

Jump start
your Analytics
with
Cortana Intelligence Solutions

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Program Manager

Our customers are building solutions for...



**Improving visibility
and making
accurate
predictions** with
remote monitoring



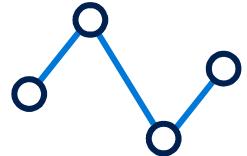
**Getting the right
products to the right
places** with inventory
management



**Offering customers
exactly what they want,
when they want it,** with
personalization



**Fixing problems
proactively before they
start** with predictive
maintenance



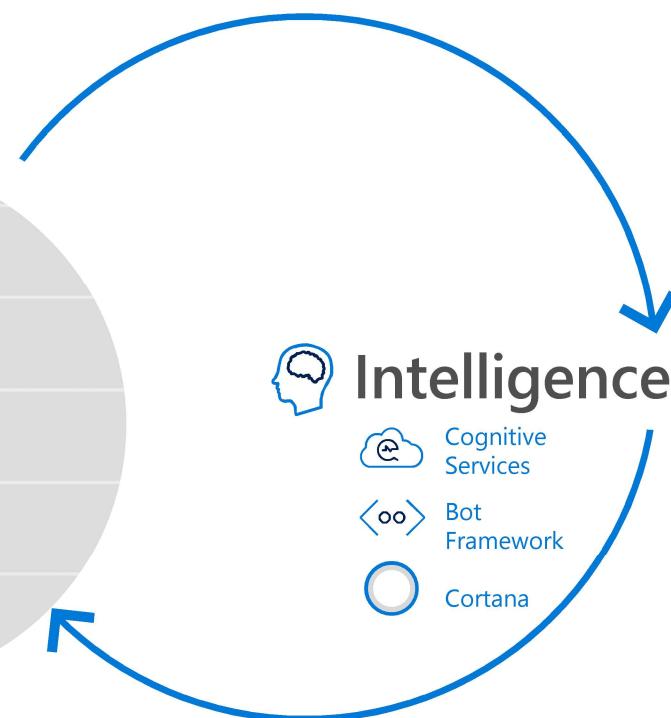
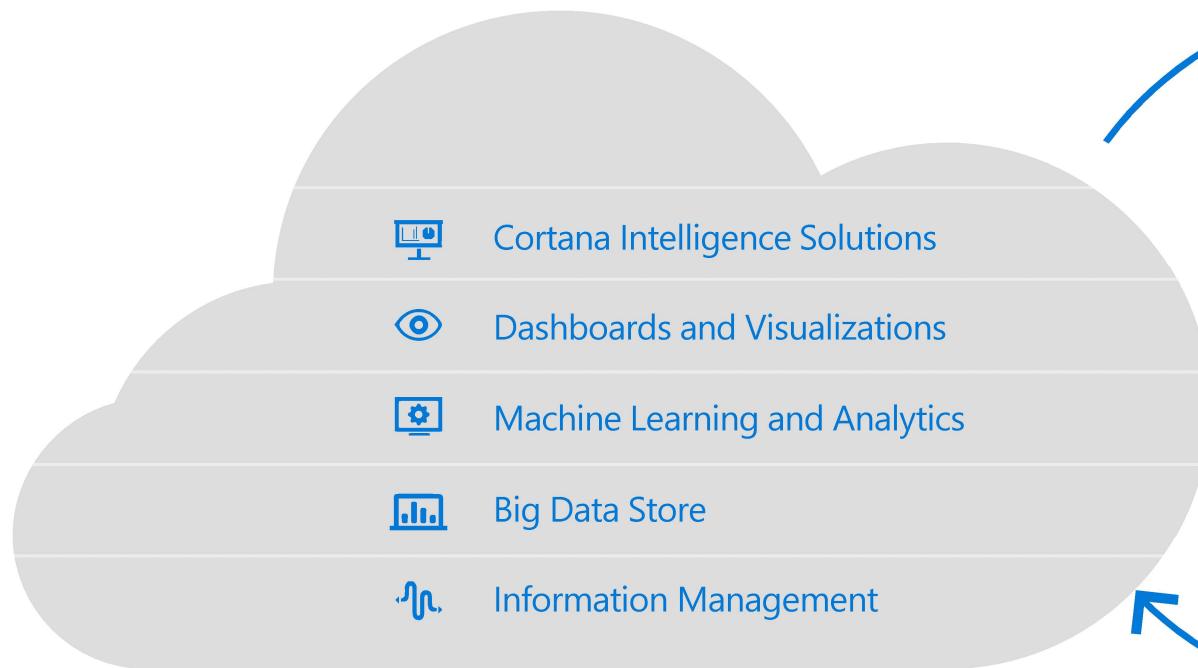
**Exploring new
business opportunities**
with data-driven
services

Leverage Advanced Analytics for...

Marketing	Sales	Service	Finance	Operations	Workforce
Customer Insight	Customer Acquisition	Service Analytics	Financial Analytics	Demand Forecasting	Employee Insight
Customer Feedback Analytics	Cross sell & Upsell	Contact Center Analytics	Financial Forecasting	Inventory Optimization	HR Insight
Churn Analytics	Lead Generation & Opportunity Scoring		Fraud Management	IT Operations Insight	Pay for Performance
Product Innovation			Risk Management	Operational Efficiency	
Personalization				Procurement Insight	
Product Recommendation				Spend Insight	
Marketing Optimization				Supplier Insight	

Cortana Intelligence Suite

Transform data into intelligent action



Introducing Cortana Intelligence Solutions

Discover



Deploy



Customize



Solutions at cloud speed



IT Anomaly Insights

Remedy your issues before they happen with IT Anomaly Insights. Optimize your IT operations through machine learning and gather intelligent insights from your data to ensure system uptime.



Windows Data Science Virtual Machine

Provision the Windows Data Science Virtual Machine, a custom virtual machine image pre-installed and configured with a host of popular tools commonly used for data science and machine learning.



Predictive Maintenance for Aerospace

This Predictive Maintenance solution monitors aircraft and predicts the remaining useful life of aircraft engine components.



Stream Analysis with Azure ML

Make predictions using near real time data streams and Azure ML.

Cortana Intelligence Solutions: Discover

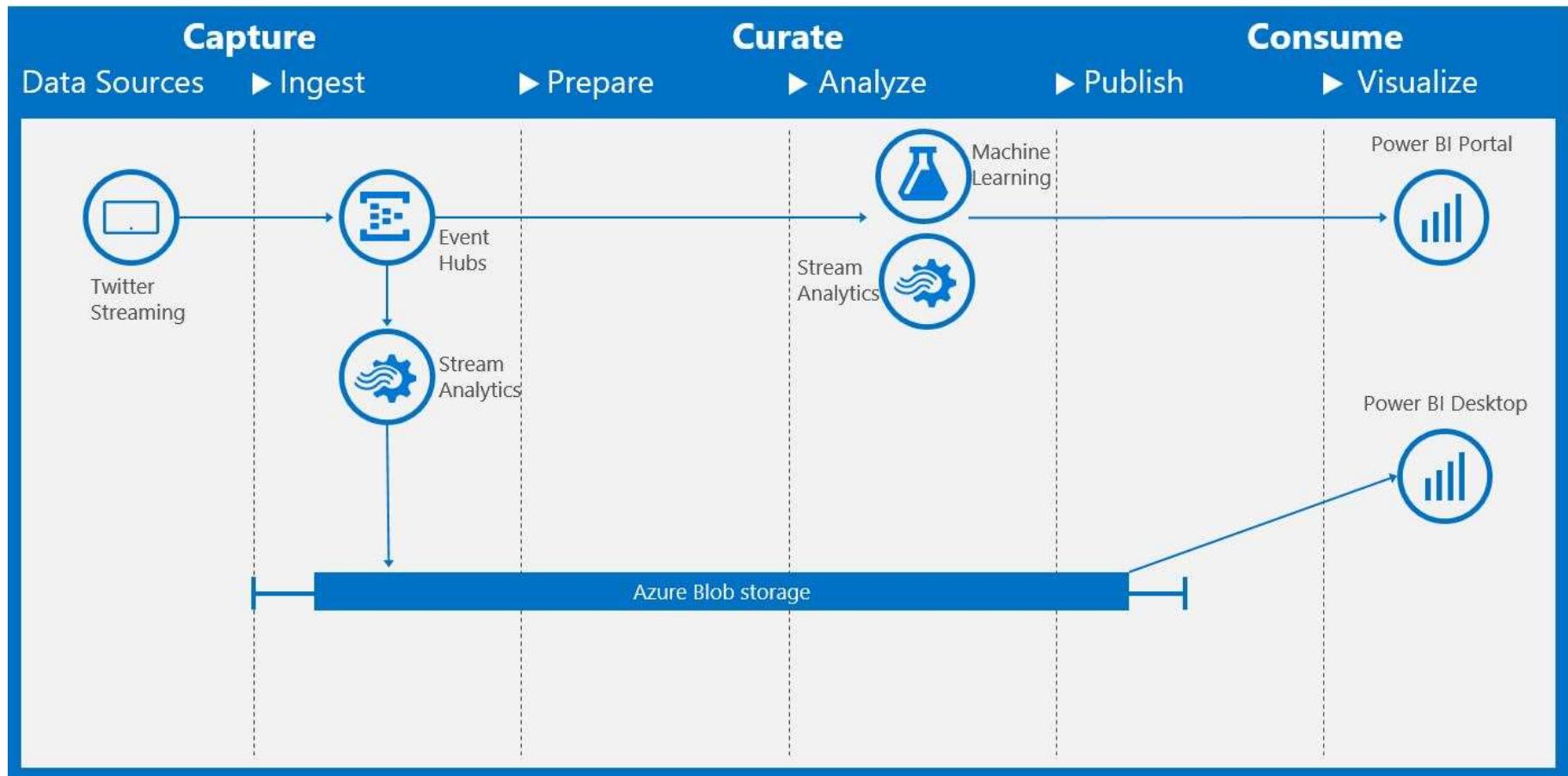
The screenshot shows the Cortana Intelligence Solutions website. At the top, there is a navigation bar with a search bar and a sign-in button. Below the navigation bar, there is a main content area with a green header titled "Solutions". The header includes a sub-header: "Quickly build Cortana Intelligence Solutions from preconfigured solutions, reference architectures and design patterns. Make them your own with the included instructions or with a featured partner. Click here to view deployed solutions". To the right of the sub-header is a cartoon illustration of a rocket launching. Below the header, there is a section titled "Recently added" which lists four solutions:

- Predictive Maintenance for Aerospace**: This solution monitors aircraft and predicts the remaining useful life of aircraft engine components. It was posted 22 hours ago with 55 likes and 10 dislikes.
- Stream Analysis with Azure ML**: This solution analyzes data streams in real-time. It was posted a minute ago with 123 likes and 45 dislikes.
- Data Warehousing and Data Science with SQL Data Warehouses**: This solution provides a centralized data warehouse for advanced analytics and reporting. It was posted a minute ago with 66 likes and 35 dislikes.
- Linux Data Science Virtual Machine**: This solution provisions a custom virtual machine image pre-installed and configured with popular tools for data science and machine learning. It was posted yesterday with 71 likes and 26 dislikes.

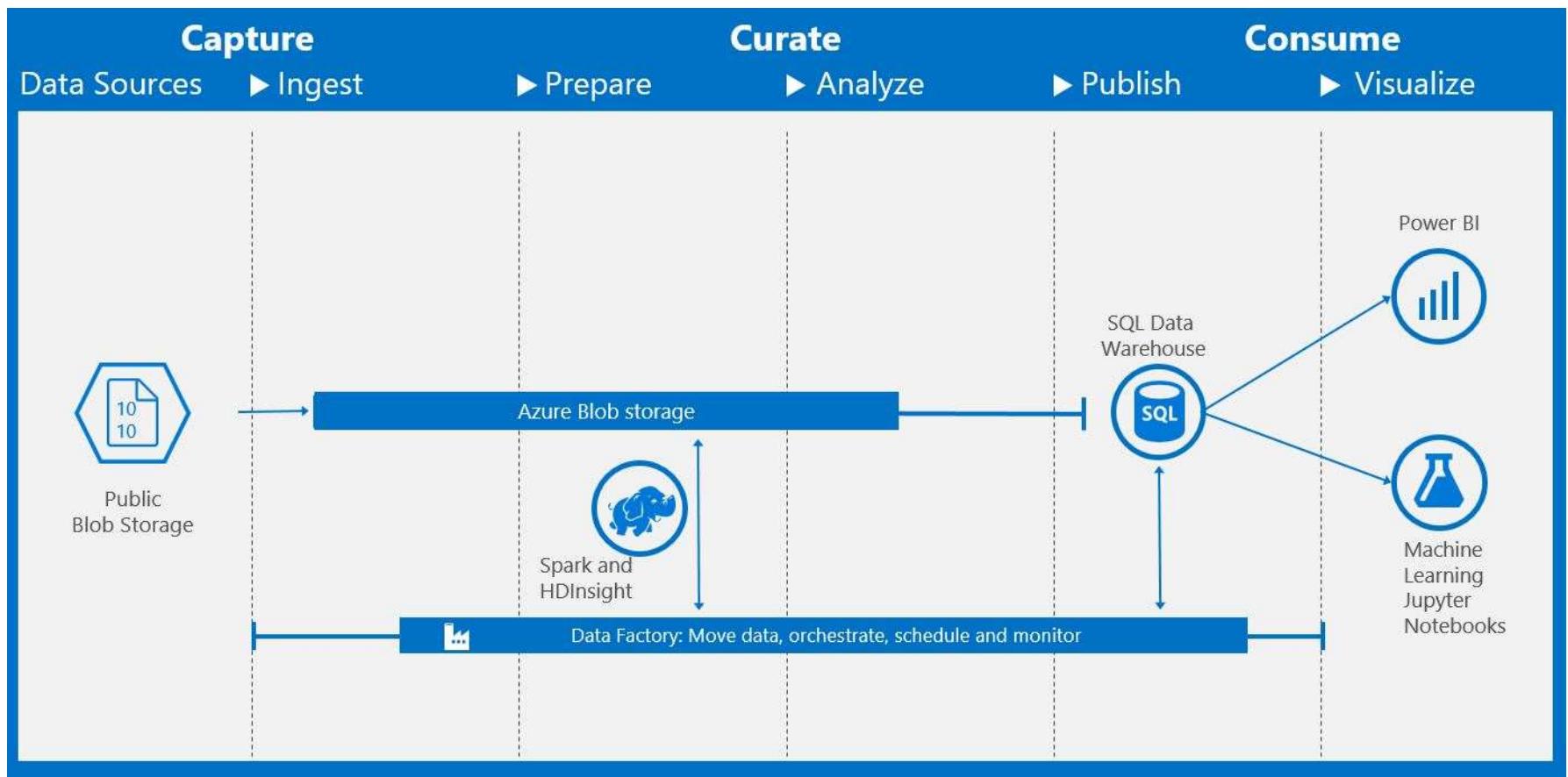
Each solution card includes a Microsoft logo at the bottom.

<http://aka.ms/cisolutions>

Stream Analysis with Azure ML



Data Warehousing and Data Science with SQL Data Warehouse and Spark



Cortana Intelligence Solutions: Deploy

Cortana Intelligence Gallery

Browse all Industries Solutions Experiments More

SOLUTION

IT Anomaly Insights

Microsoft • published on August 29, 2016

Summary

Cortana Intelligence IT Anomaly Insights solution helps IT departments within large organizations quickly detect and fix issues based on underlying health metrics from IT infrastructure (CPU, Memory, etc.), services (Timeouts, SLA variations, Brownouts, etc.), and other key performance indicators (KPIs) (Order backlog, Login and Payment failures, etc.) in an automated and scalable manner. This solution also offers an easy to 'Try it Now' experience that can be customized to your data to realize the value offered by the solution. The 'Deploy' experience allows you to quickly get started with the solution on Azure by deploying the end to end solution components into your Azure subscription and providing full control for customization as needed.



Deploy ↗

Try It Now

Create new deployment

Cortana Intelligence Solutions DEPLOYMENTS SOLUTIONS GALLERY ?

1 | Create new deployment

2 | Provide configuration parameters

3 | Resource provisioning (automated)

4 | Done

IT Anomaly Insights

Deployment name
cisolution1

(Deployment name must be between 3 and 11 characters, start with a lowercase letter, and contain only lowercase letters and numbers.)

Subscription
ADS Engg Development
(d67f2755-21f7-4954-80bf-b446dc8b4f6)

Locations
East US

Description (optional)
Cortana Intelligence Solution - IT Anomaly Insights (Sept 25, 2016)

License

Provide configuration parameters

The screenshot shows the Cortana Intelligence Solutions deployment wizard interface. The top navigation bar includes 'Cortana Intelligence Solutions', 'DEPLOYMENTS', 'SOLUTIONS GALLERY', a help icon, and a user profile icon.

The left sidebar lists four steps: 1 | Create new deployment, 2 | Provide configuration parameters (which is selected and highlighted with a green vertical bar), 3 | Resource provisioning (automated), and 4 | Done.

The main content area displays the 'cisolusion1' solution details:

- Solution: IT Anomaly Insights
- Resource group: cisolution1
- Status: Action required

Below this, the 'Azure Marketplace API key for Anomaly Detection' section contains a placeholder input field and a note:

Sign up at https://datamarket.azure.com/dataset/ml_labs/anomalydetection. Sign up instructions are at <https://github.com/Azure/itanomalyinsights-cortana-intelligence-preconfigured-solution/blob/master/Docs/Market%20Place%20API%20Key.md>

The 'Input parameters for Anomaly Detection API' section shows a JSON configuration:

```
{"tspikedetector.sensitivity": "3", "zspikedetector.sensitivity": "3", "trenddetector.sensitivity": "3.25", "bileveldetector.sensitivity": "3.25"}
```

A link to read more about parameters is provided: <https://azure.microsoft.com/en-us/documentation/articles/machine-learning-apps-anomaly-detection>.

The 'Username for SQL Server that will be created for results database (minimum 3 characters)' field contains 'SCUSER'.

The 'Password for SQL Server that will be created for results database' field contains '*****' and includes a visibility toggle icon.

A note below the password field specifies: Your password must not contain all or part of the user account name, must be more than 8 characters in length and must contain characters from three of the following categories- English uppercase letters, English lowercase letters, numbers (0-9), and non-alphanumeric characters (!, \$, #, %, etc.)

A blue 'Next' button is located at the bottom right of the configuration area.

Provisioning activities

The screenshot shows the Cortana Intelligence Solutions interface. The top navigation bar includes 'Cortana Intelligence Solutions', 'DEPLOYMENTS', 'SOLUTIONS GALLERY', a help icon, and a user profile icon.

The main area displays a deployment titled 'cisolution1' with the following details:

- Solution: IT Anomaly Insights
- Resource group: cisolution1
- Status: Provisioning

A vertical sidebar on the left lists the provisioning steps:

- 1 | Create new deployment
- 2 | Provide configuration parameters
- 3 | Resource provisioning (automated)
- 4 | Done

The 'Resource provisioning (automated)' step is currently active, showing a table of activities and their status:

Activity	Status
Create Pattern Resources	Succeeded
Upload IT Anomaly Insight Scripts to Blob	Succeeded
Prepare SQL DB	Succeeded
Create Pattern Resources	Running
Start StreamAnalytics Jobs	Pending
Start Data Factory Pipeline	Pending

Go to Azure Portal from Activities

The screenshot shows the Cortana Intelligence Solutions interface. On the left, a vertical navigation bar lists steps: 1 | Create new deployment, 2 | Provide configuration parameters, 3 | Resource provisioning (automated), and 4 | Done. Step 3 is currently selected. At the top, there are tabs for DEPLOYMENTS and SOLUTIONS GALLERY, along with a user icon.

A modal window titled "Create Pattern Resources" is open. It displays a message: "This activity is running." Below this, it says "Go to [Azure portal](#) to see more." The main content area shows the "Activity" section with the "Create Pattern Resources" activity selected. Underneath, there is a list of other activities: Upload IT Anomaly Insight Scripts to Blob, Prepare SQL DB, Create Pattern Resources, Start StreamAnalytics Jobs, and Start Data Factory Pipeline.

To the right of the modal, a detailed view of the "Create Pattern Resources" activity is shown in a "Microsoft Azure" deployment window. The deployment name is "cisolution1_0000". The configuration parameters listed are:

Parameter	Value
SCRIPTCONTAINERNAME	cisolution16sx3m55hfnr3blob
DATABASENAME	cisolution1db
SQLSERVERUSERNAME	darwin
SQLSERVERPASSWORD	The80Ch@mp
SQLSERVERNAME	cisolution16sx3m55hfnr3isrv
APPINSIGHTSACCOUNTNAME	cisolution16sx3m55hfnr3applInsights
APPINSIGHTSINSTRUMENTATIONKEY	1e260397-86f5-4e48-8482-94e840164fe3
SQLSERVERURL	https://portal.azure.com/#resource/subscriptions/d67f2

itanomaly

Resource group

+ Add

Columns

Delete

Refresh

Move

Overview

Activity log

Access control (IAM)

Tags

SETTINGS

Quickstart

Resource costs

Deployments

Properties

Locks

Automation script

MONITORING

Metrics

Alert rules

Search (Ctrl+ /)

Subscription name: ADS Engg Development

Last deployment: 9/24/2016 (Deploying)

Subscription ID: d67f2755-21f7-4954-80bf-b446dcb8b4f6

Location: Central US

NAME

TYPE

LOCATION

NAME	TYPE	LOCATION
itanomaly6sx3m55hfnr3iadf	Data factory	North Europe
itanomaly6sx3m55hfnr3ins	Event Hubs	Central US
itanomaly6sx3m55hfnr3iappInsights	Application In...	Central US
itanomaly6sx3m55hfnr3itopicns	Service Bus	Central US
itanomaly6sx3m55hfnr3isrv	SQL server	Central US
itanomalydb	SQL database	Central US
itanomaly6sx3m55hfnr3i	Storage account	Central US
itanomaly6sx3m55hfnr3isaJob	Stream Analyt...	Central US
itanomaly6sx3m55hfnr3ihostingplan	App Service pl...	Central US
itanomaly6sx3m55hfnr3iws	App Service	Central US

Instructions and Next Steps: Customize

The screenshot shows the Cortana Intelligence Solutions deployment dashboard. On the left, a sidebar lists four steps: 1 | Create new deployment, 2 | Provide configuration parameters, 3 | Resource provisioning (automated), and 4 | Done. Step 4 is highlighted with a green bar. The main content area is titled "Next Steps". It contains a summary message and five numbered sections detailing deployed Azure components:

- 1. Storage account [Total: 1, Performance: Standard LRS]**

Azure storage account is used to create Azure Tables which stores the incoming events for sending to anomaly detection API.

```
Storage Account Name: scpcs356nkhegsk7xisns
Storage Connection String: DefaultEndpointsProtocol=https;AccountName=scpcs356nkhegsk7xisns;AccountKey=[REDACTED];BlobEndpoint=https://scpcs356nkhegsk7xisns.blob.core.windows.net;/TableEndpoint=https://scpcs356nkhegsk7xisns.table.core.windows.net/;QueueEndpoint=https://scpcs356nkhegsk7xisns.queue.core.windows.net/;FileEndpoint=https://scpcs356nkhegsk7xisns.file.core.windows.net/
```
- 2. Azure Event Hubs [Total: 1, Pricing tier : Standard]**

Azure Event Hub is used for data ingestion into the pipeline. Here is the connection information:

```
Service Bus Name: scpcs356nkhegsk7xisns
Event Hub Name: scpcs356nkhegsk7xiseh
Event Hub Consumer Group: scpcs356nkhegsk7xiscg
Event Hub Connection String: Endpoint=sb://scpcs356nkhegsk7xisns.servicebus.windows.net/;SharedAccessKeyName=RootManageSharedAccessKey;SharedAccessKey=[REDACTED]
```
- 3. Azure Stream Analytics [Total: 1, 1 Steaming unit]**

Azure Stream Analytics job is used to ingest the data from event hub, aggregate it and write it to table storage for the anomaly detection ADF pipeline to consume, and to SQL DB for visualizing in Power BI dashboards.
- 4. Azure SQL Database [Total: 1, Pricing tier: Standard S1]**

Azure SQL database is used to store the Anomaly Detection API's scored results. Here are the credentials of the server and database

```
Server: scpcs356nkhegsk7xissrv.database.windows.net
Database: scpcs3db
Username: [REDACTED]
Password: [REDACTED]
```
- 5. Azure Service Bus Topics [Total: 1, Pricing tier: Standard]**

Azure Service Bus Topics are used for publishing detected anomalies. You can use topics to listen for detected anomaly notifications. Here are the credentials of Service Bus Topics:

IT Anomaly Insights

Implement yourself or with selected partners



- Specializes in Data Science implementations
- 22 Solutions in Cortana Intelligence Suite across Retail, Consumer Goods, Oil & Gas, Manufacturing, Education & Healthcare Industries
- Microsoft Partner of the Year
- 2015 Finalist in Big Data and Analytics



- Specializes in design, development and integration of business knowledge, information technology and creativity
- 2016 MAPA Excellence in Business Insights and Data
- 2015 Microsoft APAC Platinum Club
- Several Microsoft Most Valuable Professionals (MVPs) on staff

Visit analyticspartner.microsoft.com to learn more about Microsoft Advanced Analytics Partner Solutions

How to find and delete already deployed Cortana Intelligence Solutions

Click on the “Click [here](#) to view deployed solutions” link in the Solutions category in the Cortana Intelligence Gallery [Cortana Intelligence Gallery](#)

The screenshot shows the Cortana Intelligence Gallery interface. At the top, there's a navigation bar with a menu icon, the text "Cortana Intelligence Gallery", and a search bar. Below the navigation bar, there are tabs: "Browse all", "Industries", "Solutions" (which is highlighted in blue), "Experiments", and "Machine Learning APIs". The main content area has a teal header with a white rocket ship icon and the word "Solutions". Below the header, there's a brief description: "Quickly build Cortana Intelligence Solutions from preconfigured solutions, reference architectures and design patterns. Make them your own with the included instructions or with a featured partner." Underneath the description is a link: "Click here to view deployed solutions".

Note: If you have already deployed this solution, click [here](#) to view your deployment.

The screenshot shows a specific solution page for "IT Anomaly Insights". At the top, it says "SOLUTION IT Anomaly Insights" and indicates it was published by Microsoft on September 14, 2016. Below the title, there's a "Summary" section with a detailed description of the solution's purpose and benefits. To the right of the summary is a thumbnail image showing a magnifying glass over a chart with red bars. Below the summary are buttons for "Deploy" and "Try It Now". At the bottom of the page, there's a note: "Note: If you have already deployed this solution, click [here](#) to view your deployment." and a "Add to Collection" button.

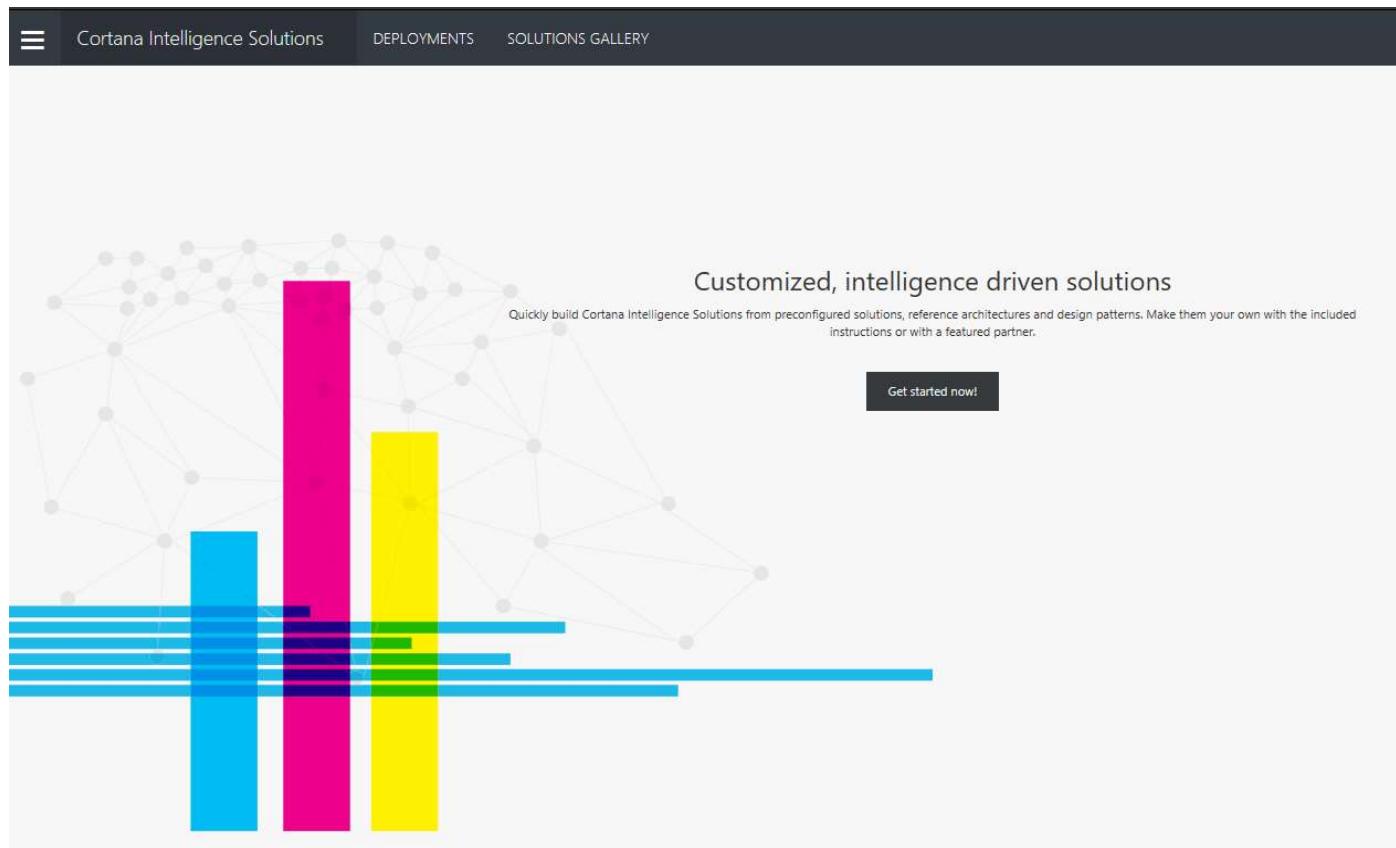
Find, Manage and Delete deployments

The screenshot shows the Cortana Intelligence Solutions web interface. At the top, there's a navigation bar with a menu icon, the text "Cortana Intelligence Solutions", and links for "DEPLOYMENTS" and "SOLUTIONS GALLERY". Below this is a dropdown menu labeled "IT Anomaly Insights ▾". The main content area displays a table titled "8 deployment(s)". The table has columns for "Deployment name", "Type", "Subscription", and "Date created". The data in the table is as follows:

Deployment name	Type	Subscription	Date created
aacs	IT Anomaly Insights	ADS Engg Development	09-23-2016 14:08:18
adpcs112	IT Anomaly Insights	ADS Engg Development	09-16-2016 11:57:48
itanomaly	IT Anomaly Insights	ADS Engg Development	09-24-2016 14:55:50
mollyadpcs2	IT Anomaly Insights	ADS Engg Development	09-16-2016 13:36:39
mollybadpcs	IT Anomaly Insights		
pcsciqspc1	IT Anomaly Insights		
scpcs7	IT Anomaly Insights		
testpcs	IT Anomaly Insights		

A modal dialog box is open in the center, asking "Are you sure you want to clean up the following deployments?". It lists "adpcs112" and includes "Cancel" and "Clean up Deployments" buttons. The background table also shows rows for "adpcs112" and "itanomaly".

Visit the Cortana Intelligence Solutions landing page and click on 'Deployments'



<https://start.cortanaintelligence.com>

Demo of IT Anomaly Insights
and
DW and DS with SQL Data
Warehouse and Spark

Solution User

Using Solutions Summary

- Try It Now
- Deploy solutions into your Azure subscription
- Build and experiment with analytics services
- Jump start your analytics solutions
- Check back often for new solutions added

Solutions at cloud speed

Provide feedback at cisolutions@microsoft.com

Deck is available at

<https://github.com/michhar/data-pipeline-education/tree/master/Decks/JumpStartAnalyticsWithCISplusPatternAuthoring.pdf>

CIS Pattern Authoring



Windows Data Science Virtual Machine



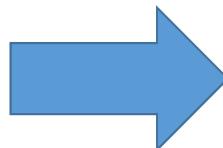
Provision the Windows Data Science Virtual Machine, a custom virtual machine image pre-installed and configured with a host of popular tools commonly used for data science and machine



Create HDInsight Cluster



Uses HDInsight Clusters



Help with pattern authoring cisauthors@microsoft.com

Disclaimer

Every effort has been made to make Cortana Intelligence Solution pattern authoring as complete and accurate as possible, but no warranty or fitness is implied. The information provided is on an “as is” basis. The development of Cortana Intelligence Solutions and the code used to build solutions is subject to change. **Specifically, since we are still developing our authoring platform, any solutions you might author would likely require modifications by the time we publicly release the authoring platform.** Authoring access provides sample code and data that are not published as public preview Cortana Intelligence Solutions. Cloning existing unpublished solutions provides access to code and sample datasets that per the license terms are solely for installation on your Microsoft Azure subscription. We value feedback on potential improvements to building solutions and can be reached at cisauthors@microsoft.com

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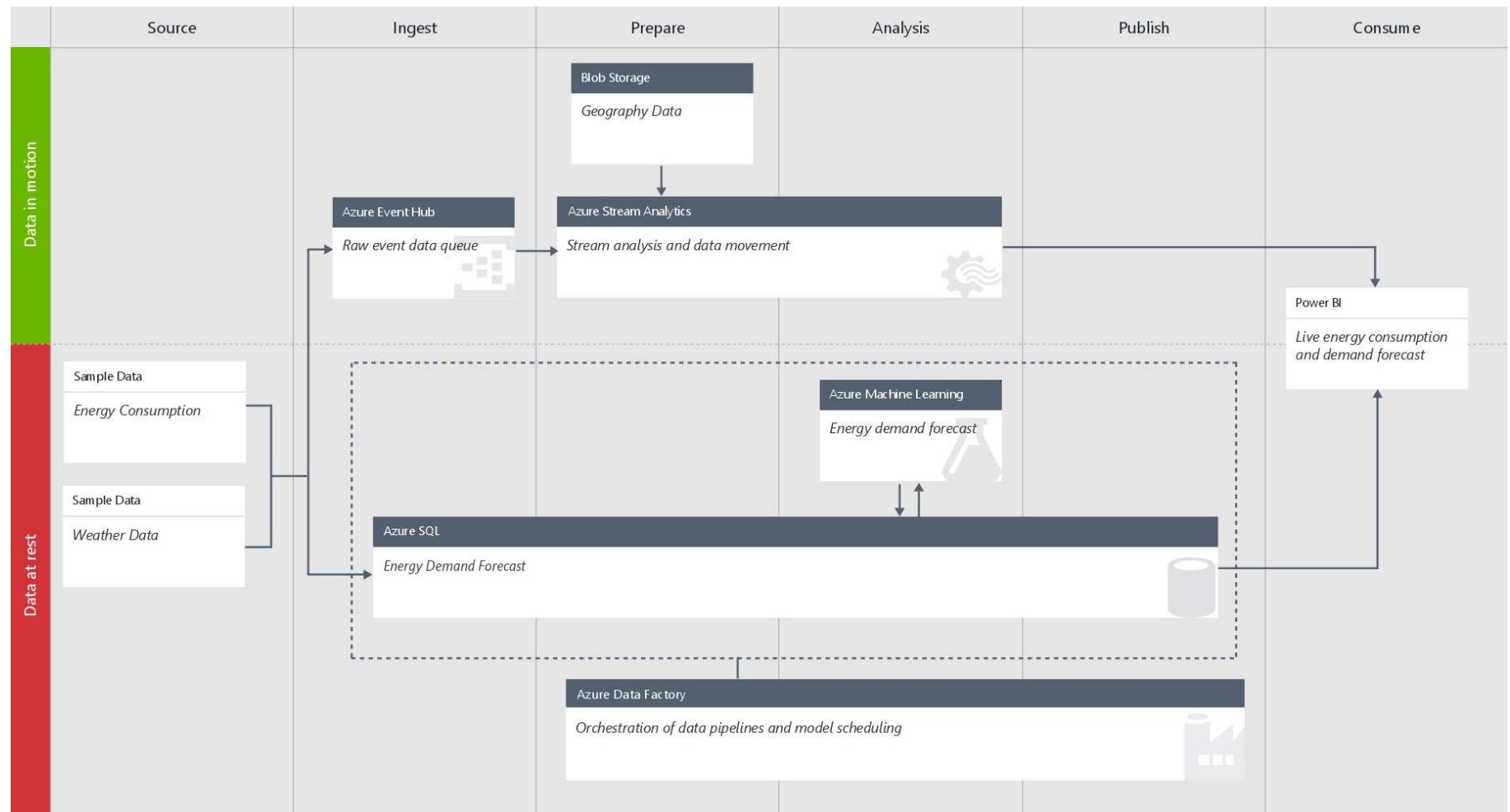
Cortana Intelligence Solution Patterns

CIS uses the concept of patterns to speed time to solution

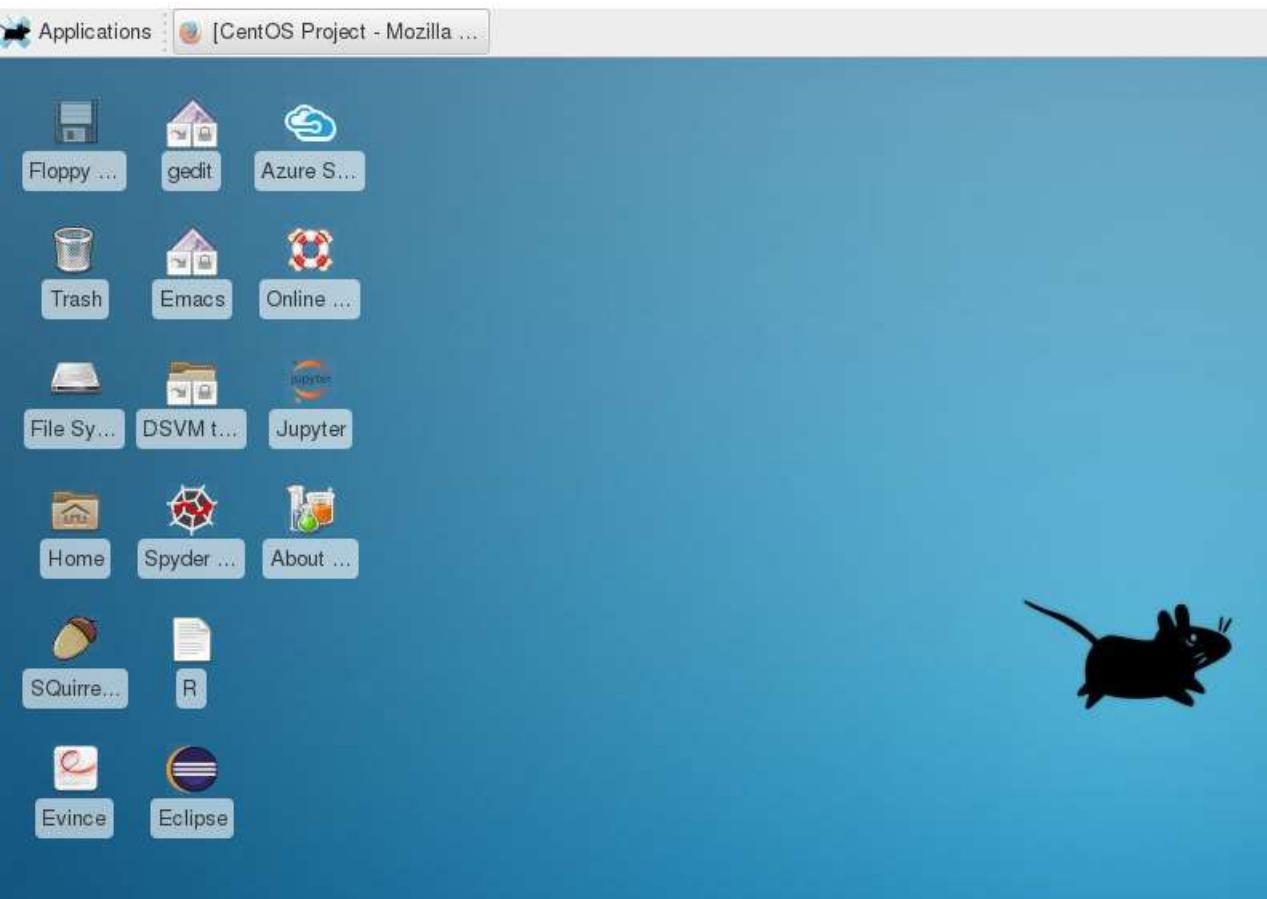
Patterns are composed of two or more Cortana Intelligence Suite components to create:

- demos
- design patterns (proven reference architectures)
- pre-configured solutions

Energy Demand Forecasting - Complex



Data Science VM -Simple



Cortana Intelligence Solutions DEPLOYMENTS SOLUTIONS GALLERY

darwintdsp

Solution: Linux Data Science Virtual Machine
Resource group: darwintdsp
Status: Ready

1 | Create new deployment

2 | Provide configuration parameters

3 | Resource provisioning (automated)

4 | Done

Accessing your VM

You can access your newly created Linux Data Science VM via:

Terminal

Use the following credentials to log in:

- **VM Name:** data
- **Admin Username:** darwin
- **SSH Command:** ssh darwin@darwintdsp6sx3m55hfnr3ipubip0.southcentralus.cloudapp.azure.com

X2Go Client

You can download The X2Go client from the [X2Go site](#).

- **Host:** darwintdsp6sx3m55hfnr3ipubip0.southcentralus.cloudapp.azure.com
- **Login:** darwin
- **SSH port:** 22
- **Session Type:** Change the value to XFCE

PutTY

You can download PutTY from the [PutTY site](#).

- **Host Name:** darwintdsp6sx3m55hfnr3ipubip0.southcentralus.cloudapp.azure.com
- **Port:** 22
- **Connection Type:** SSH
- **login as:** darwin

Azure Portal

- Click [here](#) to view the first of your 1 DSVM instances
- Click [here](#) to view your Storage Account on the Azure Portal

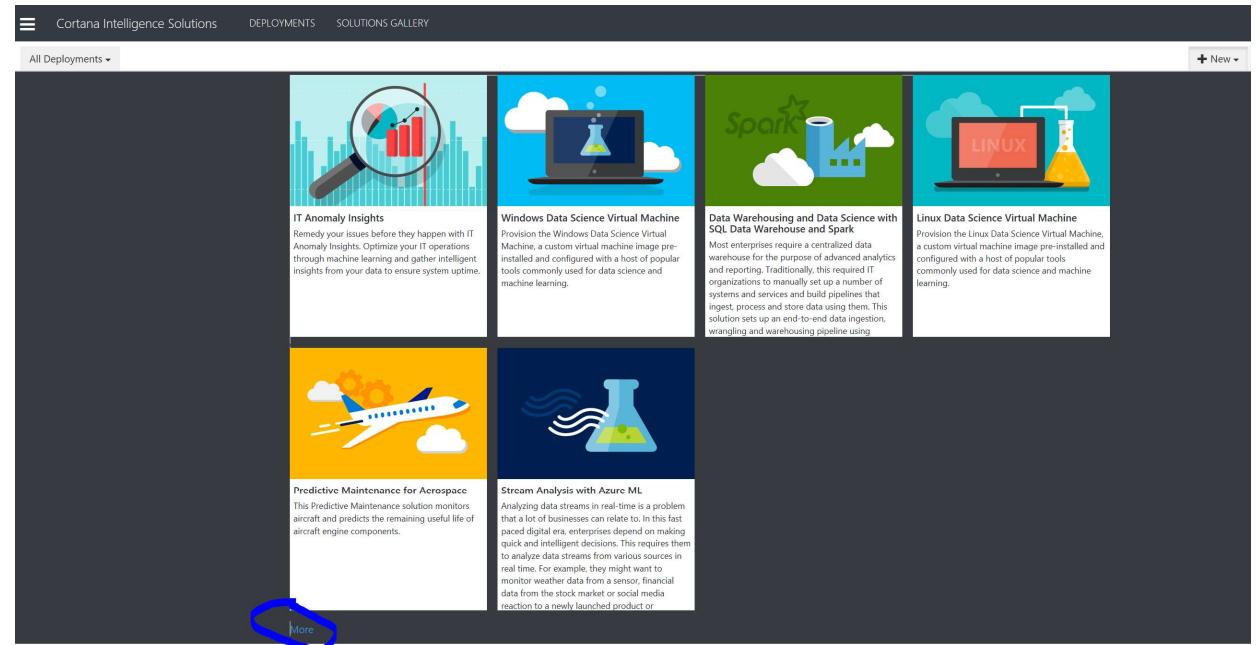
Resources

<https://start.cortanaintelligence.com>

The screenshot shows the homepage of the Cortana Intelligence Solutions website at <https://start.cortanaintelligence.com>. The page features a navigation bar with back, forward, and refresh buttons, and a URL field showing the site's address. Below the navigation is a dark header bar with the text "Cortana Intelligence Solutions" and three menu items: "DEPLOYMENTS" and "SOLUTIONS GALLERY". The main content area has a light gray background. It features a large, stylized graphic in the center consisting of a network of gray dots connected by lines, overlaid with several vertical bars in various colors (blue, magenta, yellow, green). To the right of this graphic is a section titled "Customized, intelligence driven solutions" with a subtext: "Quickly build Cortana Intelligence Solutions from preconfigured solutions, reference architectures and design patterns. Make them your own with the included instructions or with a featured partner." A black button labeled "Get started now!" is located in the bottom right corner of this section.

How do I Clone and Author solution patterns

- Go to <https://start.cortanaintelligence.com>
- Click on DEPLOYMENTS
- Click on the +New
- Click on the More link
- This lands you in the Legacy Gallery



Legacy Gallery Setup

- Setup Azure Storage Account
 - Create a Resource group
 - Create a Standard Storage account
 - Copy the Storage account name and Storage account key into SETTINGS

Search (Ctrl+ /)

Overview

Activity log

Access control (IAM)

Tags

Diagnose and solve problems

SETTINGS

Access keys

Configuration

Storage account name [REDACTED]

Use access keys to authenticate your applications when making requests to this Azure storage account. Store your access keys securely - for example, using Azure Key Vault - and don't share them. We recommend regenerating your access keys regularly. You are provided two access keys so that you can maintain connections using one key while regenerating the other.

When you regenerate your access keys, you must update any Azure resources and applications that access this storage account to use the new keys. This action will not interrupt access to disks from your virtual machines. [Learn more](#)

NAME	KEY
key1	[REDACTED]
key2	[REDACTED]

Cortana Intelligence Solutions

INTERNAL

Azure Data Factory and DocumentDB E2E tutorial

Azure Blob Storage → Azure Data Factory → Azure DocumentDB
Azure Batch → NET Class library for Custom Activity

DESIGN PATTERN

IT Anomaly Insights

Remedy your issues before they happen with IT Anomaly Insights. Optimize your IT operations through machine learning and gather intelligent insights from your data to ensure system uptime.

INTERNAL

Azure Search backed by DocumentDB

INTERNAL

Contoso Insurance Call Center Demo

Cortana Intelligence Solutions

HOME

GALLERY

DEPLOYMENTS

SETTINGS

Your solution storage

This setting is required for Clone feature.

Account name [REDACTED]

Account access key [REDACTED]

If you change the storage setting, your private solutions stored in the previous storage in the Azure portal.

Tools for Pattern Authoring

- Visual Studio Code
<https://code.visualstudio.com/>
- Microsoft Azure Storage Explorer
<http://storageexplorer.com/>
- Browser
 - Edge
 - Chrome
 - Firefox
 - Safari

Show how to Configure
Setting for Cloning and
provide time to download
tools

Review of Pattern Cloning - Simple

Clone DSVM single ARM Template pattern

Clone existing pattern

To get started authoring:

- Recommend you clone an existing pattern
- Pre-reqs
 - Create an Azure Resource group and Storage account
 - Use Storage account name and key to configure Settings in CIS
 - Click Save

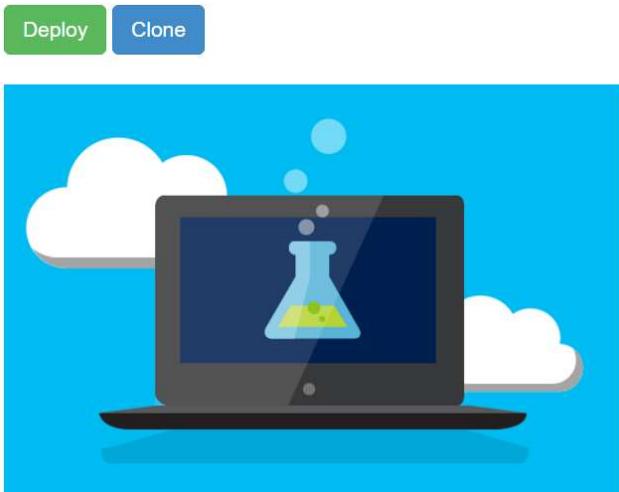
(you should have done this
in slide 29)



The screenshot shows the CIS interface with a sidebar on the left containing 'HOME', 'GALLERY', 'PROJECTS', and 'SETTINGS' buttons. The main area is titled 'Your pattern storage'. It displays 'Account name: adsengdarwinpatterns' and 'Account access key: NY5Xhv...'. A large portion of the access key is obscured by a blue redaction. At the bottom right of the main area is a 'Save' button.

Choose a pattern and Click Clone

- give it a new Pattern ID, Title, Description and Image URL and Click Clone



Information.

Cloning 'Microsoft Data Science Virtual Machine' pattern has started. You will be notified once it is complete.

Success!

Cloning 'Microsoft Data Science Virtual Machine' pattern is successful.

[7:17:30 AM] Cloning 'Microsoft Data Science Virtual Machine' pattern is successful.
[7:16:46 AM] Cloning 'Microsoft Data Science Virtual Machine' pattern has started. You will be

Clone pattern

Clone of 'Microsoft Data Science Virtual Machine' will be saved into your pattern storage.

Pattern ID

data science vm

(Pattern ID must be unique, begin with a lowercase letter, and contain only lowercase letters and numbers. It must also be between 3 and 32 characters long.)

Title

Clone of Microsoft Data Science Virtual Machine

Description

This pattern provisions a Data Science Virtual Machine

Image URL

...engpatternauthor0622.blob.core.windows.net/datasciencevm/ DSVMIcon115

Files to copy ▾ ⚠ Cloning pattern may take a few minutes.

Pattern Files

DataScienceArmTemplate.json
DataScienceInstructions.md
DataScienceSummary.md
Manifest.xml

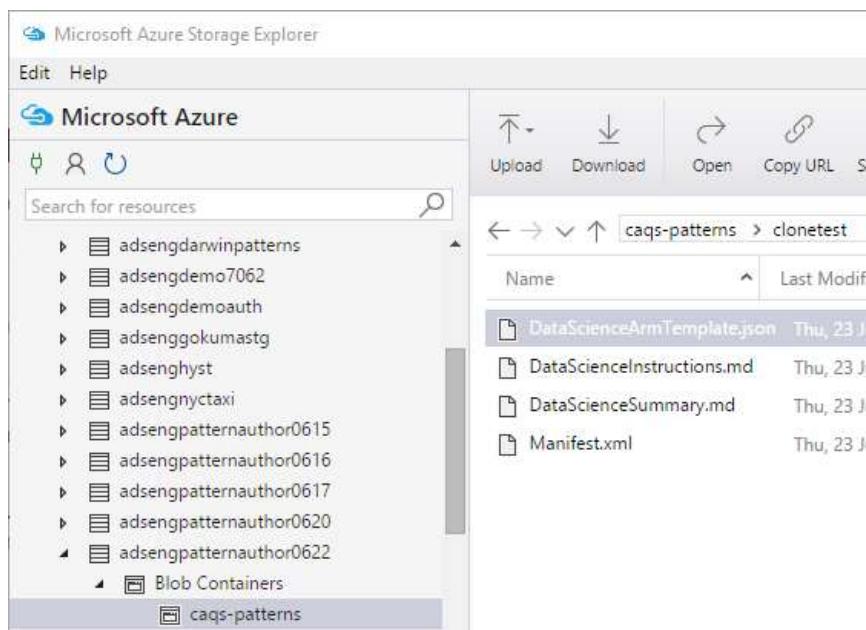
Asset Files

DSVMIcon115.png

Cancel Clone

Open up Microsoft Azure Storage Explorer

- Pattern Files are in [caqs-patterns](#) > **clonetest** (Pattern ID)
- Asset Files are in [clonetest](#) container (Pattern ID)



Microsoft Azure Storage Explorer

Edit Help

Microsoft Azure

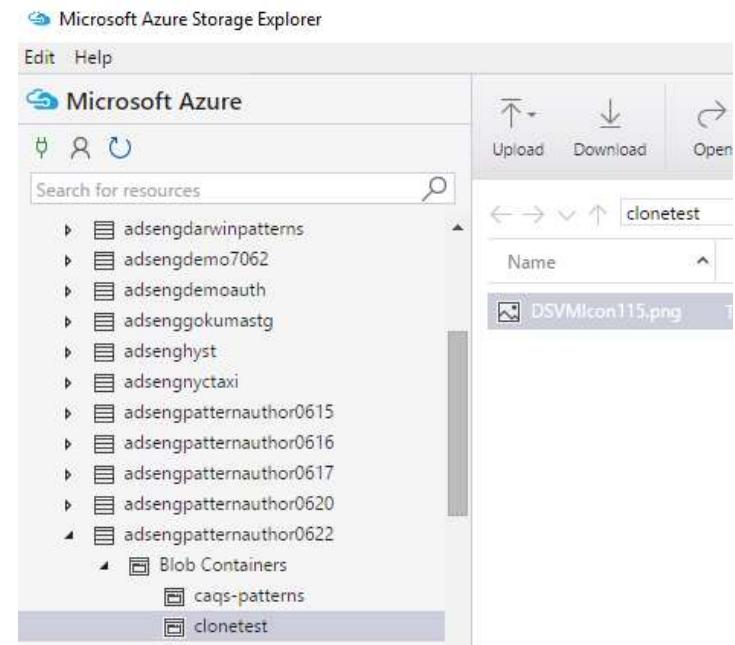
Search for resources

- adsengdarwinpatterns
- adsengdemo7062
- adsengdemoauth
- adsenggokumastg
- adsenghyst
- adsengnyctaxi
- adsengpatternauthor0615
- adsengpatternauthor0616
- adsengpatternauthor0617
- adsengpatternauthor0620
- adsengpatternauthor0622
- Blob Containers
- caqs-patterns

Upload Download Open Copy URL Search

caqs-patterns > clonetest

Name	Last Modified
DataScienceArmTemplate.json	Thu, 23 Jun 2016
DataScienceInstructions.md	Thu, 23 Jun 2016
DataScienceSummary.md	Thu, 23 Jun 2016
Manifest.xml	Thu, 23 Jun 2016



Microsoft Azure Storage Explorer

Edit Help

Microsoft Azure

Search for resources

- adsengdarwinpatterns
- adsengdemo7062
- adsengdemoauth
- adsenggokumastg
- adsenghyst
- adsengnyctaxi
- adsengpatternauthor0615
- adsengpatternauthor0616
- adsengpatternauthor0617
- adsengpatternauthor0620
- adsengpatternauthor0622
- Blob Containers
- caqs-patterns
- clonetest

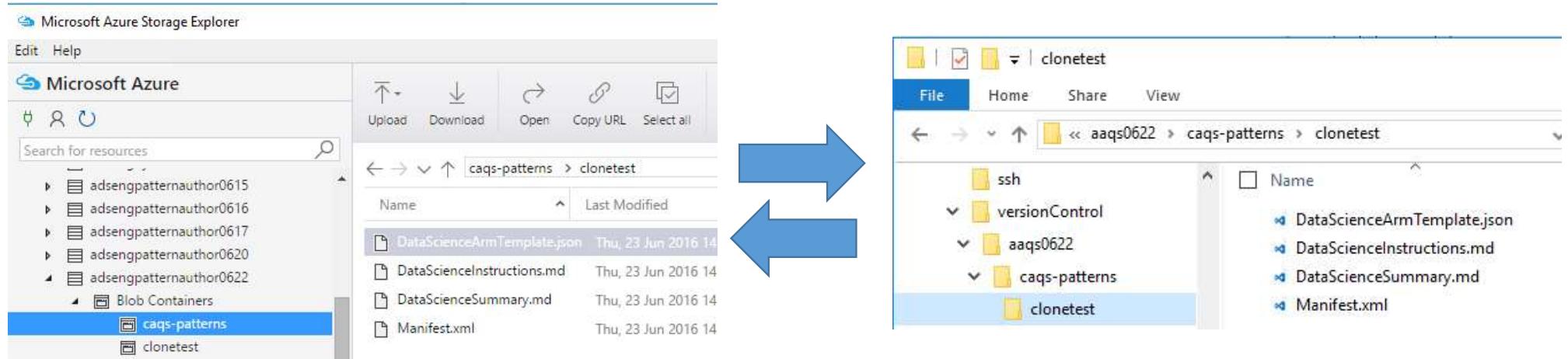
Upload Download Open

clonetest

Name
DSVMIIcon115.png

Download the files to your device

- Edit locally and then unload back to the storage account



Go back to CIS Legacy Gallery – Scroll to bottom

- Click on the new Private pattern
- It is a clone of the DSVM pattern
- Need to make edits and upload

Clone of Windows Data Science Virtual Machine

Darwin Schweitzer · published on 10/16/2016

Estimated Provisioning Time: 12 Minutes

Ingredients

- Azure Storage
- Azure Virtual Machine

STOP before you proceed You need to accept the Terms of Use of the Data Science Virtual Machine on your Azure Subscription before you deploy this VM the first time by clicking [here](#).

The Microsoft Data Science Virtual machine (VM) is a custom Azure VM based on Windows Server 2012 with several popular tools for data science modeling/development like:

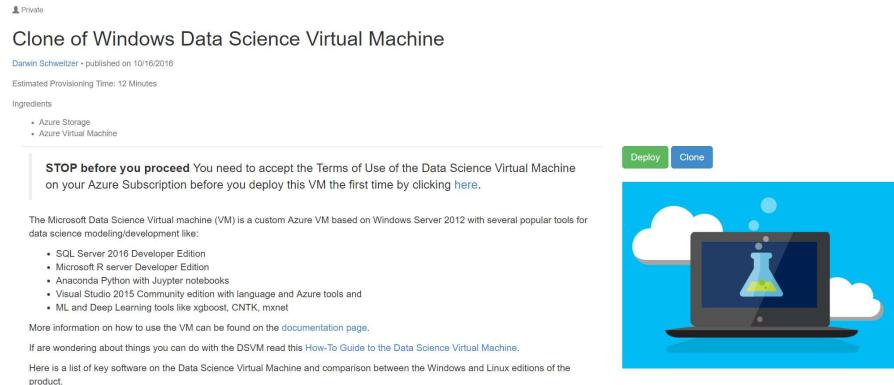
- SQL Server 2016 Developer Edition
- Microsoft R server Developer Edition
- Anaconda Python with Jupyter notebooks
- Visual Studio 2015 Community edition with language and Azure tools and
- ML and Deep Learning tools like xgboost, CNTK, mxnet

More information on how to use the VM can be found on the [documentation page](#).

If are wondering about things you can do with the DSVM read this How-To Guide to the Data Science Virtual Machine.

Here is a list of key software on the Data Science Virtual Machine and comparison between the Windows and Linux editions of the product.

Deploy Clone



Provision the Windows Data Science Virtual Machine, a custom virtual machine image pre-installed and configured with a host of popular tools commonly used for data science and machine learning.

Demo of Pattern Cloning

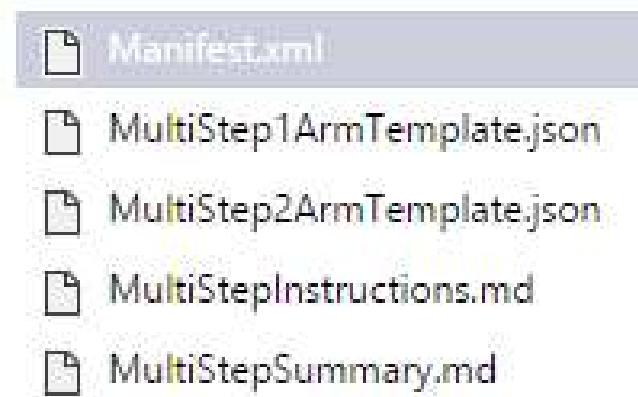
Clone DSVM single ARM Template pattern

What makes up a CIS pattern?

The components of a pattern

Main CIS Pattern files

- Manifest.xml
- JSON
 - MultiStep1ArmTemplate.json
 - MultiStep2ArmTemplate.json
- Markdown
 - Summary.md
 - Instructions.md



Manifest.xml

```
TempManifest.xml C:\Users\darsch\AppData\Local
1  <?xml version="1.0" encoding="utf-8"?>
2  <Template>
3      <Category>InternalUse</Category>
4      <Title>Clone2 of Multi-step Automation</Title>
5      <Owner displayname="Darwin Schweitzer" email="darsch@microsoft.com" />
6      <PublishedOn>06/16/2016</PublishedOn>
7      <ImageUrl>https://acom.azurecomcdn.net/80C57D/cdn/cvt-604ca7be9281ef62b7b61093c2eee79fe68976e89c3abc41e7a3052185192080/images/page/documentation/samples/samples-hero-background.png</ImageUrl>
8      <Description>Deploying multiple ARM templates and executing actions that cannot be accomplished through ARM templates</Description>
9      <Summary src="MultiStepSummary.md" format="markdown">
10         <Tabs>
11             <Tab src="MultiStepSummary.md" format="markdown" />
12         </Tabs>
13     </Summary>
14     <ProvisioningSteps>
15         <ArmDeployment title="Create Storage Account" source="MultiStep1ArmTemplate.json">
16             <Parameters>
17                 <Parameter name="baseUrl" hidden="true">
18                     <DefaultValue>{PatternAssetBaseUrl}</DefaultValue>
19                 </Parameter>
20             </Parameters>
21         </ArmDeployment>
22         <WebJob title="Create Container and Blob in Storage Account">
23             <Parameters>
24                 <Parameter name="appName">
25                     <DefaultValue>{Outputs.webJobSiteName}</DefaultValue>
26                 </Parameter>
27                 <Parameter name="jobName">
28                     <DefaultValue>{Outputs.webJobName}</DefaultValue>
29                 </Parameter>
30                 <Parameter name="arguments">
31                     <DefaultValue>{Outputs.stgContainerName} {Outputs.stgBlobName}</DefaultValue>
32                 </Parameter>
33             </Parameters>
34         </WebJob>
35     </ProvisioningSteps>
36 
```

Changes to Manifest.xml

1) For private user patterns set Category to

<Category>**DesignPattern**</Category>

2) Added **EstimatedTime** and **Ingredients**

```
<?xml version="1.0" encoding="utf-8"?>
<Template>
<Category> DesignPattern </Category>
<Title>Clone of Multi-step Automation</Title>
<Owner displayname="Darwin Schweitzer" email="darsch@microsoft.com" />
<PublishedOn>08/25/2016</PublishedOn>
<ImageUrl>{PatternAssetBaseUrl}/multistep.png</ImageUrl>
<Description>Deploying multiple ARM templates and executing actions that cannot be accomplished through ARM templates</Description>
<Summary src="MultiStepSummary.md" format="markdown" />
<EstimatedTime>5 Minutes</EstimatedTime>
<Ingredients>
<Ingredient>Web</Ingredient>
<Ingredient>StorageAccount</Ingredient>
<Ingredient>DataFactory</Ingredient>
```

Here are the possible values to place in the Manifest

Data Factory -> DataFactory

Document Db -> DocumentDb

Search Service -> Search

Storage Account -> StorageAccount

Web jobs -> Web

Stream Analytics -> StreamAnalytics

Event Hub -> EventHub

Cognitive Service LUIS API -> CognitiveServicesLuis

Cognitive Service Speech API -> CognitiveServicesSpeech

Sql Server -> Sql

Data Lake Store -> DataLakeStore

Data Lake Analytics -> DataLakeAnalytics

Machine Learning -> MachineLearning,
Power BI -> PowerBi

Virtual Machine -> VirtualMachine

Azure HDInsight -> HDInsight

SQL DW -> SqlDw

Application Insights -> AppInsights

Azure Batch -> Batch

Azure Resource Manager template

Azure Resource Manager (ARM) templates are used to define the resources to deploy for a solution on Azure

- specify parameters and variables that enable you to input values for different environments
- The template consists of JSON and expressions which you can use to construct values for your deployment

<https://azure.microsoft.com/en-us/documentation/articles/resource-group-authoring-templates/>

ARM JSON sample

```
TempMultiStep1ArmTemplate.json C:\Users\darsch\AppData\Local
1  {
2      "contentVersion": "1.0.0.0",
3      "$schema": "http://schema.management.azure.com/schemas/2015-01-01/deploymentTemplate.json#",
4      "parameters": {
5          "baseUrl": {
6              "type": "string"
7          }
8      },
9      "variables": {
10         "namePrefix": "[resourceGroup().name]",
11         "uniqueNamePrefix": "[toLowerCase(concat(resourceGroup().name, uniqueString(subscription().subscriptionId)))]",
12         "location": "[resourceGroup().location]",
13         "stgVersion": "2015-06-15",
14         "sfVersion": "2014-06-01",
15         "wsVersion": "2015-08-01",
16         "storageAccountType": "Standard_LRS",
17         "storageContainerName": "multistep",
18         "storageBlobName": "blob.txt",
19         "hostingPlanSku": "Standard",
20         "webJobName": "CreateBlob",
21         "storageAccountName": "[variables('uniqueNamePrefix')]",
22         "hostingPlanName": "[concat(variables('uniqueNamePrefix'), 'hostingplan')]",
23         "webJobSiteName": "[concat(variables('uniqueNamePrefix'), 'wj1')]",
24         "webJobPackageUrl": "[concat(parameters('baseUrl'), '/', 'multistepwebjob.zip')]",
25         "wsResourceId": "[resourceId('Microsoft.Web/sites', variables('webJobSiteName'))]"
26     },
27     "resources": [
28         {
29             "apiVersion": "[variables('stgVersion')]",
30             "name": "[variables('storageAccountName')]",
31             "type": "Microsoft.Storage/storageAccounts",
32             "location": "[variables('location')]",
33             "properties": {
34                 "accountType": "[variables('storageAccountType')]"
35             }
36         },
37     ],
38     "outputs": {
39         "storageConnectionString": {
40             "type": "string"
41         }
42     }
43 }
```

Markdown

Markdown is a lightweight markup language with plain text formatting syntax designed so that it can be converted to HTML and many other formats

<http://daringfireball.net/projects/markdown/>

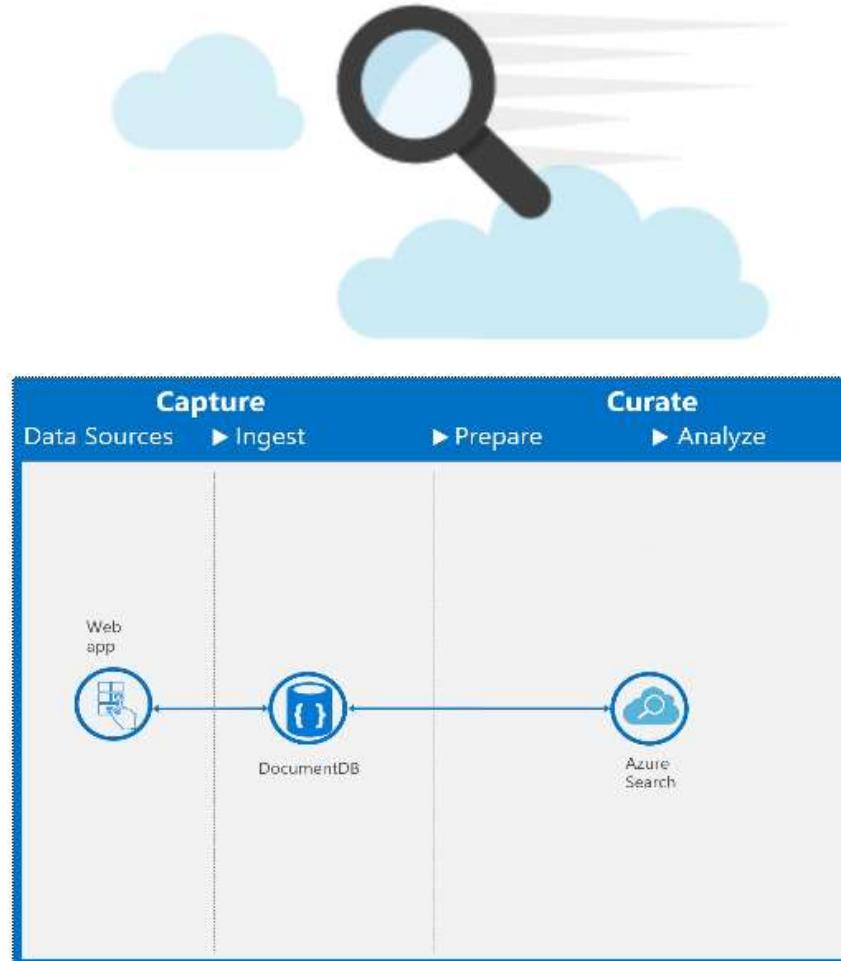
```
TempMultiStepSummary.md C:\Users\darsch\AppData\Local
1 |This pattern demonstrates how to automate a demo that requi
2 |
3 |The pattern involves the following four steps:
4 |
5 |1. Deploy an ARM template which creates a Storage Account a
6 |2. Invoke the Web Job.
7 |3. Deploy another ARM template which creates Data Factory a
8 |4. Invoke the second Web Job.
9 |
10 ## Ingredients
11 * Azure Web App
12 * Azure Storage
13 * Azure Data Factory
14 |
15 ## Estimated Provisioning Time: 8 Minutes
```

John Gruber
and Aaron Swartz

```
TempMultiStepInstructions.md C:\Users\darsch\AppData\Local
1 ## Instructions
2 |
3 |1. You can monitor the __Data Factory pipeline__ [here]({{Outputs.dataFactoryUrl}}).
4 |2. You can view the logs of the Web Jobs __Create Container and Blob in Storage Acco
5 |
```

Asset Files

- Webjob.zip
- Image.jpg
- Image.png
- Code.zip
- Power BI pbix zipped
- Notebook ipynb zipped
- pdf
- docx

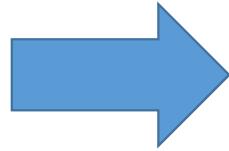




Windows Data Science Virtual Machine



Provision the Windows Data Science Virtual Machine, a custom virtual machine image pre-installed and configured with a host of popular tools commonly used for data science and machine



Create HDInsight Cluster



Uses HDInsight Clusters

Review of Pattern Authoring

Make the pattern your own

Getting started - Change the Bookends

Take your first **steps** towards mastery of
Cortana Intelligence Suite

Steps 1-3

Change the Bookends of the Manifest.xml
before you edit the <ProvisioningSteps>

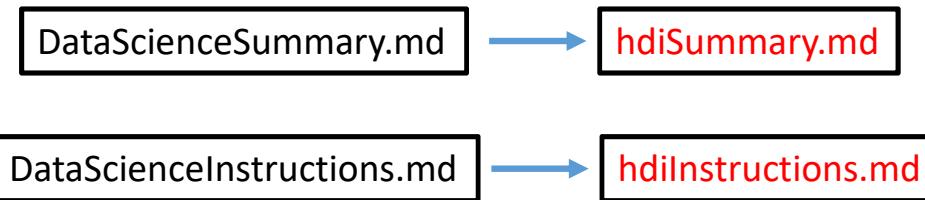
Step 1

- Make changes to:
 - Manifest.xml
- Set the Category in the Manifest to **DesignPattern**
- Change the name of the Summary src
- Set EstimateTime to **25 Minutes**
- Change the Ingredients
- Change the name of the Instructions src
- Save

```
<?xml version="1.0" encoding="utf-8"?>
<Template>
  <Category>DesignPattern</Category>
  <Title>HDInsight Cluster</Title>
  <Owner displayname="Darwin Schweitzer" email="darsch@microsoft.com" />
  <PublishedOn>06/23/2016</PublishedOn>
  <ImageUrl>{PatternAssetBaseUrl}/HDInsightLogo.png </ImageUrl>
  <Description>Deploy a HDInsight Cluster</Description>
  <Summary src="hdiSummary.md" format="markdown" />
  <EstimatedTime>25 Minutes</EstimatedTime>
  <Ingredients>
    <Ingredient>HDInsight</Ingredient>
    <Ingredient>StorageAccount</Ingredient>
  </Ingredients>
  <ProvisioningSteps>
    <ArmDeployment source="hdiArmTemplate.json" />
    <Manual title="Done">
      <Instructions src="hdInstructions.md" format="markdown" />
    </Manual>
  </ProvisioningSteps>
</Template>
```

Step 2

- Rename your markdown files



<folderName>Summary.md

Step 3

- Make changes to:
 - Summary.md
 - Instructions.md
 - (no changes for now)

This pattern will provision a **HDInsight Cluster** on Azure via CIS.

The various steps involved in this solution are as follows:

- * Creation of aforementioned Azure resources in user's Azure Subscription.
- * Copy dataset from a public storage location to a newly created Azure Storage container.

• Save

<folderName>Instructions.md

```
## Instructions
```

Click [here]({{Outputs.hdiUrl}}) to connect to your HDInsight Cluster

Cluster Name `{{Outputs.clusterName}}`

Cluster Login User Name `{{Outputs.clusterLoginUserName}}`

SSH User Name `{{Outputs.sshUserName}}`

SSH Connection `{{Outputs.sshConnection}}`

```
## Resources
```

* [HDInsight Info](https://azure.microsoft.com/en-us/services/hdinsight/)

* Contact <darsch@microsoft.com> if you have questions about this pattern

Step 4 - Make sure the ARM template works in PowerShell

- Steps to test ARM Template on Azure PowerShell

1) Login PS C:\Users\user> **Login-AzureRmAccount**

2) Get Subscriptions PS C:\Users\user> **Get-AzureRmSubscription**

3) Select Default Subscription

```
PS C:\Users\user> Get-AzureRmSubscription --SubscriptionName "My Development" | Select-AzureRmSubscription
```

4) Create a Resource Group in a Location

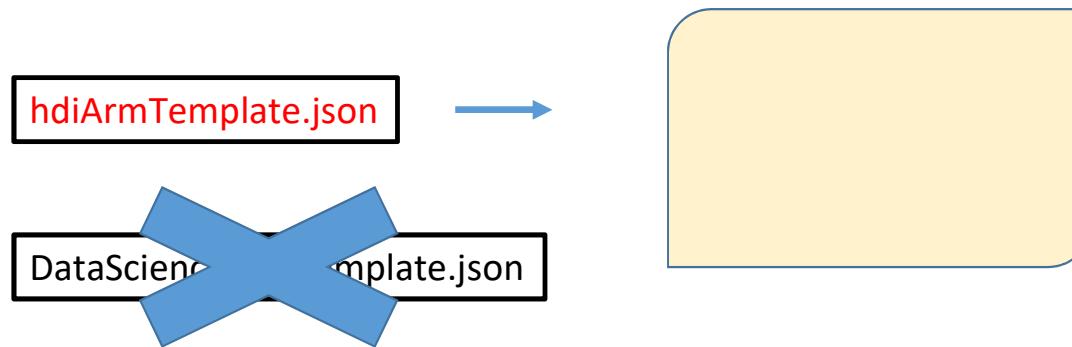
```
PS C:\Users\user> New-AzureRmResourceGroup -Name aduserhdi0623a -Location "West US"
```

5) Create an HDInsight Cluster with ARM

```
PS C:\Users\user> New-AzureRmResourceGroupDeployment -ResourceGroupName aduserhdi0623a -TemplateFile C:\Users\user\versionControl\CIS\working\ARM\HDInsight\hdinsightArmTemplateString.json -clusterType hadoop -clusterWorkerNodeCount 2 -clusterLoginUserName admin -clusterLoginPassword MyP@ssw0d - sshUserName user123 -sshPassword MyP@ssw0rd
```

Step 5

- Copy over the new ARM template
- Delete the old ARM template



Step 6

- Upload local files to Storage Account at caqs-patterns > <folderName>

The screenshot shows the Azure Storage Explorer interface. At the top, there is a toolbar with icons for Upload, Download, Open, Copy URL, Select all, Copy, Paste, Delete, and Refresh. Below the toolbar, the navigation bar displays the path: caqs-patterns > clonetest. To the right of the path is a search bar labeled "Search by prefix (case-sensitive)" with a magnifying glass icon. The main area is a table listing files in the "clonetest" folder. The columns are Name, Last Modified, Blob Type, Content Type, and Size. The table contains four rows:

Name	Last Modified	Blob Type	Content Type	Size
hdiArmTemplate.json	Thu, 23 Jun 2016 15:07:15 GMT	Block Blob	application/json	5.4 KB
hdIInstructions.md	Thu, 23 Jun 2016 15:07:15 GMT	Block Blob	text/x-markdown	829 B
hdISummary.md	Thu, 23 Jun 2016 15:07:15 GMT	Block Blob	text/x-markdown	1.2 KB
Manifest.xml	Thu, 23 Jun 2016 15:07:19 GMT	Block Blob	application/xml	782 B

At the bottom of the interface, there is a button labeled "Delete old file from Storage Account in caqs-patterns > <folderName>".

Step 7 - Go back to CIS Legacy Gallery – Scroll to bottom and test the changes you made

- Make sure you are signed in
- Click on the new Private pattern
- Click Continue to provision your cloned pattern



Stop Here

- Did it work?
- If not are the file names in the Manifest.xml the same as in the Storage account?
- Did you forget to upload the changed files to the Storage account?

Note: if this worked you might consider cloning your user pattern and editing that new clone.

This way you keep a working copy or use source control!

Demo of Pattern Authoring

Make the pattern your own

Review of Pattern Cloning - Complex

Clone Multi-step Automation

ARM Templates and Multi-step

CIS supports multi-step provisioning for complex patterns via staged deployment of:

- multiple ARM templates
- interspersed with execution of custom tasks (WebJobs)
- manual steps not programmatically possible

(i.e. Power BI authorization in Stream Analytics job outputs)

Choose a pattern and Click Clone

- give it a new Pattern ID, Title, Description and Image URL and Click Clone

The screenshot shows the Azure DevOps interface for cloning a pattern. At the top, there are two green buttons: 'Continue' and 'Clone'. Below them is a decorative icon featuring a GitHub Octocat, code snippets, and clouds. A modal window titled 'Information' displays the message: 'Cloning 'Multi-step Automation' pattern has started. You will be notified once it is complete.' In the bottom left corner, there is a sidebar with a list of recent cloning activities.

- [10:37:32 AM] Cloning 'Clone of Multi-step Automation' pattern is successful.
- [10:36:53 AM] Cloning 'Clone of Multi-step Automation' pattern has started. You will be notified.
- [10:36:05 AM] Cloning 'Multi-step Automation' pattern is successful.
- [10:35:29 AM] Cloning 'Multi-step Automation' pattern has started. You will be notified once it is

Two modal windows are shown. The first, 'Information', says: 'Cloning 'Multi-step Automation' pattern has started. You will be notified once it is complete.' The second, 'Success!', says: 'Cloning 'Clone of Multi-step Automation' pattern is successful.'

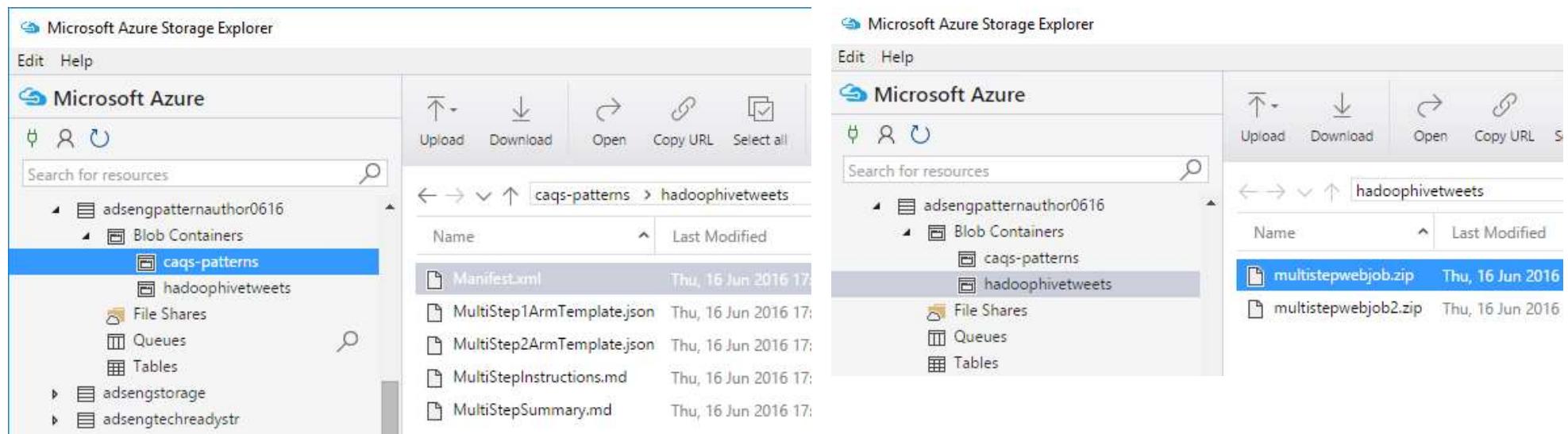
The 'Clone pattern' dialog box is open. It contains the following fields:

- Pattern ID:** hadoophivetweets (with a note: Pattern ID must be unique, begin with a lowercase letter, and contain only lowercase letters and numbers. It must also be between 3 and 32 characters long.)
- Title:** Clone of Multi-step Automation
- Description:** Deploying multiple ARM templates and executing actions that cannot be accomplished in a single ARM template.
- Image URL:** https://acom.azurecomcdn.net/80C57D/cdn/cyt-604ca7be9281ef62b7b61093c2ee
- Files to copy:** Cloning pattern may take a few minutes.
- Pattern Files:** Manifest.xml, MultiStep1ArmTemplate.json, MultiStep2ArmTemplate.json, MultiStepInstructions.md, MultiStepSummary.md
- Asset Files:** multistepwebjob.zip, multistepwebjob2.zip, twtrtest01.zip, twtrwithml01.zip

At the bottom right are 'Cancel' and 'Clone' buttons.

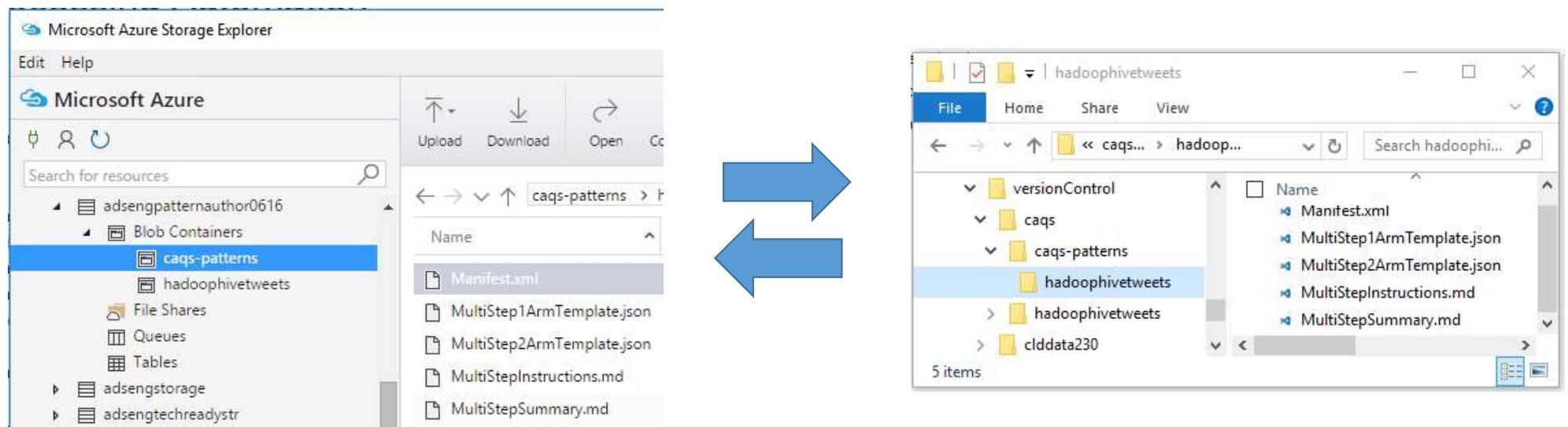
Open up Microsoft Azure Storage Explorer

- Pattern Files are in [caqs-patterns > hadoophivetweets](#) (Pattern ID)
- Asset Files are in [hadoophivetweets](#) container (Pattern ID)



Download the files to your device

- Edit locally and then unload back to the storage account



Go back to CIS Gallery – Scroll to bottom

- Click on the new User Pattern
- Click Continue to provision your cloned pattern



Demo of Pattern Cloning

Clone Multi-step Automation

Review of Pattern Authoring

Make the pattern your own

Getting started - Change the Bookends

Take your first **steps** towards mastery of
Cortana Intelligence Suite

Steps 1-3

Change the Bookends of the Manifest.xml
before you edit the <ProvisioningSteps>

Step 1

- Make changes to:
 - Manifest.xml
- Set the Category in the Manifest to **DesignPattern**
- Save

Top

```
<?xml version="1.0" encoding="utf-8"?>
<Template>
  <Category>DesignPattern</Category>
  <Title>Hive Processing Automation</Title>
  <Owner displayname="Darwin Schweitzer" email="darsch@microsoft.com" />
  <PublishedOn>06/20/2016</PublishedOn>
  <ImageUrl>{PatternAssetBaseUrl}/HDInsightLogo.png</ImageUrl>
  <Description>Hive Processing of Tweets</Description>
  <Summary src="hiveprocSummary.md" format="markdown"/>
  <ProvisioningSteps>
```

Bottom

```
<Manual title="Done">
  <Instructions src="hiveprocInstructions.md" format="markdown" />
</Manual>
</ProvisioningSteps>
</Template>
```

Step 2

- Rename your markdown files

MultiStepSummary.md

hiveprocSummary.md

MultiStepInstructions.md

hiveprocInstructions.md

Top

```
<Summary src="hiveprocSummary.md" format="markdown"/>
```

Bottom

```
<Manual title="Done">
  <Instructions src="hiveprocInstructions.md" format="markdown" />
</Manual>
```

Step 3

- Make changes to:
 - Summary.md
 - Instructions.md
(no changes for now)
- Save

<folderName>Summary.md

This pattern demonstrates hive processing of Tweets

The pattern involves the following six steps:

1. Deploy an ARM template which creates a Storage Account and a WebJob.
2. Invoke the first WebJob.
3. Deploy another ARM template which creates Data Factory and another Web Job.
4. Invoke the second WebJob to start the ADF pipeline.
5. Deploy an ARM template which creates an HDInsight Hadoop Cluster and ADF hive activity.
6. Invoke the second WebJob to start the ADF pipeline.

<folderName>Instructions.md

```
## Instructions
```

1. You can monitor the __Data Factory pipeline__ [here]({{Outputs.dataFactoryUrl}}).
2. You can download the source for the Web Jobs __Create Container and Blob in Storage Account__ [here]({{PatternAssetBaseUrl}}/multistepsrc.zip).

Changing the <ProvisioningSteps>

Take another **step** towards mastery of
Cortana Intelligence Suite

Steps 4-7

Change and add the ARM templates and WebJobs to the
Manifest.xml

- Make the appropriate adds of json files and edits to json files

Step 4

- Make changes to:
 - Manifest.xml
- Save

<folderName>1ArmTemplate.json or Arm1Template.json

```
<ArmDeployment title="Create Storage Account" source="hiveproc1ArmTemplate.json">
  <Parameters>
    <Parameter name="baseUrl" hidden="true">
      <DefaultValue>{PatternAssetBaseUrl}</DefaultValue>
    </Parameter>
  </Parameters>
</ArmDeployment>
```

<folderName>2ArmTemplate.json or Arm2Template.json

```
<ArmDeployment title="Create Data Factory" source="hiveproc2ArmTemplate.json">
  <Parameters>
    <Parameter name="baseUrl" hidden="true">
      <DefaultValue>{PatternAssetBaseUrl}</DefaultValue>
    </Parameter>
    <Parameter name="storageName" hidden="true">
      <DefaultValue>{Outputs.stgAccountName}</DefaultValue>
    </Parameters>
</ArmDeployment>
```

Step 5

- Rename your ARM json files

MultiStep1ArmTemplate.json → **hiveproc1ArmTemplate.json**

MultiStep2ArmTemplate.json → **hiveproc2ArmTemplate.json**

Step 6

- Upload local files to Storage Account at caqs-patterns > <folderName>

Name	Last Modified	Blob Type	Content Type	Size
hiveproc1ArmTemplate.json	Mon, 20 Jun 2016 16:02:01 GMT	Block Blob	application/json	5.6 KB
hiveproc2ArmTemplate.json	Mon, 20 Jun 2016 16:02:01 GMT	Block Blob	application/json	8.2 KB
hiveprocInstructions.md	Mon, 20 Jun 2016 11:38:12 GMT	Block Blob	text/x-markdown	252 B
hiveprocSummary.md	Mon, 20 Jun 2016 11:32:33 GMT	Block Blob	text/x-markdown	974 B
Manifest.xml	Mon, 20 Jun 2016 16:02:09 GMT	Block Blob	application/xml	3.2 KB

Delete old file from Storage Account in caqs-patterns > <folderName>

Step 7 - Go back to CIS Legacy Gallery – Scroll to bottom and test the changes you made

- Make sure you are signed in
- Click on the new User Pattern
- Click Continue to provision your cloned pattern



Stop Here

- Did it work?
- If not are the file names in the Manifest.xml the same as in the Storage account?
- Did you forget to upload the changed files to the Storage account?

Note: if this worked you might consider cloning your user pattern and editing that new clone.

This way you keep a working copy!

Demo of Pattern Authoring

Make the pattern your own

Review of Pattern Authoring

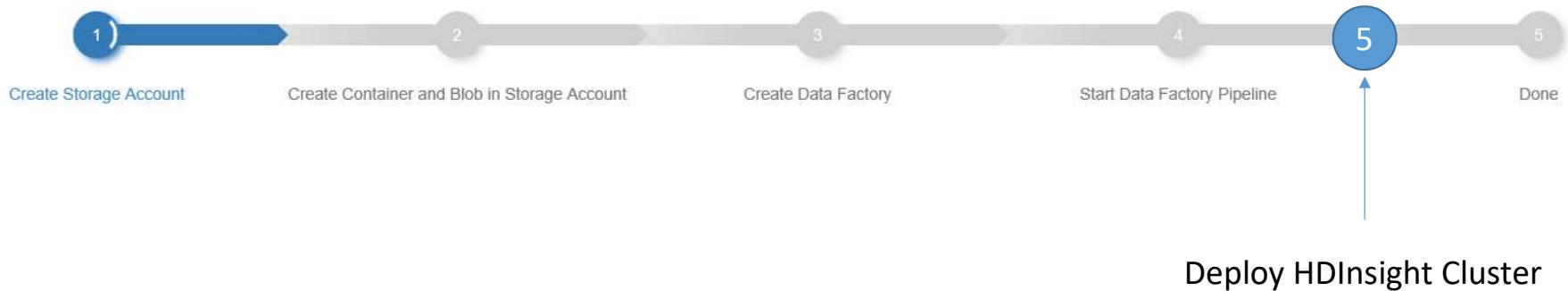
Add another ARM Step

Now come the Modifications

- Add new ARM Template
- Edit existing ARM Template(s)
- Modify the <ProvisioningSteps> in Manifest.xml

Steps 8-?

Add hdiArmTemplate.json as new Step 5



This is from the old UX but it helps explain what we are doing

Copy the HDInsight Parameters to the 1Arm

- Rename new arm if you want to
- Leave **hdiArm3Template.json** as is for now
- Copy the HDInsight parameters from **hdiArm3Template.json** into **hiveproc1ArmTemplate.json**

```
"clusterType": {
    "type": "string",
    "defaultValue": "hadoop",
    "allowedValues": [
        "hadoop",
        "hbase",
        "storm",
        "spark"
    ],
    "metadata": {
        "description": "The type of the HDInsight cluster to create."
    }
},
"clusterWorkerNodeCount": {
    "type": "string",
    "defaultValue": "2",
    "metadata": {
        "description": "The number of nodes in the HDInsight cluster."
    }
},
"clusterLoginUserName": {
    "type": "string",
    "defaultValue": "admin",
    "metadata": {
        "description": "These credentials can be used to submit jobs to the cluster and to log into cluster dashboards."
    }
},
"clusterLoginPassword": {
    "type": "securestring",
    "metadata": {
        "description": "The password for the cluster login."
    }
}
```

Capture the HDInsight parameters as outputs in hiveproc1ArmTemplate.json

Add these 6 outputs at the end of the hiveproc1ArmTemplate.json

```
"clusterType": { "type": "string", "value": "[parameters('clusterType')]" },
"clusterWorkerNodeCount": { "type": "string", "value": "[parameters('clusterWorkerNodeCount')]" },
"clusterLoginUserName": { "type": "string", "value": "[parameters('clusterLoginUserName')]" },
"clusterLoginPassword": { "type": "string", "value": "[parameters('clusterLoginPassword')]" },
"sshUserName": { "type": "string", "value": "[parameters('sshUserName')]" },
"sshPassword": { "type": "string", "value": "[parameters('sshPassword')]" }
```

Add new Provisioning step into Manifest.xml

Important: Remove the `baseUrl` Parameter if you copied one of the other ARMDeployment provisioning steps

```
<ArmDeployment source="hdi3ArmTemplate.json" title="Provision HDInsight">
  <Parameters>
    <Parameter name="baseUrl" hidden="true">
      <DefaultValue>{PatternAssetBaseUrl}</DefaultValue>
    </Parameter>
    <Parameter name="clusterType" defaultValue="{Outputs.clusterType}" hidden="true" />
    <Parameter name="clusterWorkerNodeCount" defaultValue="{Outputs.clusterWorkerNodeCount}" hidden="true" />
    <Parameter name="clusterLoginUserName" defaultValue="{Outputs.clusterLoginUserName}" hidden="true" />
    <Parameter name="clusterLoginPassword" defaultValue="{Outputs.clusterLoginPassword}" hidden="true" />
    <Parameter name="sshUserName" defaultValue="{Outputs.sshUserName}" hidden="true" />
    <Parameter name="sshPassword" defaultValue="{Outputs.sshPassword}" hidden="true" />
    <Parameter name="stgAccountName" defaultValue="{Outputs.stgAccountName}" hidden="true" />
    <Parameter name="stgAccountKey" defaultValue="{Outputs.stgAccountKey}" hidden="true" />
  </Parameters>
</ArmDeployment>
```

Important: You have to pass the `stgAccountName` and `stgAccountKey` outputs from the `1ArmTemplate`

Changes in hdi3ArmTemplate.json

- Change the password parameters in hdi3ArmTemplate.json to **string** not **securestring**
- Add a new parameter to pickup the **stgAccountName** and **stgAccountKey** outputs
- Remove any parameter default values

```
"stgAccountName":{  
    "type": "string",  
    "metadata": {  
        "description": "Storage Account name"  
    }  
},  
"stgAccountKey":{  
    "type": "string",  
    "metadata": {  
        "description": "Storage Account key"  
    }  
},
```

More Changes in hdi3ArmTemplate.json

- Use the **stgAccountName** and **stgAccountKey** parameter for all the references to the storage account for provisioning HDInsight
- Remove the storage variables

"storageVersion": "2015-06-15",

"storageAccountType": "Standard_LRS",

"storageName": "[toLower(concat(variables('namePrefix'), 'store'))]",

Change storageaccounts key to use the parameter

"key": "[listKeys(resourceId('Microsoft.Storage/storageAccounts', variables('storageName')), variables('storageVersion')).key1]"

"key": "[parameters('stgAccountKey')]"

More Changes in hdi3ArmTemplate.json

- Remove resource that creates the Storage account and the use the storage account created in 1ARM

```
{  
  "name": "[variables('storageName')]",  
  "type": "Microsoft.Storage/storageAccounts",  
  "apiVersion": "[variables('storageVersion')]",  
  "location": "[variables('location')]",  
  "properties": {  
    "accountType": "[variables('storageAccountType')]"  
  }  
},  
• Remove depends on      "dependsOn": [  
    "[concat('Microsoft.Storage/storageAccounts/', variables('storageName'))]",  
  ],
```

Demo of Pattern Authoring

Add another ARM Step

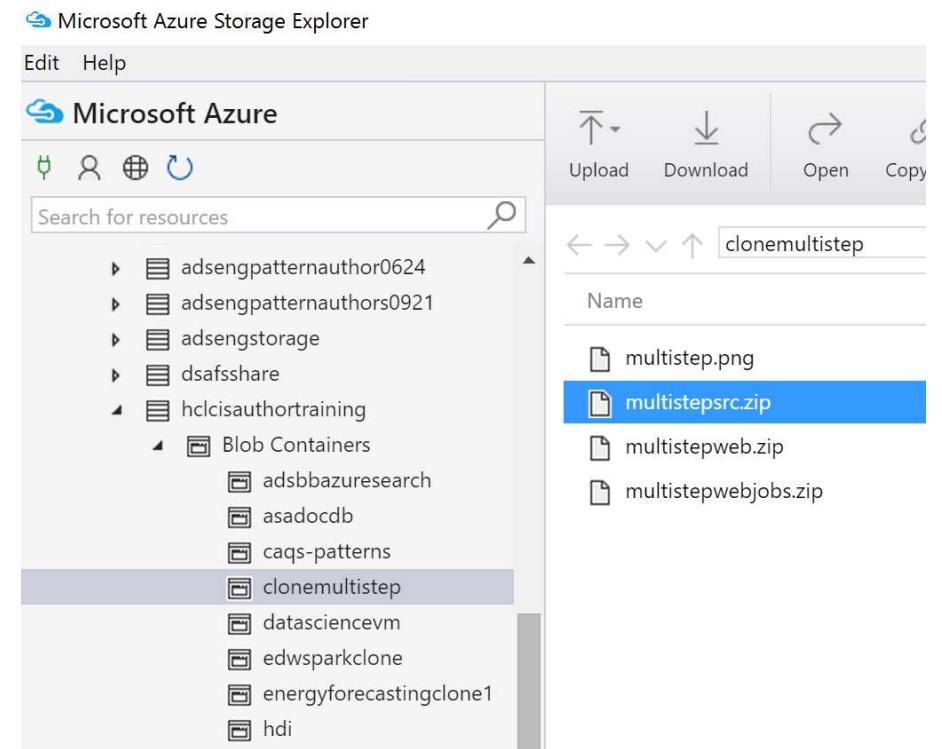
Overview of WebJobs for Pattern Authoring

Add another ARM Step

Note: Feature in CIS most likely to rapidly change

WebJobs – gluing together the deployment

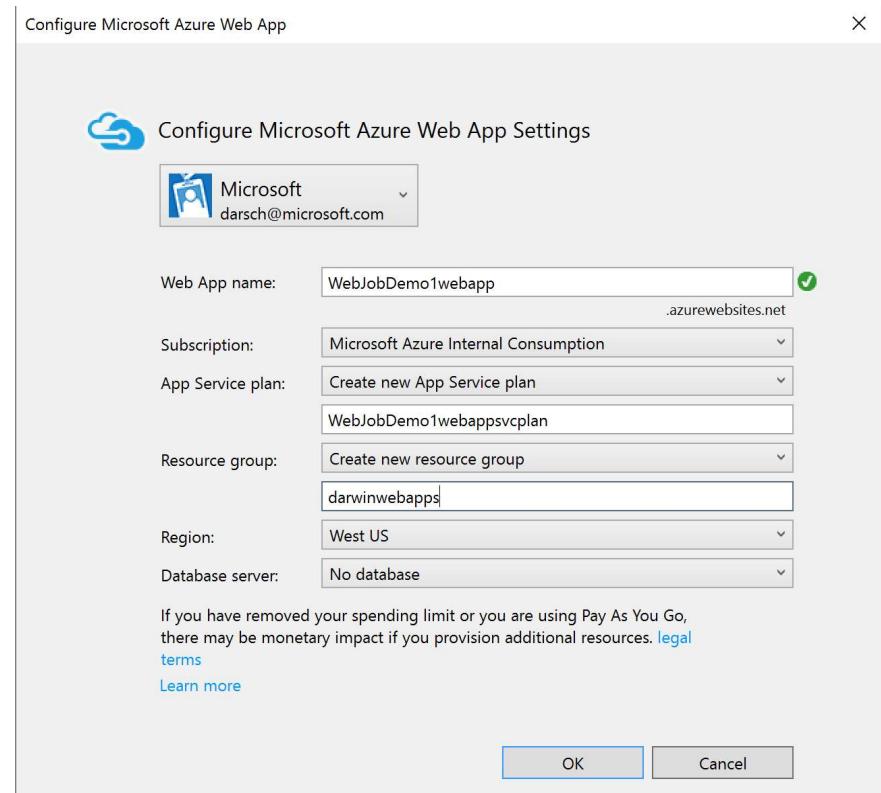
- Modify existing WebJobs?
- Clone the solution
- Download the source code from the asset files
- Open in Visual Studio



WebJobs – gluing together the deployment

- Write new WebJobs?
- Open Visual Studio
- New Project and use the Visual C# > Cloud Template > ASP.NET Web Application
- Select ASP.NET 4.5.2 Template > Empty and Click OK
- Authenticate to Azure Account
- Fill out the form and click OK
- Write your WebJob code and choose appropriate WebJob run mode
- Right Click on WebJob and select Publish
- Add webjob.zip to the correct assets blob container in the storage account

Note this is a massive simplification of the steps



Authoring Solutions Summary

- Try It Now
- Clone existing solutions into a storage account in your Azure subscription as private solutions
- Deploy your private solutions using the Cortana Intelligence solutions UX
- Look for authoring improvements; provide feedback

Solutions at cloud speed

Deck is available at

<https://github.com/michhar/data-pipeline-education/tree/master/Decks/JumpStartAnalyticsWithCISplusPatternAuthoring.pdf>

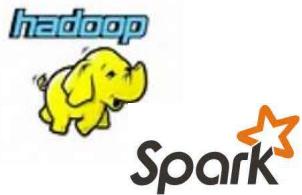
Help with pattern authoring at cisauthors@microsoft.com

Appendix

Microsoft Advanced Analytics Portfolio

Solutions

HDInsight/Spark



Microsoft R



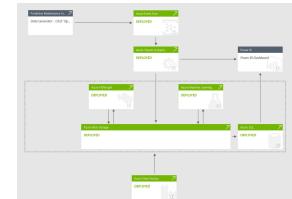
Azure Machine Learning



Cognitive Services



Preconfigured
Solutions/Apps/Solu
tion Templates



Big Data Platform

R-based analytics

Cloud analytics

Analytics APIs

Finished Apps & Solutions

Run large massively parallel compute and data jobs

Enterprise grade, write once deploy anywhere

Easy drag/drop UX with single click operationalization

Ready to consume APIs for Vision, Speech, Language, Knowledge

solutions for solving specific business scenarios

Data Engineer /Data Scientist

Advanced Data Scientist

Citizen Data Scientist

Developer

Decision Makers

IT Anomaly Insights

This solution is based on a set of curated parts:

- services and templates
- samples and documentation

Try It Now

- easily showcased within minutes without the need of installing any software or signing up for any services

Deploy It Now

- easily deploy into an Azure subscription for customization and further evaluation

Solves customer pain

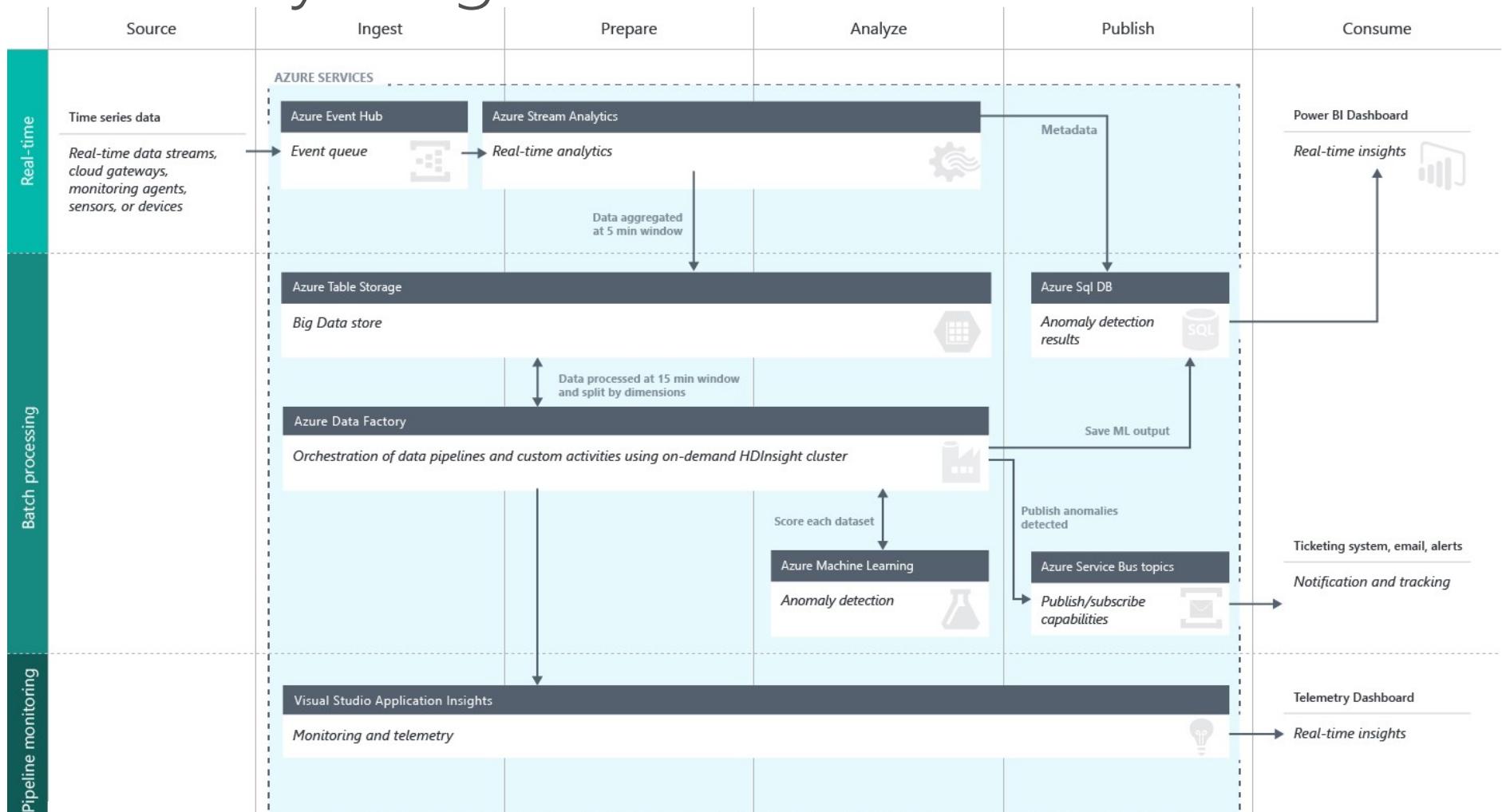
- provides a solution with a low barrier of entry that is based on Cortana Intelligence Solutions and the Azure Machine Learning Anomaly Detection API



IT Anomaly Insights

Remedy your issues before they happen with IT Anomaly Insights. Optimize your IT operations through machine learning and gather intelligent insights from your data to ensure system uptime.

IT Anomaly Insights



Data Science Virtual Machine

Custom virtual machine image

- pre-installed and configured with a host of popular tools commonly used for data science and machine learning
- Analytics Desktop in the cloud
- Data Science Training and Education
- On-demand elastic capacity for large workloads
- Short term experimentation and evaluation



Linux Data Science Virtual Machine

Provision the Linux Data Science Virtual Machine, a custom virtual machine image pre-installed and configured with a host of popular tools commonly used for data science and machine learning.



Windows Data Science Virtual Machine

Provision the Windows Data Science Virtual Machine, a custom virtual machine image pre-installed and configured with a host of popular tools commonly used for data science and machine learning.

Data Warehousing and Data Science with SQL Data Warehouse and Spark

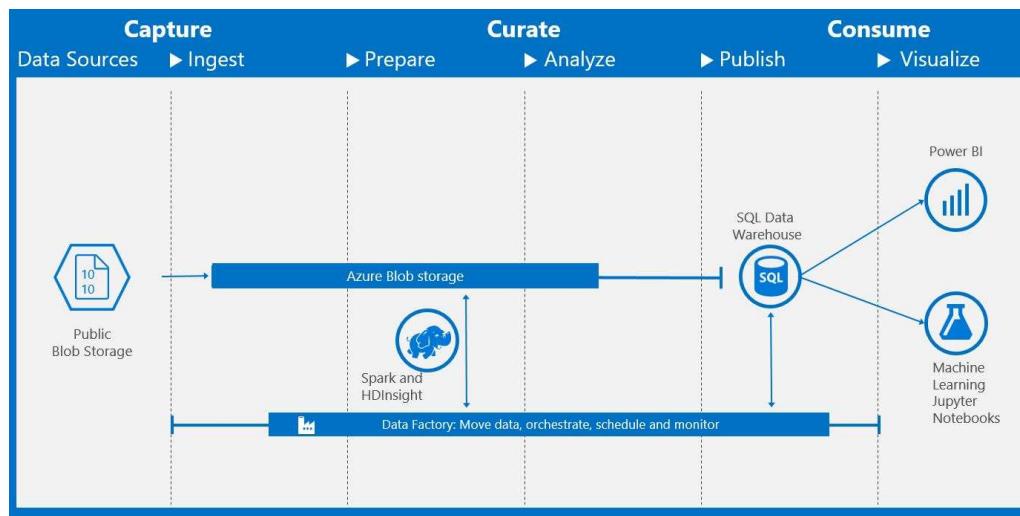
Uses the Million Song dataset to demonstrate a data ingestion pipeline leveraging Spark, SQL Data Warehouse and Polybase.

- pipeline demonstrates loading, sanitization and aggregation against unstructured data
- allows you to visualize the data in Power BI



Data Warehousing and Data Science with SQL Data Warehouse and Spark

Uses the Million Song dataset to demonstrate a data ingestion pipeline leveraging Spark, SQL Datawarehouse and Polybase.



Stream Analysis with Azure ML

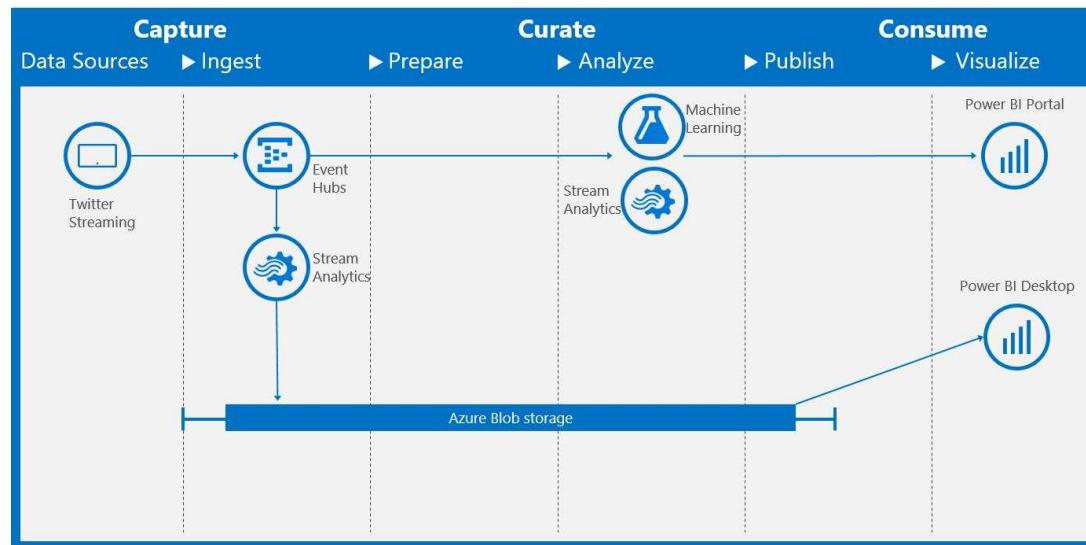
Make predictions using near real time data streams and Azure ML

Build a Cortana Intelligence environment quickly to perform Real-time Twitter sentiment analysis utilizing the Azure ML Web Service.



Stream Analysis with Azure ML

Make predictions using near real time data streams and Azure ML.



In order to create and run the TwitterClient web job, you will need:

- A Twitter account
- A Twitter application
- Twitter's Streaming API OAuth credentials

Predictive Maintenance for Aerospace

- Predicts the remaining useful life of aircraft engine components
- Combine real-time data from sensors with advanced analytics to monitor aircraft parts in real time
- Derived from publicly available data from the NASA data repository using the Turbofan Engine Degradation Simulation Data Set



Predictive Maintenance for Aerospace
This Predictive Maintenance solution monitors aircraft and predicts the remaining useful life of aircraft engine components.