DevOps Conference

ARM

Azure Resource Manager

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time cockpit
Saves the day.

Your Host

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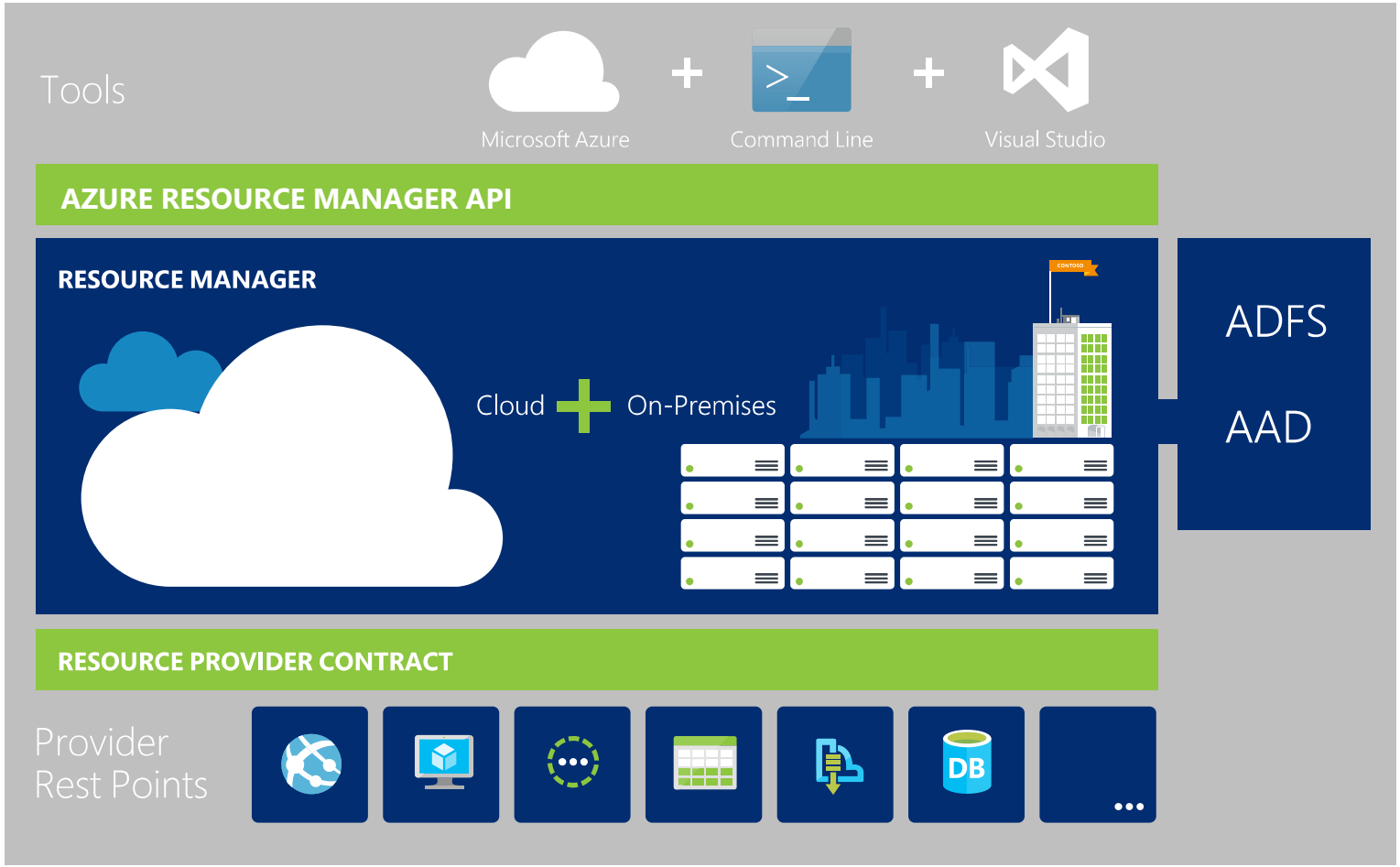
Azure Resource Manager

Why do we need ARM?

In the Early Days…

- *Azure Service Management API* was the version 1 that provided programmatic access for functionality in the Azure platform
- Very limited functionality
  Examples: ASM can be used to configure Cloud Services, Storage accounts, Virtual Networks
  No way to target multi-region or multi-service in a single script
- No consistency in the API exposed by services
  XML, some used JSON
- Limited access control
  Subscription co-administrator for providing user access
- Limited auditing available from the portal
- Hard to organize lots of resources across the organization

Consistent Management Layer



Areas of Focus

Deploy

Organize

Control

Deploying with ARM

- template-driven
- declarative
- idempotent
- multi-service
- multi-region
- extensible

Demo

Windows

[01-Simple-Windows-VM]

- JSON ARM Template
- Edit in VSCode
- Imperative PowerShell

Azure Resource Explorer

https://resources.azure.com/

Templates in Azure Portal

- Get template from deployment
- Generate scripts (PS and CLI)
- Template Mgmt. in Portal

Edit and create in VS2017

```
# Get available regions
((Get-AzureRmResourceProvider -ProviderNamespace
Microsoft.Web).ResourceTypes | Where-Object ResourceTypeName -
eq sites).Locations

# Find publisher
Get-AzureRmVMImagePublisher -Location "North Europe" | Where {
$_.PublisherName -like "*Canonical" }

# Find offer
Get-AzureRmVMImageOffer -Location "North Europe" -PublisherName
"Canonical" | Where { $_.Offer -like "*Ubuntu*" }

# Find SKU
Get-AzureRmVMImageSku -Location "North Europe" -PublisherName
"Canonical" -Offer "UbuntuServer"
```

Helper Scripts

Resources

- Resource Manager Overview
  https://azure.microsoft.com/en-us/documentation/articles/resource-group-overview/
- Supported Services
  https://azure.microsoft.com/en-us/documentation/articles/resource-manager-supported-services/
- Template Language Reference
  https://azure.microsoft.com/en-us/documentation/articles/resource-group-authoring-templates/

Demo

Linux

02-Docker

- Docker extension
- Custom script extension

Tagging

- Tags in ARM template
- Tags in Azure portal

ARM Visualizer

- http://armviz.io/

For PowerShell DSC extension see https://github.com/Azure/azure-quickstart-templates/tree/master/201-web-app-vm-dsc

Demo

Linux

[06-SonarQube on Docker]
- Mixing IaaS, Docker and PaaS
- ARM Template

Azure CLI

- Running locally
- Running in Azure Portal

For PowerShell DSC extension see https://github.com/Azure/azure-quickstart-templates/tree/master/201-web-app-vm-dsc

Azure CLI 2.0

```
docker run -it --rm -v azuresdk/azure-cli-python
  git clone https://github.com/rstropek/Samples.git

  az login

  az account list --output table

  az account list | \
    jq '.[] | select(.name | startswith("MVP")) | .name'
  az account set --subscription "..."

  az group create --name RehDOCLt17 --location "North Europe"

  az vm image list -o table
  az group deployment create --name Deployment \
    --resource-group RehDOCLt17 \
    --template-file azuredeploy.json \
    --parameters @./azuredeploy.parameters.json

  az group list
```

Support for IaaS and PaaS

- Support for IaaS
  Incl. Networking
- Support for PaaS
- Mixed environments
  E.g. web app in IaaS, SQL DB in PaaS

Demo

PaaS

[04-PaaS-Web-DB]

- Azure SQL DB with Firewall
- Azure App Service

PaaS advantages

- Portal: Scaling & Management
- Scale via ARM template

Advanced Concepts, Resources

- Template functions
  E.g. string functions, numeric functions, array functions, deployment values, etc.
  https://azure.microsoft.com/en-us/documentation/articles/resource-group-template-functions/
- Template linking
  https://azure.microsoft.com/en-us/documentation/articles/resource-group-linked-templates/
- Creating multiple instances
  https://azure.microsoft.com/en-us/documentation/articles/resource-group-create-multiple/
- Best Practices
  https://azure.microsoft.com/en-us/documentation/articles/best-practices-resource-manager-design-templates/

Summary

- Infrastructure is code
- ARM makes Azure ready for large-scale
  Number of resources, regions, etc.
- ARM makes management easier
  E.g. idempotency, tags, access control
- ARM is cross-platform
  PowerShell, Azure CLI, or REST
  Create Linux and Windows resources

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Q&A

Thank your for coming!

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