

extremeCRM

2016 Newport Beach

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Integrating CRM with the Common Data Service

David Evans

InaPlex, Inc



CONNECT + LEARN = GROW

Introduction

Power Apps, Flow, Azure Logic Apps, Common Data Service

Outline

- Brief overview of the Common Data Service (CDS) environment
 - We will be examining integration, not covering how to build apps
- Motivating Example Application
 - PowerApp querying CRM directly
 - Flow populating CDS, then read by PowerApp
 - Azure Logic App populating CDS, then read by PowerApp (maybe)
 - Custom Web API read by PowerApp
- Second example
 - Bulk data import to CDS from CRM



Special Offer From InaPlex

InaPlex has a special offer until December 31

To learn more about integration with CDS take up our FREE offer

- A set of maps freely available for Dynamics CRM and Salesforce account and contact
- Blog post going into process in detail (blog.inaplex.com)
- FREE 30 day license for importing into CDS

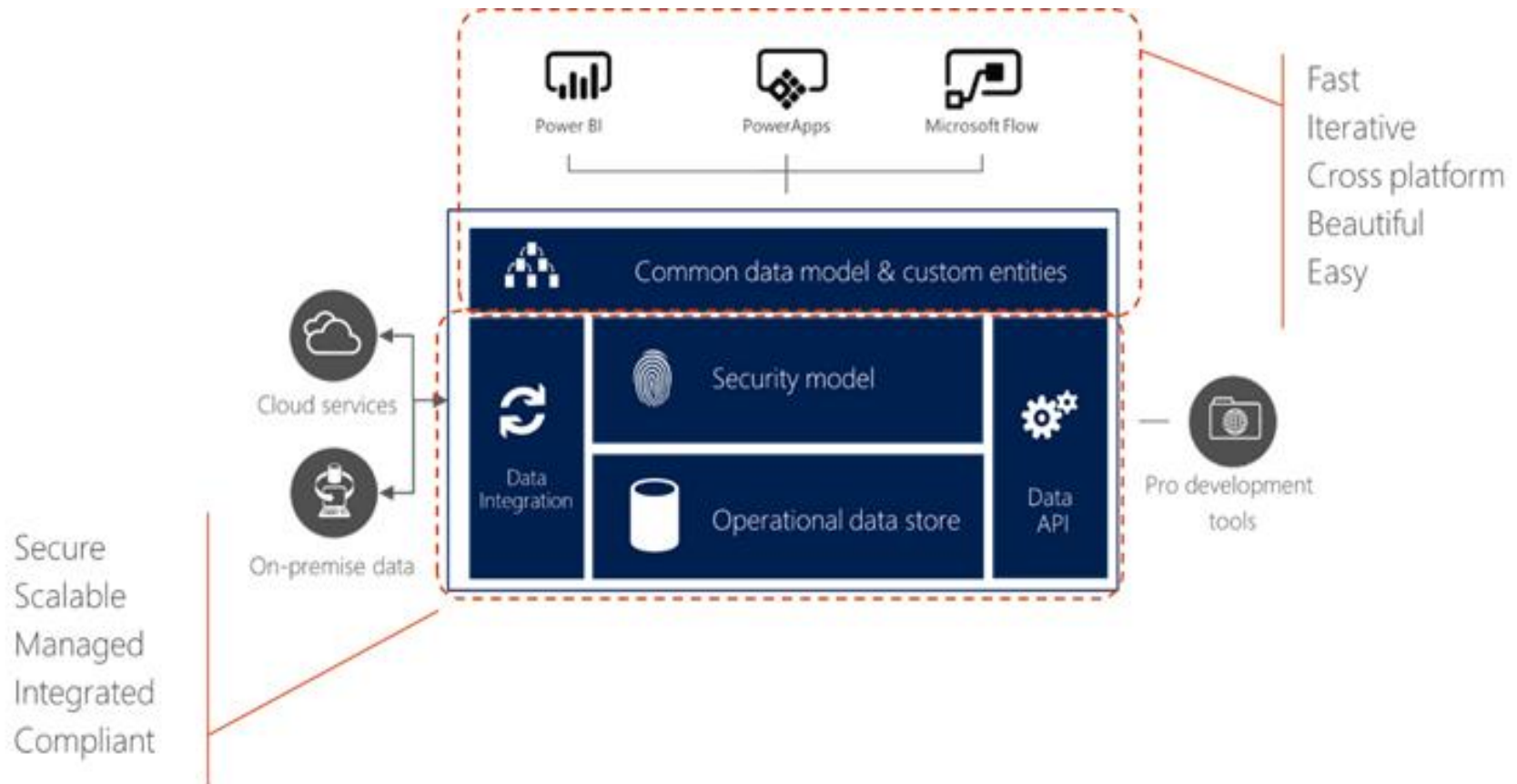
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Now – on with the presentation!



Microsoft Common Data Service and Flow

... changing every day... GA Oct 1, iterating every 2 weeks



Tenancy and Environments

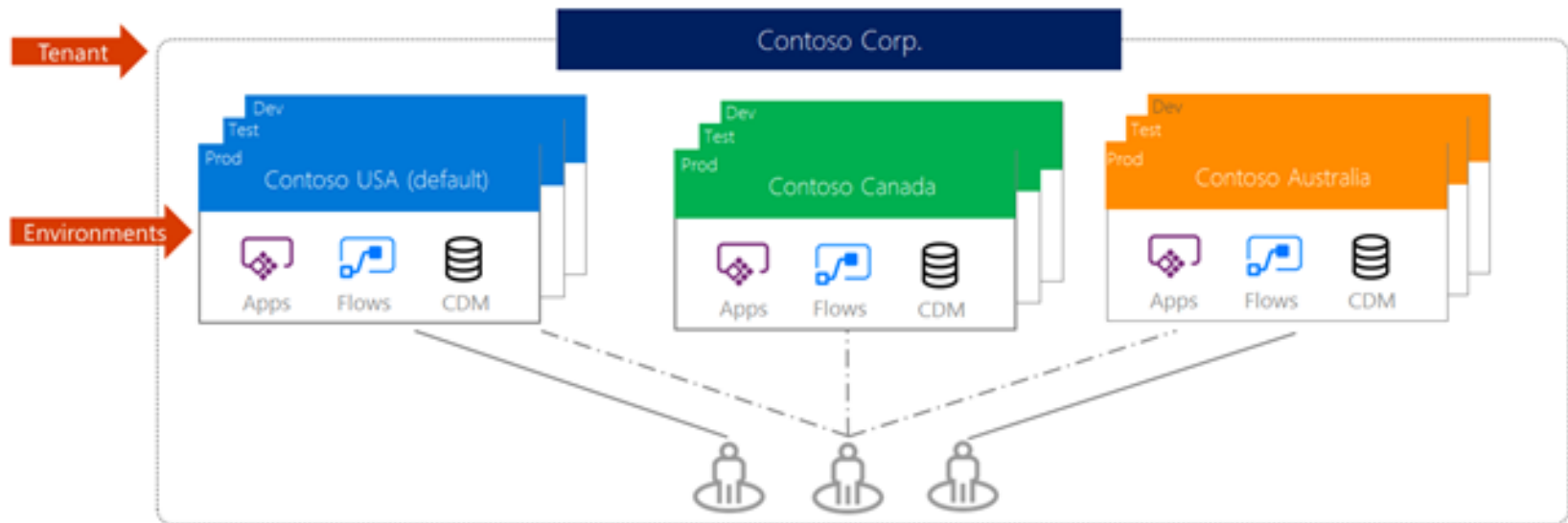
For all practical purposes, Office 365 and Azure subscriptions are single tenant

- Ignoring complex Active Directory forest structures

PowerApps, Flow, Connections, Logic Apps live inside the subscription

But they can exist in multiple Environments

- <https://powerapps.microsoft.com/en-us/blog/powerapps-environments/>



PowerApp and CDS Environments

Environment can have zero or one CDS database

Environment is a security realm

- Apps can only connect to data sources within environment
 - Connections
 - Flows
 - Gateways
 - CDS database
 - But they can be shared across an organization

Environment disposed - all connections, Flows, gateways, databases go.

Azure subscription and Office 365 subscription are different worlds (currently)



Motivating Example

Realty Advisors – Property Appraisals for Banks

Realty Advisors have multiple bank clients

For each bank, they conduct property appraisals

- Licensed Appraiser does the Appraisal
- Banks have lists of approved Appraisers
- Each Appraisal has multiple steps, documents
- Appraiser is a contact in CRM, used by multiple banks
- Custom entities for aspects of Appraisal process

Major bank customer requested real time access to Appraisal process and documents



Concept 1 – PowerApp querying CRM

Demonstration – Create PowerApp to access CRM

Screen1

Options Advanced

Layout ? ▾

Data sources ? ▲

+ New connection ↻ Refresh

- Add static data to your app
Import from Excel
- ms1611@MS1611.onmicrosoft...
Common Data Service
- ms1611@MS1611.onmicrosoft...
Dynamics 365
- ms1611@MS1611.onmicrosoft...
Dynamics 365
- WebProdsAzure
WebProdsAzure

← MS 1611

Choose a table

Search ... 🔍 ⌵

- Accounts
- Action Card Type
- Action Card User Settings
- Action Cards

Connect

Cancel



Concept 1 – PowerApp querying CRM

Demonstration – Create PowerApp to access CRM

Items = *fx* Contacts

App name
http://www.adatum.com Lastname Vincent
Mr and Mrs Bilbo Baggins 15:04:29
Mr Bill Smith 15:04:30
Dumitrascu Adrian
Cook Cathryn

Screen1

TemplateGalleryList1

Options Advanced

Content ?

Contacts

firstname

entityimage

lastname

websiteurl



Concept 1 – PowerApp querying CRM

Points to Note, Problems

Multiple CRM connectors – same names

When connector selected, get list of entities

- Can select one or more, but not a query
- In App, can use filter(), search(), lookup() functions to extract and combine data

Problems

- App and Connector live in Banks tenancy/environment, outside our control
- If connector has credentials for all entities, they can modify and query anything
- Could possibly have custom entity with just there data, but then need to manage sync and refresh

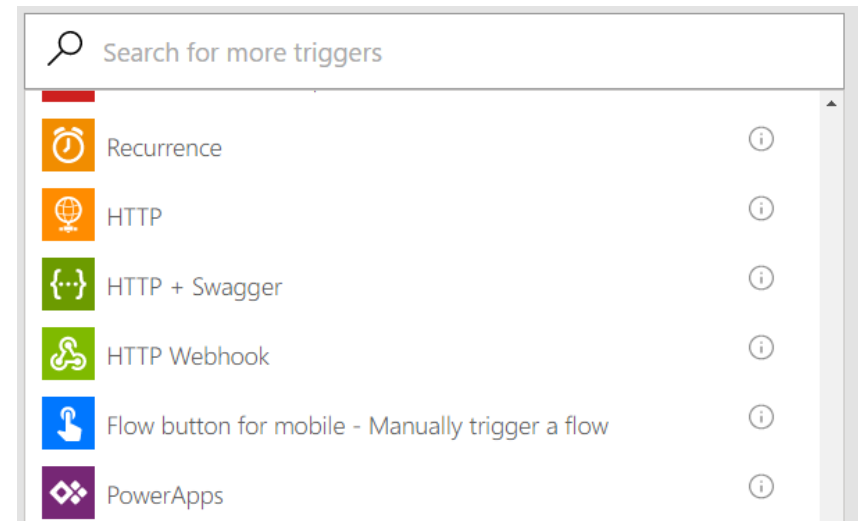
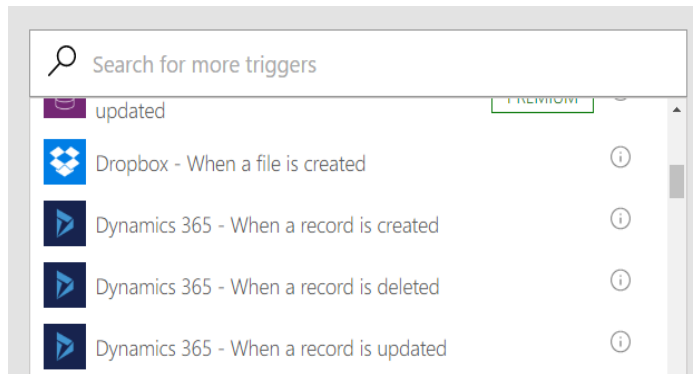


Concept 2 – Flow populating CDS

Get Summary Data into CDS for Bank PowerApp

Use a Flow to pull data from CRM

First step is to specify a trigger



Concept 2 – Flow populating CDS

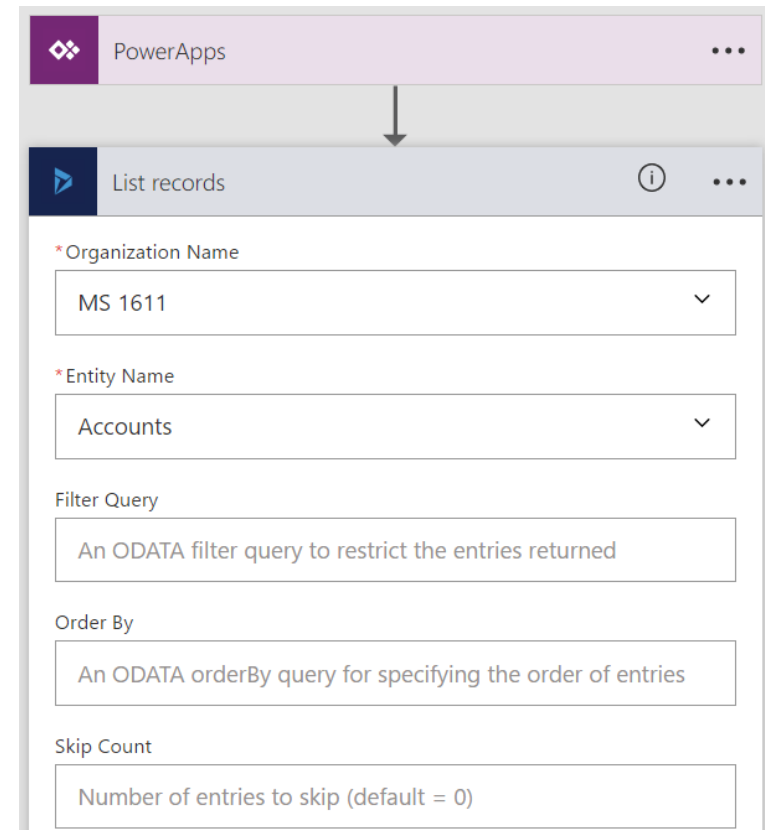
Flow Design

Start of a Flow that looks promising

List records action only queries a single entity

Means need multiple Flows

- Account
- Contact
- Custom Appraisal entities



The screenshot shows the configuration for the 'List records' action in a PowerApps flow. The interface is divided into several sections:

- Organization Name:** A dropdown menu with 'MS 1611' selected.
- Entity Name:** A dropdown menu with 'Accounts' selected.
- Filter Query:** A text input field containing the placeholder text 'An ODATA filter query to restrict the entries returned'.
- Order By:** A text input field containing the placeholder text 'An ODATA orderBy query for specifying the order of entries'.
- Skip Count:** A text input field containing the placeholder text 'Number of entries to skip (default = 0)'.

An arrow points from the 'PowerApps' header to the 'List records' action header.



Concept 2 – Flow populating CDS

Problems

Essentially same problems as Concept 1

The Flow and Connector live in Bank tenancy / environment

- They can modify Flow and Connector at any time
- Need to have credentials that restrict access but still allow all required data
- Very complex for this system

Second issue is that Flow needs to be triggered

- Example showed trigger from PowerApps
- Not clear if PowerApp can trigger multiple Flows
- Can use Recurrence trigger, but then need to decide frequency



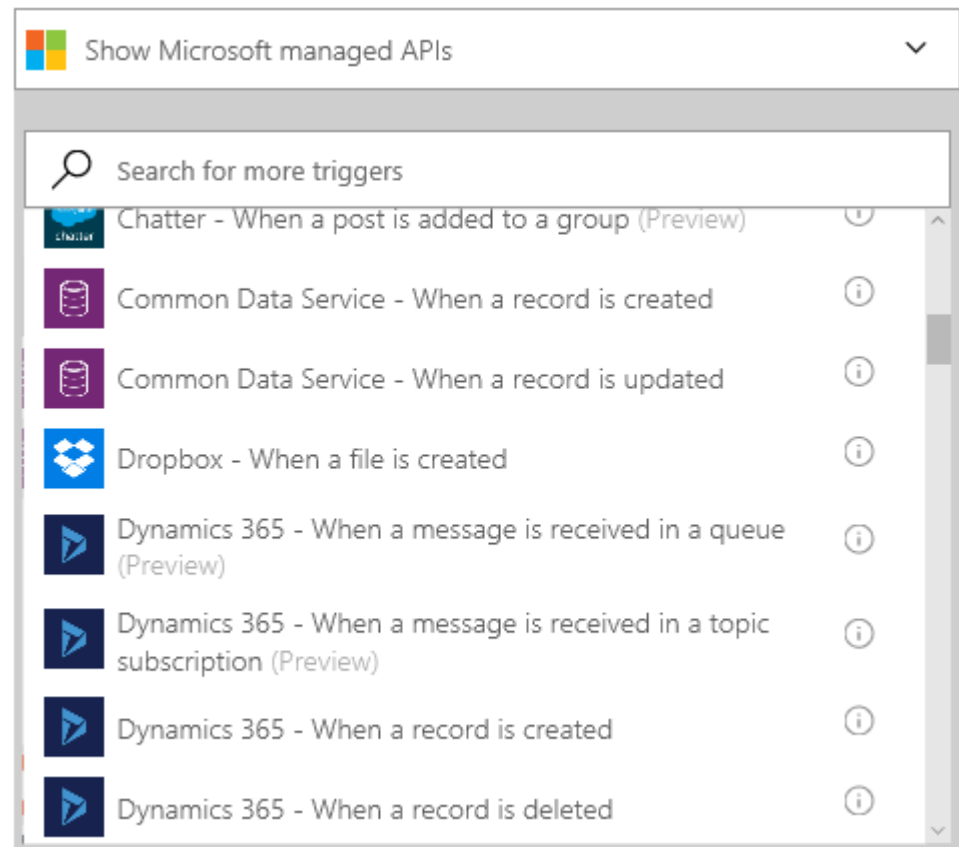
Concept 3 – Azure Logic App to CDS

Use a Logic App to Populate CDS

Azure Logic Apps underlie Flow
More functionality and flexibility

But

- Azure world separate to Office 365 world
- See portal.azure.com
- CDS connector only added in
last couple of weeks
- Not clear which environment
CDS will be in



Concept 3 – Azure Logic App to CDS

Possible Trigger, Problems

Can do POST to URL to trigger

Not clear if PowerApp can do URL post

Not clear if Logic App in 'our' Azure
can update CDS in 'their' O365

Back to security issues

Probably also multiple Logic Apps



The screenshot shows the 'Request' trigger configuration in Azure Logic Apps. The title bar is red and contains a globe icon, the word 'Request', and a three-dot menu. Below the title bar, the text 'HTTP POST to this URL' is displayed. A grey box below this text contains the message 'URL will be generated after save' and a document icon. Underneath, the section 'Request Body JSON Schema' is shown, containing an 'Example:' of a JSON schema:

```
Example:
{
  "type": "object",
  "properties": {
    "address": {
      "type": "string"
    }
  },
  "required": ["address"]
}
```



Concept 4 – Web API to query CRM

Custom API deployed to Azure

Both Azure Logic Apps and PowerApps can use a connector that connects to Rest API

Advantages

- API is accessed by URL – can reside anywhere
- We have full control over credentials, querying
- API can present consolidated data schema that is just what customer requires
- We can change CRM schema with breaking the client
- Extend to other banks by using separate logins
- Scalable, can also use Azure Web API Management for high to very high volume



Concept 4 – Web API to query CRM

Build the Web App

Steps

1. Use Visual Studio to create a Web API App

<https://www.asp.net/web-api/overview/getting-started-with-aspnet-web-api/tutorial-your-first-web-api>
<https://docs.microsoft.com/en-us/azure/app-service-api/app-service-api-dotnet-get-started>

NOTE: MUST include Swagger

2. Web API implements login and query to CRM internally

3. Deploy to Azure

4. Hit the Swagger URL, download the Swagger JSON

<https://webprods120160830043401.azurewebsites.net/swagger/docs/v1>



Concept 4 – Web API to query CRM

Deployment in Azure

Note the URL top right

The screenshot displays the Azure portal interface for an App Service. The left sidebar shows a list of subscriptions, with 'WebProds120160830043401' selected. The main content area shows the 'Essentials' section for the App Service, which is currently 'Running'. The URL is highlighted in yellow and reads: `http://webprods120160830043401.azurew...`. Other details include the resource group 'Default-SQL-WestUS', location 'West US', and subscription name 'Microsoft Partner Network'.

Subscription	Name
Microsoft Partner Network – Don't see a subscription? Switch directories	ContosoAdsWeb-20161020
	inaplex
	WebProds120160830043401

Property	Value
Resource group	Default-SQL-WestUS
Status	Running
Location	West US
Subscription name	Microsoft Partner Network
Subscription ID	93de5f5e-3ae7-...
URL	http://webprods120160830043401.azurew...
App Service plan/pricing tier	Default1 (Standard: 1 Small)
FTP/deployment username	WebProds1201608-...
FTP hostname	ftp://waws-prod-bay-029.ftp.azurewebsites...
FTPS hostname	ftps://waws-prod-bay-029.ftp.azurewebsite...



Concept 4 – Web API to query CRM



Connector in PowerApps, Azure

Create a custom connector to API

← New connection

Standard • Custom

NAME ▾

-  WebProds
-  WebProdsAzure


← Connect to a new API endpoint ?

Name *

WebProds2

Swagger API definition *

WebProdSwagger_Azure.json

Upload API icon 

Choose file

Description

Demo of connecting to azure web app

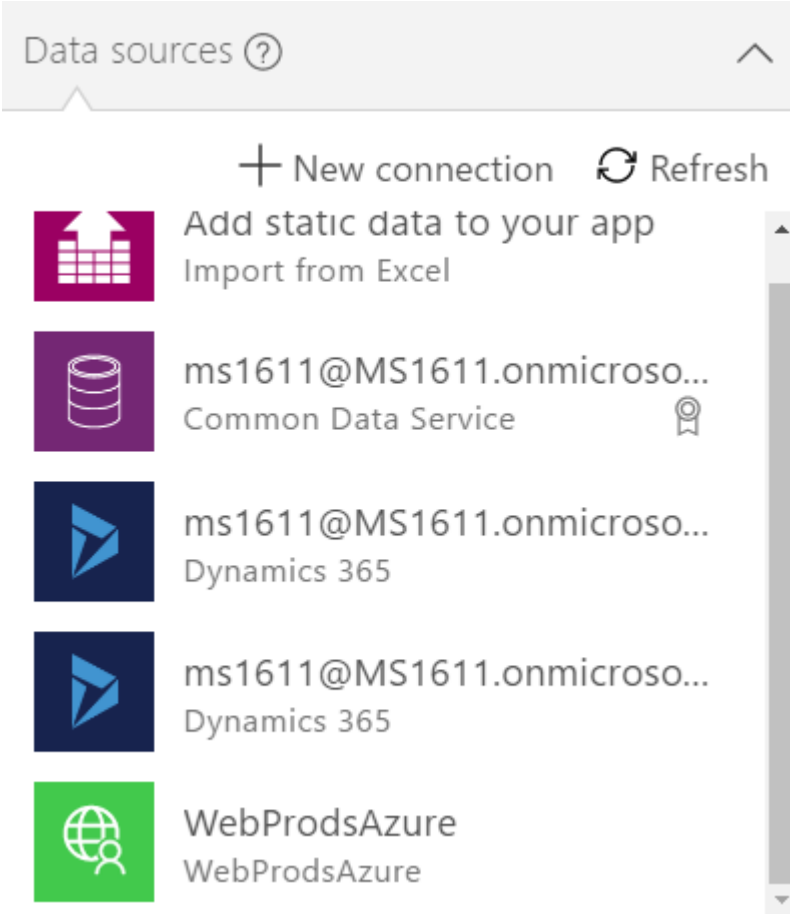


Concept 4 – Web API to query CRM

Build a PowerApp

Add a Connection

Simply select the new Connector from list



The screenshot shows the 'Data sources' pane in PowerApps. At the top, there is a header 'Data sources' with a help icon and an expand/collapse arrow. Below the header, there are two buttons: '+ New connection' and 'Refresh'. A list of connectors follows, each with an icon and text:

- Icon: A purple square with a white grid and an upward arrow. Text: 'Add static data to your app', 'Import from Excel'.
- Icon: A purple square with a white database cylinder icon. Text: 'ms1611@MS1611.onmicroso...', 'Common Data Service'.
- Icon: A dark blue square with a white envelope icon. Text: 'ms1611@MS1611.onmicroso...', 'Dynamics 365'.
- Icon: A dark blue square with a white envelope icon. Text: 'ms1611@MS1611.onmicroso...', 'Dynamics 365'.
- Icon: A green square with a white globe and a magnifying glass icon. Text: 'WebProdsAzure', 'WebProdsAzure'.



Concept 4 – Web API to query CRM

Build a PowerApp

Gallery Control – expression to set data source

```
SortByColumns(Search(WebProds1.ProductsGetAllProducts(), TextSearchBox1.Text, "Category"), "Category", If(SortDescending1, Descending, Ascending))
```

The screenshot shows a PowerApp interface with a gallery control. The gallery has a search bar labeled 'Search items' and a title bar '[Title]'. The search results are displayed in a list format with columns for title and category. The first item is 'Tomato Soup' with category 'Groceries'. The second item is 'Hammer' with category 'Hardware'. The gallery control is titled 'BrowseGallery3' and has tabs for 'Options' and 'Advanced'. The 'Data sources' section is expanded, showing a list of data sources with 'WebProds1' selected. There is an 'Add data source' button and a database icon next to 'WebProds1'.



Concept 4 – Web API to query CRM

Build a PowerApp

Simple Gallery control, select field for each textbox

The image shows a PowerApps gallery control with a list of items and its properties pane. The gallery has a title "[Title]" and a search bar "Search items". The items are:

- Tomato Soup (highlighted in yellow)
- Groceries
- Hammer
- Hammer
- Hardware
- Yo-yo
- Yo-yo
- Toys

The properties pane on the right shows the following settings:

- Subtitle2
- Options: Advanced
- Content: Custom
- Category: [Dropdown]
- Name: [Dropdown]
- Name: [Dropdown]
- Category: [Dropdown]
- Name: [Dropdown]
- Id: [Dropdown]
- Price: [Dropdown]



Section I Summary

What have we learned?

Multiple ways to attempt to connect CRM data to PowerApps, CDS

If all data and apps in single environment, can work well

If need to cross environment boundaries, Web API provides:

- Isolation from implementation and schema changes
- Security
- Query consolidation for schema



Section II – Bulk Import into CDS

Microsoft Objectives for Common Data Service

From the GA blog post Oct 31, 2016

Our objective for the Common Data Service is to enable the following capabilities for the PowerApps, Microsoft Flow and Pro development communities:

- An easy to provision, yet scalable data store
- A common data model with standard entity schema and behavior
- A powerful data access layer with support for data import, export and security
- Integration with Microsoft Office for Excel and Outlook
- A software developer kit (SDK) for professional development scenarios

The combination of PowerApps and the Common Data Service provides power users and enterprises a best of breed solution for rapid application development.



Bulk Import into CDS

Why get bulk data into CDS?

In Section I we looked at a particular application with a requirement to get limited data into CDS

Problems caused by security, management

Easy to imagine scenarios inside an enterprise where it is useful/important to have substantial amount of information in CDS, for use by PowerApps across org

CDS also designed to be accessed from Excel, Outlook

But Flow, Logic Apps not really set up to do large scale importing

- Trigger based
- Limited data transformation
- No matching



Bulk Import into CDS

Import via Excel

CDS offers Excel import capabilities to single or multiple tables

IPtest1611 database ▾ 🔍

ENTITY ▾	MODIFIED	CATEGORIES	TYPE
Account	22 h ago	Sales	Standard
Alumnus	22 h ago	Person	Standard
Application user	22 h ago	Person	Standard

+ New entity ...

- ← Import data
- Export data
- 🗑 Clear all data

← Import data Add Entities Import

Choose the file you want imported for each entity, and we'll map the fields that match.

NAME	FILE	MAPPING STATUS [?]
Account	<input type="text" value="PowerAppData.xlsx Account"/> ▾	⚠ Partial match Show mapping ×



Bulk Import into CDS

Problems with Excel Import

While Excel Import does work, there are some issues

- The worksheet must have the primary key of the table, and matching appears to be just on the primary key. If there is a match the record is updated, otherwise created.
- The field names should match the field names in CDM exactly. If the field names in the Excel file do not match the field names in CDM exactly you will have to manually map them during the import. You will want to avoid doing this because there is currently no way to save a mapping which means you have to do the mapping again if you do another import.
- All required fields must be mapped, even if you do not have data.
- Several fields have default values that may not be appropriate for your data. For example, the country fields default to Afghanistan unless you map a different default value.
- Picklist fields need to have the correct values.

In summary – not a repeatable process

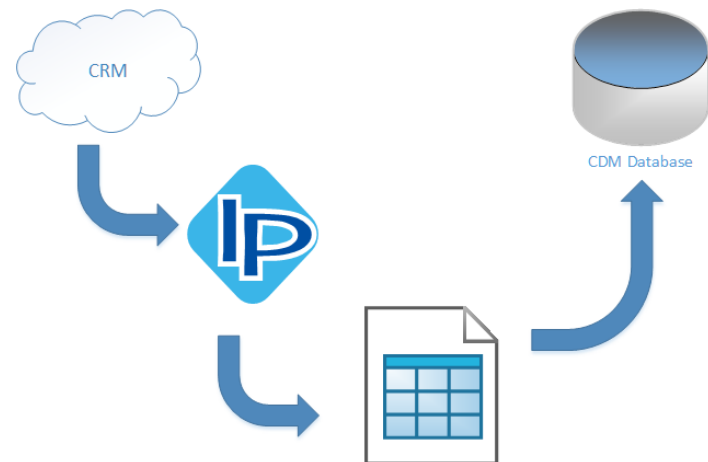


Bulk Import into CDS

Possible Solution

Process can be automated using ETL products such as Inaport

1. Export a template file or files from the CDS.
2. Use the template files to create an Excel worksheet that will hold the Dynamics data.
3. Use ETL to pull account and contact data from Dynamics CRM into the data file. In the process, the data will be standardized to meet the CDS import requirements.
4. Import the data sheet into the CDM database.



Bulk Import into CDS

Advantages of Approach

Using an ETL product to populate the spreadsheet means

- Can do match/update on records, using flexible match criteria
- Can do sensible data transformation
- Provide data for default and required fields

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Conclusion

It's a fun time for us all!

Scale of functionality and opportunity in Office 365, Dynamics 365, and Azure is enormous

PowerApps, Flow, Azure Logic Apps offer significant integration capabilities

BUT

- Are currently targeted more at intra-enterprise, not inter-enterprise
- Not a replacement for ETL products (yet)
- Will probably lead to hard to manage spaghetti flows of data
- Are iterating **very** rapidly and likely will be very different this time next year

Web APIs represent a good solution for many scenarios



David Evans, InaPlex - david@inaplex.com

2 WAYS TO FILL OUT SURVEY:

1 DOUBLEDUTCH APP

2 WEBSITE

<http://tinyurl.com/hohgnyp>



Complete prior to the closing session to be included in Wednesday's drawing!



FITBIT CHARGE 2

