Azure Automation with new Azure Resource Manager
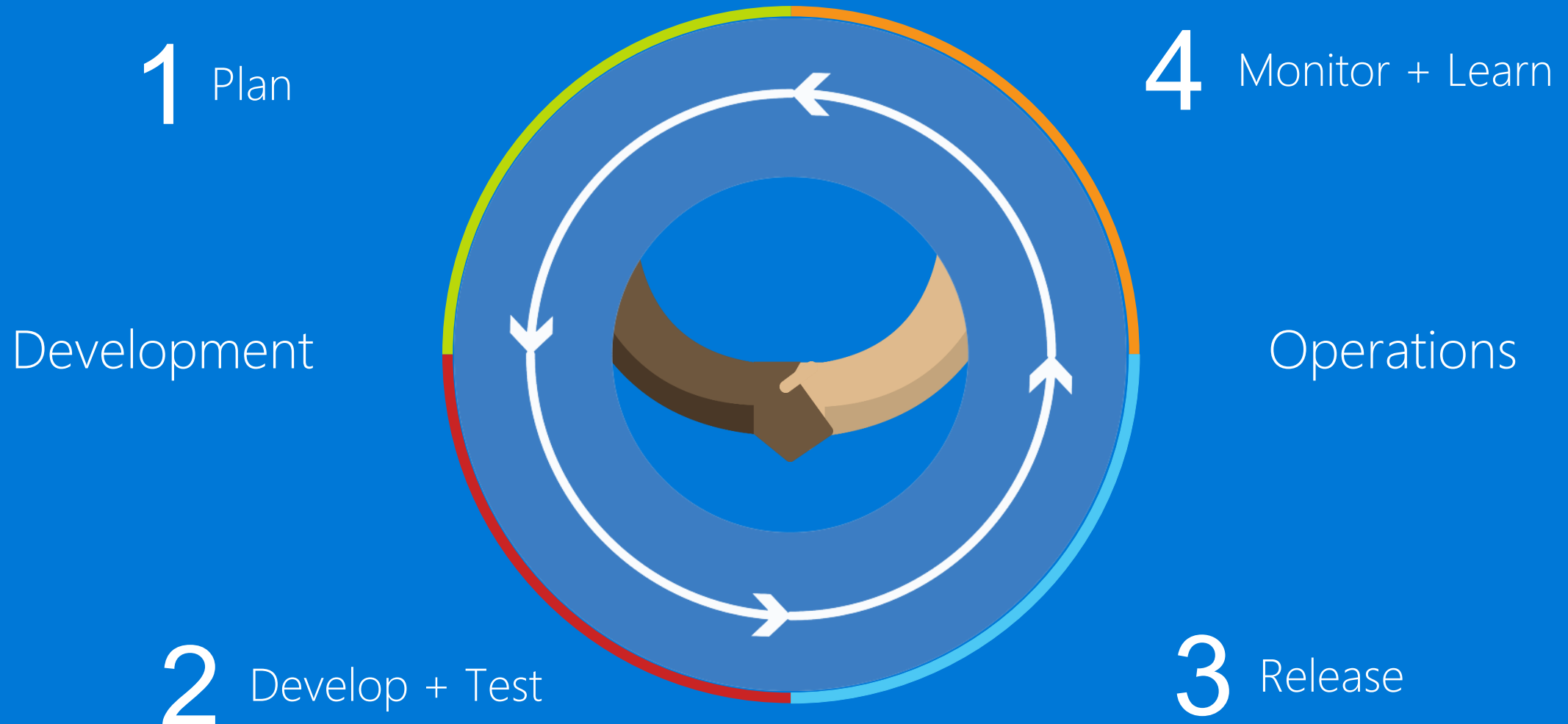
Manash Maitra

Agenda

- Continuous Management in a DevOps world
- Automating a heterogeneous environment
- Azure Automation Introduction
- Runbook Authoring Experiences
- Enterprise Portal Integration
- PowerShell DSC
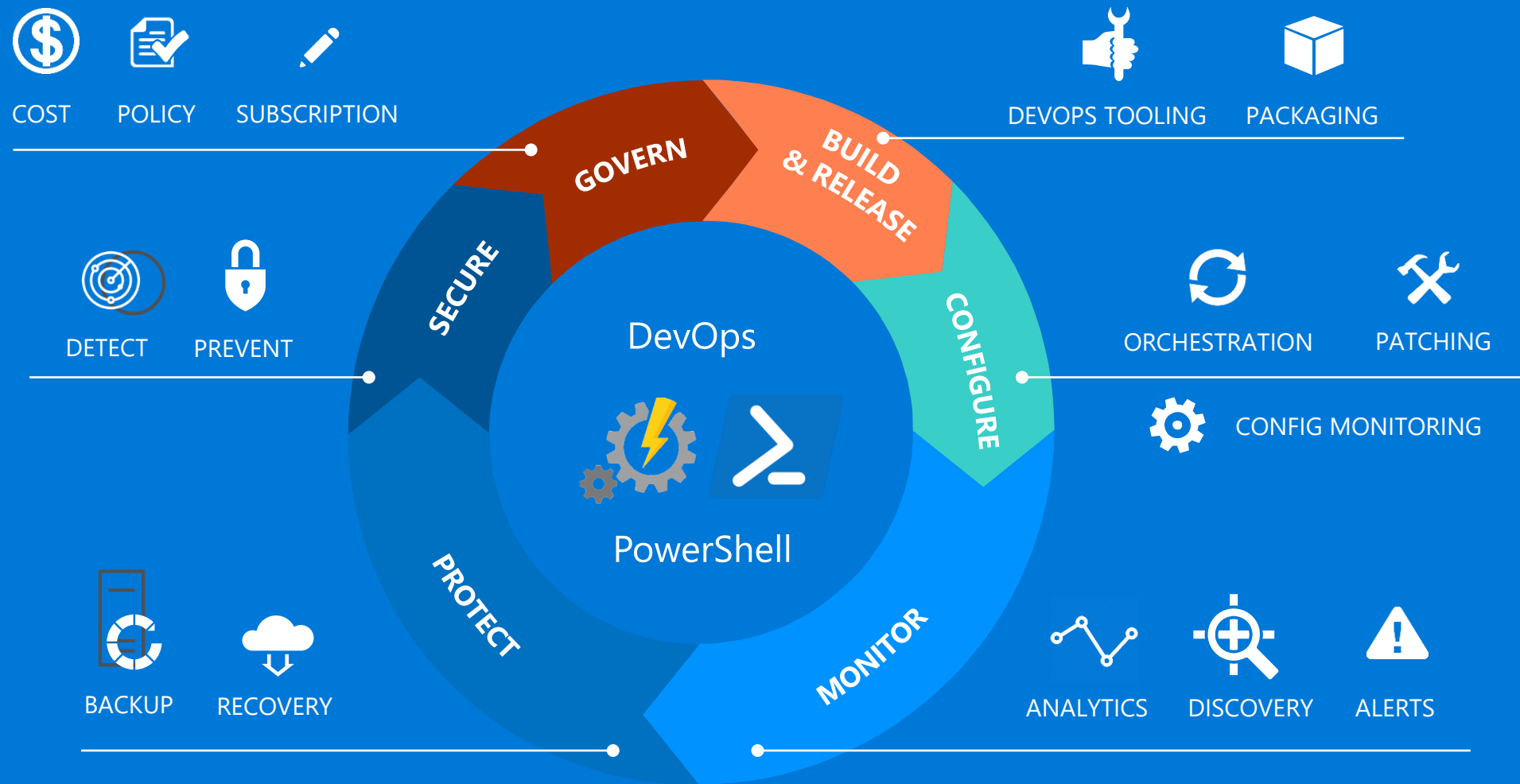- Hybrid Runbook Worker
- Integration Scenarios

Poll

Quick Poll

- Azure Automation little bit?
- Configuration Manager ?
- Operation Manager?
- PowerShell & DSC
- PowerShell workflow
- GitHub or any Source Control?
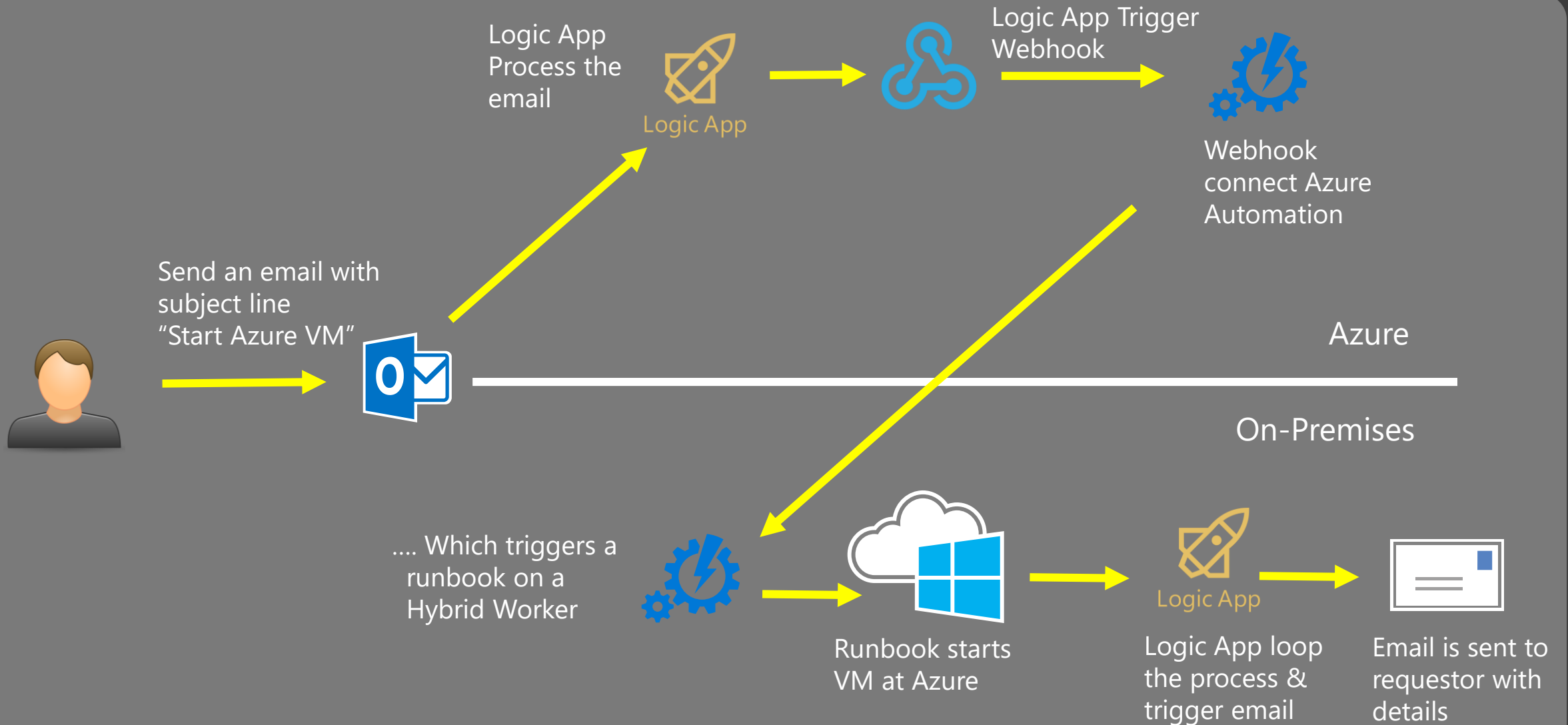- Operation Management Suite?

DevOps lifecycle

1 Plan

Development

2 Develop + Test

4 Monitor + Learn

Operations

3 Release

Live Demo

Logic App Process the email

Logic App

Logic App Trigger Webhook

Webhook connect Azure Automation

Send an email with subject line "Start Azure VM"

Azure

On-Premises

…. Which triggers a runbook on a Hybrid Worker

Runbook starts VM at Azure

Logic App

Logic App loop the process & trigger email

Email is sent to requestor with details

Automation Platform

ORCHESTRATOR

- Simple drag-and-drop authoring experiences

- Integrate with dozens of platforms

- Challenge with parallelism, restart behavior

SERVICE MANAGEMENT AUTOMATION

- PowerShell Workflow based engine

- Control parallelism restart behavior

- No UI, component integration *by you*

AZURE AUTOMATION

- PowerShell Workflow

- Native PowerShell

- Basic Authoring UI

- Source Control Integration

- DSC Support

Typical Azure Automaton Scenarios

Patch / Update / Backup Orchestration

Patch Azure IaaS VMs without downtime, leveraging Traffic manager.

Orchestrate patching of applications in your data center with System Center 2012/2016

SQL Backup on a schedule

Backup and restore Azure or Hyper-V VMs

Change Control & Provisioning

Deploy a VM on an Azure / On-Premise cloud and enable monitoring for the VM.

Deploy applications to requesting users as part of a self-service automation strategy.

Deploy application from Git, run validation tests, and swap to production if tests pass.

Monitoring & Remediation

Automate remediation of issues raised in OpsMgr and OMS alerts.

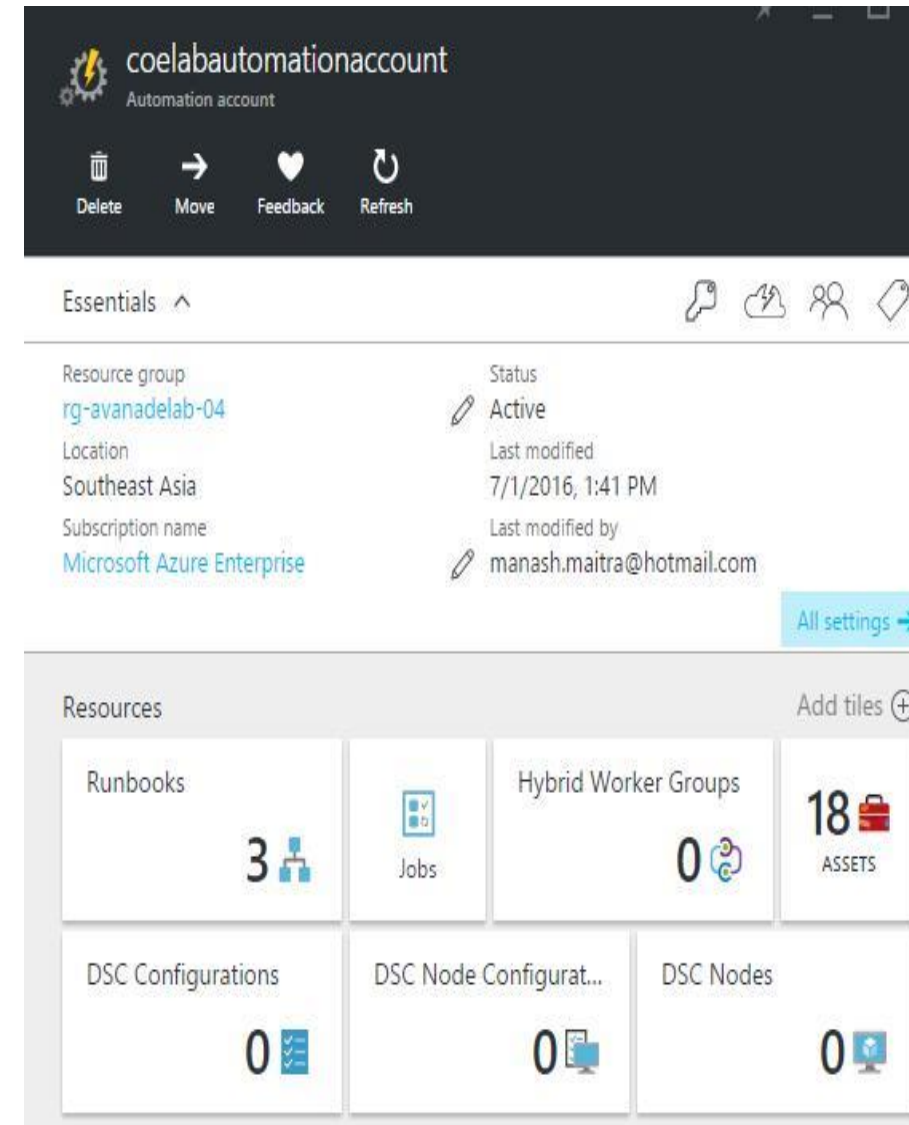Start up and shut down developments and test environments on a schedule.

Monitor for when a new service gets created and configure it for the right tracing / backup policy

Automation Dashboard

Automation Accounts & Dashboard

- ## Create Automation Accounts
  - Organize your automation by group or individual contributor.
  - Accounts can live in different regions
  - Create up to 30 accounts

- ## Use Automation Dashboard
  - Operational dashboard for analysis and troubleshooting
  - Quickly access "problem" jobs to get up and running quickly

Runbooks

Runbooks are the collection of procedures and operation that can be used to do things with Azure Automation

Types of Run Books

- Runbooks with PowerShell
- Runbooks with PowerShell Workflow
- Runbooks with Graphical Platform
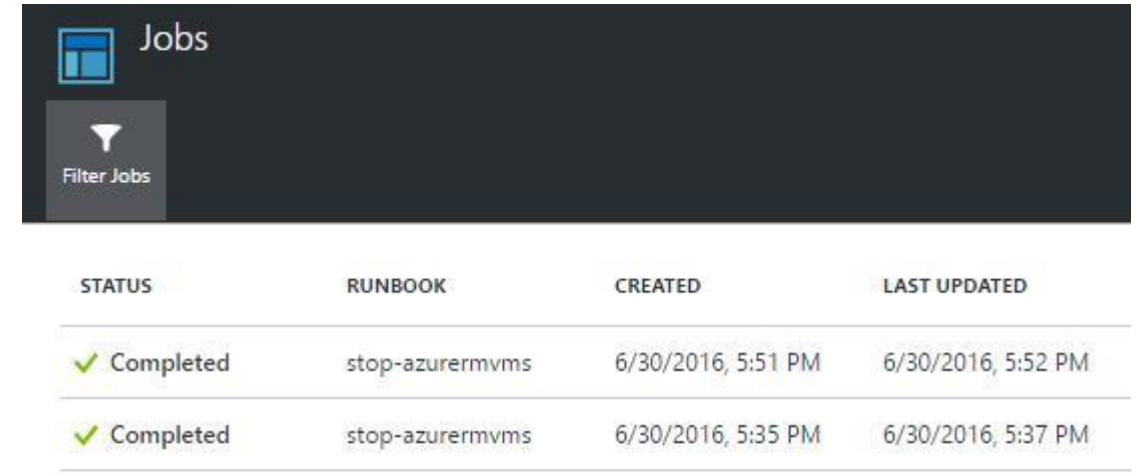
Manage Runbooks & Jobs

Dashboard View
- View runbook jobs over time
- Find jobs that may need attention

Runbooks View
- Filtering of jobs based on status and date
- Identify authoring state (New, In edit, Published)
- Filter by tags to group related runbooks

Jobs View
- History of jobs per runbook
- Who last update and when
- Input parameter and output
- Drill into each job to view streams generated to help troubleshooting
- Stop, Suspend and Resume job

Jobs

Filter Jobs

STATUS	RUNBOOK	CREATED	LAST UPDATED
✓ Completed	stop-azurermvms	6/30/2016, 5:51 PM	6/30/2016, 5:52 PM
✓ Completed	stop-azurermvms	6/30/2016, 5:35 PM	6/30/2016, 5:37 PM

Manage Automation Assets

Manage Global Assets

- Add additional integration modules
- Update to new module versions
- Create / manage credentials
- Create / manage connections
- Create / manage variables
- Manage Schedules
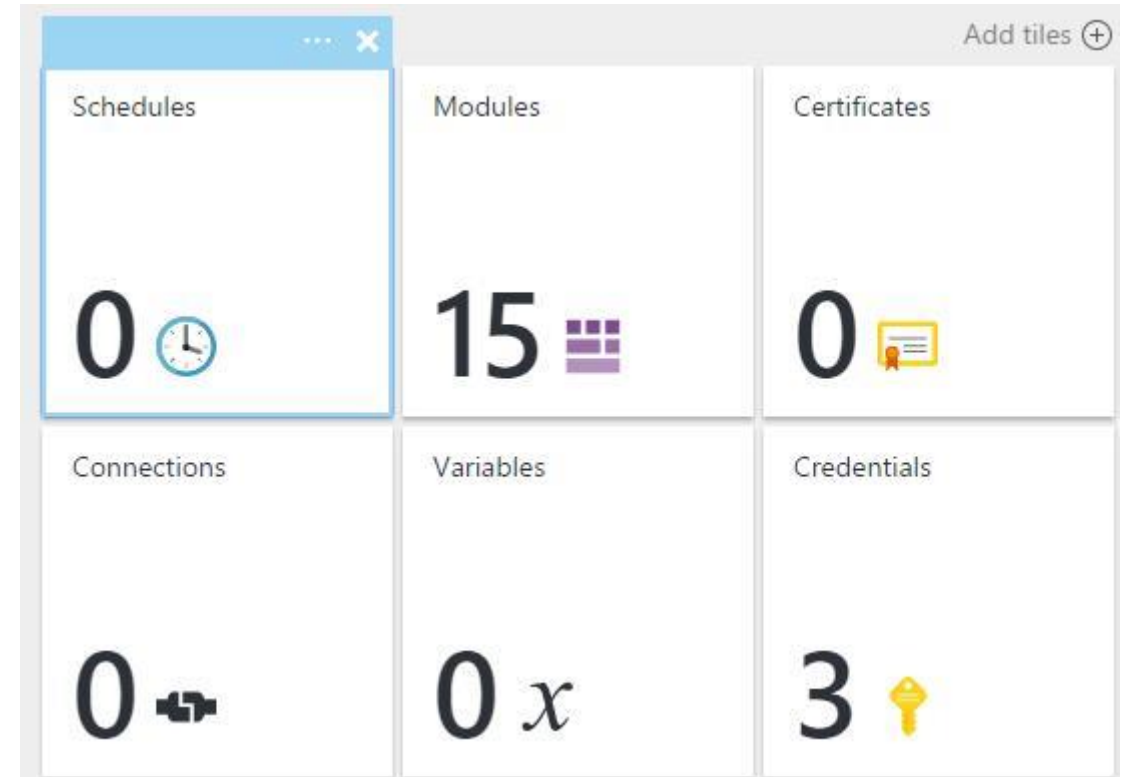
DEMO – Quick tour of Azure Automation

Runbook Authoring Options

Azure Portal

Both script and visual Authoring
Author from anywhere
Not an optimal scripting interface

PowerShell ISE

Author, test and publish from local
PowerShell ISE instance
Create and test assets locally

PowerShell ISE Add-in

Use Automation Activities

- Enables use of the Automation activities (Get-AutomationVariable, Get-AutomationPSCredential etc)

Create and Edit Assets

- Allows creating and editing the values of Automation assets locally.

Track state & Changes

- Allows easy tracking of local changes to runbooks and assets vs state of those assets in an Azure account.

Sync Changes

- Allows syncing of runbooks/assets between a local authoring environment and an Azure automation account.

Test & Publish Runbooks

- Allows testing of PowerShell workflow, scripts locally in the ISE and also in the Automation service without changing the runbook.

DEMO – PowerShell & GUI Runbooks

New Automation Capabilities

Built-in integration with on-premises systems and PowerShell DSC nodes.

- Run Azure automation notebooks on-premises

- Automation accessible via new REST API (including GitHub, VSO and ARM)

- Graphical workflow-authoring tool

- Runbook management from the new Microsoft Azure Portal

Hybrid Worker in Azure Automation

- An on-prem server running MS MGMT agent

- Execute runbooks download from AA

- Reports result back to AA and OMS

- Can be deployed in groups for high-availability

- Require no-ports (outside-in)

Hybrid Automation Overview

Public clouds

- AWS
- Service Providers

Other clouds

Automation

Azure resources

Runbooks delivered to on-premises machines

Enterprise Private clouds

- Hyper-V
- VMWare
- OpenStack
- Heterogeneous (e.g. Linux)
- And many more...

Other providers

Automation Hybrid Runbook Workers
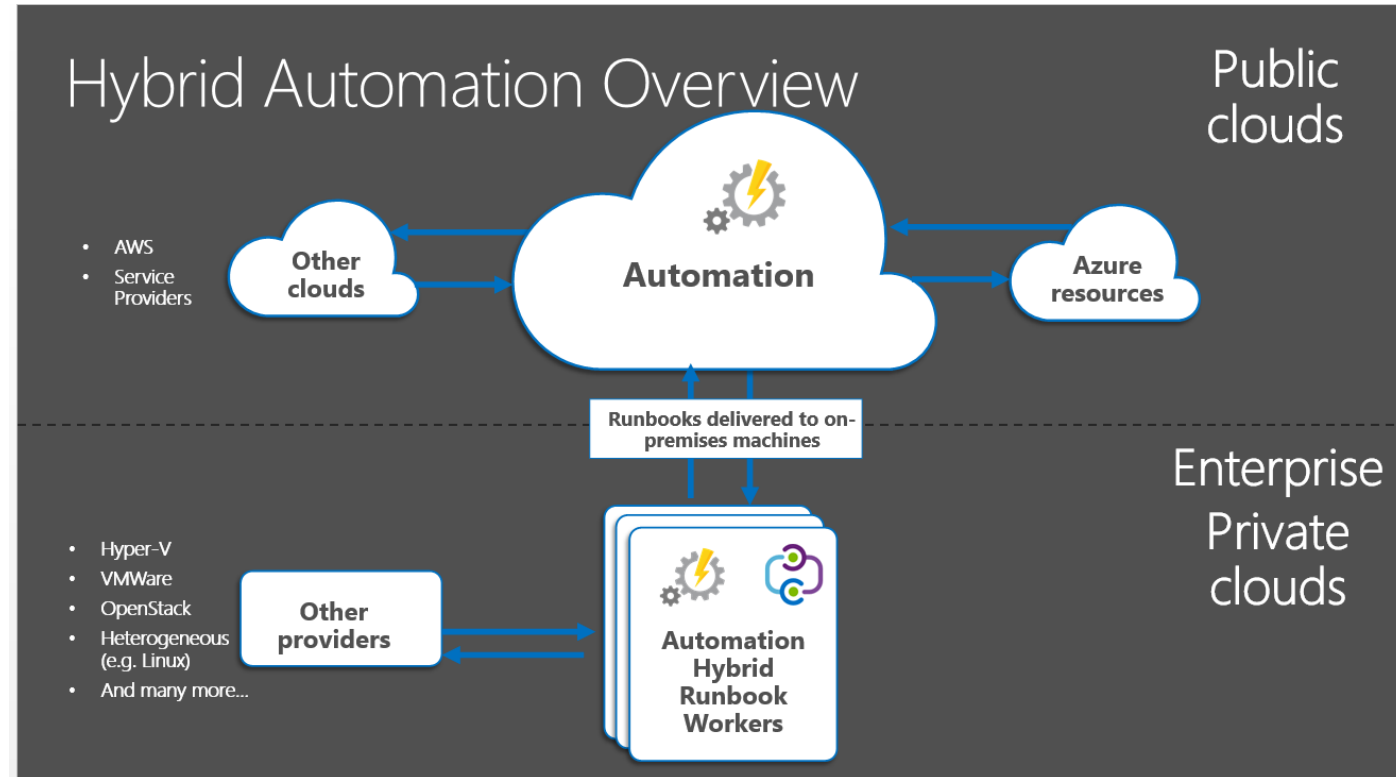
Integration With Azure Automation

System Center
or other enterprise management tools

Easily trigger via
Webhooks

Requires a simple runbook in
PowerShell

Leverage Azure Automation
Hybrid Worker
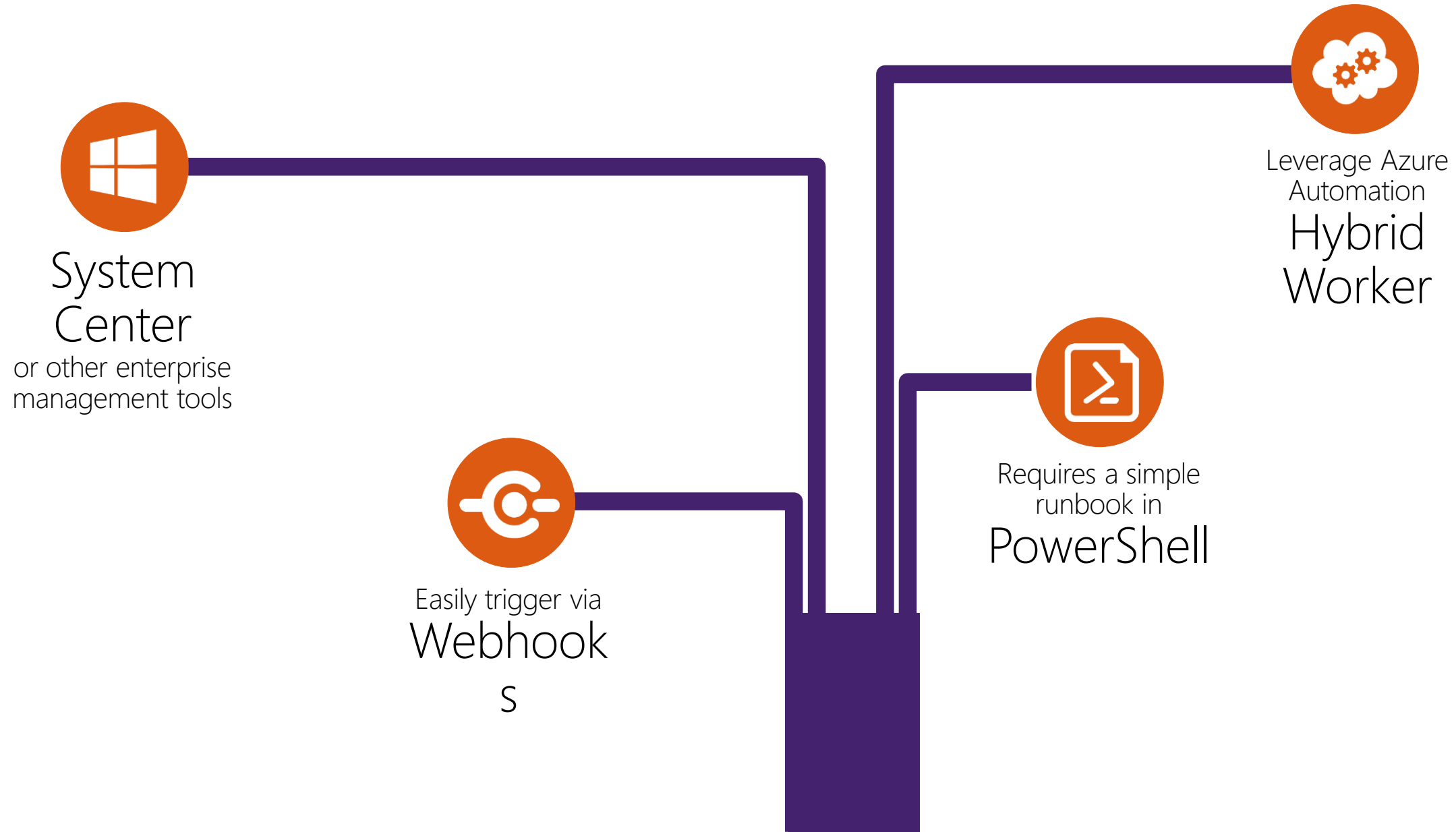
DEMO – Hybrid Worker Automation

Webhooks

A *webhook* allows you to start a particular runbook in Azure Automation through a single HTTP request (URL)

Parameters

Can be hard-coded or included in HTTP body

Secure

URL cannot be retrieved after creation

Expiry

Has an expiry date

Simplicity

Great way to trigger Without PowerShell or credential

Enable Automation Across Azure Resources

Applying Policy

Provisioning
Monitoring
Manual Tasks
Patch Remediation
Backup
Disaster Recovery
Incidents Response
VM Lifecycle Mgmt.
Change Control
Release Mgmt.
Compliance
SLA Adherence

1. Add request to SharePoint list

2. SharePoint workflow triggers webhook

3. .... Which triggers a runbook

7. Update SPS list with account details

Azure

On-Premises

4. .... Which triggers a runbook on a Hybrid Worker

5. Which then create an account in ADDS

6. e-mail is sent to requestor with account details
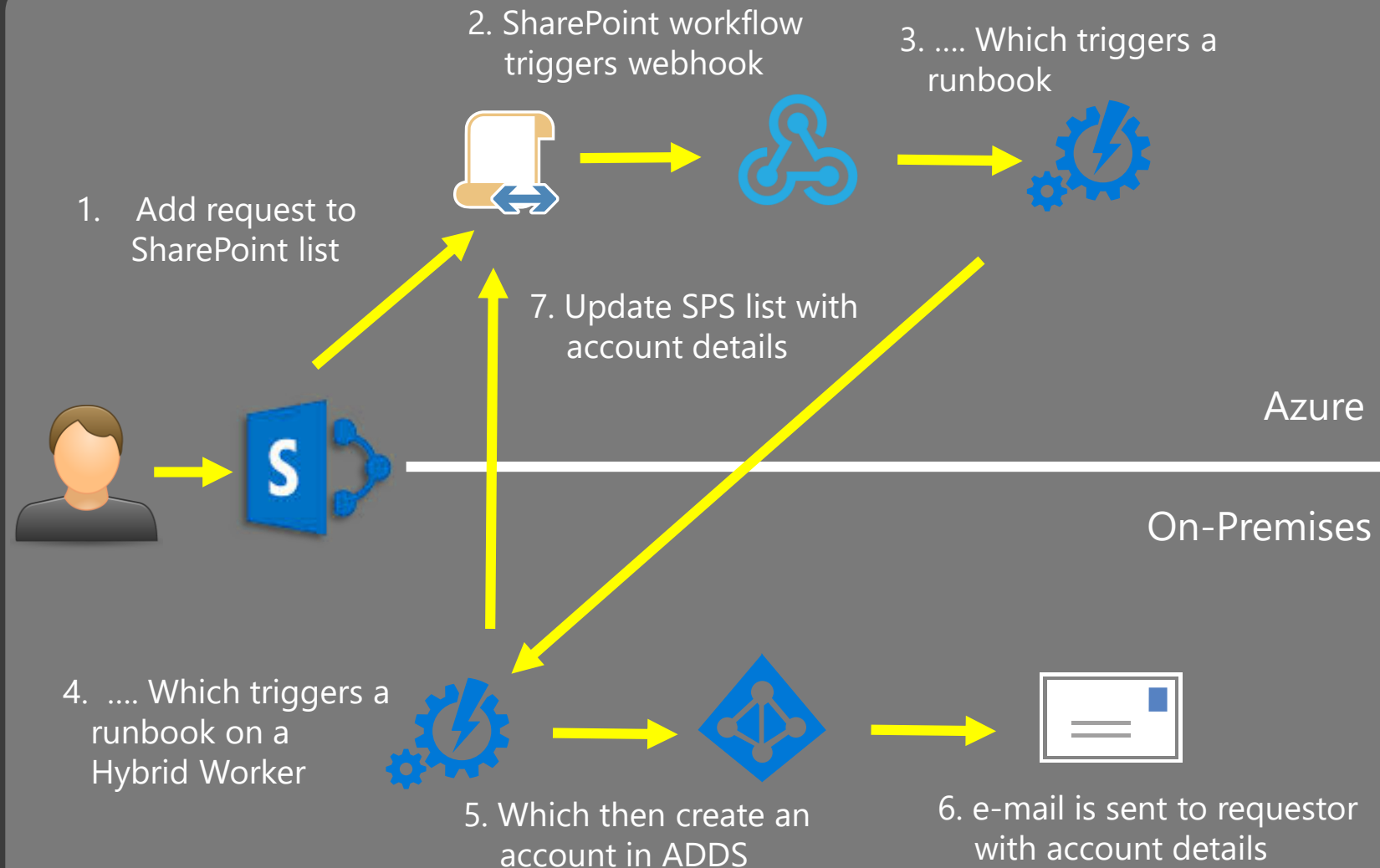
What is PowerShell DSC

DSC is a new management platform in Windows PowerShell

Enables deploying and managing configuration data for software services and environments

Common Uses

- Enabling or disabling server roles and features
- Managing registry settings
- Managing files and directories
- Starting, stopping, and managing processes and services
- Managing groups and user accounts

- Deploying new software
- Managing environment variables
- Running Windows PowerShell scripts
- Fixing a configuration that has drifted away from the desired state
- Discovering the actual configuration state on a given node

DSC Architecture in Azure Automation

Staging

amazon web services

Microsoft Azure

Google Cloud Platform

Authoring

Configuration Script

Node Configuration (MOF)

Checksum

Rest Endpoint

DSC Resources

ZIP

Report

Azure VM

Physical Server

On-Premises Server

Azure Automation Platform

Microsoft

Linux
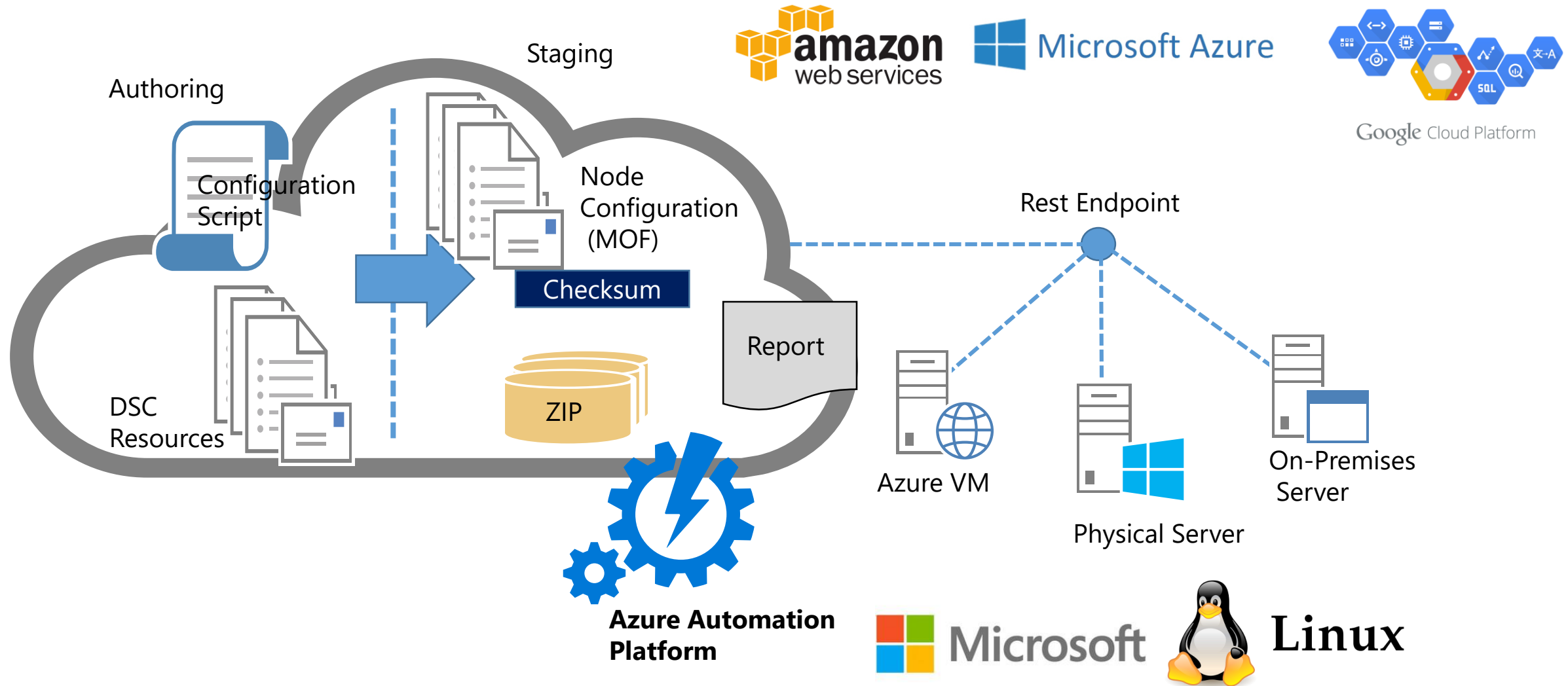
Azure Automation DSC Terms

DSC Configuration : Allows you to define, using PowerShell syntax, the desired state of your environment.

DSC Node Configuration : Same as "MOF" or "Configuration" document.

DSC Node : Any machine that has its configuration managed by DSC.

DSC Resources : Building blocks that you can use to define a DSC configuration.

Compilation Job: Causes DSC items to be places on the Azure automation DSC pull server.

DSC Configurations	DSC Node Configurat...	DSC Nodes
0	0	0

Different Ways to Onboard Nodes

How to Onboard	What to Onboard
Register-AzureRmAutomationDSCNode	VM v2
Set-AzureRmVMDscExtension	VM v2
Set-AzureVMDscExtension	VM v1 (classic) – Not recommended
Set-AzureRmVMExtension (Linux as well)	VM v2
Set-AzureVMExtension	VM v1 (classic)
Get-AzureRmAutomationDscOnboardingMetaConfig (Linux as well)	VM v1 (classic), VM v2, On-Premises VM/Physical
ARM Template (Linux as well)	VM v2
Azure Portal ("Add Azure VM)"	VM v2
Azure Portal (Azure Automation Dsc extension)	VM v1 (classic)

⭐ Any deployment with classic VMs is not recommended as Microsoft's approach on Azure is to deployment with Azure Resource Manager

DSC in Azure Automation

Features:

Accessible thru PowerShell

UI in Azure Preview Portal

Requirements:

Requires WMF 5

Limitations:

As of today, no support for....

Partial and composite configurations

Side-by-side module support

Auto-certificate renewal

Passing ConfigurationData

Automation Asset

DEMO – DSC in Azure Automation

OMS Search API

- Enables direct programmatic access to OMS Log Search capabilities of OMS
- Exposes the RESTful Azure Resource Manager API

Supported use cases include:

Issue direct query

Invoke a saved search

Export and import saved search in bulk

Resources

Sample Runbooks from this Session

- https://github.com/tyconsulting/AUIgnite2015

Azure Automation Add-in for PowerShell ISE

- https://github.com/azureautomation/azure-automation-ise-addon

OMSSearch PowerShell Module (community)

- https://www.powershellgallery.com/packages/OMSSearch/

PowerShell Module for OMS Search API (MS)

- https://github.com/tiander/OMSsearchAPI

OpsMgrExtended PowerShell Module

http://www.tyconsulting.com.au/portfolio/opsmgrextended-powershell-and-sma-module/

Importing / Export OMS Saved Queries

- http://overcast.info/2015/11/importing-saved-searches-into-your-oms-workspaces-2/

Thanks ☺