



Empowering ARM and JSON with 'Project Bicep'



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Agenda



Introduction to automation



Azure Resource Manager & JSON



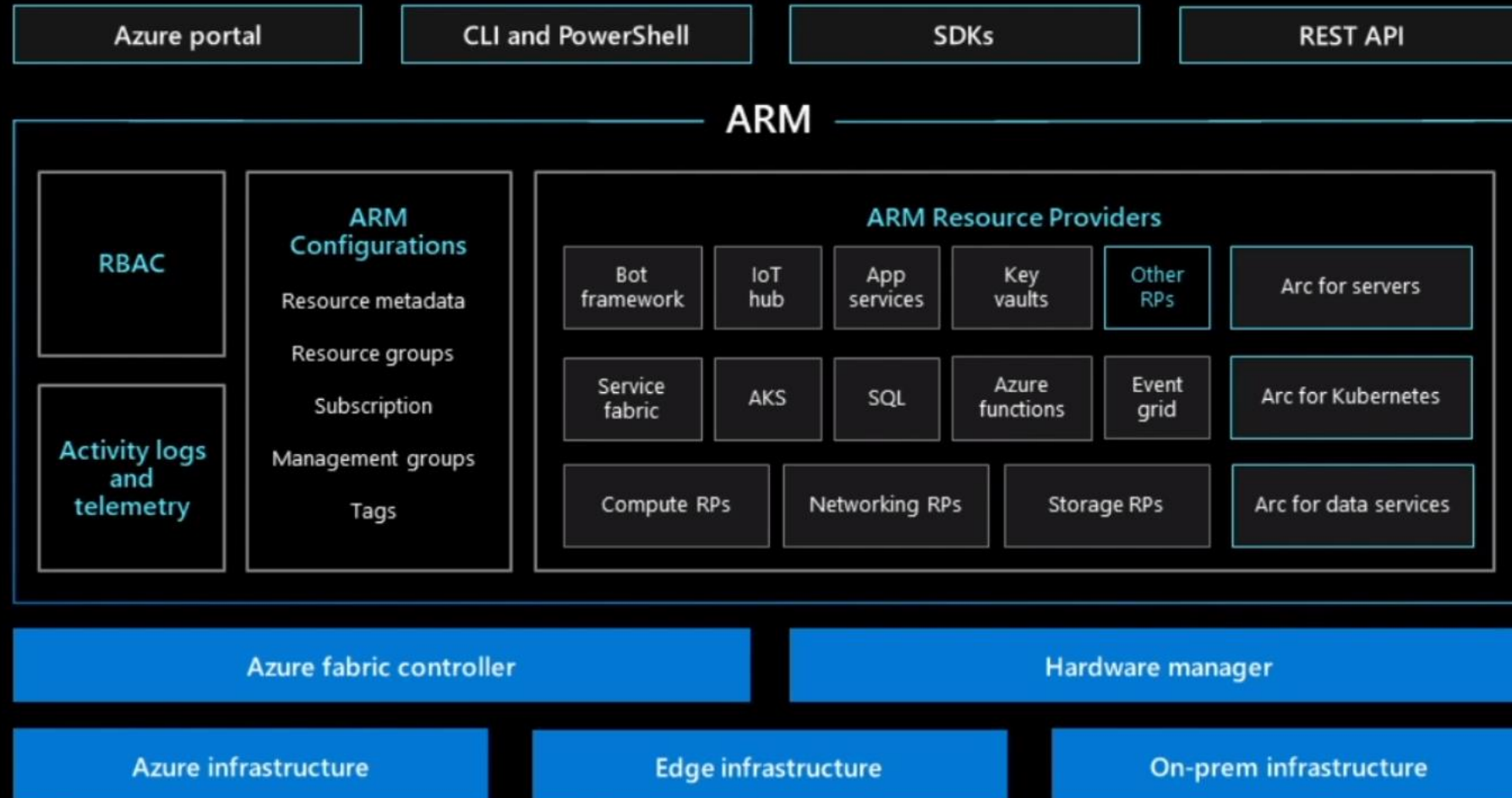
What is Project 'Bicep'



Demos, demos, demos!



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>
```

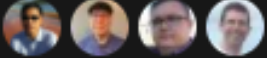
```
[
  {
    "name": "<variable-array-name>",
    "count": <number-of-iterations>,
    "input": <object-or-value-to-repeat>
```

```
"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

Quickstart: Create and deploy ARM templates by using the Azure portal

06/29/2020 • 6 minutes to read • 







Learn how to generate an Azure Resource Manager template (ARM template) using the Azure portal, and the process of editing and deploying the template from the portal. ARM templates are JSON files that define the resources you need to deploy for your solution. To understand the concepts associated with deploying and managing your Azure solutions, see [template deployment overview](#).




ARM Template

Microsoft Azure

Search resources, services, and docs (G+ /)



CLOUDDEVOPSNINJA

Home > Windows Virtual Desktop >

Create a host pool

×

BasicsVirtual MachinesWorkspaceTagsReview + create

Project details

Subscription *

Microsoft Azure Sponsorship

Resource group *

Select a resource group

Create new

Host pool name *

Location *

East US

Metadata will be stored in Azure geography associated with (US) East US

Validation environment

☒ No ☐ Yes

Host pool type

If you select pooled (shared), users will still be able to access their personalization and user data, using FSLogix.

Host pool type *

Select a type

Review + create

Next: Virtual Machines >



ARM Template

Microsoft Azure

Search resources, services, and docs (G+ /)

CLOUDDEVOPSNINJA

Home > Windows Virtual Desktop >

Create a host pool

✓ Validation passed.

Basics

Virtual Machines

Workspace

Tags

Review + create

Basics

Subscription

Resource group

Host pool name

Location

Host pool type

Max session limit

Load balancing algorithm

Microsoft Azure Sponsorship

rg-wvd-infra

hp-demo

East US

Pooled

10

Breadth-first

Virtual Machines

Resource group

rg-wvd-resources

Create

< Previous

Download a template for automation



ARM Template

The screenshot shows the Microsoft Azure portal interface. At the top, the navigation bar includes the Microsoft Azure logo, a search bar, and user information. The breadcrumb trail indicates the path: Home > Windows Virtual Desktop > Create a host pool > Template. The 'Template' tab is active, and the 'Download' button is highlighted with a yellow box. Below the navigation bar, a blue information banner explains that ARM templates automate resource deployment. The main content area is divided into three tabs: Template, Parameters, and Scripts. The 'Template' tab is selected, displaying a JSON ARM template. On the left, a sidebar lists the template's components: Parameters (56), Variables (15), and Resources (5). The JSON code is displayed in a dark-themed editor with line numbers. The template defines a schema, content version, parameters (including nested templates location and artifacts location), and metadata.

Microsoft Azure Search resources, services, and docs (G+)

Home > Windows Virtual Desktop > Create a host pool > Template

Download Add to library (preview) Deploy

Automate deploying resources with Azure Resource Manager templates in a single, coordinated operation. Define resources and configurable input parameters and deploy with script or code. [Learn more about template deployment.](#)

☒ Include parameters ⓘ


Template Parameters Scripts

Parameters (56)
Variables (15)
Resources (5)

- [parameters('hostpoolName')]
(Microsoft.DesktopVirtualization/h
- [variables('appGroupName')]
(Microsoft.DesktopVirtualization/a
- [concat('Workspace-linkedTemplate-',
parameters('deploymentId'))]
(Microsoft.Resources/deployments
- [concat('AVSet-linkedTemplate-',
parameters('deploymentId'))]
(Microsoft.Resources/deployments

```
1 {  
2   "$schema": "https://schema.management.azure.com/schemas/2015-01-01/  
deploymentTemplate.json#",  
3   "contentVersion": "1.0.0.0",  
4   "parameters": {  
5     "nestedTemplatesLocation": {  
6       "type": "string",  
7       "metadata": {  
8         "description": "The base URI where artifacts required by this  
template are located."  
9       },  
10      "defaultValue": "https://catalogartifact.azureedge.net/publicartifacts/  
Microsoft.Hostpool-ARM-1.0.18-preview/"  
11    },  
12    "artifactsLocation": {  
13      "type": "string",  
14      "metadata": {
```

ARM Template – Reference Guide

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Ssh Public Keys

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, and how to use them. ARM template reference documentation provides information on the resource types available in Azure.

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.

Is this page helpful?

Yes No

In this article

Template format

Property values

Quickstart templates

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

| VirtualNetworkPropertiesFormat object | | | | Is this page helpful? |
|---------------------------------------|--------|----------|--|---|
| Name | Type | Required | Value | Yes No |
| addressSpace | object | No | The AddressSpace that contains an array of IP address ranges that can be used by subnets. - AddressSpace object | In this article Template format Property values Quickstart templates |
| 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 | |



ARM Template – Reference Guide

```
"parameters": {  
  "dnsServer": {  
    "type": "string",  
    "metadata": {  
      "description": "The vNet DNS server to enable the domain-join of Session Hosts"  
    }  
  }  
},  
"resources": [  
  {  
    1 child: string (subnets)  
    "name": "[variables('vnetName')]",  
    "type": "Microsoft.Network/virtualNetworks",  
    "apiVersion": "2020-07-01",  
    "location": "[resourceGroup().location]",  
    "properties": {  
      "addressSpace": {"addressPrefixes": ["10.0.0.0/16"]},  
      "dhcpOptions": {"dnsServers": ["parameters('dnsServer')"]},  
    }  
  }  
]
```

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

Search

Showing all 978 templates. Refine

Resource Types:

All

Microsoft.Aad (1)

Microsoft.Analysisservices (1)

Microsoft.ApiManagement (11)

Microsoft.AppConfiguration (2)

Microsoft.AppPlatform (1)

Microsoft.Attestation (1)

Microsoft.Authorization (15)

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 VM in the resource group location and return the FQDN of the VM.

by Brian Moore

Last updated: 9/18/2020

Deploy to Azure

Browse on GitHub

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.ps1

Install and configure Azure PowerShell

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

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-WVD
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 |

Azure
Thursdays

Empowering ARM and JSON with Project 'Bicep'

ARM Template – Automatic deployments

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

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       "type": "string",
346       "defaultValue": "[concat('vmCreation-linkedTemplate-', parameters('deploymentId'))]",
347       "resourceGroup": "[parameters('vmResourceGroup')]",
348       "dependsOn": [
349         "[concat('AVSet-linkedTemplate-', parameters('deploymentId'))]"
350       ],
351       "type": "Microsoft.Resources/deployments",
352       "properties": {
353         "mode": "Incremental",
354         "templateLink": {
355           "uri": "[variables('vmTemplateUri')]",
356           "contentVersion": "1.0.0.0"
357         },
358         "parameters": {
359           "artifactsLocation": {
360             "value": "[parameters('artifactsLocation')]"
361           },
362           "vmImageVhdUri": {
363             "value": "[parameters('vmImageVhdUri')]"
364           },
365           "storageAccountResourceGroupName": {
366             "value": "[parameters('storageAccountResourceGroupName')]"
367           },
368           "vmGalleryImageOffer": {
369             "value": "[parameters('vmGalleryImageOffer')]"
370           },
371           "vmGalleryImagePublisher": {
372             "value": "[parameters('vmGalleryImagePublisher')]"
373           },
374           "vmGalleryImageSKU": {
375             "value": "[parameters('vmGalleryImageSKU')]"
376           }
377         }
378       }
379     },
380     "vmTemplateUri": {
381       "type": "string",
382       "defaultValue": "[concat('https://raw.githubusercontent.com/Azure/azure-quickstart-templates/master/101-vm-gallery-image/azuredeploy.json')]",
383       "resourceGroup": "[parameters('vmResourceGroup')]",
384       "dependsOn": [
385         "[concat('vmCreation-linkedTemplate-', parameters('deploymentId'))]"
386       ],
387       "type": "Microsoft.Resources/deployments",
388       "properties": {
389         "mode": "Incremental",
390         "templateLink": {
391           "uri": "[variables('vmTemplateUri')]",
392           "contentVersion": "1.0.0.0"
393         },
394         "parameters": {
395           "artifactsLocation": {
396             "value": "[parameters('artifactsLocation')]"
397           },
398           "vmImageVhdUri": {
399             "value": "[parameters('vmImageVhdUri')]"
400           },
401           "storageAccountResourceGroupName": {
402             "value": "[parameters('storageAccountResourceGroupName')]"
403           },
404           "vmGalleryImageOffer": {
405             "value": "[parameters('vmGalleryImageOffer')]"
406           },
407           "vmGalleryImagePublisher": {
408             "value": "[parameters('vmGalleryImagePublisher')]"
409           },
410           "vmGalleryImageSKU": {
411             "value": "[parameters('vmGalleryImageSKU')]"
412           }
413         }
414       }
415     }
416   },
417   "variables": {
418     "vmTemplateUri": "[concat('https://raw.githubusercontent.com/Azure/azure-quickstart-templates/master/101-vm-gallery-image/azuredeploy.json')]"
419   },
420   "resources": [
421     {
422       "type": "Microsoft.Resources/deployments",
423       "name": "[concat('vmCreation-linkedTemplate-', parameters('deploymentId'))]",
424       "resourceGroup": "[parameters('vmResourceGroup')]",
425       "dependsOn": [
426         "[concat('AVSet-linkedTemplate-', parameters('deploymentId'))]"
427       ],
428       "type": "Microsoft.Resources/deployments",
429       "properties": {
430         "mode": "Incremental",
431         "templateLink": {
432           "uri": "[variables('vmTemplateUri')]",
433           "contentVersion": "1.0.0.0"
434         },
435         "parameters": {
436           "artifactsLocation": {
437             "value": "[parameters('artifactsLocation')]"
438           },
439           "vmImageVhdUri": {
440             "value": "[parameters('vmImageVhdUri')]"
441           },
442           "storageAccountResourceGroupName": {
443             "value": "[parameters('storageAccountResourceGroupName')]"
444           },
445           "vmGalleryImageOffer": {
446             "value": "[parameters('vmGalleryImageOffer')]"
447           },
448           "vmGalleryImagePublisher": {
449             "value": "[parameters('vmGalleryImagePublisher')]"
450           },
451           "vmGalleryImageSKU": {
452             "value": "[parameters('vmGalleryImageSKU')]"
453           }
454         }
455       }
456     },
457     {
458       "type": "Microsoft.Resources/deployments",
459       "name": "[concat('vmTemplateUri-linkedTemplate-', parameters('deploymentId'))]",
460       "resourceGroup": "[parameters('vmResourceGroup')]",
461       "dependsOn": [
462         "[concat('vmCreation-linkedTemplate-', parameters('deploymentId'))]"
463       ],
464       "type": "Microsoft.Resources/deployments",
465       "properties": {
466         "mode": "Incremental",
467         "templateLink": {
468           "uri": "[variables('vmTemplateUri')]",
469           "contentVersion": "1.0.0.0"
470         },
471         "parameters": {
472           "artifactsLocation": {
473             "value": "[parameters('artifactsLocation')]"
474           },
475           "vmImageVhdUri": {
476             "value": "[parameters('vmImageVhdUri')]"
477           },
478           "storageAccountResourceGroupName": {
479             "value": "[parameters('storageAccountResourceGroupName')]"
480           },
481           "vmGalleryImageOffer": {
482             "value": "[parameters('vmGalleryImageOffer')]"
483           },
484           "vmGalleryImagePublisher": {
485             "value": "[parameters('vmGalleryImagePublisher')]"
486           },
487           "vmGalleryImageSKU": {
488             "value": "[parameters('vmGalleryImageSKU')]"
489           }
490         }
491       }
492     }
493   ],
494   "outputs": {
495     "rdshVmName": {
496       "value": "[parameters('vmCreation-linkedTemplate-')]",
497       "type": "string"
498     }
499   }
500 }
```

- 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](#)

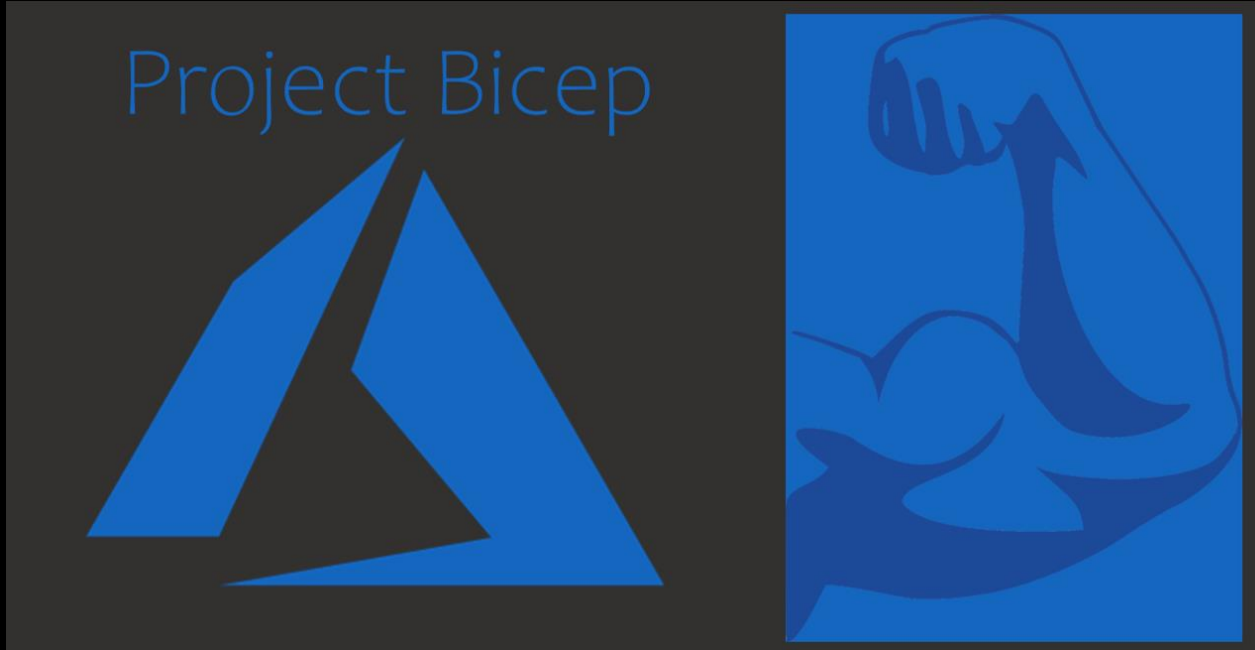
Start time: 1/30/2021, 4:39:52 PM
Correlation ID: 24959bf7-49ef-4a12-8abf-f42d14bc57b3

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

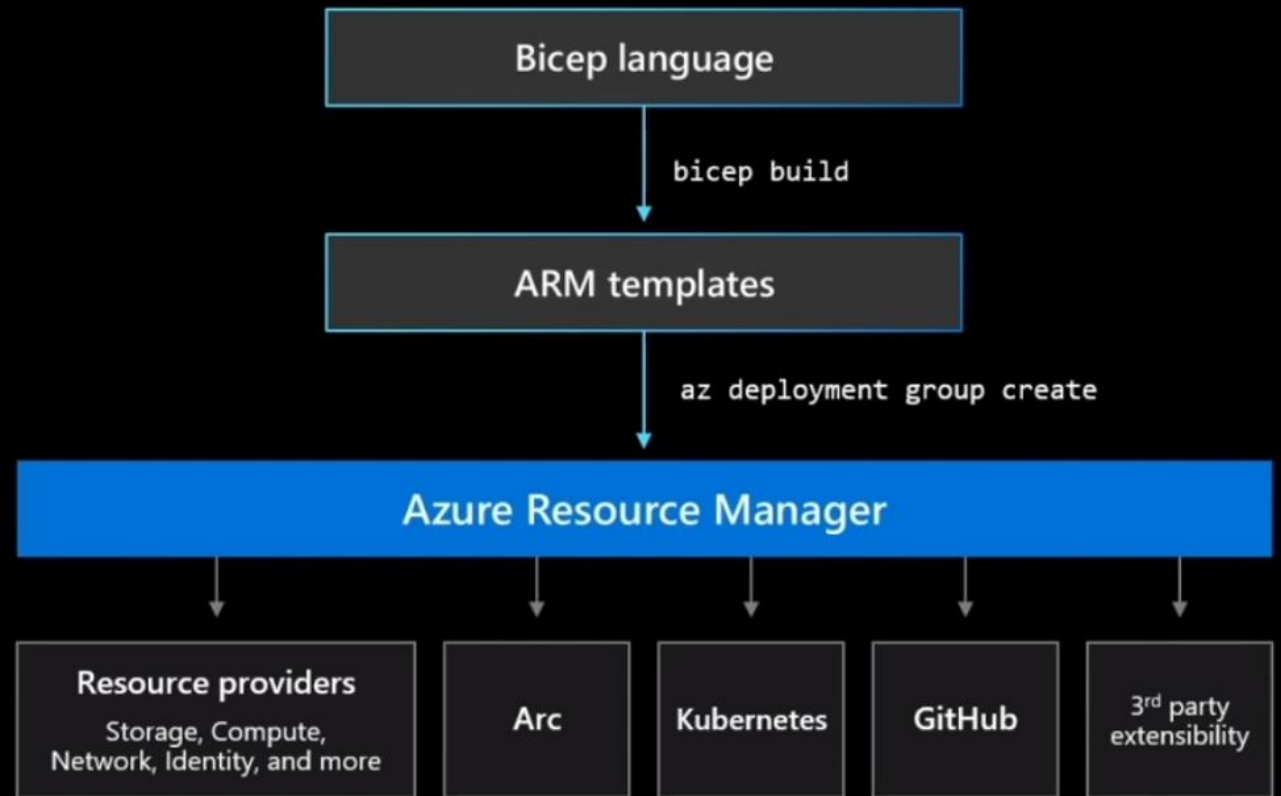
Leverage ARM template knowledge and investments

Modular

Abstract common blocks of code into reusable parts

Open Source

Transparency and community



Installing project '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!
```



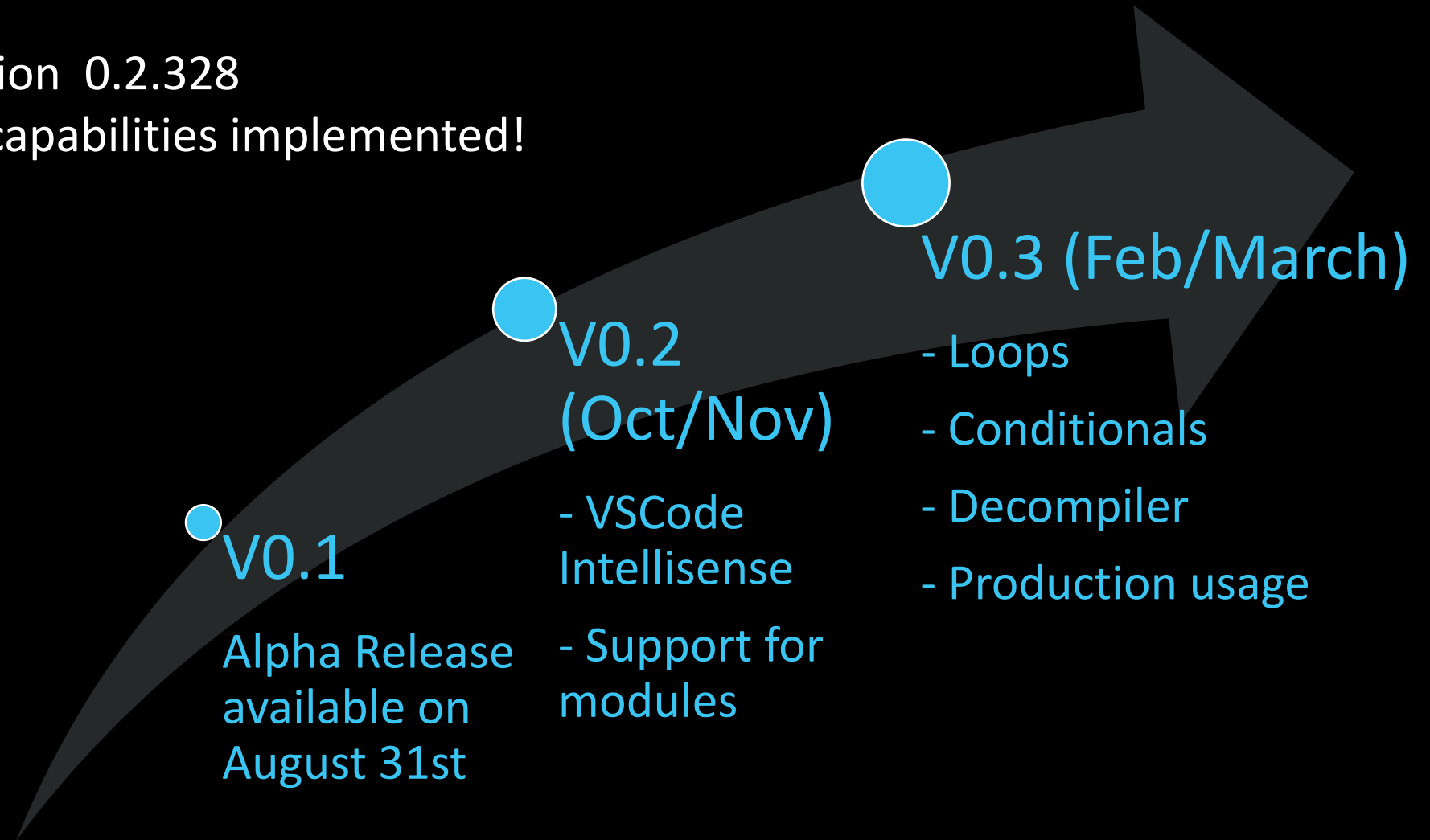
Demo



Road map

Current release: CLI version 0.2.328

~90% of ARM template capabilities implemented!



Breaking changes planned

| | BEFORE | | AFTER |
|---|---|---|--|
| Param Decorators Issue #64 | <pre>param authType string { default: 'password' allowed: ['sshPublicKey' 'password'] }</pre> | → | <pre>@allowed(['sshPublicKey' 'password') param authType string = 'password'</pre> |
| Outputs Issue #569 | <pre>param adminUsername string ... output username string = adminUsername</pre> | → | <pre>param adminUsername string ... output adminUsername as string</pre> |

Call to action: aka.ms/bicep

Install guides, tutorials, example code & playgrounds!

The screenshot shows the GitHub repository for Azure/bicep. The repository has 85 watchers, 827 stars, and 120 forks. The main branch is selected. The repository description states: "Bicep is a declarative language for describing and deploying Azure resources". The repository includes a README, a MIT License, and a list of releases. The latest release is v0.2.328 (alpha), released yesterday. The repository also lists contributors and languages used, including C#, PowerShell, JavaScript, and Ruby.

| File | Description | Commit |
|-----------------------|---|--------------|
| .config | official build prereqs (#1021) | 2 months ago |
| .github | Stop triggering build on tags (#1345) | 3 days ago |
| pipelines | Fix official VSIX version to unblock publishing to VS gallery (#1365) | yesterday |
| vscode | Fix launch.json (#1219) | last month |
| Formula | Update homebrew to use v0.2.212 (#1192) | last month |
| docs | Filter available types by target scope (#1321) | 9 days ago |
| scripts | Script to populate existing release with signed build artifacts (#1344) | 3 days ago |
| src | Refactor scope naming (#1368) | 15 hours ago |
| gitattributes | Run VSIX tests on all platforms (#930) | 2 months ago |
| gitignore | Update CONTRIBUTING.md with instruction to run Bicep VSCode extensi... | 2 months ago |
| gitmodules | Switched from submodule to type nugets (#987) | 2 months ago |
| Bicep.sln | Detecting duplicate resource and module names (#1204) | 11 days ago |
| Bicep.sln.DotSettings | Parse errors no longer spill over multiple new lines (#77) | 6 months ago |
| CODE_OF_CONDUCT.md | Initial CODE_OF_CONDUCT.md commit | 9 months ago |
| CONTRIBUTING.md | Detecting duplicate resource and module names (#1204) | 11 days ago |
| LICENSE | Updating LICENSE to template content | 9 months ago |
| NuGet.config | Replace expressions nugget package with stripped down library (#182) | 5 months ago |
| README.md | Added link to Bicep PowerShell Module in readme (#1333) | 4 days ago |
| SECURITY.md | Initial SECURITY.md commit | 9 months ago |
| SetBaseline.ps1 | Fixed baseline script (#1108) | last month |
| azure-pipelines.yml | Updated to .net 5 (#911) | 2 months ago |

The screenshot shows the Azure/bicep GitHub repository with a specific example selected: "bicep/docs/examples/201/wvd-backplane-with-network-and-storage-and-monitoring/". The example is a multi-module WVD deployment with some prerequisites. The repository has 85 watchers, 827 stars, and 120 forks. The example is a multi-module WVD deployment with some prerequisites. The example is a multi-module WVD deployment with some prerequisites.

| File | Description | Commit |
|-------------------------------|---|--------------|
| main.bicep | multi-module WVD deployment with some prereqs (#1010) | 2 months ago |
| main.json | multi-module WVD deployment with some prereqs (#1010) | 2 months ago |
| readme.md | Added readme.md (#1047) | 2 months ago |
| wvd-LogAnalytics.bicep | multi-module WVD deployment with some prereqs (#1010) | 2 months ago |
| wvd-LogAnalytics.json | multi-module WVD deployment with some prereqs (#1010) | 2 months ago |
| wvd-backplane-module.bicep | multi-module WVD deployment with some prereqs (#1010) | 2 months ago |
| wvd-backplane-module.json | multi-module WVD deployment with some prereqs (#1010) | 2 months ago |
| wvd-fileservices-module.bicep | multi-module WVD deployment with some prereqs (#1010) | 2 months ago |
| wvd-fileservices-module.json | multi-module WVD deployment with some prereqs (#1010) | 2 months ago |
| wvd-monitor-diag.bicep | multi-module WVD deployment with some prereqs (#1010) | 2 months ago |
| wvd-monitor-diag.json | multi-module WVD deployment with some prereqs (#1010) | 2 months ago |
| wvd-network-module.bicep | multi-module WVD deployment with some prereqs (#1010) | 2 months ago |
| wvd-network-module.json | multi-module WVD deployment with some prereqs (#1010) | 2 months ago |

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| wvd-backplane-module.json | multi-module WVD deployment with some prereqs (#1010) | 2 months ago |
| wvd-fileservices-module.bicep | multi-module WVD deployment with some prereqs (#1010) | 2 months ago |
| wvd-fileservices-module.json | multi-module WVD deployment with some prereqs (#1010) | 2 months ago |
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| wvd-monitor-diag.json | multi-module WVD deployment with some prereqs (#1010) | 2 months ago |
| wvd-network-module.bicep | multi-module WVD deployment with some prereqs (#1010) | 2 months ago |
| wvd-network-module.json | multi-module WVD deployment with some prereqs (#1010) | 2 months ago |



Empowering ARM and JSON with Project 'Bicep'



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