



PRAIRIE DEVCON 2022

THE TECH BEHIND SAVING MILLIONS OF POUNDS OF FOOD TO HELP FEED PEOPLE

MARK ARTEAGA
REDBIT DEVELOPMENT

neo

Gold Sponsors



Community Supporters





WHO IS REDBIT & MARK?

Mark Arteaga

RedBit Development
President & Founder

- whoami
 - Husband, Father, Speaker, Mentor, Friendly
 - Developing since the VIC20 days
 - Former 15 year Microsoft MVP
 - Architecting and building solutions
- Contact
 - <https://twitter.com/markarteaga>
 - <https://linkedin.com/in/markarteaga>
 - info@markarteaga.com
 - mark@redbitdev.com



Who Is RedBit?

- Founded 2003 by Mark Arteaga as software consultant
- Hiring fulltime employees since 2014
- Award winning business delivering award winning solutions
- Working with for profit and not for profit organizations in all stages
 - Start-ups (Funded)
 - Small & Medium Enterprises
 - Enterprises





2020 Partner of the Year Finalist
Partner for Social Impact Award
2020 Partner of the Year Winner
Community Response Award



2021 Innovator of the Year Co-winner
Channel Innovation Awards by ITWC



Microsoft
IMPACT Awards



2020 WINNER



Microsoft Canada
Impact Awards



2021 FINALIST



2021 Rapid Business Innovation
Champion Award - Finalist



WHAT IS SECOND HARVEST FOOD RESCUE



WHAT IS SECOND HARVEST FOOD RESCUE



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Best Before Dates

- Canned goods: Last up to one year past the best before date
- **Dairy (and eggs):** Lasts up to two weeks past the best before date
- **Poultry pieces:** Last up to six months in the freezer
- Meats (incl. beef, lamb, pork and whole poultry): Last up to one year in the freezer
- Dry cereals: Last up to one year past the best before date
- Packaged snacks (incl. popcorn, granola bars and bagged snacks): Last up to one year past the best before date
- Prepared and frozen meals: Last up to one year past the best before date in the freezer
- Unopened, shelf-stable condiments: Last up to one year past the best before date
- Unopened drinks (incl. juice or coconut water): Last up to one year past the best before date

Source: <https://blog.secondharvest.ca/2022/02/19/everything-you-need-to-know-about-best-before-dates/>

Top 10 Food Donors



**Loblaw
Companies
Limited**



KraftHeinz



THE J.M. SMUCKER CO

**GROENEWEGEN & SONS
PRODUCE SALES LTD.**

100,000 Pounds+



COBS BREAD



Longos.



metro



Source: <https://www.secondharvest.ca/about-us/our-supporters>

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Mark Arteaga
@MarkArteaga



Amazing to go pick up a coffee at Starbucks and to see the [@SecondHarvestCA](#) Food Rescue sticker advertising Starbucks' participation! The amazing [@RedBitDev](#) team continues to do amazing work helping food not go to landfills and feed people instead!



11:38 AM · Apr 20, 2022 · Made with Kizie.co

What Is Second Harvest Food Rescue?





THE TECHNICAL JOURNEY

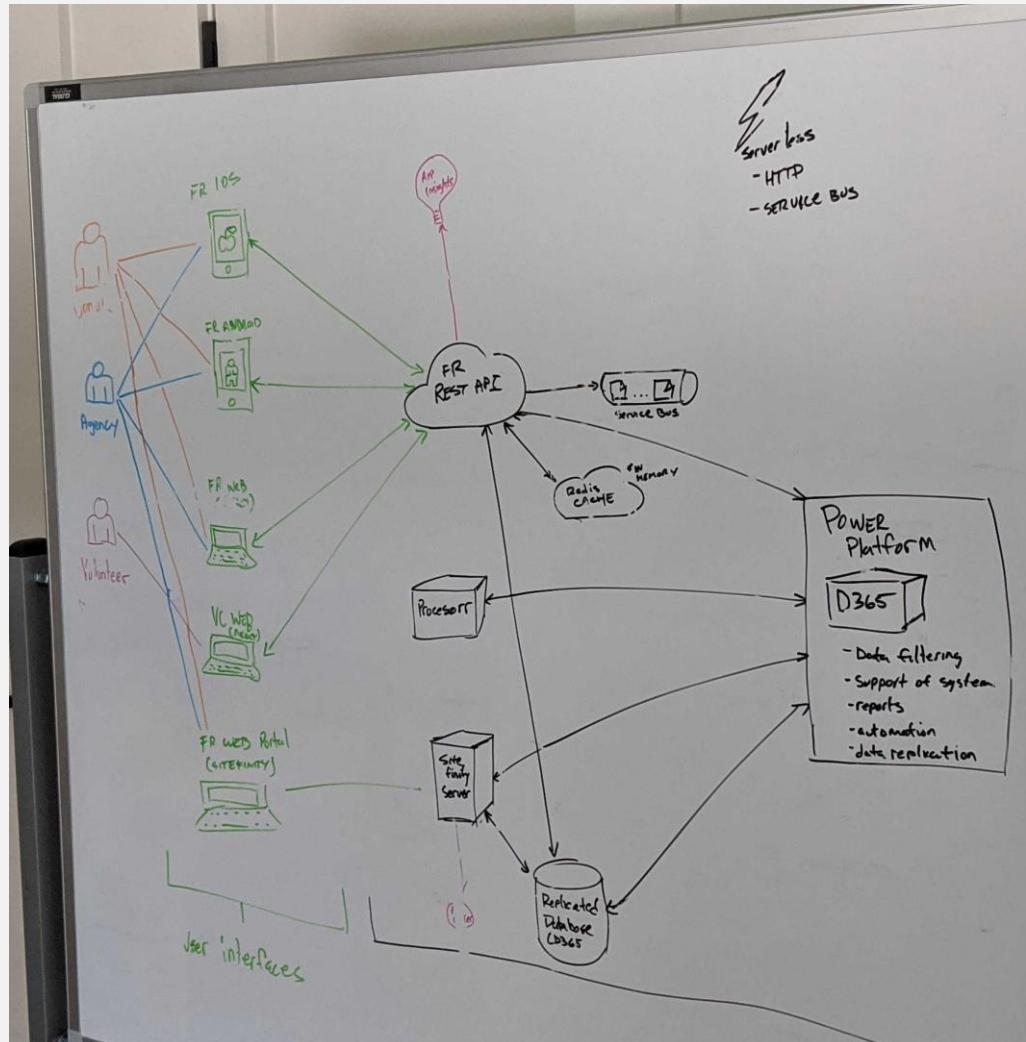
SCALING NATIONWIDE ACROSS CANADA



THE TECHNICAL JOURNEY

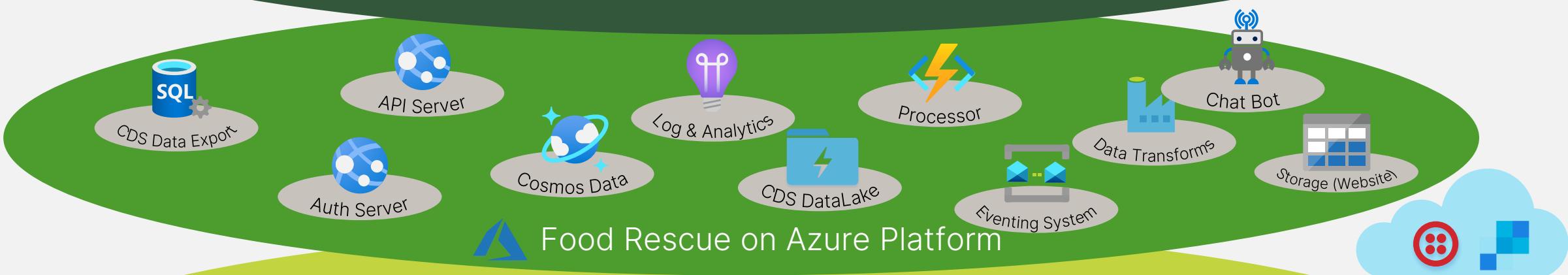
PLATFORM EVOLUTION

Conceptual New Architecture

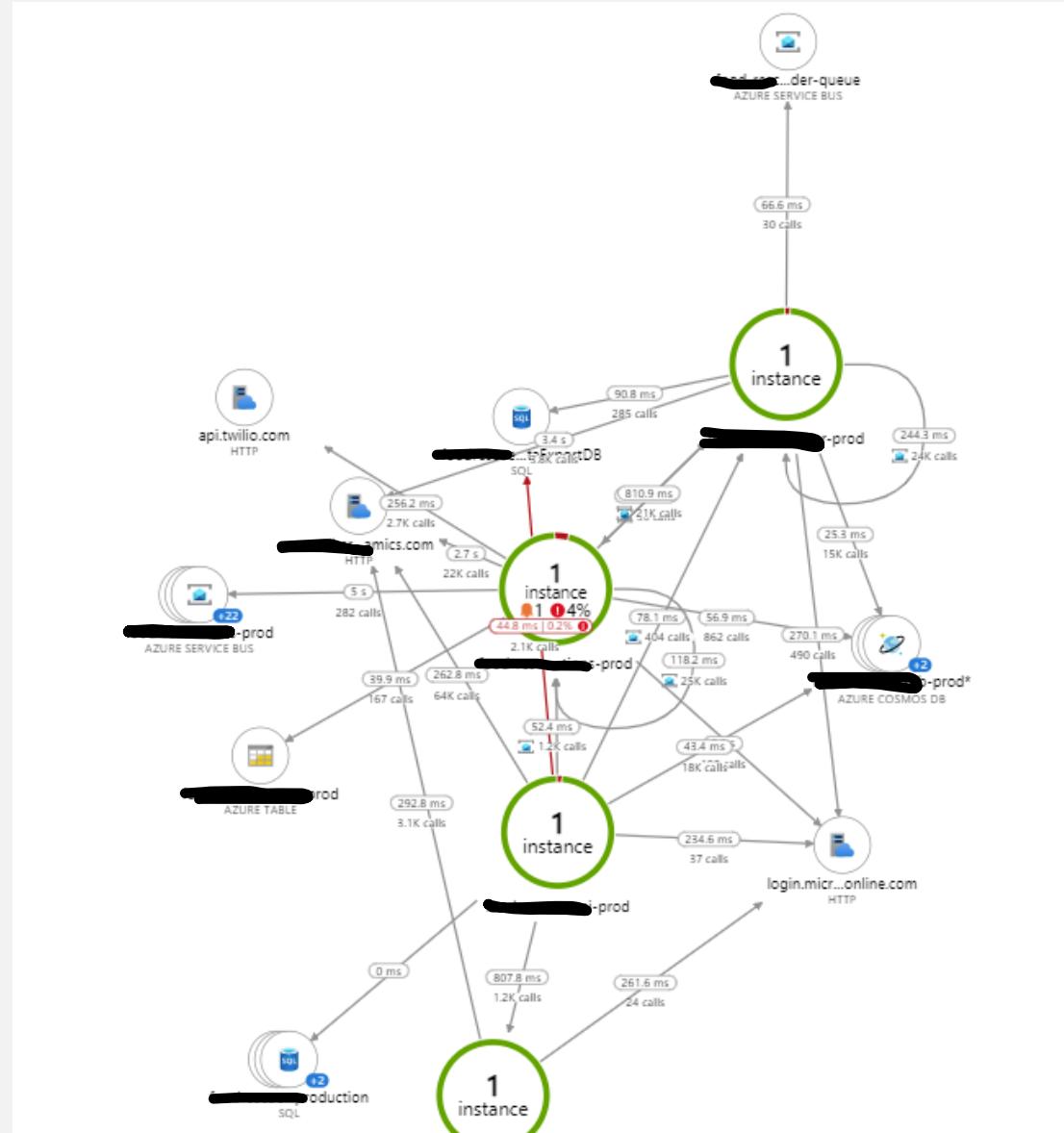




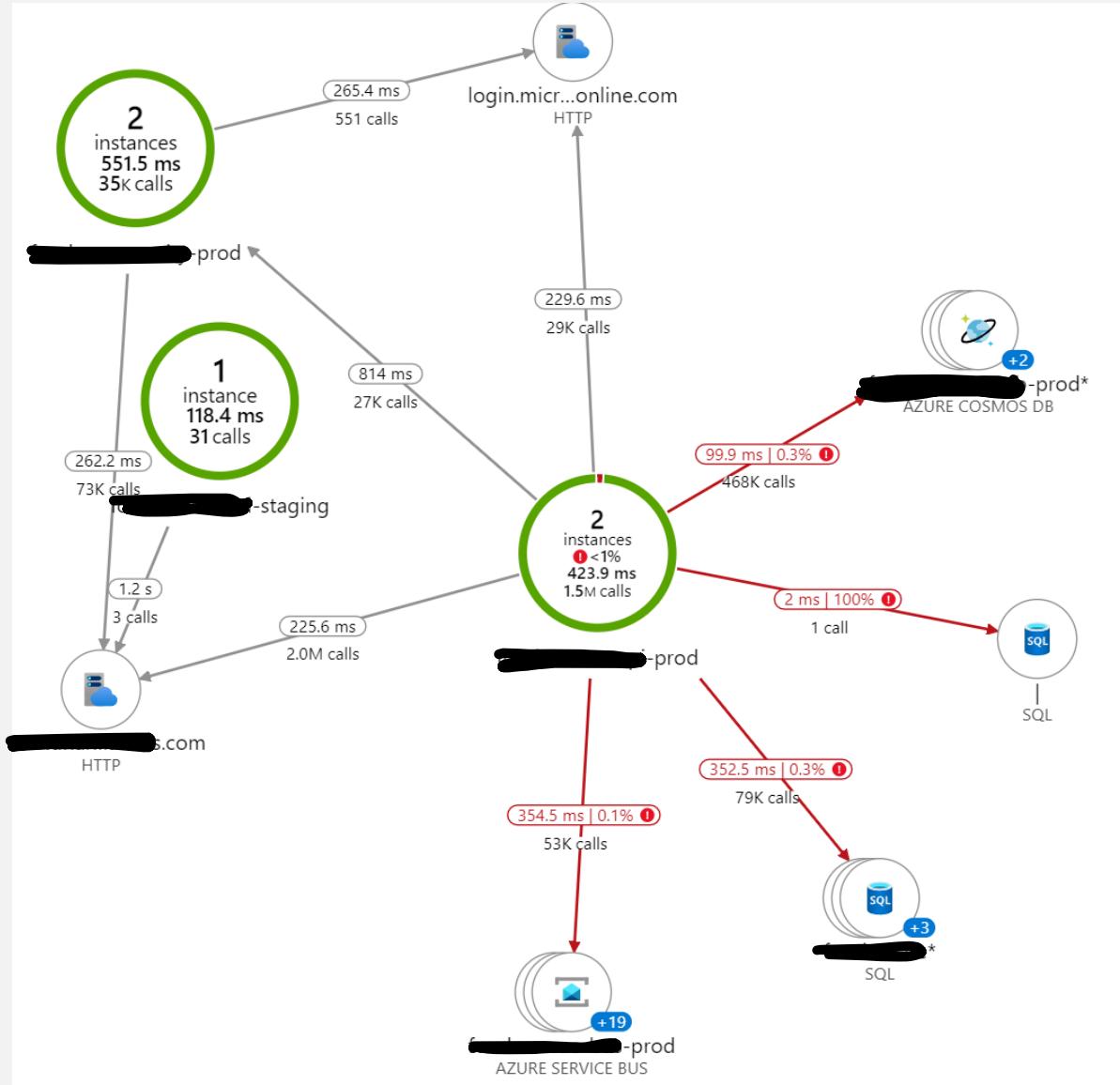
second harvest



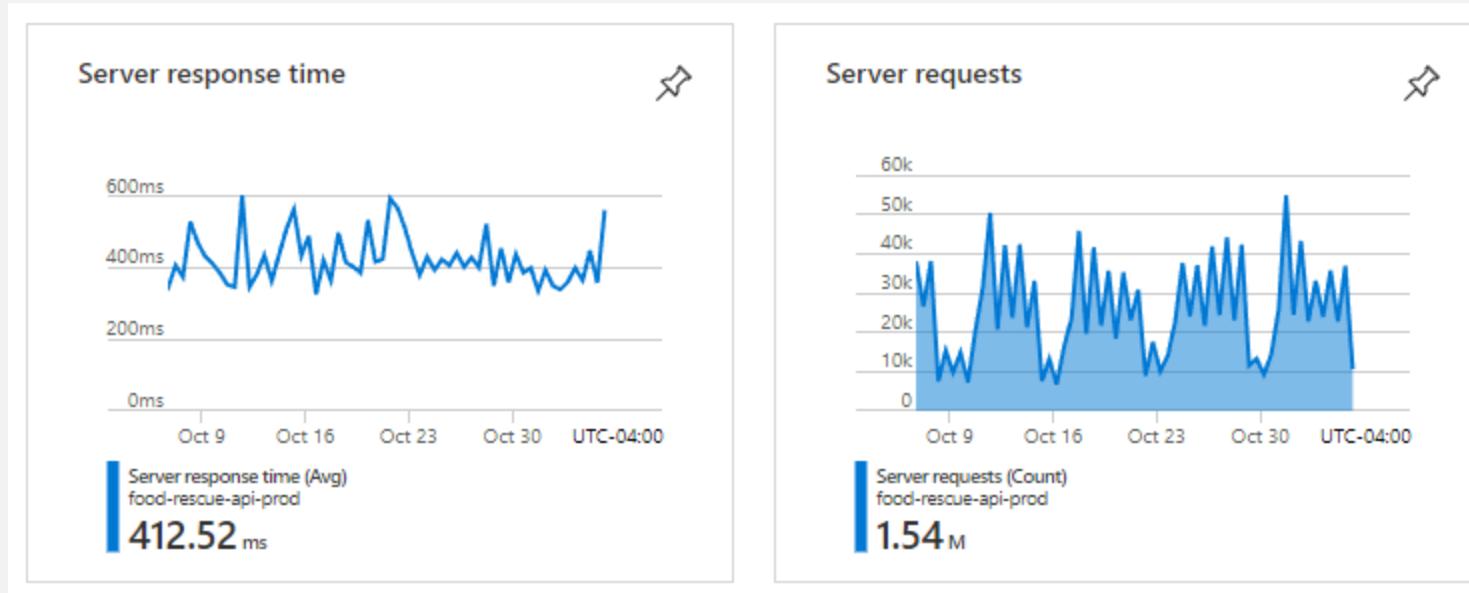
Application Insights – Legacy and Modern API



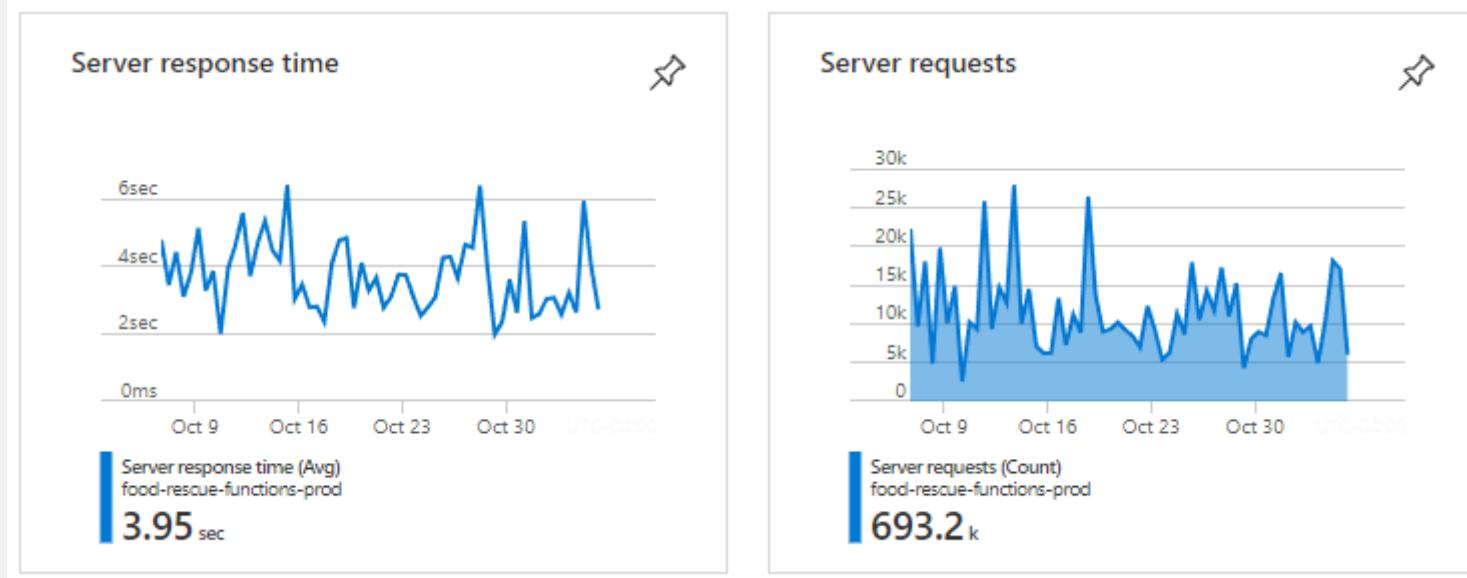
Application Insights – Modern API



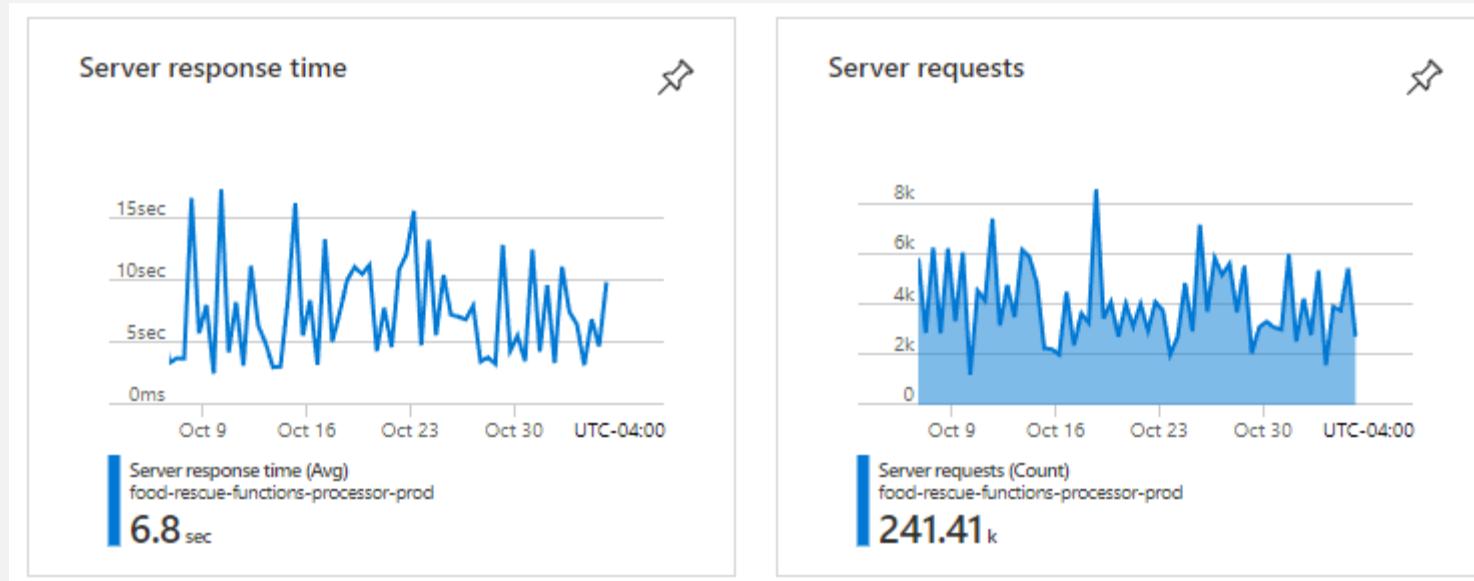
Capacity & Load - API



Capacity & Load - Processor



Capacity & Load – Donation Processor



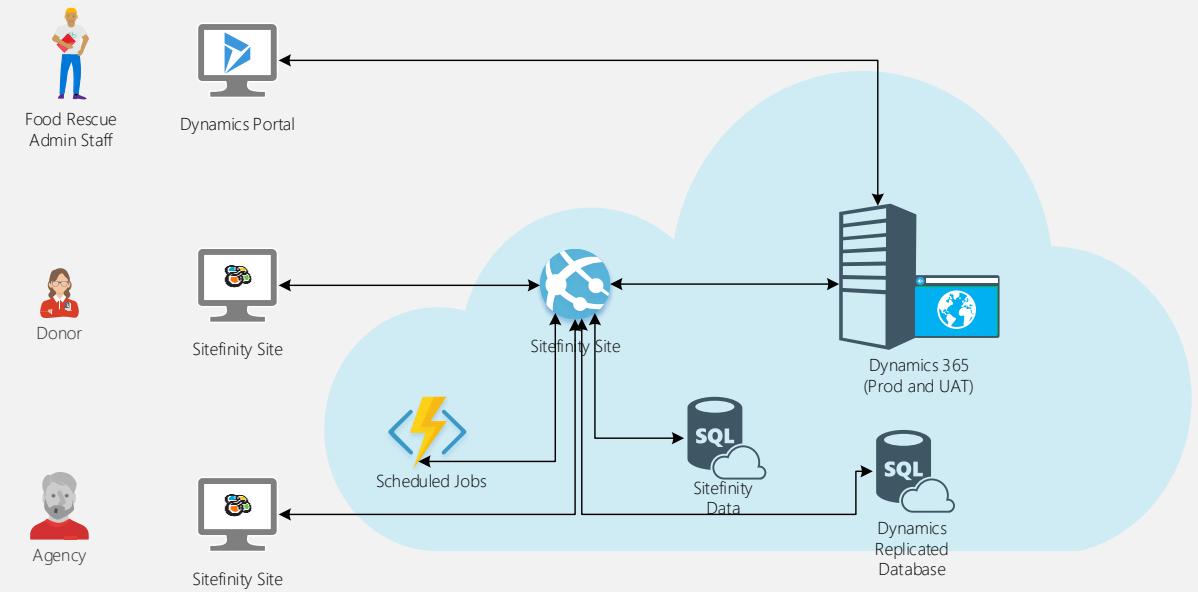


THE TECHNICAL JOURNEY

CHOOSING TECHNOLOGY STACK

Use the Right Technology

- Use a system for what it's meant for
- Just because you are comfortable with a certain tech doesn't mean it's the right tech
- Think about future growth and scalability
- Use the same Azure region

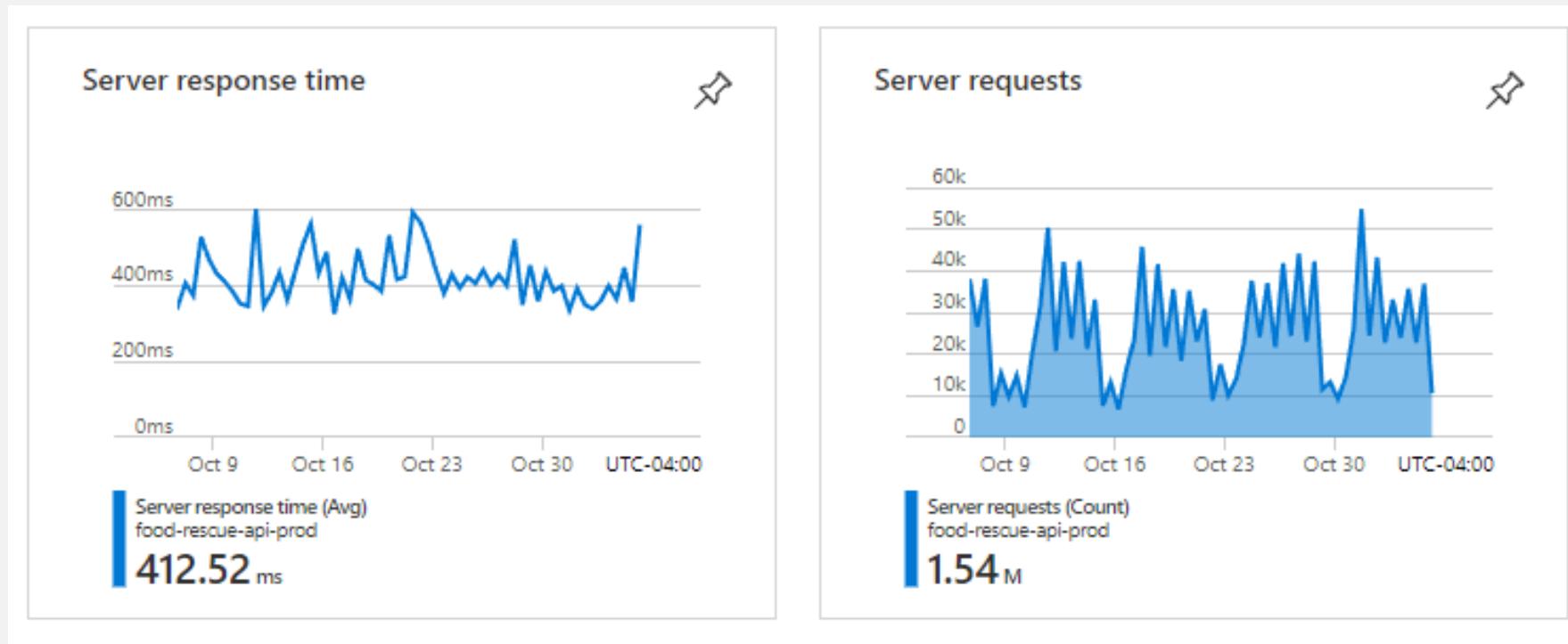




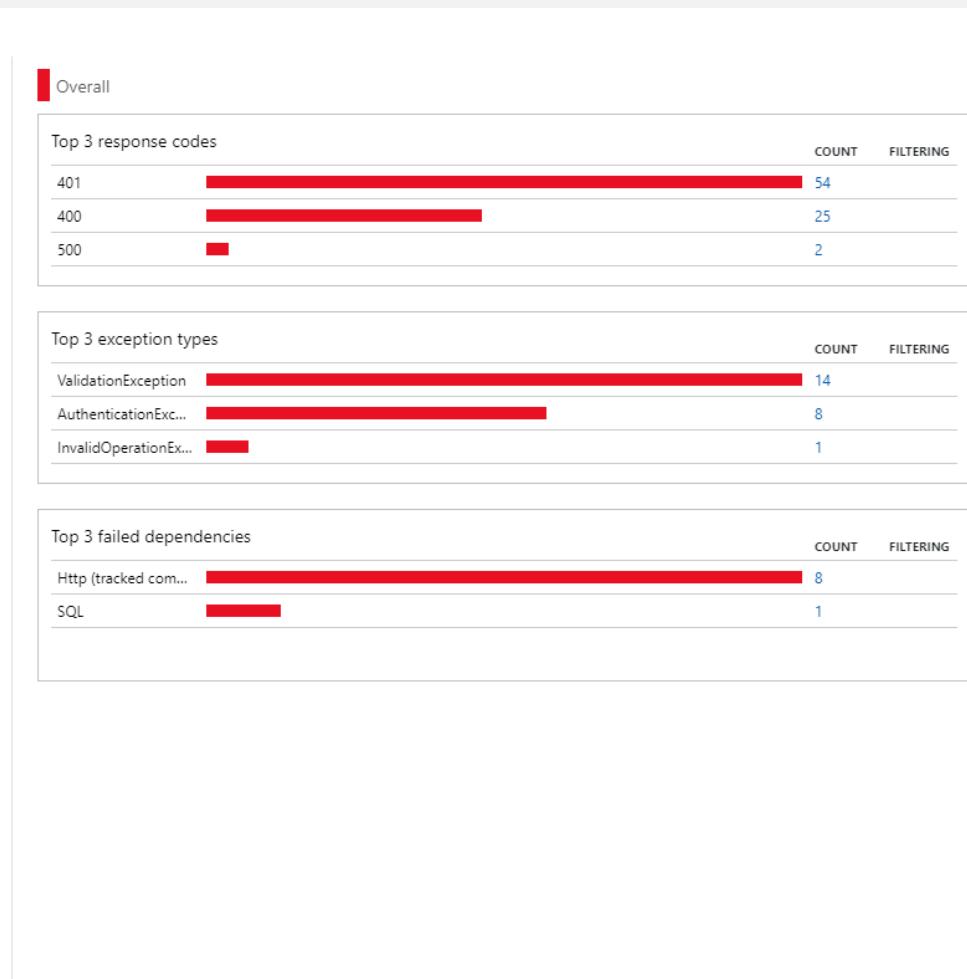
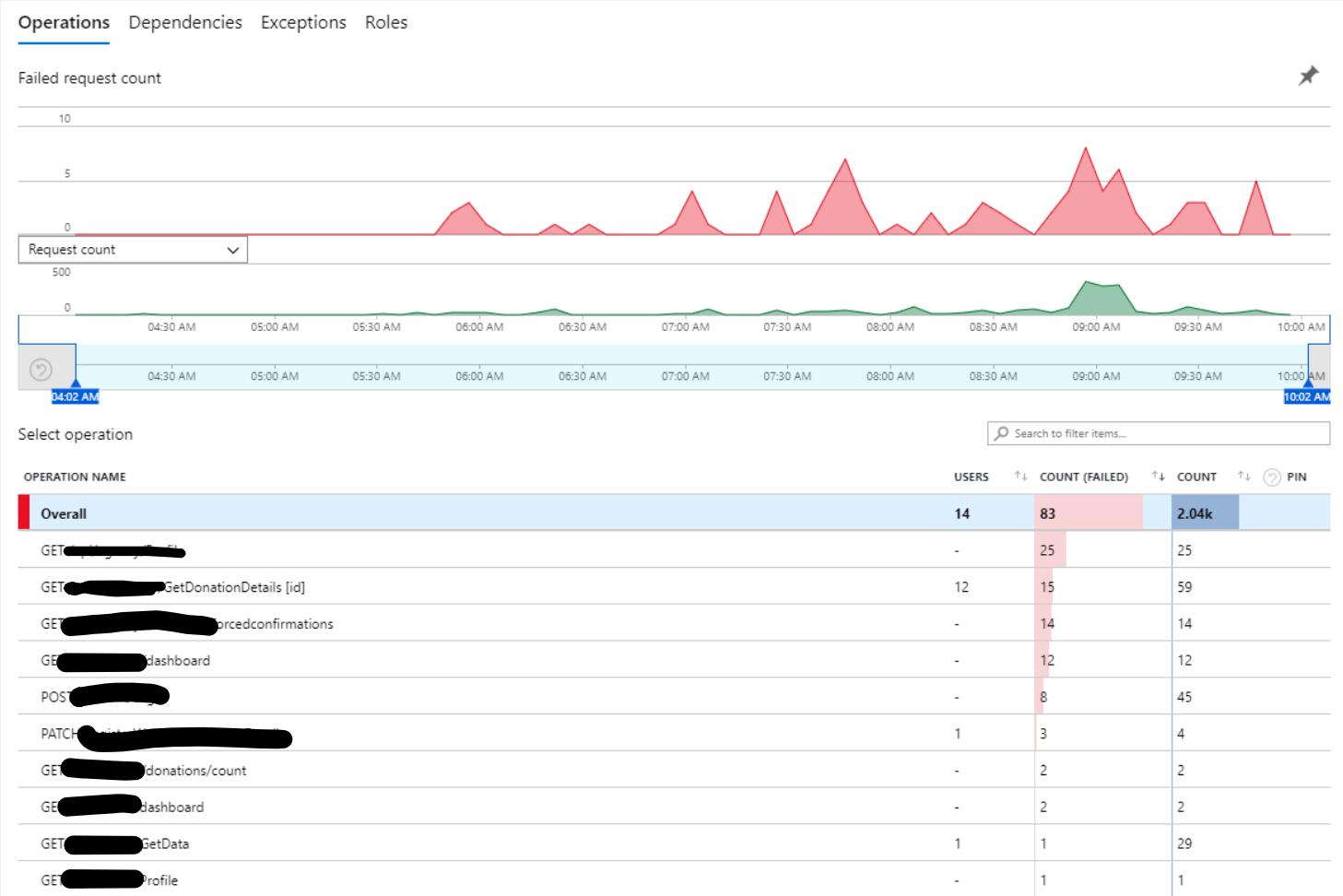
THE TECHNICAL JOURNEY

TELEMETRY & MONITORING

Telemetry and Monitoring



Telemetry and Monitoring



Telemetry and Monitoring

The screenshot displays a monitoring interface with a timeline of events on the left and a detailed view of an exception on the right.

Timeline Events:

- GET [REDACTED] 500 219.3 ms [REDACTED]
- login.microsoftonline.com POST /fe68baa9-09b6-4915-9a5f-237bd62c 200 155 ms

Exception Properties:

Exception Properties	
Event time	11/6/2022, 9:29:57.784 AM (Local time)
Message	Collection was modified; enumeration operation may not execute.
Exception type	System.InvalidOperationException
Failed method	RedBit.PowerApps.TokenCache.AddToken
Operation Id	cd4f36e54257554c9729a199f6749c9f
Parent Id	f3a9ba6bcc021747
Severity level	Error
Telemetry type	exception
Operation name	GET [REDACTED]s [id]
User Id	[REDACTED]
Auth Id	[REDACTED]
Application version	1.0.0.28177
Device type	PC
Client IP address	0.0.0.0
City	Brampton
State or province	Ontario
Country or region	Canada
Role name	[REDACTED]
Role instance	[REDACTED]
SDK version	iL2.13.1-12554
Sample rate	1
Problem Id	System.InvalidOperationException at RedBit.PowerApps.TokenCache.AddToken
Assembly	RedBit.PowerApps, Version=1.0.0.0, Culture=neutral, PublicKeyToken=null

Custom Properties:

FormattedMessage	Value
FormattedMessage	An unhandled exception has occurred while executing the request.

Telemetry and Monitoring

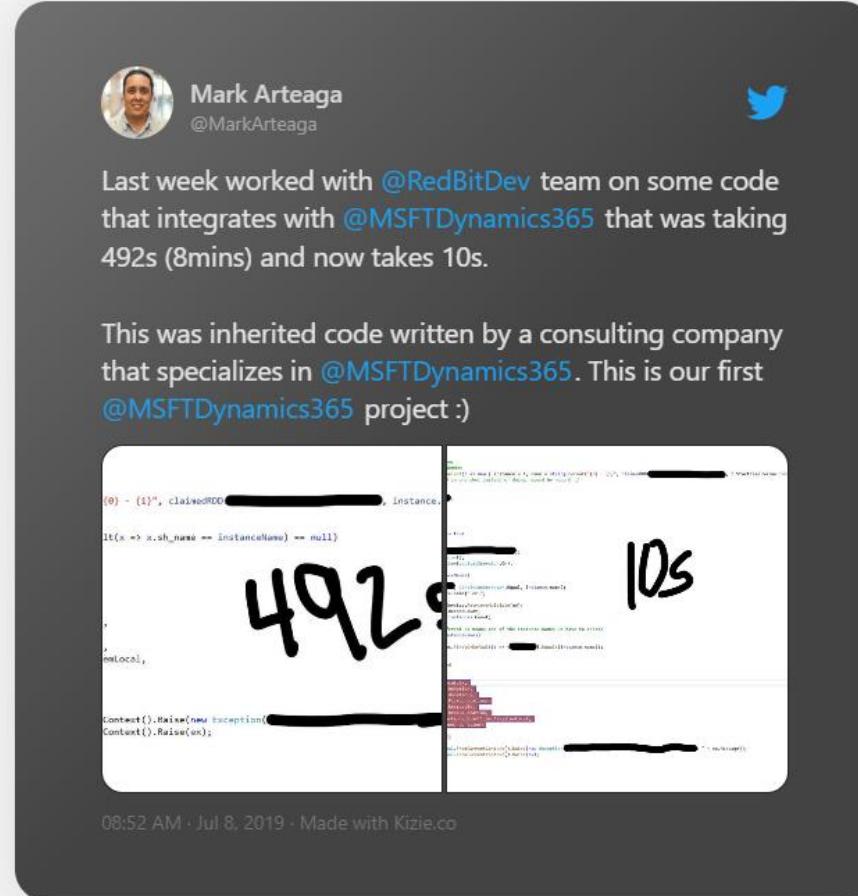
Event time	11/6/2022, 9:29:57.784 AM (Local time)	...
Message	Collection was modified; enumeration operation may not execute.	...
Exception type	System.InvalidOperationException	...



THE TECHNICAL JOURNEY

CODE OPTIMIZATION

Code Optimization



Source: <https://twitter.com/MarkArteaga/status/1148213259989901312>

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```
else
{
    foreach (var instance in instances)
    {
        string instanceName = String.Format("{0} - {1}", claimedRDD.ClaimedRddId, instance.StartTime.Value.ToString("yyyyMMddHHmm"));

        //name convention: RDD# - MMYYDDHHMM
        if (ctx.ShuttleInstances != null && ctx.ShuttleInstances.FirstOrDefault(x => x.sh_name == instanceName) == null)
        {
            try
            {
                CreateRDDInstance(ctx,
                    claimedRDD.Donation,
                    claimedRDD.DonatedBy,
                    claimedRDD.PickupLocation,
                    claimedRDD.RescuedBy,
                    claimedRDD.RescueLocation,
                    instance.StartTime.AsSystemLocal,
                    instanceName, duration);
            }
            catch (Exception ex)
            {
                Elmah.ErrorSignal.FromCurrentContext().Raise(new Exception("Shuttle instance creation failed: " + ex.Message));
                Elmah.ErrorSignal.FromCurrentContext().Raise(ex);
            }
        }
    }
}
```

492 s

```
else
{
    // get an array of instance names
    //name convention: RDD# - MYYDDHHMM
    var instanceNames = instances.Select(t => new { instance = t, name = string.Format("{0} - {1}", claimedRDD███████████, t.StartTime.Value.ToString("yyyyMMddHHmm")) }).ToList();
    // find all records in the d365 in one shot instead of doing record by record :/
    var qe = new QueryExpression
    {
        EntityName = ██████████,
        PageInfo = new PagingInfo
        {
            Count = 5000,
            PageNumber = 1,
            PagingCookie = null,
            ReturnTotalRecordCount = true
        },
    };
    qe.ColumnSet.AddColumns██████████);
    qe.Criteria = new FilterExpression();
    var filter = qe.Criteria.AddFilter(LogicalOperator.Or);
    var f = "";
    foreach (var instance in instanceNames)
    {
        filter.AddCondition█████████, ConditionOperator.Equal, instance.name);
        f += $" or '{instance.name}'";
    }
    EntityCollection results = OrgService.RetrieveMultiple(qe);
    totalDonations += results.TotalRecordCount;
    if(results.TotalRecordCount != instances.Count)
    {
        // the record count is different so means one of the instance names we have to create
        foreach (var instance in instanceNames)
        {
            var e = results.Entities.FirstOrDefault(t => t██████████].Equals(instance.name));
            if (e == null)
            {
                // create the record
                try
                {
                    CreateRDDInstance(ctx,
                        claimedRDD.Donation,
                        claimedRDD.DonatedBy,
                        claimedRDD.PickupLocation,
                        claimedRDD.RescuedBy,
                        claimedRDD.RescueLocation,
                        instance.instance.StartTime.AsSystemLocal,
                        instance.name, duration);
                }
                catch (Exception ex)
                {
                    Elmah.ErrorSignal.FromCurrentContext().Raise(new Exception██████████ + ex.Message));
                    Elmah.ErrorSignal.FromCurrentContext().Raise(ex);
                }
            }
        }
    }
}
```

10s

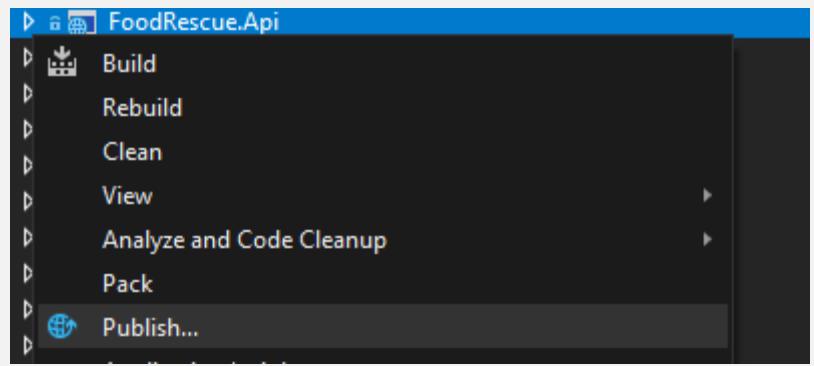
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THE TECHNICAL JOURNEY

CI/CD PIPELINES & DEVOPS

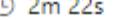
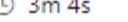
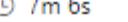
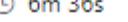


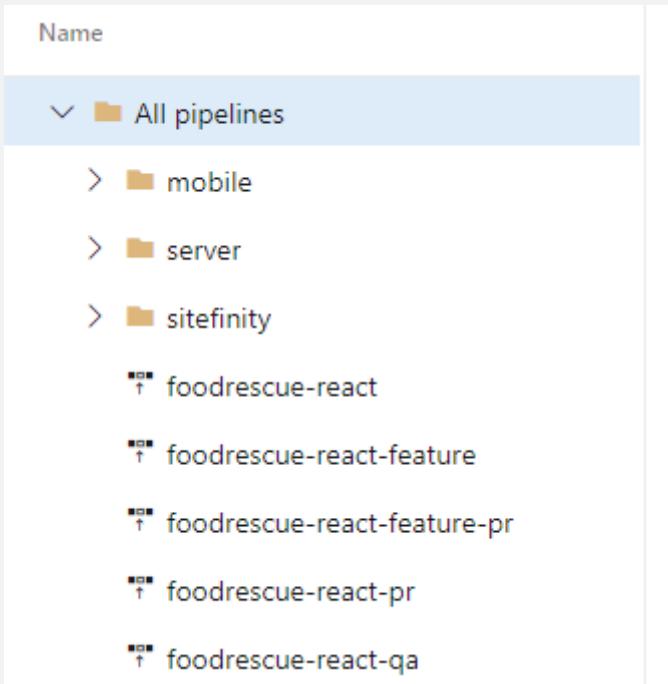


Pipelines

[New pipeline](#)[Recent](#) [All](#) [Runs](#)[Filter pipelines](#)

Recently run pipelines

Pipeline	Last run	
 food-rescue-api-functions-idserv-2 	#28353 • #17266 - refactoring how we upsert/insert/delete...  PR automated for  #8446	 Thursday 
 foodrescue-react-qa	#28328 • Merged PR 8431: #17247 - small superficial cha...  Manually triggered for  # dev	 Wednesday 
 foodrescue-react-pr	#28303 • 17225 - User list self edit goes to profile  Manually triggered for  # u-dev-20221025-17225-UserListLo...	 Oct 28 
 foodrescue-react	#28302 • Merged PR 8433: Superficial change to get new ...  Individual CI for  # prod	 Oct 28 
 food-rescue-mobile 	#1121 • #17225 - on user list self edit go to profile edit  PR automated for  #8428	 Oct 27 
 foodrescue-react-feature	#28277 • Merged PR 8411: Donation items and translations  Individual CI for  # f-20221003-16846-editRecurringDona...	 Oct 27 
 foodrescue-react-feature-pr	#28255 • Donation items and translations  PR automated for  #8411	 Oct 26 



food-rescue-api-functions-idserv-2

[Edit](#)[Create release](#)[Releases](#) [Deployments](#) [Analytics](#)[All releases](#)

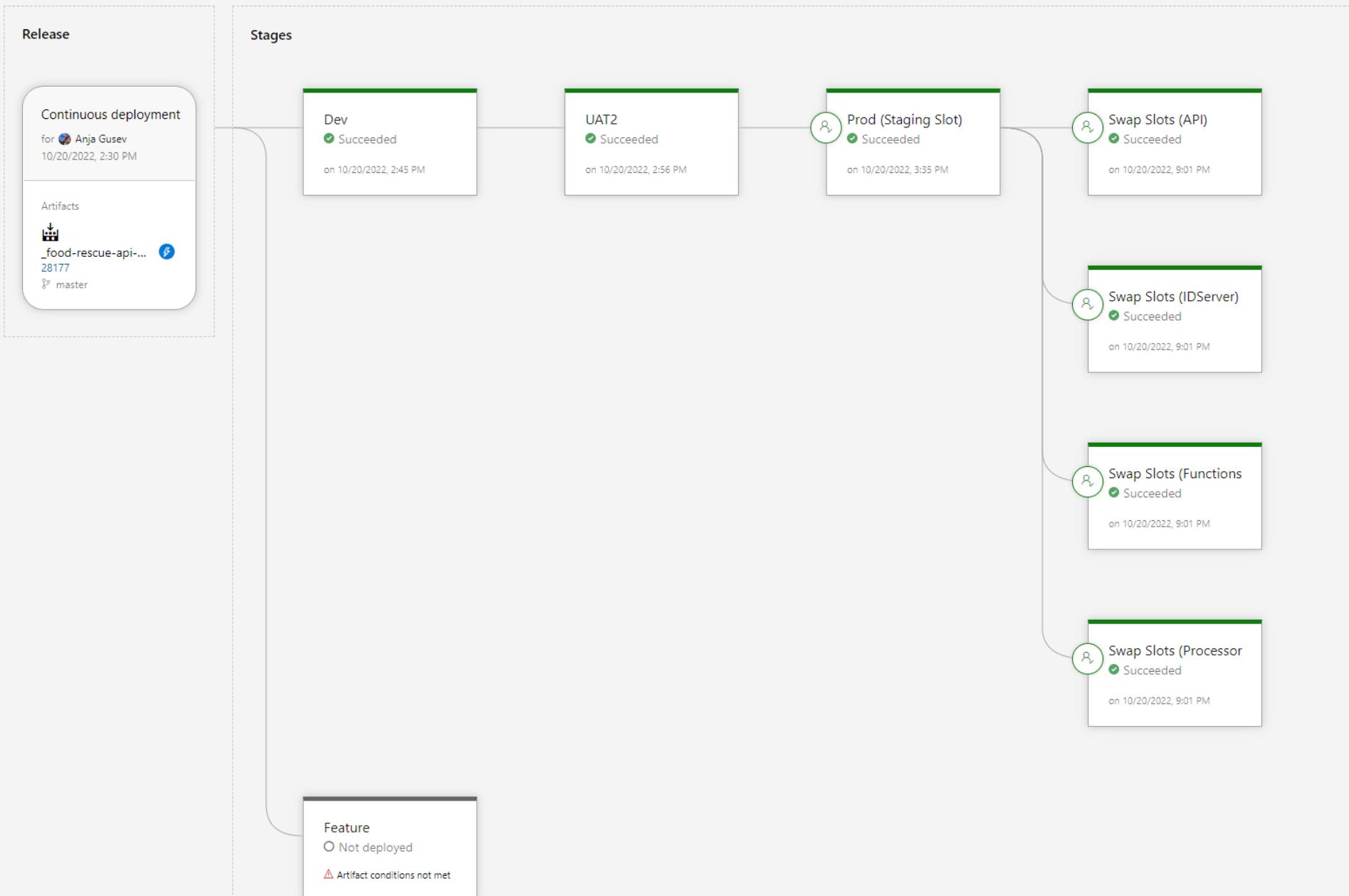
Releases

Created

Stages

Release-761 # 28353 ↗ refs/pull/8446/merge	11/3/2022, 11:04:34 AM	<input type="radio"/> Dev	<input type="radio"/> UAT2	<input type="radio"/> Prod (Sta...)	<input type="radio"/> Swap Slot...	<input checked="" type="checkbox"/> Feature			
Release-760 # 28352 ↗ refs/pull/8446/merge	11/3/2022, 10:10:19 AM	<input type="radio"/> Dev	<input type="radio"/> UAT2	<input type="radio"/> Prod (Sta...)	<input type="radio"/> Swap Slot...	<input checked="" type="checkbox"/> Feature			
Release-759 # 28351 ↗ refs/pull/8446/merge	11/2/2022, 3:52:09 PM	<input type="radio"/> Dev	<input type="radio"/> UAT2	<input type="radio"/> Prod (Sta...)	<input type="radio"/> Swap Slot...	<input checked="" type="checkbox"/> Feature			
Release-758 # 28346 ↗ refs/pull/8446/merge	11/2/2022, 3:05:15 PM	<input type="radio"/> Dev	<input type="radio"/> UAT2	<input type="radio"/> Prod (Sta...)	<input type="radio"/> Swap Slot...	<input checked="" type="checkbox"/> Feature			
Release-757 # 28333 ↗ refs/pull/8437/merge	11/2/2022, 11:13:01 AM	<input type="radio"/> Dev	<input type="radio"/> UAT2	<input type="radio"/> Prod (Sta...)	<input type="radio"/> Swap Slot...	<input checked="" type="checkbox"/> Feature			
Release-756 # 28329 ↗ refs/pull/8437/merge	11/2/2022, 9:55:33 AM	<input type="radio"/> Dev	<input type="radio"/> UAT2	<input type="radio"/> Prod (Sta...)	<input type="radio"/> Swap Slot...	<input checked="" type="checkbox"/> Feature			
Release-755 # 28326 ↗ refs/pull/8436/merge	11/2/2022, 9:18:35 AM	<input type="radio"/> Dev	<input type="radio"/> UAT2	<input type="radio"/> Prod (Sta...)	<input type="radio"/> Swap Slot...	<input checked="" type="checkbox"/> Feature			

Releases	Created	Stages
 Release-737  28177 ➔ master	10/20/2022, 2:30:11 PM	✓ Dev ✓ UAT2 ✓ Prod (Sta...) ✓ Swap Slot... ✓ Swap Slot... ✓ Swap Slot... ✓ Swap Slot... ○ Feature
 Release-726  28103 ➔ master	10/11/2022, 5:20:05 PM	✓ Dev ✓ UAT2 ✓ Prod (Sta...) ✓ Swap Slot... ✓ Swap Slot... ✓ Swap Slot... ✓ Swap Slot... ○ Feature
 Release-715  27960 ➔ master	9/23/2022, 11:27:56 AM	✓ Dev ✓ UAT2 ✓ Prod (Sta...) ✓ Swap Slot... ✓ Swap Slot... ✓ Swap Slot... ✓ Swap Slot... ○ Feature



Prod (Staging Slot)

✔ Succeeded

Summary Commits Work Items

Difference in commits ⓘ ▾

Showing changes compared to Release-726 (Previous deployment) | Change

 _food-rescue-api-functions-idserv-2 (2 commits) ^

Author

Clear Filters

Commit	Message	Author
7b93d097	Merged PR 8380: adding appsetting for initial delay in finding closest nfp loca...	 Anja Gusev
c14078d6	adding appsetting for initial delay in finding closest nfp locations	 Anja Gusev

Prod (Staging Slot)

✓ Succeeded

Summary Commits Work Items

Difference in work items ⓘ ▾

Showing changes compared to Release-726 (Previous deployment) | [Change](#)

 _food-rescue-api-functions-idserv-2 (1 work item) ^

Id	Type	Title	State
17195	User ...	FS - [DES] - Make FindClosestNFPLocations Delay Configurable in App Sett...	Closed



THE TECHNICAL JOURNEY

POWER PLATFORM, DATAVERSE & .NET

Microsoft Power Platform

One low-code platform that spans Office 365, Dynamics 365, Azure and standalone applications

Dynamics 365



Office 365



Azure



Your business apps & data



Power BI
Business analytics



Power Apps
Application development



Power Automate
Workflow automation



Power Virtual Agents
Intelligent virtual agents



Power Pages
Build websites



Dataverse



Data connectors



AI Builder

Microsoft Power Platform

No code, low code, and code first—all are welcome



No Code

Drag and drop experiences that are like PowerPoint



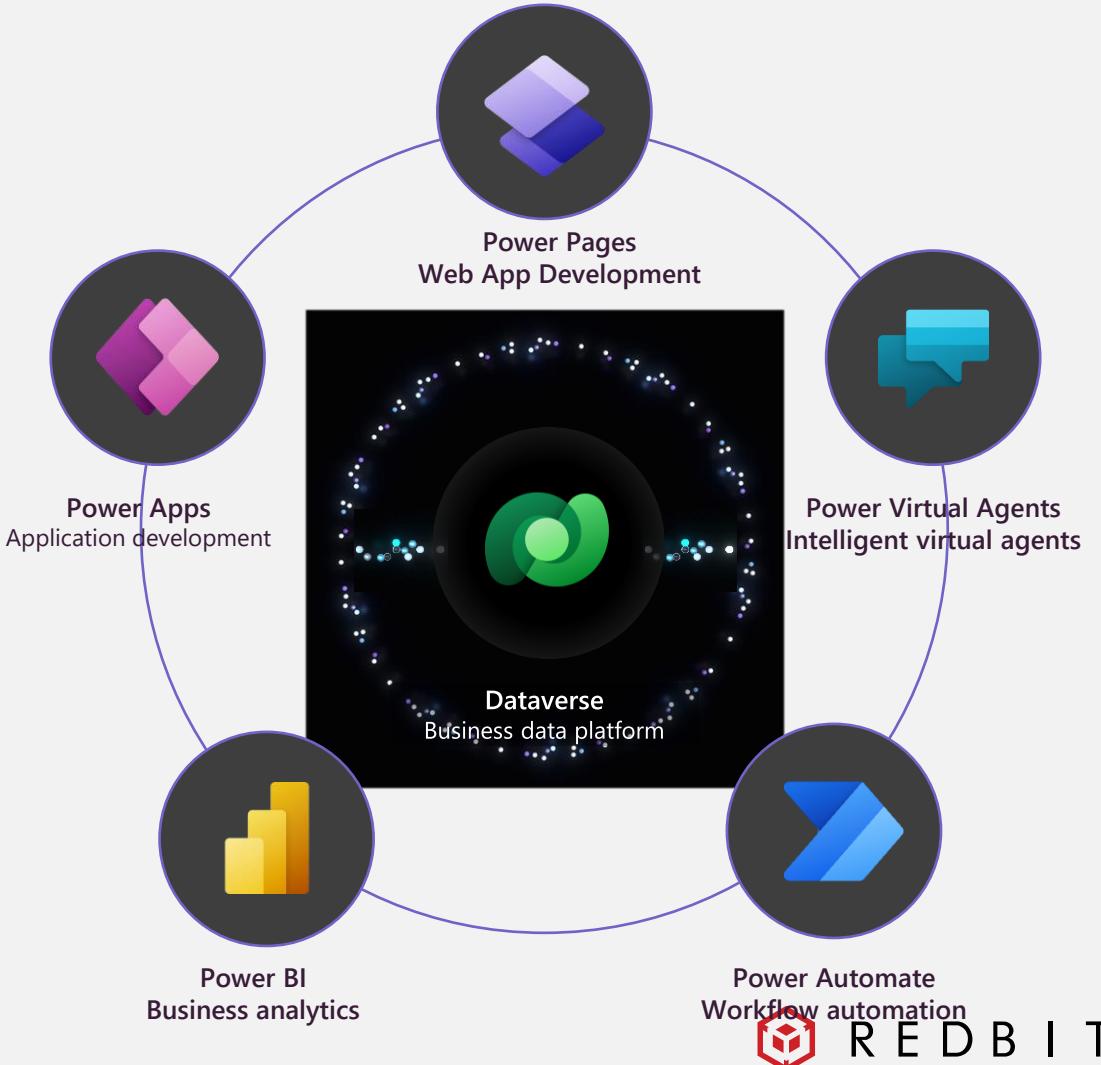
Low Code

Drag and drop plus Excel-like formulas for functionality



Code First

Professional development and extensibility across Microsoft



second harvest

- Dashboard
- Reporting
- Donations
- Resources
- Business Profile
- User Profile

Invite Other Businesses

Privacy Terms of Use

©2020 Second Harvest

Generously supported by Walmart

built by RE DB IT Build: 26796

Welcome back, George

Here are your key statistics for the last 12 months.

49,824 Meals Provided

Your donation volume over time:

Last [12 months](#) [6 months](#) [3 months](#)

Date	Volume (Lbs)
Jul 2021	~1000
Aug 2021	~500
Sep 2021	~500
Oct 2021	~500
Nov 2021	~1000
Dec 2021	~30,000

second harvest

Donation Statistics (past 12 months)

\$0 value of food you've donated

Determined using average Canadian costs of food by food category.

equivalent meals GHG's Averted

Based on the individual carbon footprint of each meal.

[Donate food](#)

Donation Volume Last 12 months

Date	Volume (Lbs)
Jul-30-2019	40,000
Nov 2018	~32,000
Today	~32,000

Tap on the graph above and drag your finger to see statistics.

Dashboard Donations Activity Settings

Français [Donate Food](#) [NEED HELP](#) George

181 Donations Made

115,846 GHG's Averted

4 Non-profits Helped

Food categories you've donated

Category	Percentage
Produce	~75%
Dairy	~15%
Meat & Fish	~5%
Baby Food & Formula	~5%



Save Save & Close Save & Route Refresh New Resolve Case Cancel Case Assign Add to Queue

Locations
 Contacts
 Volunteers
 Location Contacts
 Online Credentials

Food Rescues

Recurring Donatio...

Donations

Donation Items

Volunteer Confir...

Claims

Actions

Cases

Case Resolutions

Activities

Queues

SH Second Harvest H...

GT

Grace Test - Missed Donation 00315604: We agreed on an alternate pickup date with the business - Saved Case

2022-04-01 10:42 AM
Created OnIn Progress
StatusFoodRescueUAT2 NoReply
Owner

[Summary](#) [Case Relationships](#) [Articles and Contract Information](#) [Related](#)

CASE DETAILS

Customer*



Contact



Donation



Case Title*

Grace Test - Missed Donation 00315604: W...

Case Type*

Maintenance

Origin*

Internal

Case Number

CAS-14829-Q0P4T4

DESCRIPTION

Donation 00315604 marked as "Didn't receive" with rating reason of "we agreed on an alternate pickup date with the business." With this section the donation was automatically rated at 0 lbs.

Donation Link

https://secondharvestuat.crm3.dynamics.com/main.aspx?appid=7a13bcd3-db71-41b4-8c16-ca8102bed5ee&newWindow=true&pagetype=entityrecord&etn=sh_frdonation&id=eaa05c10-77f4-4e53-8152-b00e98f3a7af

MANAGEMENT

Created By

FoodRescueUAT2 NoReply

Timeline

Search timeline

Enter a note...

Email from FoodRescueUAT2 NoR...
We need your help adjusting donatio...
Hello Grace, please update the rating...
Closed 10:42 AM

Email from FoodRescueUAT2 NoR...
Your donation will be adjusted #0031...
Hello George, your donation will be a...
Closed 10:42 AM



THE TECHNICAL JOURNEY

DATAVERSE RATE LIMITING

Showing data for <https://secondharvest.crm3.dynamics.com/> from **11/1/2022 12:00 AM to 11/2/2022 12:00 AM** [Change filters](#)**API Pass Rate****100.00%****API Calls****918,229****Top API By Failures**

Click the item below to see details

0 ProvisionLanguage 1

0 ImportSolution 1

11131 Retrieve 1

0 RetrieveUserPrivilegeByPrivilegeName

10037 RetrieveMultiple

10031 RetrieveMultiple

1036 RetrieveMultiple

0 DownloadBlock

2 Retrieve

0 InitializeFileBlocksDownload

9609 RetrieveMultiple

9606 Retrieve

0 GetFeatureEnabledState

Most used API● API Calls**Total API calls**● API Calls

Dataverse and Rate Limits

- [Dataverse API Limits Overview](#)
- [Request Limits and Allocations](#)
- [Service Protection Limits](#)

Exchange & Power Platform

- Sending more than 10,000 unique emails every 24hours you will be blocked by Exchange APIs
- At first use the out of box emailing from REST APIs and Dataverse
- Architect code (DI) to swap out email provider
- [Exchange Online Sending Limits](#)



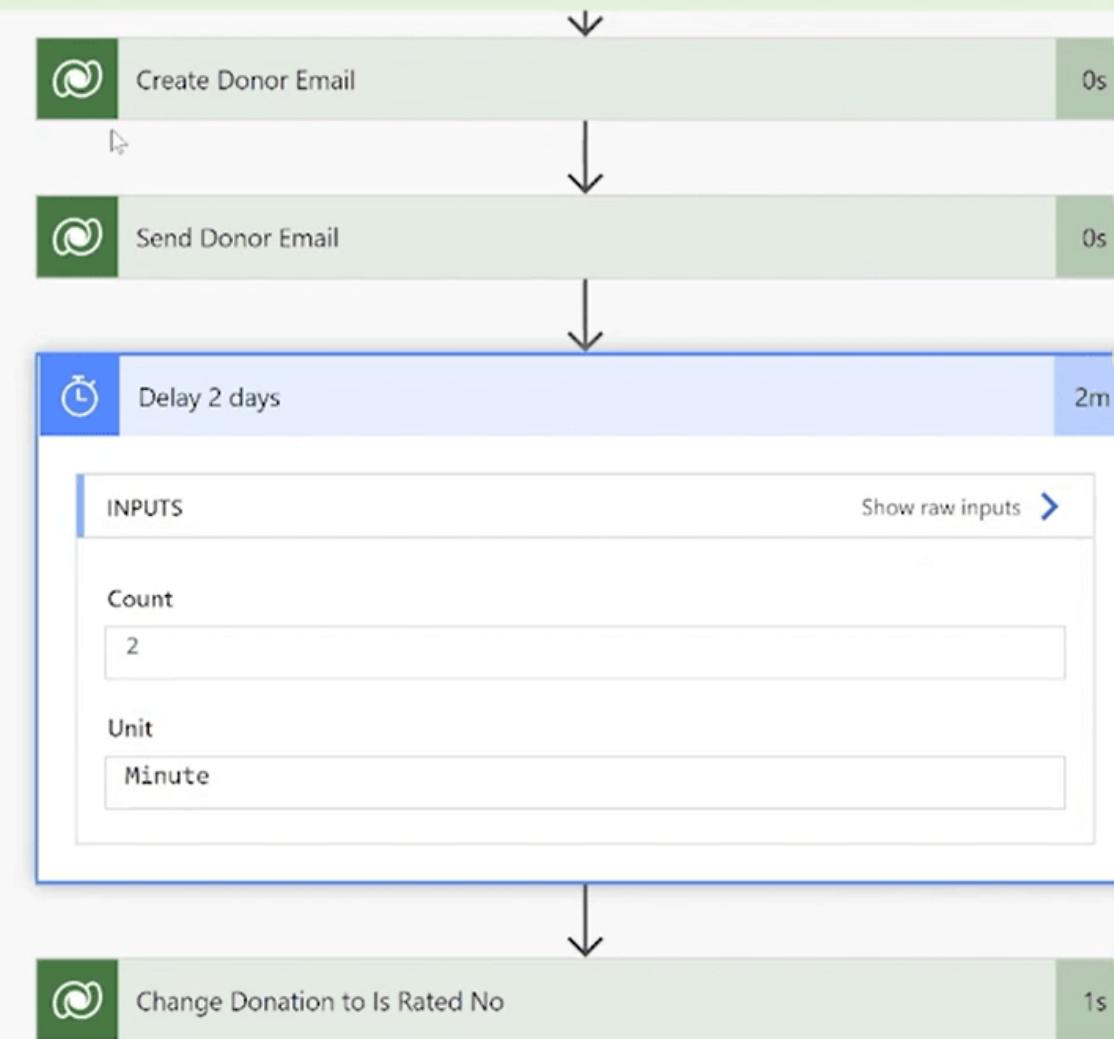
THE TECHNICAL JOURNEY

POWER TO THE PEOPLE!

Missed Donation - We agreed on an alternate pickup date with the business

Edit

Your flow ran successfully.



Saving 2000lbs of food being wasted monthly via a
Low-Code / No-Code solution



On Demand

Learn how technology ensured 2000LBS of food stays out of landfills and goes to those who need it most. How team at SecondHarvest leveraged Power Automate ,Dynamics and Azure to automate the "non-pickup" response to ensure food goes back into inventory to be picked up by another food bank.

<https://mktoevents.com/Microsoft+Event/336530/157-GQE-382>

Register Now

Fill out this form to register for the digital meetup

First name *

Last name *



THE TECHNICAL JOURNEY

DATA EXPORT SERVICE

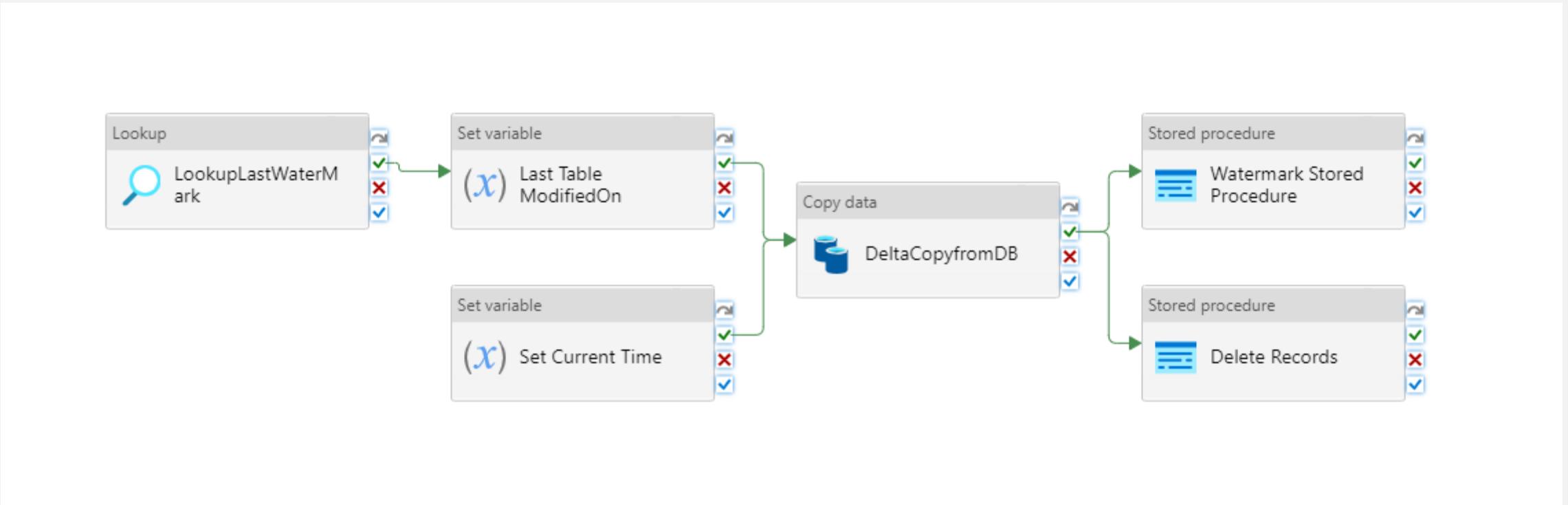
Reminder: Deprecation of Data Export Service for Dataverse

Hello,

If you have built a solution that relies on data coming in from dataverse via "Data Export Service" (export to Azure SQL store) please be aware that in November 2021 it was announced that this service is being deprecated in late 2022 in favour of Synapse Link for Dataverse. See this blogpost: [From Data Export Service to Azure Synapse Link for Dataverse](#).

In the blogpost you can find the deprecation playbook with more information and guides on how to make the transition: <https://aka.ms/DESDeprecationPlaybook>

/ChristianDK

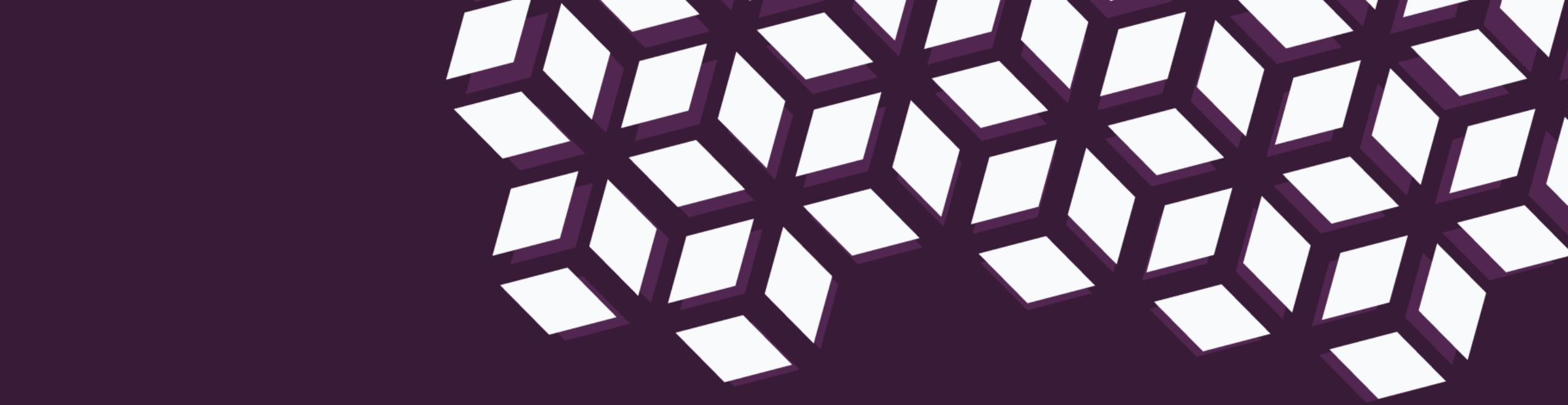


Some Links

- <https://powerapps.microsoft.com/en-us/blog/do-more-with-data-from-data-export-service-to-azure-synapse-link-for-dataverse/>
- <https://docs.microsoft.com/en-us/power-apps/maker/data-platform/export-to-data-lake>
- <https://docs.microsoft.com/en-us/power-apps/developer/data-platform/data-export-service>
- <https://docs.microsoft.com/en-us/shows/dynamics-365-fasttrack-architecture-insights/best-practice-des-deprecation-playbook>
- Great thread - <https://community.dynamics.com/365/f/dynamics-365-general-forum/442397/data-export-services-des---deprecation---metadata-information?pifragment-113042=1#responses>
 - Main person responding in thread willing to help <https://www.linkedin.com/in/jonmeyer/>
- <https://docs.microsoft.com/en-us/shows/dynamics-365-fasttrack-architecture-insights/best-practices-api-request-limits>
 - Discusses API rate limiting which we need to know about for possible solutions
- <https://docs.microsoft.com/en-us/power-apps/maker/data-platform/azure-synapse-link-synapse#access-near-real-time-data-and-read-only-snapshot-data-preview>

The Technology Journey

- Build for scale in mind but don't build an infinitely scalable system from beginning
- Add Telemetry to your systems
- Implement CI/CD Pipelines
- Power Platform will help accelerate digital adoption keep an open mind



THE IMPACT & RESULTS



Our impact in 2022 from coast to coast to coast

Across the country, we support a large network of non-profit partners with food, which equates to millions of meals for people facing food insecurity.

Northwest Territories

32 Non-profits
103,000+ meals



Yukon
9 Non-profits
95,000+ meals



British Columbia
544 Non-profits
5 million+ meals



Alberta
402 Non-profits
6.9 million+ meals



Saskatchewan
134 Non-profits
970,000+ meals

Manitoba
285 Non-profits
3.7 million+ meals

Ontario
1,659 Non-profits
29.7 million+ meals

Nunavut

9 Non-profits
39,000+ meals



Newfoundland and Labrador

77 Non-profits
280,000+ meals



Québec
154 Non-profits
3.1 million+ meals



Prince Edward Island
26 Non-profits
131,000+ meals



Nova Scotia
97 Non-profits
903,000+ meals



Impact Highlights

\$185 million

worth of food was rescued and distributed

4.3 million

Canadians received food

150,000

meals per day provided by rescued food (avg.)

86%

of food donations were perishable

53.3 million lbs

of food rescued and distributed

64%

of food rescued and redistributed was
produce, protein and dairy

31.2 billion

litres of water saved

162 million lbs

of GHGs averted from the atmosphere

5,700

food donors

Microsoft Partner



2020 Partner of the Year Finalist
Partner for Social Impact Award
2020 Partner of the Year Winner
Community Response Award

Microsoft

Microsoft
IMPACT Awards

2020 WINNER





Satya Nadella liked your Tweet

Very big thanks to @satyanadella for
recognizing the impactful work between both
teams!

Satya Nadella Praises Yorktel, RedBit For Innovative Uses Of Microsoft Technology

Some of the ways that channel partners have leveraged Microsoft's products during the global coronavirus pandemic have been 'pretty stunning,' according to Nadella.

By [Donna Goodison](#)

April 14, 2021, 05:51 PM EDT

Microsoft CEO Presenting Award: <https://www.youtube.com/watch?v=B55vicIWLc&t=2075s>

Source: <https://www.crn.com/news/cloud/satya-nadella-praises-yorktel-redbit-for-innovative-uses-of-microsoft-technology>



“They [RedBit] went around and essentially created a system of connecting all of the food, solving the hard challenge in the pandemic: How can they scale a nationwide effort around food security? That was fascinating.”

- Satya Nadella
CEO, Microsoft