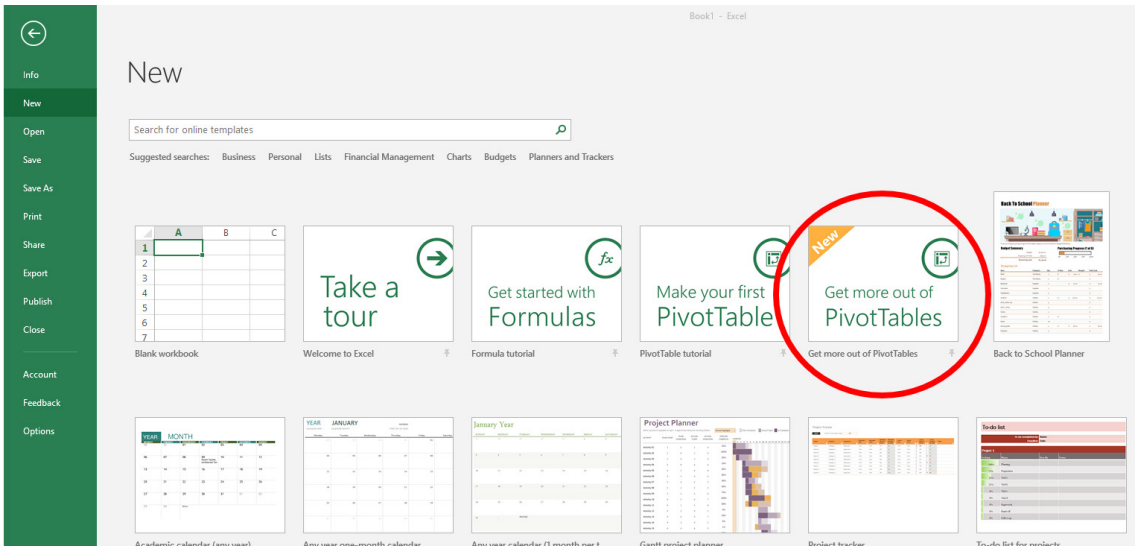
```
    'Reprotect the worksheet if it was protected previously
    If ProtectStatus = True Then
        ws.Protect
    End If

NextWorksheet:

Next ws

'Reset calculation status
Application.Calculation = InitialCalc
Application.ScreenUpdating = True


End Sub
```

The macro may need to be amended if one or more worksheets is protected with a password or if a sheet is "very hidden". No doubt someone will email us with some such instances and other improvements.

New PivotTable Tutorial

If you recall, back in January Microsoft added a formula and PivotTable tutorial (they're easy to access in Excel 2016, simply select 'File' from the Ribbon and then click on 'New' in the backstage area).

We mentioned that the PivotTable tutorial could have gone further and clearly, Microsoft agreed. Consequently, the latest versions of Excel 2016 / Office 365 have added a third tutorial – "Get more out of PivotTables". This continues the lessons learned from the first tutorial with further discussions on manipulating fields and the PivotTable itself.

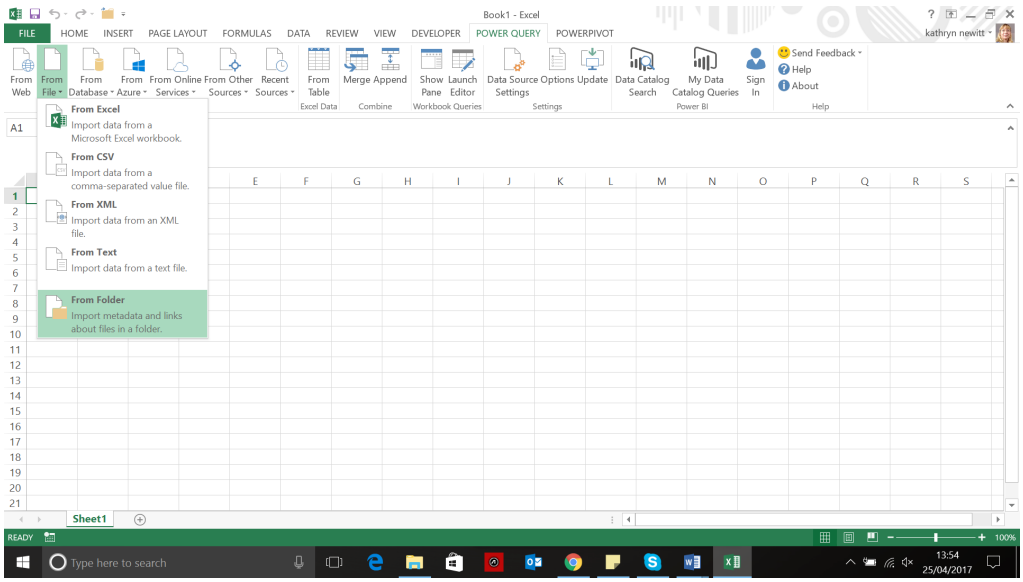


We look forward to more in due course and hope that Microsoft doesn't put us out of business!

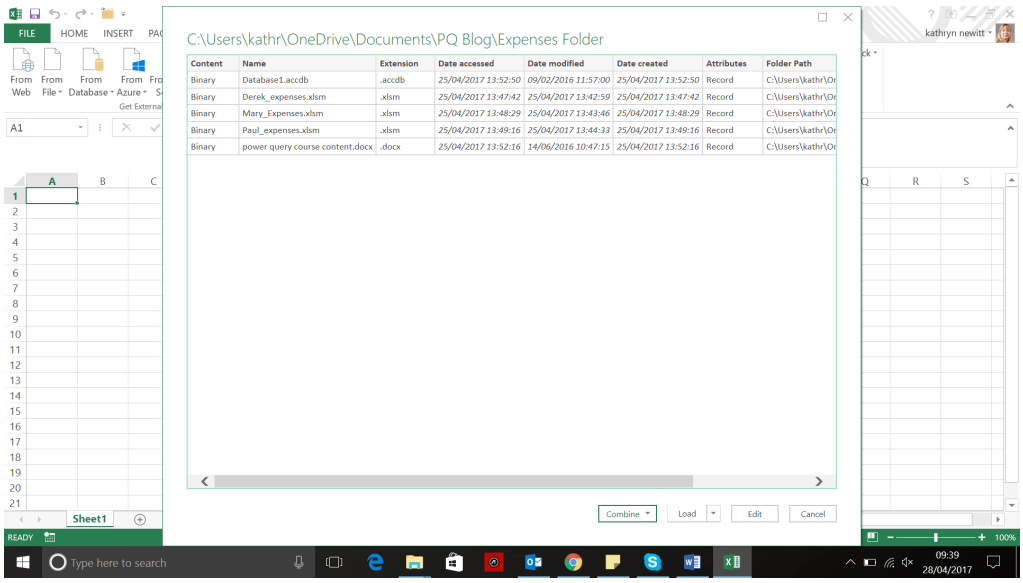
Power Query Pointers

Each month we'll reproduce one of our articles on Power Query (Excel 2010 and 2013) / Get & Transform (Excel 2016) from www.sumproduct.com/blog. If you wish to read more in the meantime, simply check out our Blog section each Wednesday. This month, we look at combining data from tables in several worksheets - but in other workbooks.

Though this may sound similar to last month's newsletter article. We will need to get a list of the workbooks that contain the data we propose to aggregate. To do this, let's start in a new workbook and create a blank query which is 'From Folder' as shown below:

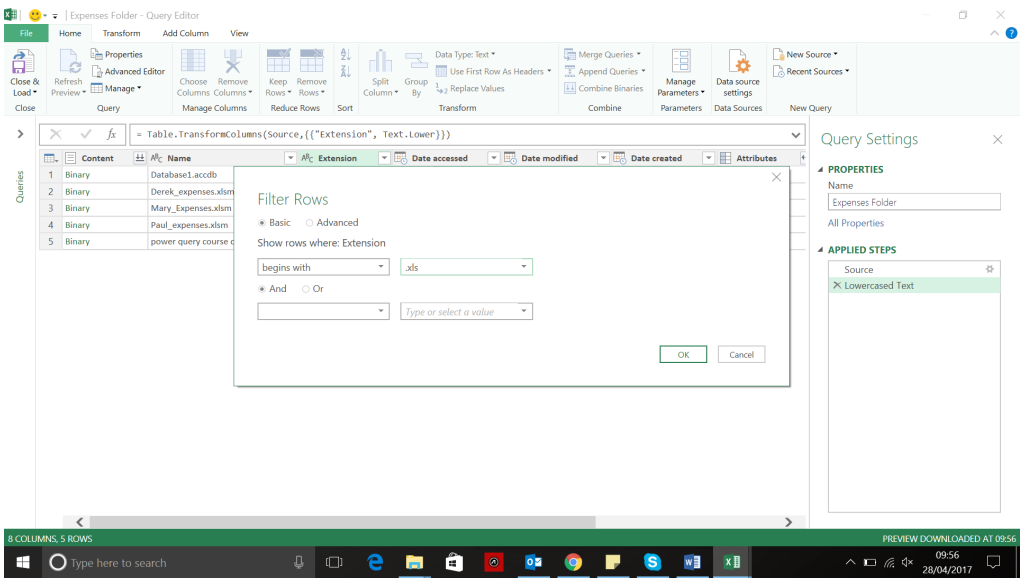


Here, a folder has been created with expense worksheets and some other items lurking around.

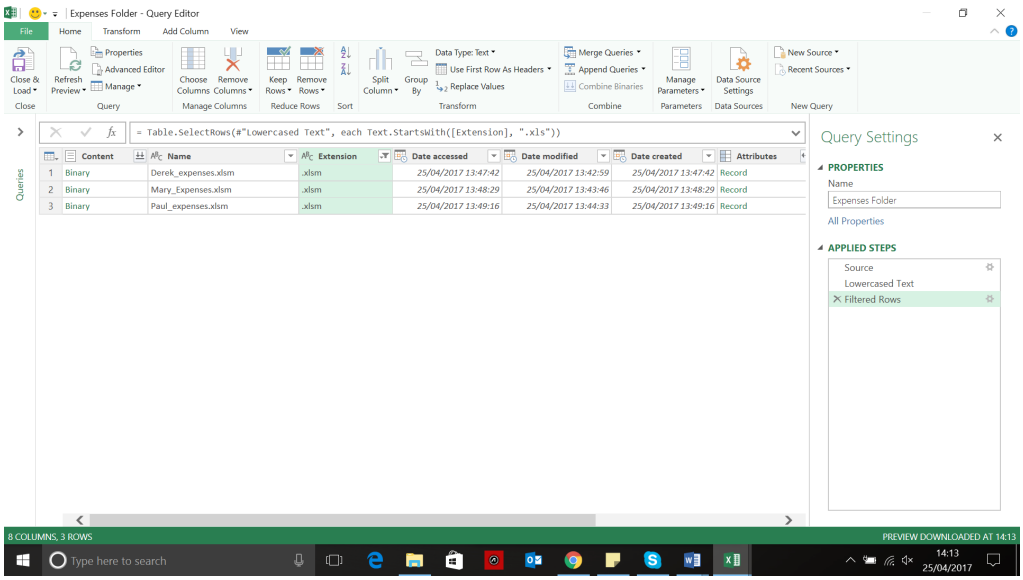


We don't want to attempt to combine at this point as some of those files are not expenses! The next step is edit the query to filter out the other files so that we are left with the workbooks. We also want to make sure that any expense workbooks added in future would be picked up.

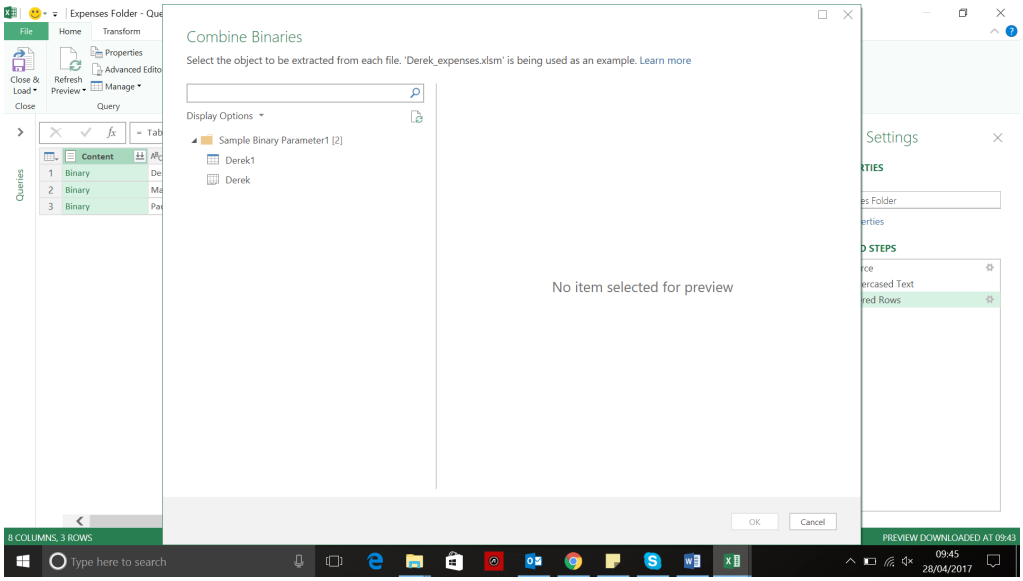
In order that any other workbooks would also be saved regardless of the extension, let's transform the case to 'lowercase' by right-clicking on the ***Extension*** column and choosing the 'Transform' option. We may then filter to pick up any extensions that start with '.xls':



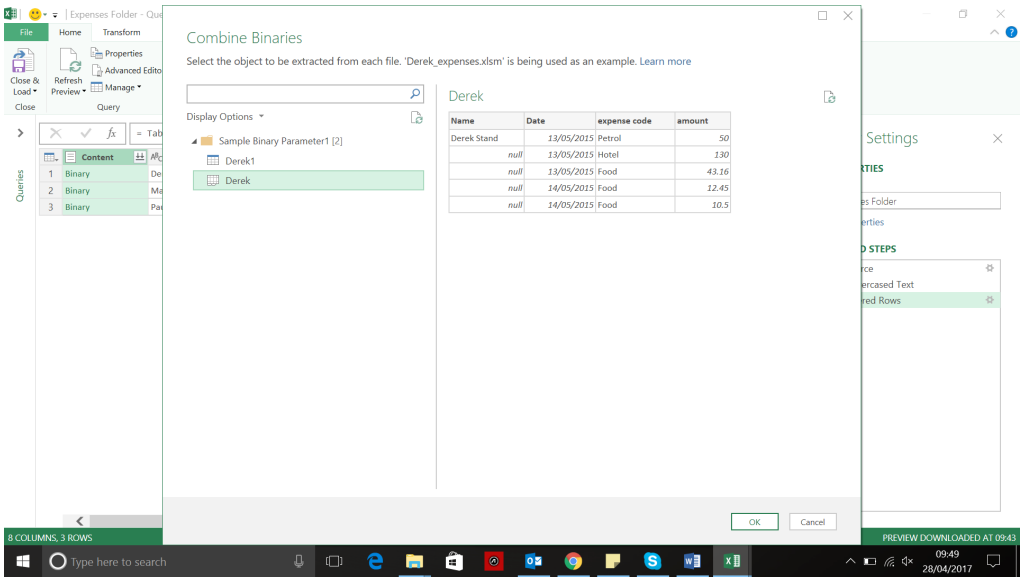
This leaves us with the files that we want.



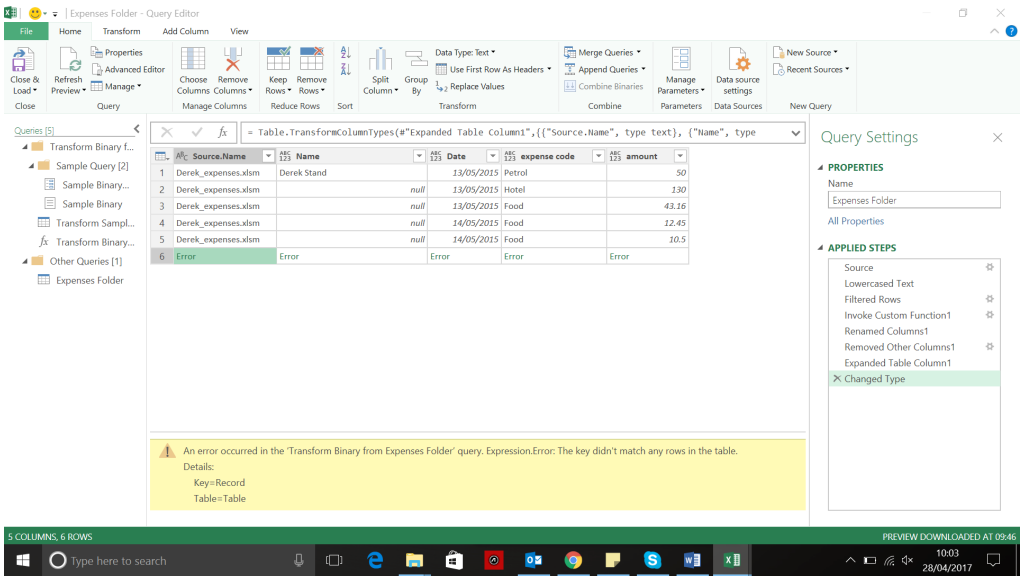
There is an icon next to ***Content***, since it is the 'Combine Binaries' button, which is tempting, so let's see what it can do. Pressing it begins a process, which shows us what is available in the first file.



This looks promising – we have two possible icons, one that looks like a sheet, and one that looks like a table called 'Derek1' and 'Derek' respectively. If you click on them, the content looks similar. We will choose the one that looks like a sheet.



Click 'OK' to combine the sheets.



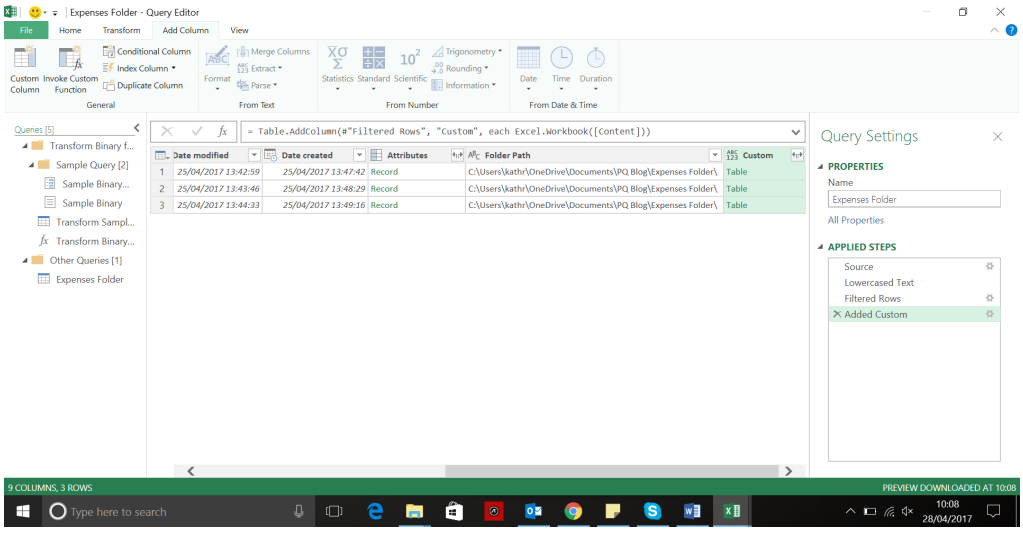
Something has gone wrong! Power Query can't see how to link the data together, so we will need to go back to basics (the same thing happens if we were to pick the table icon instead).

Next, we will remove the five steps that the 'Combine Binaries' process created, so that we are back at 'Filtered Rows':

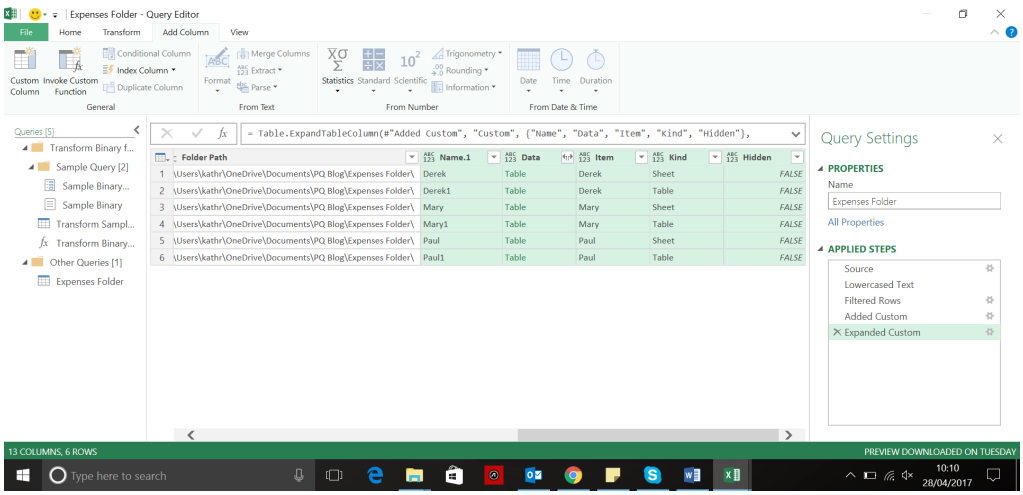
In the 'Add Column' tab, add a new custom column with the following formula:

= Excel.Workbook([Content])

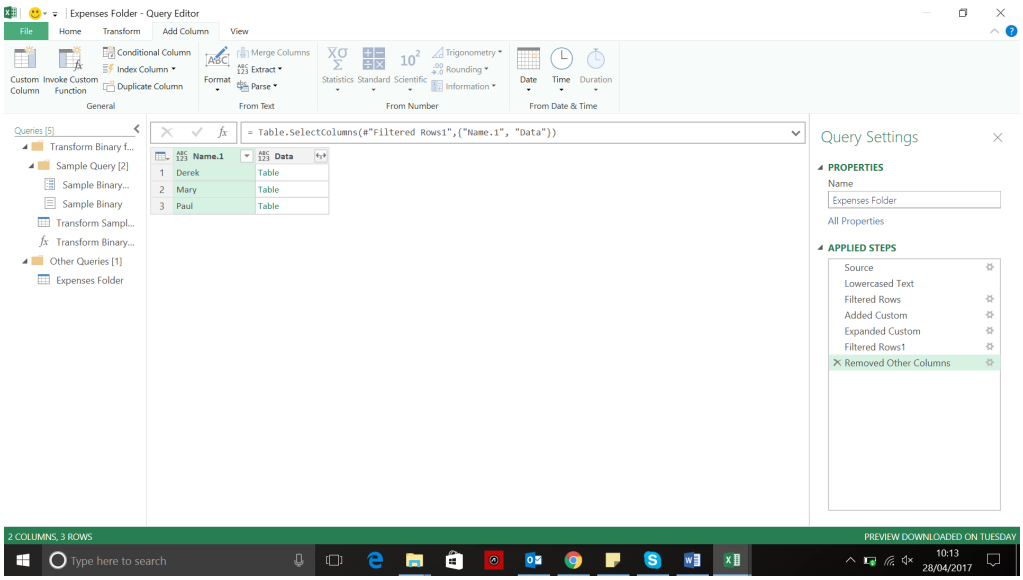
This should pull the Excel data from the binary content; we can also delete the content column once this is done:



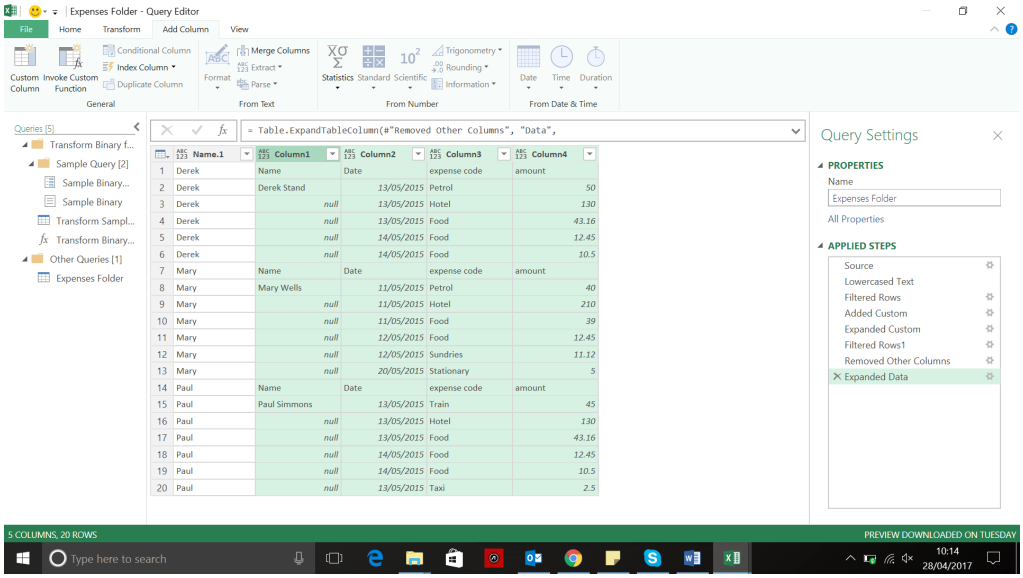
The custom column promisingly contains tables, and this time the icon next to ***Custom*** can be used to expand the contents of the tables:



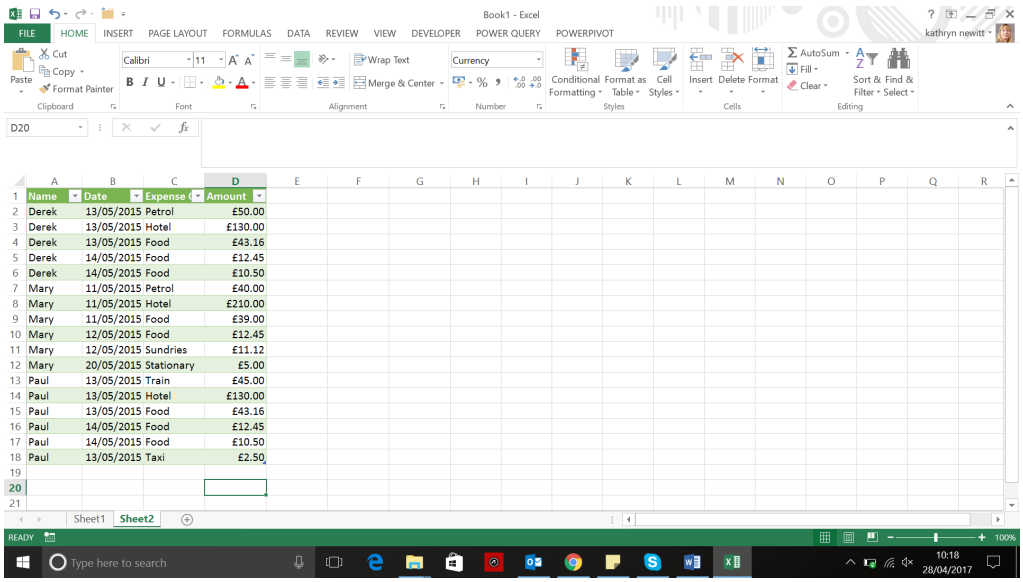
In the ***Kind*** column, we clearly have some danger of duplication as there are two rows for each person, one with value 'Table' and one with value 'Sheet'. Let's choose to filter and keep the rows where the ***Kind*** column is populated with 'Sheet'. We can also get rid of most of the columns as we only want the ***Name.1*** and ***Data*** columns.



We can now expand the ***Data*** column:



There's still some tidying up to do, but the data is all there ready to be transformed. Once we are happy we can upload the data.



June Updates for Power BI Desktop

It's that time of the month again. This month, the update's reporting features focus on accessibility and more flexibility when formatting your charts. With filtering and sorting options, the data view has been improved too. Several connectors also received major updates this month, including a new driver for our SAP Business Warehouse connector that comes with numerous significant improvements.

The full list for June is as follows:

Reporting

- High contrast support for reports
- Donut radius control
- Pie and donut detail labels position control
- Format data labels separately for each measure in a combo chart
- Longer phone reports

Custom visuals

- Organization Chart
- China Heat Map

Modelling

- Filtering and sorting in data view
- Improved locale formatting

Data connectivity

- SAP Business Warehouse connector improvements
  - New driver and improved performance
  - Improved support for hierarchy variables
- Spark connector now supports Windows Authentication
- OData V4 connector enhancements
- ODBC connector improvements
  - Folding support for Top Rows
  - Ability to filter navigation by DSN catalog

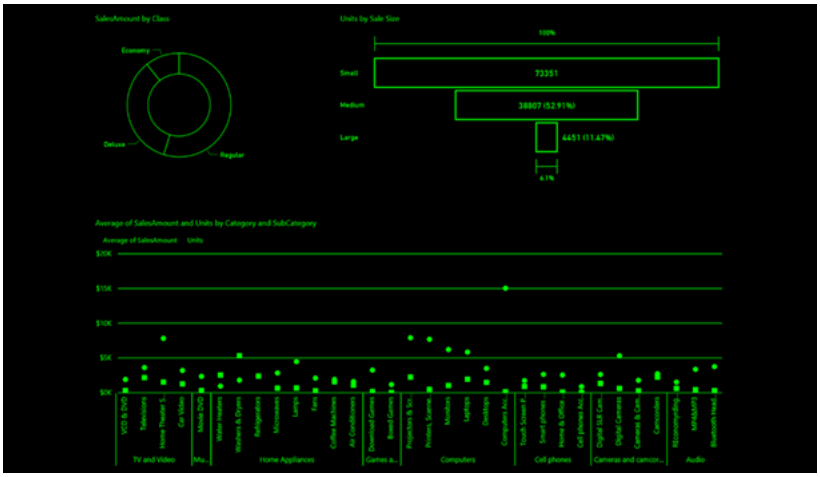
Other

- National cloud selector.

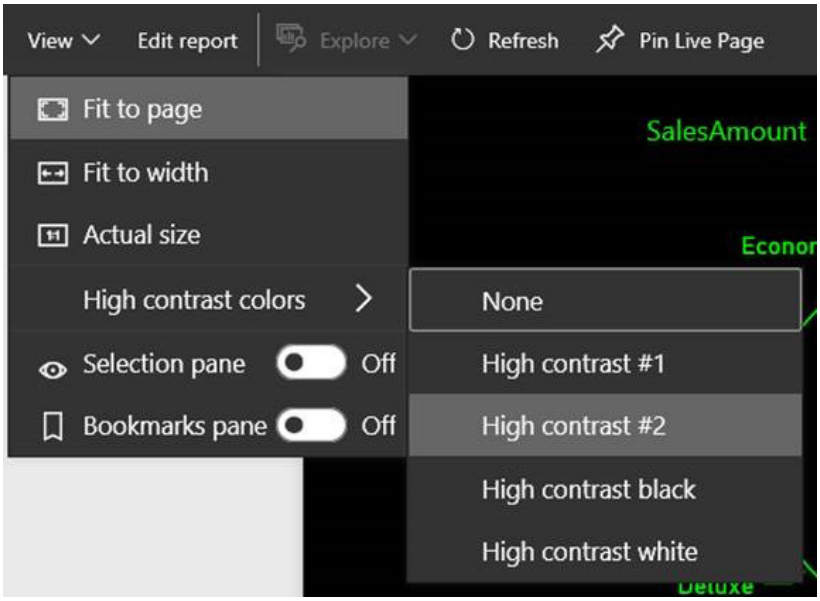
Let's take a look at each of these in turn.

High contrast support for reports

If you're using the "high contrast mode" Windows settings, your Power BI reports will now respect the colo(u)r palette you're using. When using Power BI Desktop, Power BI will automatically detect which high contrast theme you're using and apply those colours across your report, similar to the other Microsoft products, such as Excel.



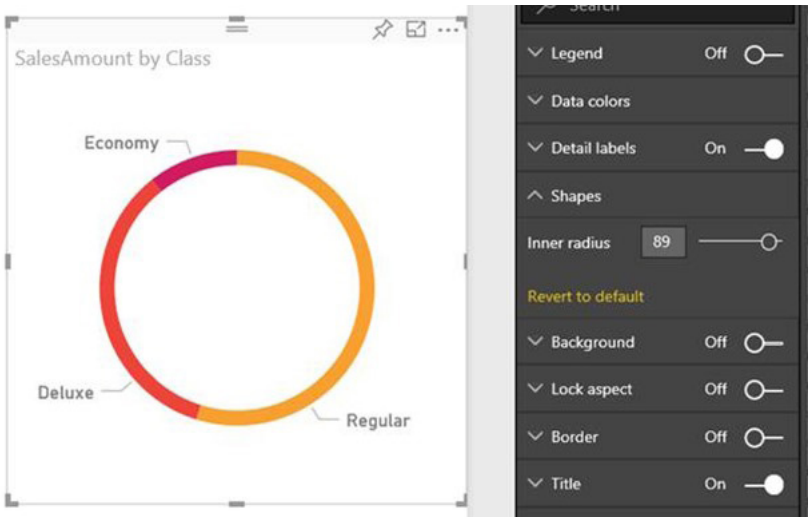
In the Power BI service, it will also try to detect which theme you're using and automatically apply it to your report, but depending on what browser you are using, this might not be successful. If you want to change the theme manually, you can select a high contrast theme under the View dropdown.



Note that if you're using high contrast themes on Power BI Desktop, you'll still see some areas of the product that aren't using your theme's colours. Microsoft has gone on record that they will provide more support for high contrast, along with other accessibility improvements, throughout the rest of this year.

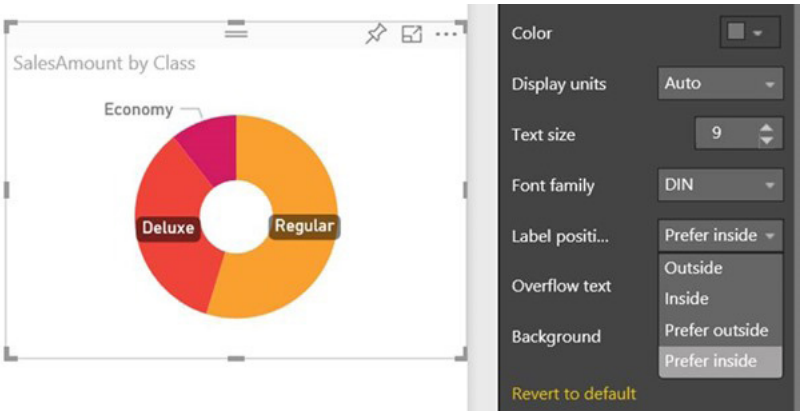
Donut radius control

The first formatting update for June was the ability to control the inner radius of your donut chart. This lets you make the donut slimmer or thicker to get the style you want. You'll find this option under the 'Shapes' card in the 'Formatting' pane.

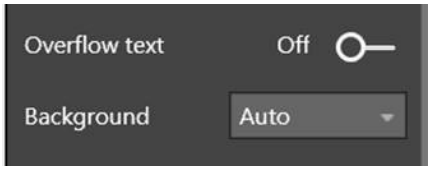


Pie and donut detail labels position control

The pie and donut charts have also been updated to support moving your detail labels inside. You can pick between forcing the labels to always be outside or inside or to prefer one position over the other.



If you choose to move your labels inside the pie or donut chart, you can also choose whether the text can overflow past the edge of the shape and if the labels have a background or not.



Format data labels separately for each measure in a combo chart

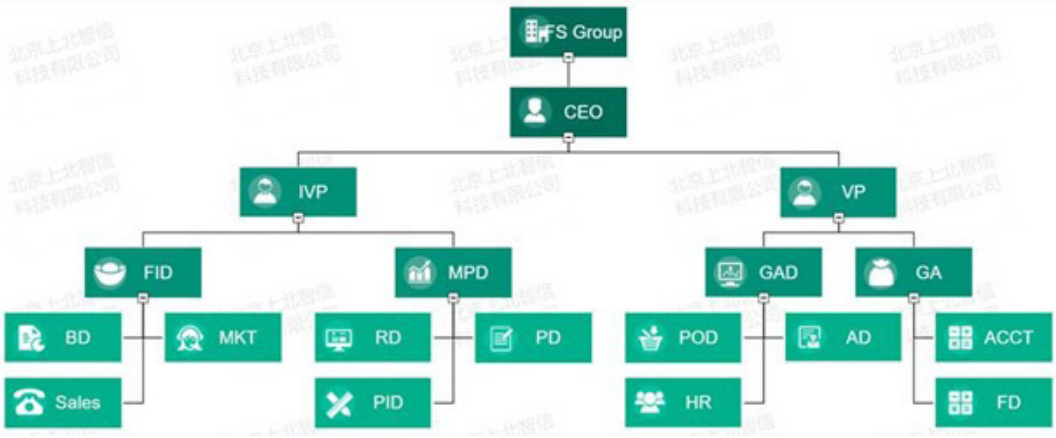
The final formatting improvement for this edition is an update to data labels in combo charts. Now you may customise individual series. In the 'Data labels' card of the 'Formatting' pane, you can turn the 'Customize series' option on to format an individual measure's formatting options, such as colour, display units and the number of decimal points.

Longer phone reports

Microsoft has also extended the total length of phone reports in this update. If you create custom layouts for your reports to be used in our mobile apps, you'll see that the grid is twice as long as before, increasing from 20 rows to 40.

Organization Chart

The Organization Chart custom visual allows you to create a tree view of your data. You can give each node a name, an image, and optionally, a link to go to when clicked. The tree is created by giving each node an ID and its parent's ID, and the visual will use this to create the tree layout. There are several formatting options as well, such as node colours, orientation and label formatting.



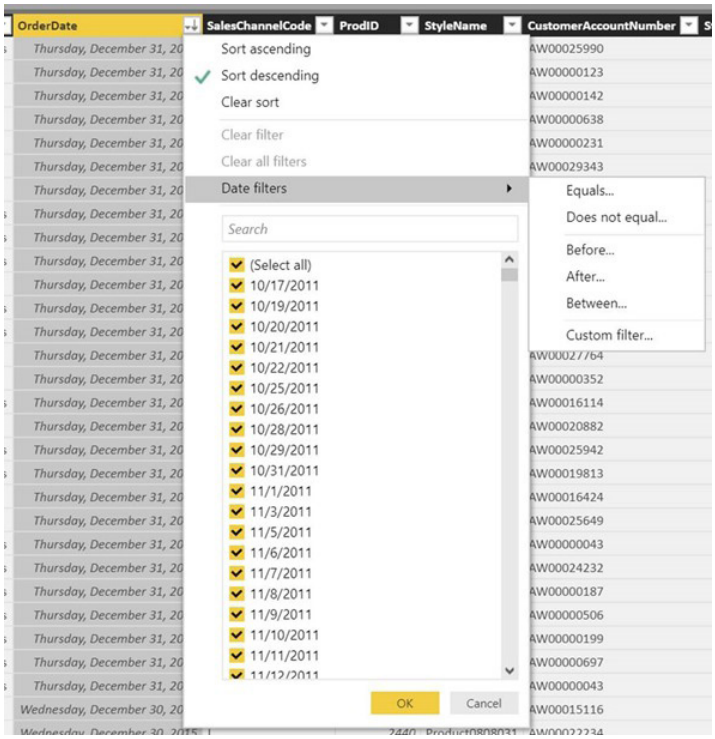
China Heat Map

Last month saw the China Color Map custom visual join the charting fold, and this month Power BI Desktop expands further with the China Heat Map visual as a follow up. If you are using geographical data for China, you might want to try out the Chinese Heat map custom visual. This map has several features:

- offline maps
- one-click switching between a national China map and provincial maps
- rich visual formatting
- arbitrarily set the latitude and longitude of the area you want to display
- custom gradient range fill.

Filtering and sorting in data view

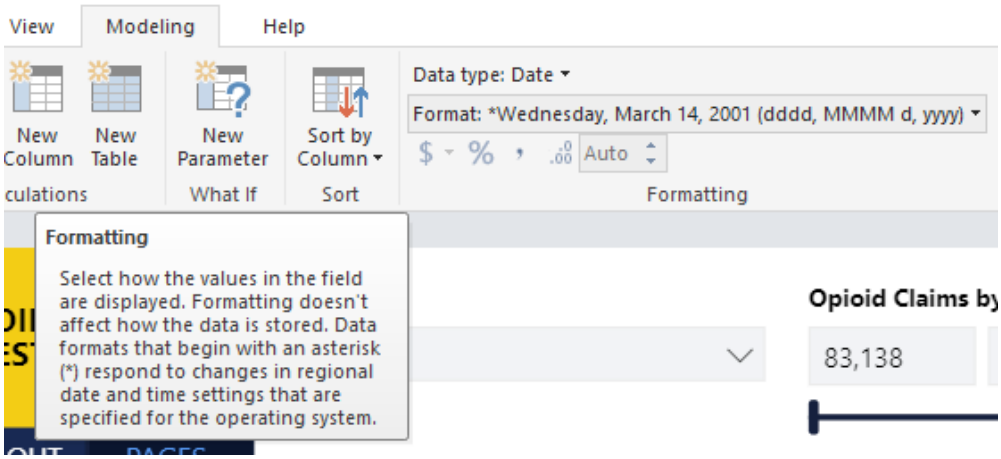
This update also saw the addition of filtering and sorting in the data view. For every column in your model, you can now see the sort direction if it is applied on that column and either filter individual values out or using advanced filtering options for that column type.



Improved locale formatting

Microsoft has stated that they are vastly increasing the number of specific locales supported for formatting when viewing your reports in the Power BI service. With this update, there is now support for a total of 670 locales. For example, you'll now see support for Mexico's variant of Spanish along with many other Spanish variants. In Power BI Desktop, the software detects and uses the "date, time, and number formatting" format set for the operating system. Internet Explorer and Edge will pass this same OS locale through, but other browsers often have their own separate language and region settings.

To take advantage of this, make sure to use the default data format for your field if you want the system locale settings to flow through. You can tell you are using system locale formatting by the * next to the format.



SAP Business Warehouse connector improvements

New driver and improved performance

Starting with this release, the SAP Business Warehouse (BW) connector supports a new implementation option labelled 2.0. Selecting implementation "2.0" in the SAP BW connector dialog while creating a new connection will switch from using the SapClient driver to a new SAP BW driver developed by Microsoft.

These are significant connector improvements that come with the new implementation:

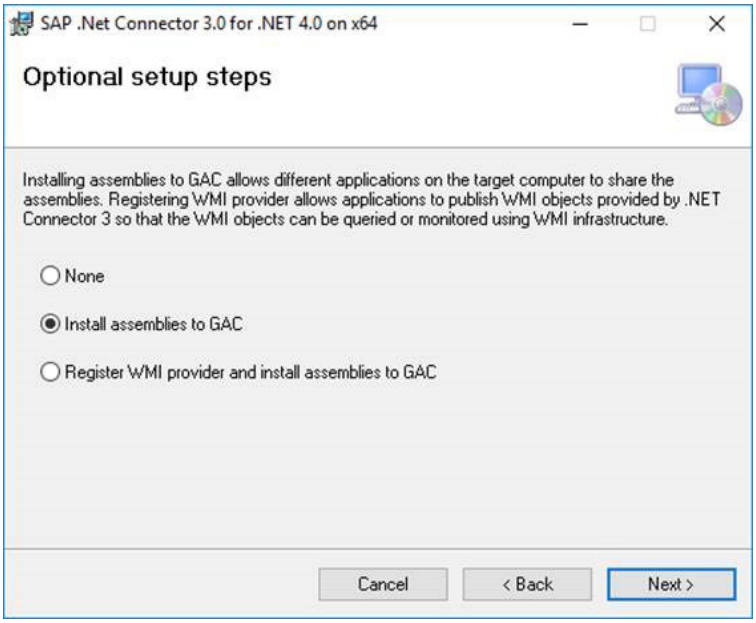
- improved performance
- ability to retrieve several million rows of data, and fine tuning through the batch size parameter
- ability to switch execution modes
- support for compressed mode, which is especially beneficial for high-latency connections or large datasets
- improved detection of Date variables
- [Experimental] Expose Date (ABAP type DATS) and Time (ABAP type TIMS) dimensions as dates and times respectively, instead of text values
- better exception handling, so errors that occur in SAP BAPI calls are now surfaced
- column folding in BasXml and BasXmlGzip modes. For example, if the generated MDX query retrieves 40 columns but the current selection only needs 10, this request will be passed onto the server to retrieve a smaller dataset.

Implementation 2.0 has a new pre-requisite, the *SAP .NET Connector 3.0.* Download of the connector is available from SAP's website. Access to this download requires a valid SAP S-user. You are encouraged to contact your SAP Basis team to get this component.

The connector comes in 32-bit and 64-bit versions, and you must choose the version that matches your Power BI installation. At the time of this writing, the website lists two versions (for .NET 4.0 framework):

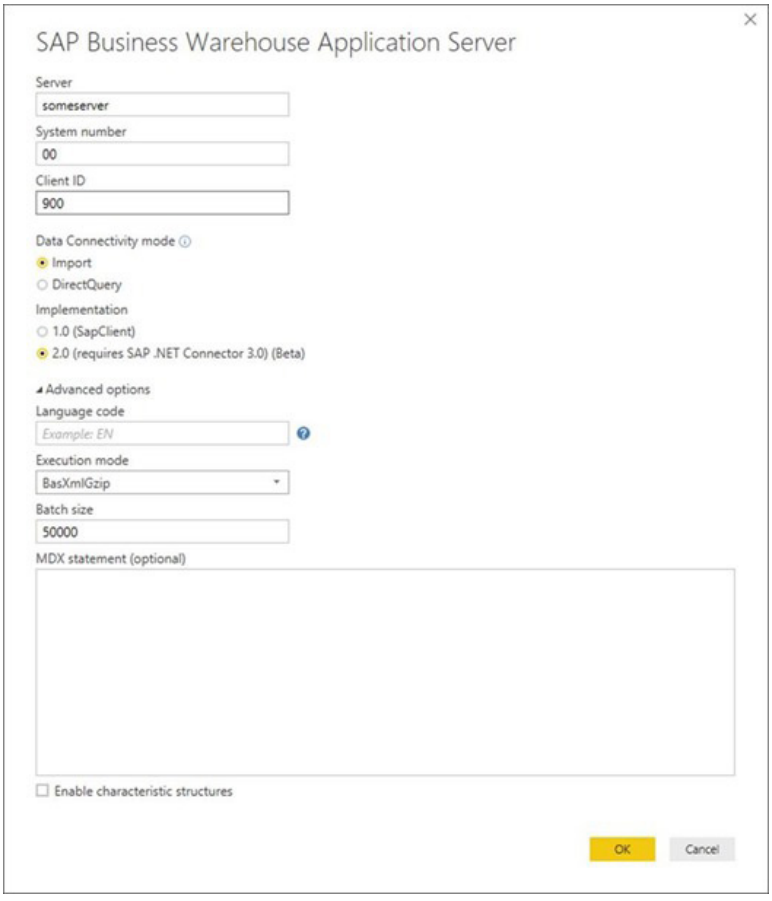
- SAP Connector for Microsoft .NET 3.0.20.0 for Windows 32bit (x86) as zip file (6.896 KB), January 16, 2018
- SAP Connector for Microsoft .NET 3.0.20.0 for Windows 64bit (x64) as zip file (7.180 KB), January 16, 2018

If this is for you, do note that whilst installing, in the "Optional setup steps" window, make sure to select the "Install assemblies to GAC" option:



After installing the required component, you must create a new connection to use the new implementation. To do this:

1. from the Get Data dialog, select either SAP Business Warehouse Application Server or SAP Business Warehouse Message Server
2. you will be presented with the new connection dialog, that allows selection of the Implementation. Selecting Implementation 2.0 will enable the Execution mode, Batch size and Enable characteristic structures options



3. upon clicking OK, you will be taken to the Navigator dialog, from which the experience is the same as before.

But that's not all.

Improved support for hierarchy variables

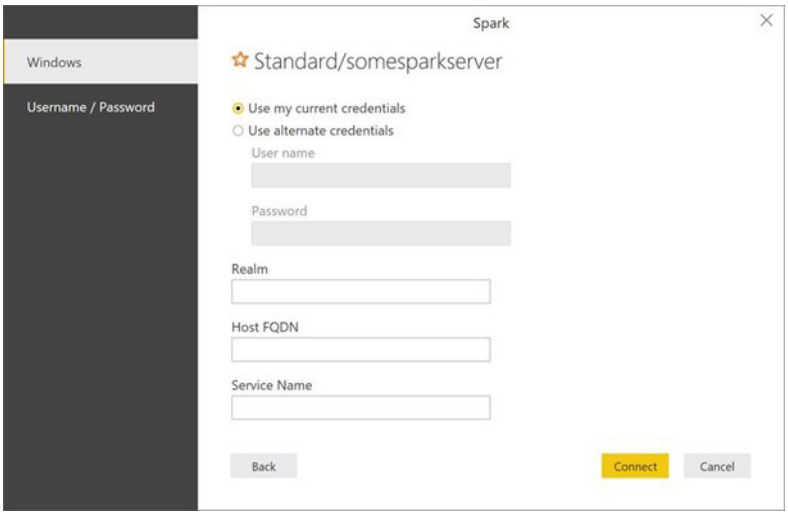
There are also improvements to the hierarchy variables input UX in the 'Navigator' dialog and 'Edit Variables' screen, so that when modifying selection for a hierarchy node variable (*e.g.* US State), dependent variable values fields (*i.e.* City) are updated to only contain values defined within the selected hierarchy node.

Improved support for hierarchy variables

There are also improvements to the hierarchy variables input UX in the 'Navigator' dialog and 'Edit Variables' screen, so that when modifying selection for a hierarchy node variable (*e.g.* US State), dependent variable values fields (*i.e.* City) are updated to only contain values defined within the selected hierarchy node.

Spark connector now supports Windows Authentication

The Spark connector has been enhanced in this update by adding support for Windows authentication. Upon specifying a server to connect to, you can now provide Windows authentication credentials in addition to the previous Basic (username / password) option. Windows authentication support allows you to specify "current" or "alternate" user credentials. Additionally, you can specify the Realm, Host Fully-Qualified Domain Name and Service Name parameters, which are required in order to establish the connection to Spark clusters.



OData V4 connector enhancements

This update sees improvements to the OData connector in order to provide richer support for OData V4:

- improved support for complex types: the new experience for complex-typed properties is now much like that for navigation properties. Complex singleton properties can now themselves contain navigation properties, and complex collections are now imported as nested tables
- open type navigation columns: while the existing OData connector has long supported importing extra data properties from an OData feed as open type columns, the enhanced connector extends this to also importing extra navigation properties, whether dynamic or from a derived type. In many cases we will still be able to fold even after following these navigation properties
- improved support for custom URLs: users who prefer to specify OData query options manually will find that the enhanced connector adjusts the type of the imported table according to the response
- significant performance improvements: loading feeds with many navigation properties has been massively sped up
- greater resiliency: if for any reason a folded query fails, the enhanced connector will retry with less folding. This allows more queries to succeed without completely giving up on the improved performance from folding.

ODBC connector improvements

The ODBC connector has been improved in this update in a couple of ways:

Folding support for Top Rows

With this release, "keep top rows" operations will be pushed down to the ODBC driver, which may improve performance of the connector if the driver and underlying data source support the "top" operator.

Ability to filter navigation by DSN catalog

If the DSN or connection string specified in the ODBC connector dialog includes a DSN catalog, the in-built Power Query will narrow down the list of tables exposed in the Navigator dialog accordingly.

National cloud selector

Microsoft states that Power BI is currently available in three separate national clouds, which offer the same levels of security, privacy, compliance and transparency as the global version of Power BI, combined with a unique model for local regulations on service delivery, data residency, access and control. If your account happens to be provisioned in more than one cloud, you can now choose the cloud you want to use when signing into Power BI Desktop.

That's it for Power BI Desktop for this newsletter – but there *is* more...

Latest Updates for Power BI Service and Mobile

The announcements for Power BI Service and Mobile always seem to be delayed by Microsoft. We're not quite sure why, but most of the updates detailed below have already been out a month – sorry about that, but not our fault!

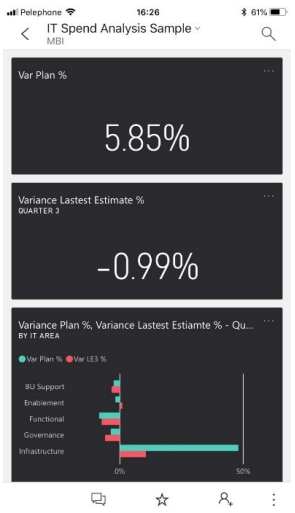
The full list this time out is as follows:

- Dashboard theming
- Incremental refresh in Premium
- Request access workflow for Apps
- Get Data updates for Apps
- Persistent filters settings in the Service
- Azure B2B invite workflow improvements for reports
- May update for On-premises data gateway
- Drill through on Mobile
- Remote configuration of Report Server on Mobile
- Updated report canvas on Mobile.

Let's take a look at each of these in turn.

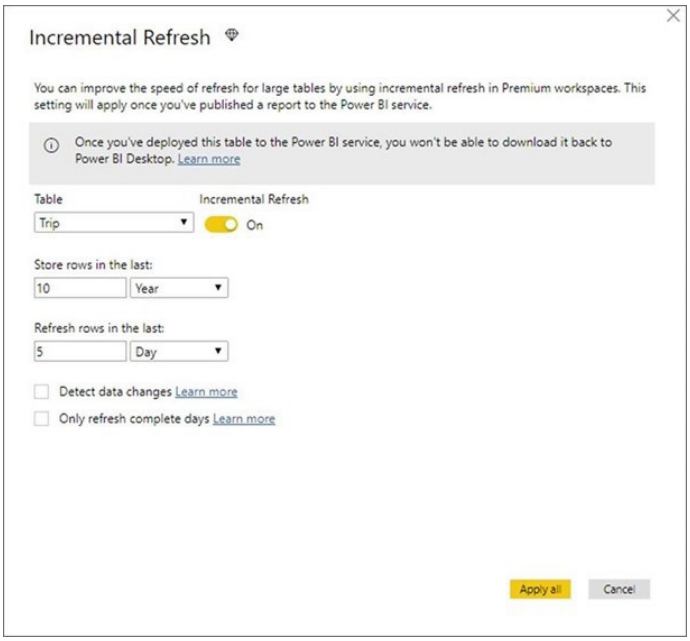
Dashboard theming

Last month's update announced the availability of dashboard theming in the Power BI Service. With this feature, authors may now further customise the look and feel their dashboards to match their corporate branding. By default, all dashboards have three built-in themes (Light, Dark, Color-blind friendly) and a Custom option to quickly toggle between. For those accustomed to report theming in Desktop, there is also an option to leverage the same JSON theme file structure to style all the chart colours within a dashboard. There's more though: to ensure consumers have a consistent experience across platforms, this update has also added support to render themed dashboards on Mobile too.



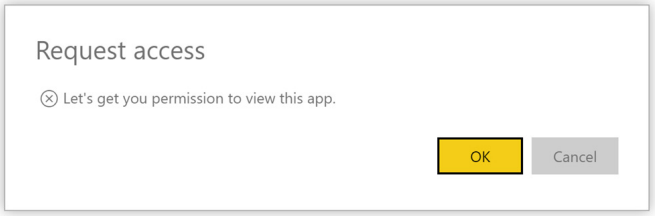
Incremental refresh in Premium

There's now support in Power BI Premium for incremental refresh (Preview presently). Businesses may now have more control over the refresh policy of their large datasets and can determine how data is incrementally refreshed in the Power BI Service. With this feature, refreshes are faster, more efficient and more reliable because only the data that has changed gets refreshed. That could save a significant amount of time and would be welcome in Power BI too…

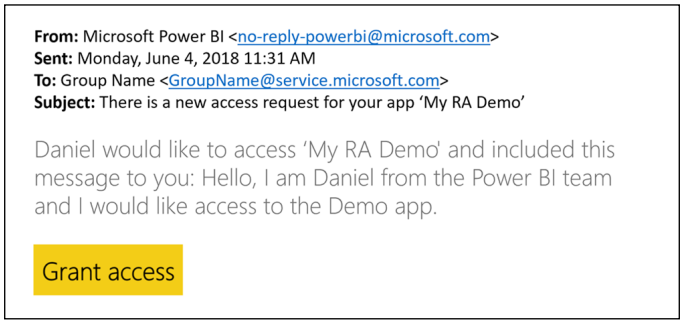


Request access workflow for Apps

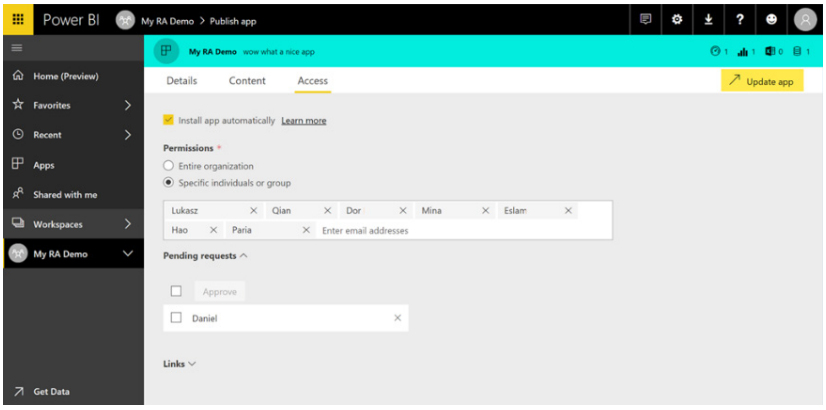
This update makes it easier for users to get access to the Apps they need by allowing them to request access to an App. Often, users share links to each other about interesting Apps or deep links to reports or dashboards contained within Apps. Until now, users would receive a message saying the content is not available. However, they are now prompted to request access to the App:



When users accept and press 'OK', they are given the option to send the request and provide a justification for it. The request is sent via email to the Office 365 Group for the App workspace.

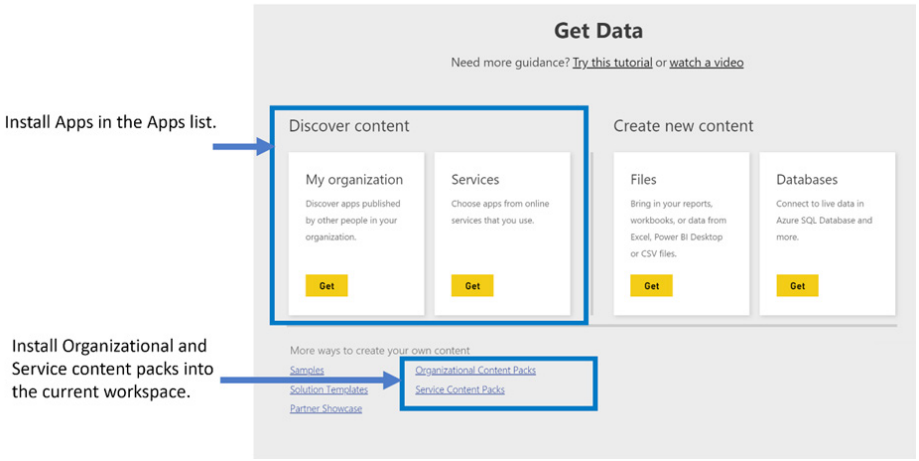


The access requests can be viewed on the 'Access' page of the App. Pressing 'Grant access' in the email takes you directly there. You may use the new 'Pending requests lists' to easily 'Approve' or 'Delete' the pending requests. Once you 'Approve' requests, the users immediately get access to the App, so they can follow the App link to view the App contents. However, the app is not automatically installed for the user(s) until you press the 'Update app' button.



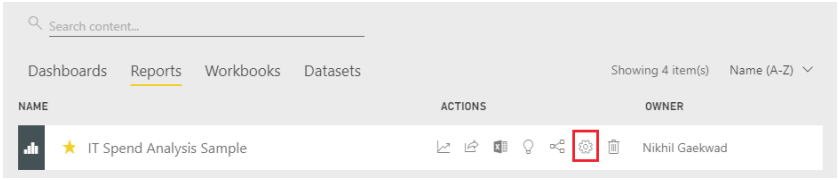
Get Data updates for Apps

Finding Apps in Power BI is now more straightforward. Microsoft has now brought in all of the 'App discovery' experiences directly into the 'Get Data' screen. This enables users to quickly find and install organisational and service Apps through the workflow they're accustomed to use to discover data they have access to in Power BI.

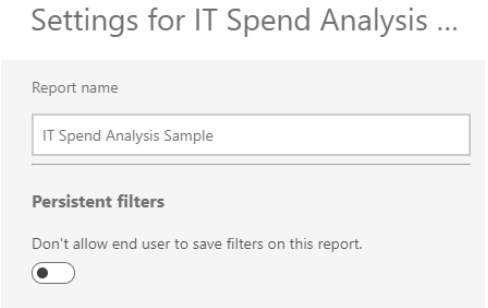


It should be noted that users may still choose to use the organisational and service content packs capabilities. The buttons have been moved to the bottom of the page as shown in the image above. However, Microsoft recommends Apps to be your go-to when distributing content to large audiences in Power BI instead of organisational content packs or read-only workspaces.

Persistent filters settings in the Service



It has also been made easier for authors to enable or disable the persistent filters for reports in the Service. You no longer need to republish from Desktop – instead you can quickly control the feature in the report Settings pane. The pane can be found under the quick actions of your report content list in your workspace.



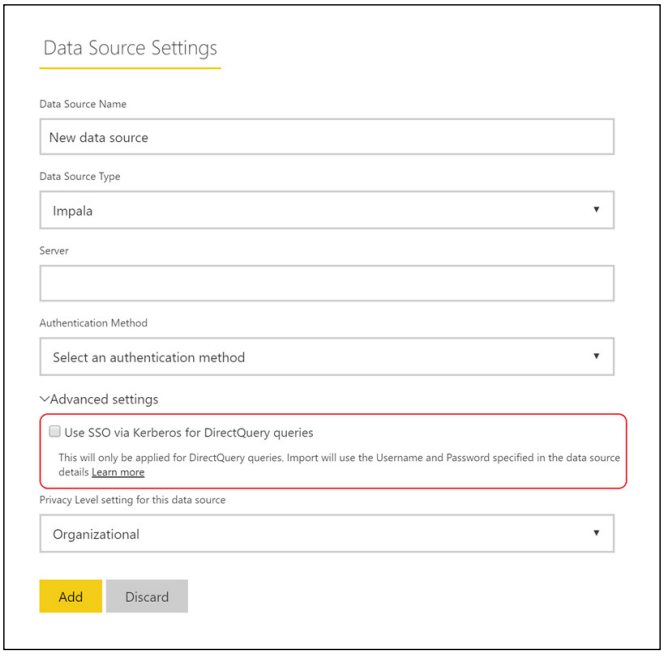
Azure B2B invite workflow improvements for reports

Microsoft has noted the increasing usage of their Azure B2B external user sharing features that help users collaborate securely across organisations. However, the invite acceptance workflow has been complicated because the user needs first to accept the Azure B2B invite, and then click the link to the Power BI content in a separate email. We have found this particularly irksome.

Moving forward, Microsoft has simplified the workflow for reports so that invited external users get a single email to the report in Power BI. When they click the link, they accept the invite and can immediately access the content.

May update for On-premises data gateway

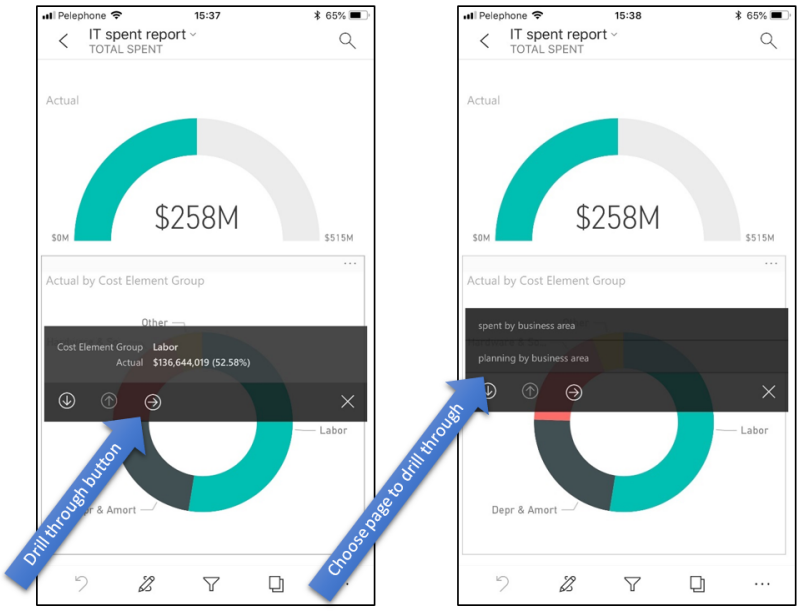
This update heralds an updated version of Power BI On-premises data gateway. The latest version (14.16.6697.1) includes a limited preview of Impala SSO support using Kerberos, improved support for Kerberos SSO for SAP HANA, and an updated mashup engine.



Drill through on Mobile

Drill through is now supported on all Power BI mobile apps. While you can navigate one level down in hierarchy on a selected data point with the existing drill down feature, drill through allows you to navigate another report page that would have more insights on that selected data point.

To drill through, when such a drill through is defined in your report, tapping on a data point will bring up the drill through option in the tooltip. You might have multiple drill through options, each taking you to a different page. In that case you will need to choose which one you want to drill through.



Remote configuration of Report Server on Mobile

This update has added a new capability in iOS devices for IT administrators to remotely configure employees' apps on their mobile phone with Report Server details using their preferred MDM tool such as Intune. Once this is done, all users have to do is to accept the configuration and sign in with their password to complete the connection to the server.

IT administrator can create "app configuration policy" and choose the set of users the policy will apply to. Once the configuration is published, Power BI Mobile app will prompt the users with a sign-in message that will configure the policy on their device.

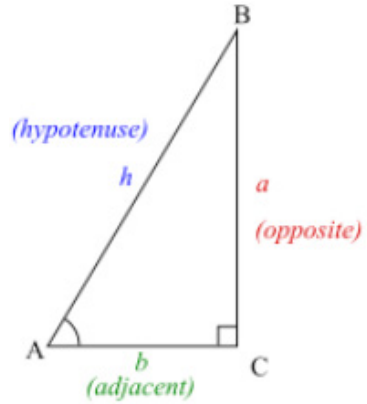
Updated report canvas on Mobile

The phone-optimised report view, when authored in Power BI Desktop and published to the Service, gives Mobile users a tailored portrait view experience on their mobile devices. Microsoft received significant feedback that the length of the phone report canvas is not enough, so much so they have now doubled the canvas length.

That's it for Power BI in total for this newsletter – more next month, no doubt!

The A to Z of Excel Functions: COS

Not to be confused with cos lettuce, this function returns the *cosine* of the given angle. For those of you with more important things to do during your trigonometry lessons (like sleeping), that denotes the ratio of the adjacent side of a triangle divided by its hypotenuse (subject to sign considerations), *viz*.



The COS function employs the following syntax to operate:

COS(number)

The **COS** function has the following arguments:

- **number:** this is required and represents the angle in radians for which you want the cosine.

It should be further noted that if the angle is in degrees, you should multiply the angle by **PI()/180** or else use the **RADIANS** function to convert the angle to radians.

Please see our example below:

	A	B	C
1	Formula	Description	Result
2	=COS(1.75)	Cosine of 1.75 radians.	-0.1782461
3	=COS(60*PI()/180)	Cosine of 60 degrees.	0.5
4	=COS(RADIANS(120))	Cosine of 120 degrees.	-0.5
5			

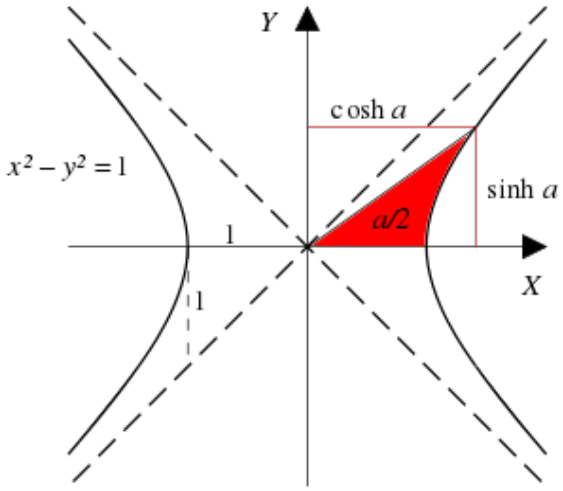
The A to Z of Excel Functions: COSH

You probably think we talk a load of hyperbolics here, but that's what happens when we are under the **COSH**. This function returns the hyperbolic cosine of a number.

That's all well and good if you know what "hyperbolic cosine" means. In mathematics, hyperbolic functions are analogous to the trigonometric, or circular, functions, such as sine and cosine.

Just as the points **(cos t, sin t)** form a circle with a unit radius, the points **(cosh z, sinh z)** form the right half of the equilateral hyperbola (please see the figure below). The hyperbolic functions take a real argument called a hyperbolic angle. The size of a hyperbolic angle is twice the area of its hyperbolic sector. The hyperbolic functions may be defined in terms of the legs of a right triangle covering this sector.

Hyperbolic functions occur in the solutions of many linear differential equations, such as some cubic equations. Further, in complex analysis, the hyperbolic functions arise as the imaginary parts of sine and cosine – but that's a story for another day.



The **COSH** function employs the following syntax to operate:

COSH(number)

The **COSH** function has the following arguments:

- **number:** this is required and represents any real number for which you want to find the hyperbolic cosine.

It should be further noted that the formula for the hyperbolic cosine is:

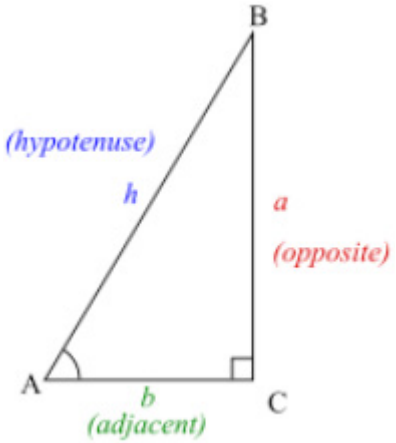
$$\mathrm{COSH}(z) = \frac{e^{z} + e^{-z}}{2}$$

Please see the example below:

	A	B	C
1	Formula	Description	Result
2	=COSH(1)	Hyperbolic cosine of 1.	1.54308063
3	=COSH(EXP(1))	Hyperbolic cosine of the base of the natural logarithm.	7.61012514
4			

The A to Z of Excel Functions: COT

This function returns the *cotangent* of the given angle. For those of you who don't find trigonometry riveting you really shouldn't be so obtuse, but the cotangent is the inverse of the tangent function, *i.e.* it calculates the ratio of the adjacent side of a triangle divided by the opposite side (subject to sign considerations), *viz*.



The **COT** function employs the following syntax to operate:

COT(number)

The **COT** function has the following arguments:

- **number:** this is required and represents the angle in radians for which you want the cotangent.

It should be further noted that if the angle is in degrees, you should multiply the angle by **PI()/180** or else use the **RADIANS** function to convert the angle to radians. Furthermore:

- The absolute value of **number** must be less than 2^27
- If **number** is outside its constraints, **COT** returns the *#NUM!* error value
- If **number** is a non-numeric value, **COT** returns the *#VALUE!* error value
- **COT(0)** returns the *#DIV/0!* error value.

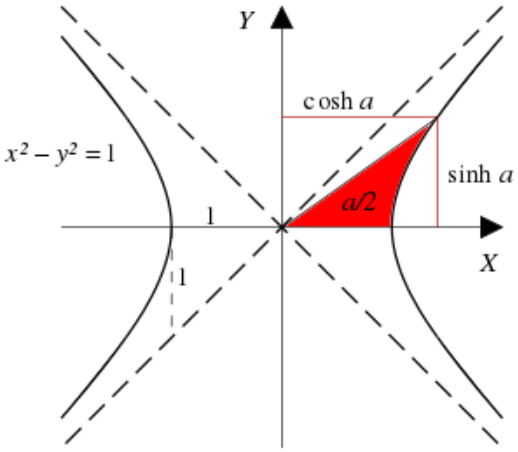
Please see our third example below:

	A	B	C
1	Formula	Description	Result
2	=COT(90)	Returns the cotangent of 30 radians.	-0.5012028
3	=COT(RADIANS(90))	Returns the cotangent of 90 degrees (with rounding issues displayed).	6.1257E-17
4			

The A to Z of Excel Functions: COTH

This function returns the hyperbolic cotangent of a hyperbolic angle. Clear as mud? Just as the points **(cos t, sin t)** form a circle with a unit radius, the points **(cosh z, sinh z)** form the right half of the equilateral hyperbola (please see the figure below). The hyperbolic functions take a real argument called a hyperbolic angle. The size of a hyperbolic angle is twice the area of its hyperbolic sector. The hyperbolic functions may be defined in terms of the legs of a right triangle covering this sector.

Hyperbolic functions occur in the solutions of many linear differential equations, such as some cubic equations. Further, in complex analysis, the hyperbolic functions arise as the imaginary parts of sine and cosine – but that's a story for another day.



Essentially, **COTH(N)** is equal to **COSH(N)** divided by **SINH(N)**. The **COTH** function employs the following syntax to operate:

COTH(number)

The **COTH** function has the following arguments:

- **number:** this is required.

It should be further noted that:

- the hyperbolic cotangent is analogous to the ordinary (circular) cotangent
- the absolute value of **number** must be less than 2^27
- if **number** exceeds its constraints, **COTH** returns the *#NUM!* error value
- if **number** is a non-numeric value, **COTH** returns the *#VALUE!* error value.

The following equation is used:

$$\coth(N) = \frac{1}{\tanh(N)} = \frac{\cosh(N)}{\sinh(N)} = \frac{e^N + e^{-N}}{e^N - e^{-N}}$$

Please see our final example for this month below:

	A	B	C
1	Formula	Description	Result
2	=SINH(1)	Returns the hyperbolic sine of 1.	1.17520119
3	=COSH(1)	Returns the hyperbolic cosine of 1.	1.54308063
4	=TANH(1)	Returns the hyperbolic tangent of 1.	0.76159416
5	=COTH(1)	Returns the hyperbolic cotangent of 1.	1.31303529
6	=TANH(1)*COTH(1)	Demonstrates COTH is the inverse of TANH.	1
7			

Upcoming SumProduct Training Courses

Location	Course	Date	Duration
Melbourne	Excel Tips & Tricks	2 Jul 2018	1 day
Melbourne	Financial Modelling	3 - 4 Jul 2018	2 days
Melbourne	Power Pivot, Power Query and Power BI	17 - 19 Jul 2018	3 days
Sydney	Excel Tips & Tricks	13 Aug 2018	1 day
Sydney	Financial Modelling	15 - 16 Aug 2018	2 days
Brisbane	Excel Tips & Tricks	27 Aug 2018	1 day
Brisbane	Financial Modelling	28 - 29 Aug 2018	2 days
Sydney	Power Pivot, Power Query and Power BI	10 - 12 Sep 2018	3 days
Perth	Financial Modelling	17 - 18 Sep 2018	2 days
Perth	Power Pivot, Power Query and Power BI	19 - 21 Sep 2018	3 days

Key Strokes

Each newsletter, we'd like to introduce you to useful keystrokes you may or may not be aware of. This month, it's time to combine **CONTROL** with **SHIFT**:

Keystroke	What it does
CTRL + SHIFT + 0	Show column
CTRL + SHIFT + 1	Fixed decimal and comma format
CTRL + SHIFT + 2	Time (AM/PM) format
CTRL + SHIFT + 3	Date format
CTRL + SHIFT + 4	Currency format
CTRL + SHIFT + 5	Percentage format
CTRL + SHIFT + 6	Exponential format
CTRL + SHIFT + 7	Outline border
CTRL + SHIFT + 8	Select current region
CTRL + SHIFT + 9	Unhide row

There are over 540 keyboard shortcuts in Excel. For a comprehensive list, please download our Excel file a www.sumproduct.com/thought/keyboard-shortcuts. Also, check out our new daily **Excel Tip of the Day** feature on the www.sumproduct.com homepage.

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We have undertaken a vast array of assignments over the years, including:

- **Business planning**
- **Building three-way integrated financial statement projections**
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- **Key driver analysis**
- **Model reviews / audits for internal and external purposes**
- **M&A work**
- **Model scoping**
- **Power BI, Power Query & Power Pivot**
- **Project finance**
- **Real options analysis**
- **Refinancing / restructuring**
- **Strategic modelling**
- **Valuations**
- **Working capital management**

If you require modelling assistance of any kind, please do not hesitate to contact us at contact@sumproduct.com.

Link to Others

These newsletters are not intended to be closely guarded secrets. Please feel free to forward this newsletter to anyone you think might be interested in converting to "the SumProduct way".

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Any Questions?

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Training

SumProduct offers a wide range of training courses, aimed at finance professionals and budding Excel experts. Courses include Excel Tricks & Tips, Financial Modelling 101, Introduction to Forecasting and M&A Modelling.

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