



Project Bicep: ARM Templates

RELOADED



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- ❖ April 29th Technine User Group
- ❖ April 7th Dutch DevOps & Github comm.
- ❖ February 17th Ask Wortell Live Stream
- ❖ February 4th Azure Thursday
- ❖ January 29th Azure Lowlands





Agenda



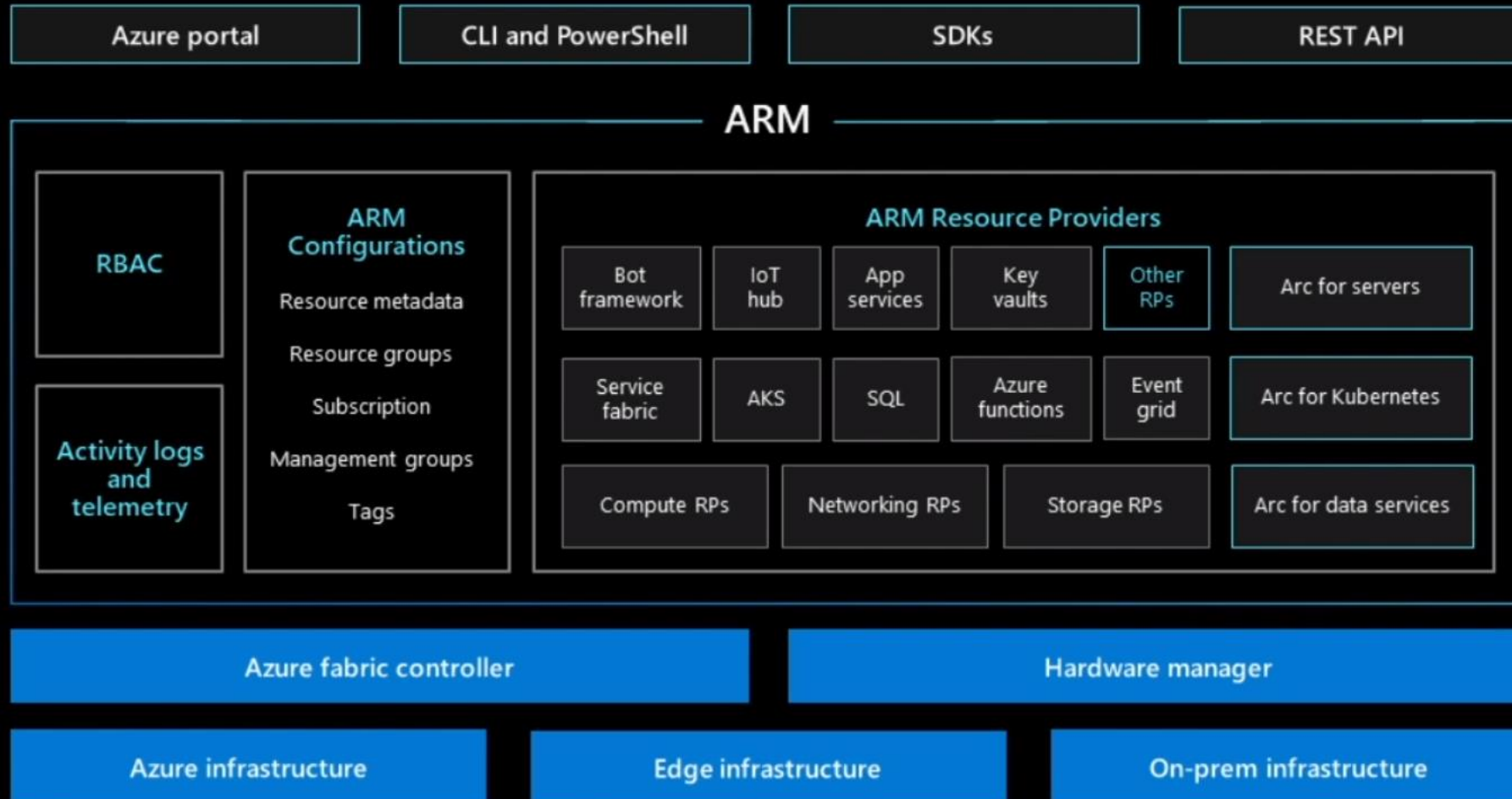
Azure Resource Manager & JSON

Project 'Bicep' architecture

Demos, demos, demos!

Bicep Roadmap & call to actions

Azure Resource Manager



How to get started with ARM & JSON

... structure of an **Azure Resource Manager template**.


The template consists of **JSON** and expressions that you can use to construct values for your deployment.

ARM Template

Template format

In its simplest structure, a template has the following elements:

JSON

 Copy

```
{
  "$schema": "https://schema.management.azure.com/schemas/2019-04-01/deploymentTemplate.json#",
  "contentVersion": "",
  "apiProfile": "",
  "parameters": {  },
  "variables": {  },
  "functions": [  ],
  "resources": [  ],
  "outputs": {  }
}
```


ARM Template

```
"parameters": {
  "<parameter-name>" : {
    "type" : "<type-of-parameter-value>",
    "defaultValue": "<default-value-of-parameter>",
    "allowedValues": [ "<array-of-allowed-values>" ],
    "minValue": <minimum-value-for-int>,
    "maxValue": <maximum-value-for-int>,
    "minLength": <minimum-length-for-string-or-array>,
    "maxLength": <maximum-length-for-string-or-array-parameters>,
    "metadata": {
      "description"
    }
  }
}
```

```
"functions": [
  {
    "namespace": "<namespace-for-functions>",
    "members": {
      "<function-name>": {
        "parameters": [
          {
            "name": "<parameter-name>",
            "type": "<type-of-parameter-value>"
          }
        ],
        "output": {
          "type": "<type-of-output-value>",
          "value": "<function-return-value>"
        }
      }
    }
  }
],
```

```
"variables": {
  "<variable-name>": "<variable-value>",
  "<variable-name>": {
    <variable-complex-type-value>
  },
  "<variable-object-name>": {
    "copy": [
      {
        "name": "<name-of-array-property>",
        "count": <number-of-iterations>,
        "input": <object-or-value-to-repeat>
```


```
[
  {
    "name": "<variable-array-name>",
    "count": <number-of-iterations>,
    "input": <object-or-value-to-repeat>
```


```
"outputs": {
  "<output-name>": {
    "condition": "<boolean-value-whether-to-output-value>",
    "type": "<type-of-output-value>",
    "value": "<output-value-expression>",
    "copy": {
      "count": <number-of-iterations>,
      "input": <values-for-the-variable>
    }
  }
}
```

```
"resources": [
  {
    "condition": "<true-to-deploy-this-resource>",
    "type": "<resource-provider-namespace/resource-type-name>",
    "apiVersion": "<api-version-of-resource>",
    "name": "<name-of-the-resource>",
    "comments": "<your-reference-notes>",
    "location": "<location-of-resource>",
    "dependsOn": [
      "<array-of-related-resource-names>"
    ],
    "tags": {
      "<tag-name1>": "<tag-value1>",
      "<tag-name2>": "<tag-value2>"
    },
    "sku": {
      "name": "<sku-name>",
      "tier": "<sku-tier>",
      "size": "<sku-size>",
      "family": "<sku-family>",
      "capacity": <sku-capacity>
    },
    "kind": "<type-of-resource>",
    "copy": {
      "name": "<name-of-copy-loop>",
      "count": <number-of-iterations>,
      "mode": "<serial-or-parallel>",
      "batchSize": <number-to-deploy-serially>
    },
    "plan": {
      "name": "<plan-name>",
      "promotionCode": "<plan-promotion-code>",
      "publisher": "<plan-publisher>",
      "product": "<plan-product>",
      "version": "<plan-version>"
    }
  }
]
```





ARM Template – Reference Guide

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Virtual Machines

Define resources in ARM templates

12/21/2020 • 2 minutes to read • 



When creating Azure Resource Manager templates, you need to understand what resource types are available. This article provides ARM template reference documentation for the Microsoft.Network virtualNetworks resource type.

Learn how to create templates

For an introduction to working with templates, see [ARM template](#).


To learn about ARM templates through a guided tour, see [Deploy and manage resources in Azure by using the Azure portal](#).

Microsoft recommends that you use VS Code with the Azure Resource Manager tools extension, or the Azure CLI. For more information, see [Quickstart: Create and deploy an ARM template](#).

Is this page helpful?
 Yes  No

In this article
[Template format](#)
[Property values](#)
[Quickstart templates](#)

Microsoft.Network virtualNetworks

12/28/2020 • 12 minutes to read • 

API Versions: Latest

Template format

To create a Microsoft.Network/virtualNetworks resource, add the following JSON to the resources section of your template.

JSON

```
{
  "name": "string",
  "type": "Microsoft.Network/virtualNetworks",
  "apiVersion": "2020-07-01",
  "location": "string",
  "tags": {},
  "extendedLocation": {
    "name": "string",
    "type": "EdgeZone"
  },
  "properties": {
    "addressSpace": {
      "addressPrefixes": [
        "string"
      ]
    }
  }
}
```

Is this page helpful?

 Yes  No

In this article

[Template format](#)
[Property values](#)
[Quickstart templates](#)

VirtualNetworkPropertiesFormat object

Name	Type	Required	Value
addressSpace	object	No	The AddressSpace that contains an array of IP address ranges that can be used by subnets. - AddressSpace object
dhcpOptions	object	No	The dhcpOptions that contains an array of DNS servers available to VMs deployed in the virtual network. - DhcpOptions object
subnets	array	No	A list of subnets in a Virtual Network. - Subnet object
ipAllocations	array	No	Array of IpAllocation which reference this VNET. - SubResource object

Is this page helpful?

 Yes  No

In this article

[Template format](#)
[Property values](#)
[Quickstart templates](#)



ARM Template learning path



<https://bit.ly/3qZGNj1>

MODULE 1: Deploy Azure infrastructure by using ARM templates

MODULE 2: Deploy to multiple Azure environments by using ARM template features

MODULE 3: Preview changes and validate Azure resources by using what-if and the ARM template test toolkit


MODULE 4: Automate the deployment of ARM templates by using GitHub Action

MODULE 5: Extend ARM templates by using deployment scripts

MODULE 6: Manage complex cloud deployments by using advanced ARM template features



ARM Template – Azure Quickstart Templates



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Azure Quickstart Templates

Deploy Azure resources through the Azure Resource Manager with community contributed templates to get more done. Deploy, learn, fork and contribute back.

Sort by:

Date updated

Template name

Author name

Most popular

Showing all 978 templates. Refine

Deploy a simple Windows VM

This template allows you to deploy a simple Windows VM using a few different options for the Windows version, using the latest patched version. This will deploy an A2 size...

by Brian Moore,

Last updated: 9/18/2020

Create an new AD Domain with 2 Domain Controllers

This template creates 2 new VMs to be AD DCs (primary and backup) for a new Forest and Domain

Templates / Deploy a simple Windows VM

Deploy a simple Windows VM

by Brian Moore

Last updated: 9/18/2020

Deploy to Azure

Browse on GitHub

This template allows you to deploy a simple Windows VM using a few different options for the Windows version, using the latest patched version. This will deploy an A2 size VM in the resource group location and return the FQDN of the VM.

Parameters

PARAMETER NAME	DESCRIPTION
OSVersion	The Windows version for the VM. This will pick a fully patched image of this given Windows version.
vmSize	Size of the virtual machine.
location	Location for all resources.
vmName	Name of the virtual machine.

Use the template

PowerShell

```
New-AzResourceGroup -Name <resource-group-name> -Location <resource-group-location> #use this command when you need to create a new resource group for your deployment
New-AzResourceGroupDeployment -ResourceGroupName <resource-group-name> -TemplateUri https://raw.githubusercontent.com/Azure/azure-quickstart-templates/master/101-vm-simple-windows/azuredeploy.
```

Install and configure Azure PowerShell >



ARM Template – Automatic deployments


```
# ARM Template file
$jsonARMTemplateFile = ".\ARM-WVDNewHostpool.template.json"
$jsonARMPParameterFile = ".\ARM-WVDNewHostpool.parameter.json"

# Create WVD Hostpool, based on ARM Template
New-AzResourceGroupDeployment -ResourceGroupName "rg-wvd-infra" `
    -TemplateFile $jsonARMTemplateFile `
    -TemplateParameterFile $jsonARMPParameterFile `
    -administratorAccountPassword $secureDomainAdminPassword `
    -vmAdministratorAccountPassword $secureLocalAdminPassword `
    -Verbose
```


ARM Template – Automatic deployments

✖ Deployment failed. Click here for details →

Your deployment failed


 Deployment name: ARM-WVDN
Subscription:
Resource group: rg-wvd-infra

Deployment details (Download)

Resource
✖ vmCreation-linkedTemplate-
✓ AVSet-linkedTemplate-
✓ Workspace-linkedTemplate-
✓ wvd-hp-demo-DAG
✓ wvd-hp-demo

✖ Deployment failed. Click here for details →

Your deployment failed

 Deployment name: vmCreation-linkedTemplate-
Subscription:
Resource group: rg-wvd-resources

Start time: 1/27/2021, 5:37:38 PM
Correlation ID: d26c3483-452c-462e-8838-8ba39d8490be

Deployment details (Download)

Resource	Type	Status	Operation details
✖ wvd-sh-0-nic	Microsoft.Network/networkl...	BadRequest	Operation details
✖ wvd-sh-1-nic	Microsoft.Network/networkl...	BadRequest	Operation details
✓ NSG-linkedTemplate	Microsoft.Resources/deploy...	OK	Operation details

ARM Template – Automatic deployments

```
1  {
2    "code": "DeploymentFailed",
3    "message": "At least one resource deployment operation
4    failed. Please list deployment operations for details.
5    Please see https://aka.ms/DeployOperations for usage
6    details.",
7    "details": [
8      {
9        "code": "InvalidResourceReference",
10       "message": "Resource /subscriptions/
11                  /resourceGroups/
12                  rg-wvd-resources/providers/Microsoft.Network/
13                  virtualNetworks/vnet-wvd-resource/subnets/default
14                  referenced by resource /subscriptions/
15                  /resourceGroups/
16                  rg-wvd-resources/providers/Microsoft.Network/
17                  networkInterfaces/wvd-sh-0-nic was not found. Please make
18                  sure that the referenced resource exists, and that both
19                  resources are in the same region."
20      },
21    ]
22  }
```

ARM Template – Automatic deployments

```
1 {
2   "$schema": "https://schema.management.azure.com/schemas/2015-01-01/deploymentTemplate.json#",
3   "contentVersion": "1.0.0.0"
4   "parameters": {
324     "vmCreation-linkedTemplate-": {
325       "name": "[concat('vmCreation-linkedTemplate-', parameters('deploymentId'))]",
326       "resourceGroup": "[parameters('vmResourceGroup')]",
327       "dependsOn": [
328         "[concat('AVSet-linkedTemplate-', parameters('deploymentId'))]"
329       ],
330       "type": "Microsoft.Resources/deployments",
331       "properties": {
332         "mode": "Incremental",
333         "linked template": {
334           "templateLink": {
335             "uri": "[variables('vmTemplateUri')]",
336             "contentVersion": "1.0.0.0"
337           }
338         }
339       }
340     },
341     "vmImageVhdUri": {
342       "type": "String",
343       "defaultValue": "[parameters('vmImageVhdUri')]"
344     },
345     "storageAccountResourceGroupName": {
346       "type": "String",
347       "defaultValue": "[parameters('storageAccountResourceGroupName')]"
348     },
349     "vmGalleryImageOffer": {
350       "type": "String",
351       "defaultValue": "[parameters('vmGalleryImageOffer')]"
352     },
353     "vmGalleryImagePublisher": {
354       "type": "String",
355       "defaultValue": "[parameters('vmGalleryImagePublisher')]"
356     },
357     "vmGalleryImageSKU": {
358       "type": "String",
359       "defaultValue": "[parameters('vmGalleryImageSKU')]"
360     }
361   },
362   "variables": {
363     "vmTemplateUri": "[variables('vmTemplateUri')]"
364   },
365   "resources": [
366     {
367       "name": "[parameters('vmCreation-linkedTemplate-')]",
368       "type": "Microsoft.Resources/deployments",
369       "properties": {
370         "mode": "Incremental",
371         "linked template": {
372           "templateLink": {
373             "uri": "[variables('vmTemplateUri')]",
374             "contentVersion": "1.0.0.0"
375           }
376         }
377       }
378     },
379     {
380       "name": "[parameters('vmImageVhdUri')]",
381       "type": "Microsoft.Storage/storageAccounts",
382       "properties": {
383         "location": "[parameters('vmImageVhdUri')]",
384         "sku": {
385           "name": "[parameters('vmImageVhdUri')]",
386           "tier": "[parameters('vmImageVhdUri')]"
387         },
388         "kind": "Vhd",
389         "osType": "[parameters('vmImageVhdUri')]"
390       }
391     },
392     {
393       "name": "[parameters('storageAccountResourceGroupName')]",
394       "type": "Microsoft.Storage/storageAccounts",
395       "properties": {
396         "location": "[parameters('storageAccountResourceGroupName')]",
397         "sku": {
398           "name": "[parameters('storageAccountResourceGroupName')]",
399           "tier": "[parameters('storageAccountResourceGroupName')]"
400         },
401         "kind": "Vhd",
402         "osType": "[parameters('storageAccountResourceGroupName')]"
403       }
404     },
405     {
406       "name": "[parameters('vmGalleryImageOffer')]",
407       "type": "Microsoft.Compute/virtualMachines",
408       "properties": {
409         "location": "[parameters('vmGalleryImageOffer')]",
410         "hardwareProfile": {
411           "vmSize": "[parameters('vmGalleryImageOffer')]"
412         },
413         "osProfile": {
414           "computerName": "[parameters('vmGalleryImageOffer')]",
415           "adminUsername": "[parameters('vmGalleryImageOffer')]",
416           "adminPassword": "[parameters('vmGalleryImageOffer')]"
417         },
418         "storageProfile": {
419           "imageReference": {
420             "publisher": "[parameters('vmGalleryImagePublisher')]",
421             "offer": "[parameters('vmGalleryImageOffer')]",
422             "sku": "[parameters('vmGalleryImageSKU')]"
423           },
424           "osDisk": {
425             "createOption": "FromImage",
426             "image": "[parameters('vmImageVhdUri')]"
427           }
428         }
429       }
430     }
431   ],
432   "outputs": {
433     "rdshVmName": {
434       "value": "[parameters('vmCreation-linkedTemplate-')]",
435       "type": "String"
436     }
437   }
438 }
```

- 531 lines of code
- complex JSON formatting
- advanced options:
 - nested templates
 - linked templates



ARM Template – Automatic deployments

✓ Your deployment is complete



Deployment name: AddVMsToHostPool-a4695839-60ac-4048-8c0...
Subscription: [Microsoft Azure Sponsorship](#)
Resource group: [rg-wvd-infra](#)

Start time: 1/30/2021, 4:39:42 PM
Correlation ID: 24959bf7-49ef-4a12-8abf-f42d14bc57b3

Deployment details [\(Download\)](#)

Resource	Type
✓ vmCreation-linkedTemplate-a4	Microsoft.Resources/deploy..
✓ AVSet-linkedTemplate-a46958	Microsoft.Resources/deploy..

Next steps

[Go to resource](#)

✓ Your deployment is complete



Deployment name: [vmCreation-linkedTemplate-a4695839-60ac-40...](#)
Subscription: [Microsoft Azure Sponsorship](#)
Resource group: [rg-wvd-resources](#)

Start time: 1/30/2021, 4:39:52 PM
Correlation ID: 24959bf7-49ef-4a12-8abf-f42d14bc57b3

Deployment details [\(Download\)](#)

Resource	Type	Status	Operation details
✓ wvd-sh-1/dscontextension	Microsoft.Compute/virtualM...	OK	Operation details
✓ wvd-sh-0/dscontextension	Microsoft.Compute/virtualM...	OK	Operation details
✓ wvd-sh-0/joindomain	Microsoft.Compute/virtualM...	OK	Operation details
✓ wvd-sh-1/joindomain	Microsoft.Compute/virtualM...	OK	Operation details
✓ wvd-sh-1	Microsoft.Compute/virtualM...	OK	Operation details
✓ wvd-sh-0	Microsoft.Compute/virtualM...	OK	Operation details
✓ wvd-sh-0-nic	Microsoft.Network/networkl...	Created	Operation details
✓ wvd-sh-1-nic	Microsoft.Network/networkl...	Created	Operation details
✓ NSG-linkedTemplate	Microsoft.Resources/deploy...	OK	Operation details



What is Project 'Bicep'?



*"..Bicep is a **Domain Specific Language (DSL)** for deploying Azure resources declaratively. It aims to **drastically simplify the authoring experience** with a cleaner syntax and better support for modularity and code re-use. Bicep is a transparent abstraction over ARM and ARM templates.*

Project 'Bicep'

Simple declarative language to provision infrastructure to Azure.

Intuitive

Easy to read and to author

Transpiles to ARM Templates

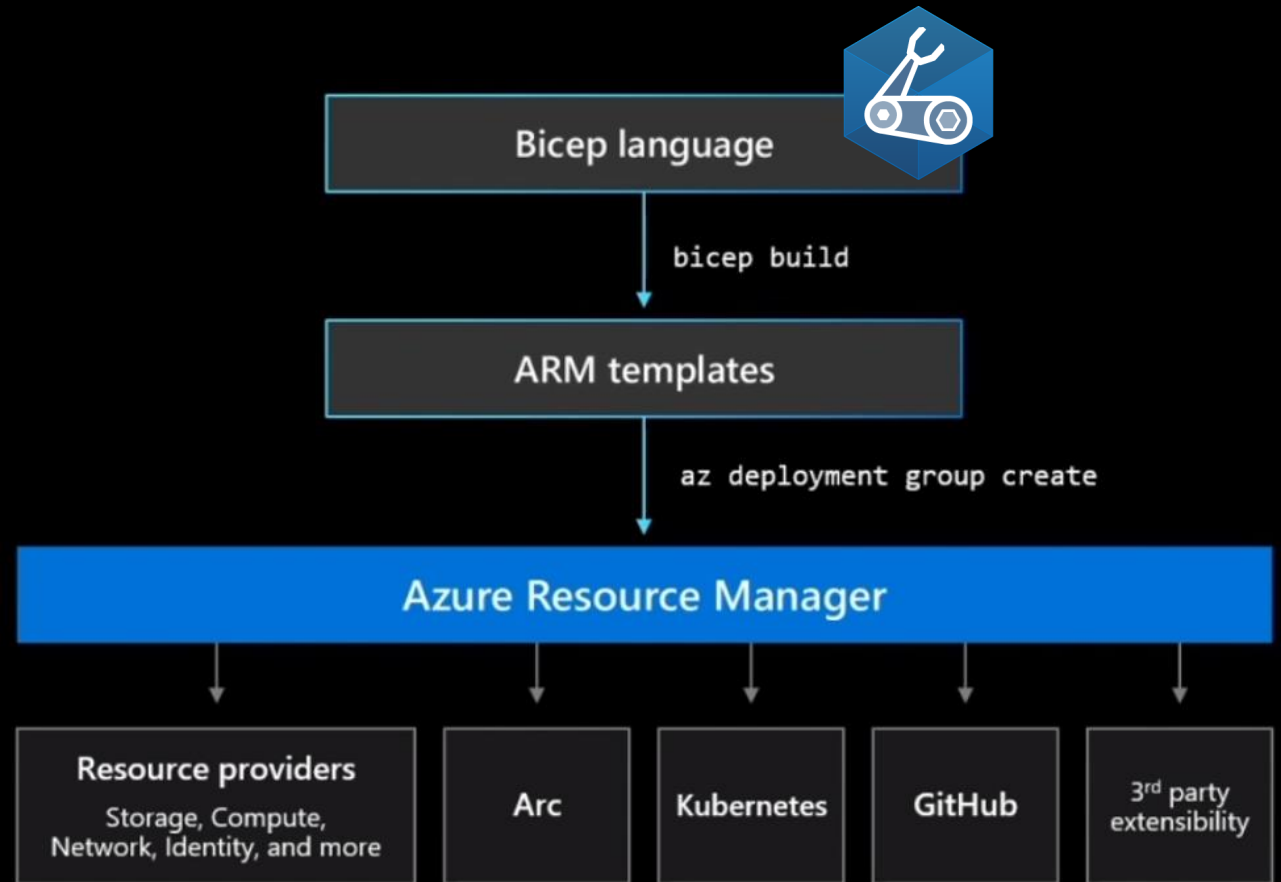
Leverage ARM template knowledge and investments

Modular

Abstract common blocks of code into reusable parts

Open Source

Transparency and community



How to get started with 'Bicep'?

1. Install the Bicep CLI (required)

```
# Create the install folder
$installPath = "$env:USERPROFILE\.bicep"
$installDir = New-Item -ItemType Directory -Path $installPath -Force
$installDir.Attributes += 'Hidden'
# Fetch the latest Bicep CLI binary
(New-Object Net.WebClient).DownloadFile("https://github.com/Azure/bicep/releases/latest/download/bicep-win-x64.exe", "$installPath\bicep.exe")
# Add bicep to your PATH
$currentPath = (Get-Item -path "HKCU:\Environment" ).GetValue('Path', '', 'DoNotExpandEnvironmentNames')
if (-not $currentPath.Contains("%USERPROFILE%.bicep")) { setx PATH ($currentPath + ";%USERPROFILE%.bicep") }
if (-not $env:path.Contains($installPath)) { $env:path += ";$installPath" }
# Verify you can now access the 'bicep' command.
bicep --help
# Done!
```

2. Install the Bicep VS Code extension(optional)

```
# Fetch the latest Bicep VSCode extension
$vsixPath = "$env:TEMP\vscode-bicep.vsix"
(New-Object Net.WebClient).DownloadFile("https://github.com/Azure/bicep/releases/latest/download/vscode-bicep.vsix", $vsixPath)
# Install the extension
code --install-extension $vsixPath
# Clean up the file
Remove-Item $vsixPath
# Done!
```



Demo



Deploy local 'Bicep' files

Note: Currently, both Azure CLI and Azure PowerShell can only deploy local Bicep files.
Bicep CLI is needed locally to compile Bicep files to JSON templates before deployment.

Azure CLI v2.20.0+

Azure CLI

```
az deployment group create \  
  --name ExampleDeployment \  
  --resource-group ExampleGroup \  
  --template-file <path-to-template-or-bicep> \  
  --parameters storageAccountType=Standard_GRS
```

PowerShell 5.6.0+

Azure PowerShell

```
New-AzResourceGroupDeployment `\  
  -Name ExampleDeployment `\  
  -ResourceGroupName ExampleGroup `\  
  -TemplateFile <path-to-template-or-bicep> `\  
  -storageAccountType Standard_GRS
```

Note: with Azure CLI v2.20.0+ installed, the Bicep CLI is automatically installed when a command that depends on it is executed.

Note: Azure PowerShell does not have the capability to install the Bicep CLI yet. Azure PowerShell (v5.6.0+) expects that the Bicep CLI is already installed and available on the PATH.



Demo – Putting Bicep into (GitHub) Action



cognitionIT/AzureWVD: Collectio

Resource groups - Microsoft Azu

https://github.com/cognitionIT/AzureWVD

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📄 Code

cognitionIT latest version

354b5b9 23 minutes ago

🕒 80 commits

📁 .github/workflows

latest version

23 minutes ago

📁 AIBCcustomizations

added vscode

19 days ago

📁 ARMTemplates

Adding ARMTemplates

4 months ago

📁 AzModule

Demo Ready!

4 months ago

📁 Bicep

testing bicep

7 days ago

📁 InlineScripts

latest version

23 minutes ago

📁 RESTAPI

RESTAPI Update

6 months ago

📄 .gitignore

Demo ready!!!

4 months ago

📄 LICENSE

Initial commit

7 months ago

📄 README.md

Update README.md

4 months ago

About

Collection of scripts, templates and other resources to support automation of the Windows Virtual Desktop (WVD) Service provided by Microsoft Azure

📖 Readme

📄 MIT License

Releases

No releases published

Create a new release

Packages

No packages published

Tip: run Bicep on windows-latest agent

```
# Action = Azure PowerShell: Run inline script
# source: https://github.com/marketplace/actions/azure-powershell-action
- name: Install the min. version Az Module using Azure PowerShell
  uses: azure/powershell@v1
  with:
    inlineScript: |
      ## Add Az PowerShell Module version 5.6.0 to the runner (if not already on the runner)
      $minAzModuleVersion = '5.6.0'
      if(!(Test-Path "C:\Modules\az_$minAzModuleVersion")) {
        Install-Module -Name Az -AllowClobber -Scope CurrentUser -Force
        Save-Module -Path "C:\Modules\az_$minAzModuleVersion" -Name Az -RequiredVersion $minAzModuleVersion -Force
      }
      $env:PSModulePath = "C:\Modules\az_$( $minAzModuleVersion );$( $env:PSModulePath )"
      # Check installed versions of Az Module
      Get-InstalledModule -Name Az -AllVersions | sort Version -Descending
      azPSVersion: 'latest'
```


Summary

Jobs

✓ ARM Deployment with bicep file

ARM Deployment with bicep file

succeeded 21 days ago in 6m 54s

Search logs



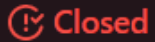
- > ✓ Set up job 24s
- > ✓ Checkout 14s
- > ✓ Login via Az module 1m 54s
- ▼ ✓ Prep runner with Bicep prereqs using Azure PowerShell 3m 56s

```
1 ▶ Run azure/powershell@v1
41 Validating inputs
42 Initializing Az Module
55 ***
56   "Success": "true",
57   "AzVersion": "5.5.0"
58 ***
97 Version      Name      Repository      Description
98 -----      ----      -
99 5.6.0         Az        PSGallery       Microsoft Azure PowerShell - Cmdlets to ...
100
101 Script execution Complete
```

- > ✓ Deploy ARM Resources with Bicep & Azure PowerShell 23s
- > ✓ Post Checkout 3s
- > ✓ Complete job 0s

The curious case of the templateHash

Bicep-generated files should include an autogenerated header #800



snarkywolverine opened this issue on Nov 3, 2020 · 2 comments

Discussed it at the team meeting today. The consensus appears to have template code generators use the top-level `metadata` property to store this information. This is the proposed schema:

```
"metadata": {
  "_generator": {
    "name": "<name of the code generator>",
    "version": "<version of the code generator>",
    "templateHash": "<template hash>"
  }
}
```

Considerations:

- Discussed using a comment instead of a JSON property. We're not in favor of using meaningful comments due to their fragility and uneven support in JSON libraries across all the relevant platforms.
- Template hash logic should reuse the existing template hash calculation logic that we already have in ARM telemetry and exposed in the API at <https://github.com/Azure/azure-rest-api-specs/blob/8cef8014762a839e98f0aeaa57a0bbdb8982d3d4/specification/resources/resource-manager/Microsoft.Resources/stable/2020-10-01/resources.json#L4236>
- Template hash calculation should run on the entire content of the template except for the `metadata._generator.templateHash` property. This is technically a breaking change in ARM, but impact should be extremely low.
- Also discussed adding a top-level multi-line comment with text similar to "This file is generated. Do not modify." This should be deferred until we fix bugs in line number handling in the runtime.

Road map

Current release: CLI version 0.3.255



v0.1

(aug '20)
Alpha Release
available on
August 31st



v0.2

(Oct '20)
- VSCode
Intellisense
- Support for
modules



v0.3

(March '21)
- Loops
- Conditionals
- Decompiler
- Production usage



v0.4

- Quality release
- Learn module *Available*
- Linter (TTK successor)
- Snippets & resource scaffolding *Available**
- Merging ARM Quickstarts & bicep
- IncludeFile() support



v0.5++

- Module Registry



And then...

Announcing the preview of PSArm



Steve

March 31st, 2021

Announcing PSArm preview

Today, we are pleased to announce the first preview of a new experimental module that make it easier than ever for PowerShell customers to create Azure Resource Manager (ARM) templates: [PSArm](#).

This module enables users to author [ARM templates](#) using PowerShell. Similar to [Azure Bicep](#), PSArm is an independent module that creates the necessary ARM JSON template to deploy and configure Azure infrastructure in a PowerShell context. PSArm allows PowerShell users who are familiar with ARM to write complex deployment templates by mixing the declarative syntax of ARM with the iterative syntax of PowerShell.

```
wvd-backplane.psarm.ps1 X
PSArm > wvd-backplane.psarm.ps1
12  Arm {
13      param(
14
15          [ArmParameter[string]]
16          $hostpoolFriendlyName = 'My Bicep created Host pool',
17
18          [ArmParameter[string]]
19          $appgroupNameFriendlyName = 'My Bicep created AppGroup',
20
21          [ArmParameter[string]]
22          $workspaceNameFriendlyName = 'My Bicep created Workspace',
23
24          [ValidateSet('Desktop', 'RemoteApp')]
25          [ArmParameter[string]]
26          $applicationgroupuptype = 'Desktop',
27
28          [ValidateSet('Desktop', 'RailApplications')]
29          [ArmParameter[string]]
30          $preferredAppGroupType = 'Desktop',
31
32          [ArmParameter[string]]
33          $wvdbackplanelocation = 'eastus',
34
35          [ArmParameter[string]]
36          $hostPoolType = 'pooled',
37
38          [ArmParameter[string]]
39          $loadBalancerType = 'BreadthFirst'
40      )
41
42      Resource $hostpoolName -Namespace 'Microsoft.DesktopVirtualization' -Type 'hostPools' -ApiVersion '2019-12-10-preview' -Location $
43      properties {
44          friendlyName $hostpoolFriendlyName
45          hostPoolType $hostPoolType
46          loadBalancerType $loadBalancerType
47          preferredAppGroupType $preferredAppGroupType
48      }
49  }
50
```

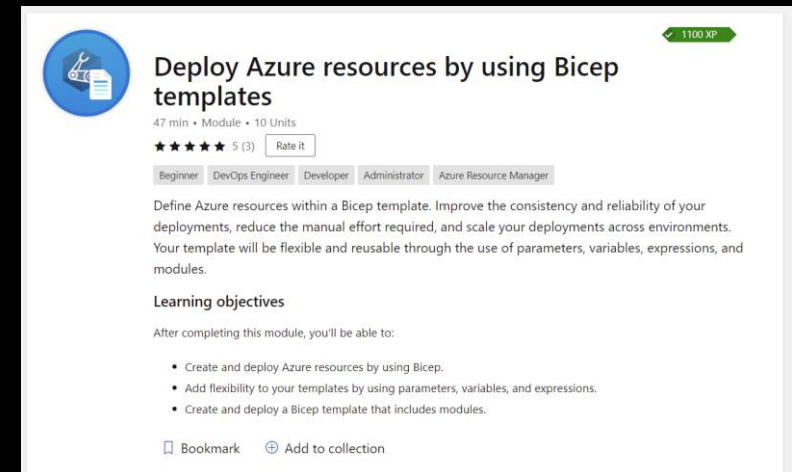
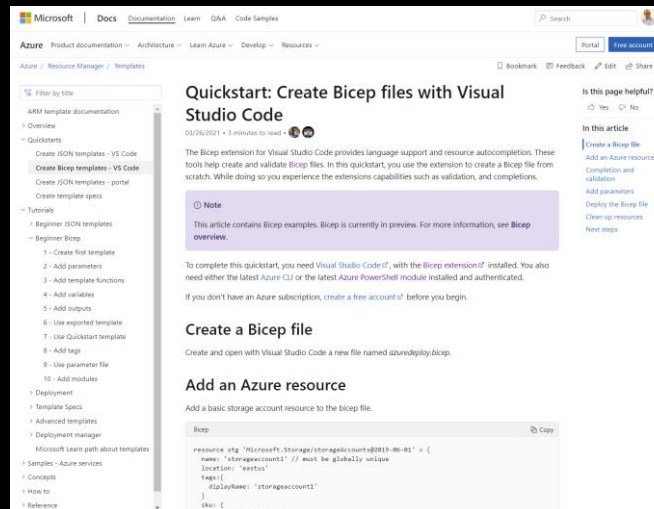
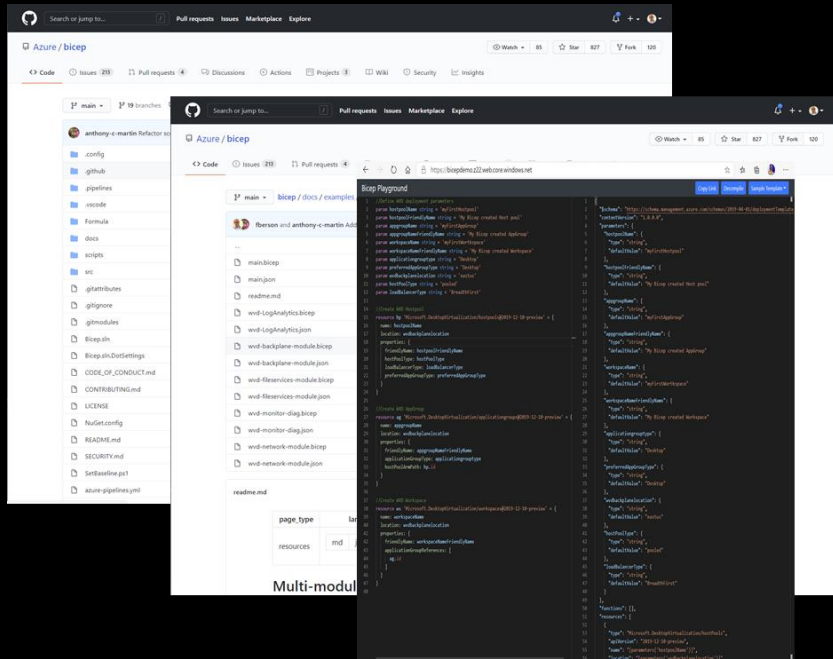
Call to actions:

Install guides, tutorials, example code & playgrounds!

aka.ms/bicep

bit.ly/3ml2FnJ

bit.ly/3wlluVA





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