

Microsoft meets Community: Windows Virtual Desktop

*Empowering your WVD deployments with
Project Bicep, experiences from the field!*

Freek Berson

Remoting Windows Enthusiast

Microsoft MVP

@fberson

freek.berson@wortell.nl



4th edition



3

Host
deployment



Your subscription—your control

Desktops and remote apps



Full Desktop



RemoteApp



Windows 10 Enterprise
multi-session



Windows 10 Enterprise



Windows Server
2012 R2 and newer



Windows 7 Enterprise
Full Desktop

Management and policies



Image, app, and profile
management



User density, VM sizing,
and scaling policies



User management and
identity



Networking policies



2

Image
management



1

WVD
backplane
deployment



Managed by Microsoft

Windows Virtual Desktop Service



Clients



Diagnostics



Gateway



Management



Broker



Load balancing

Infrastructure



Compute



Storage

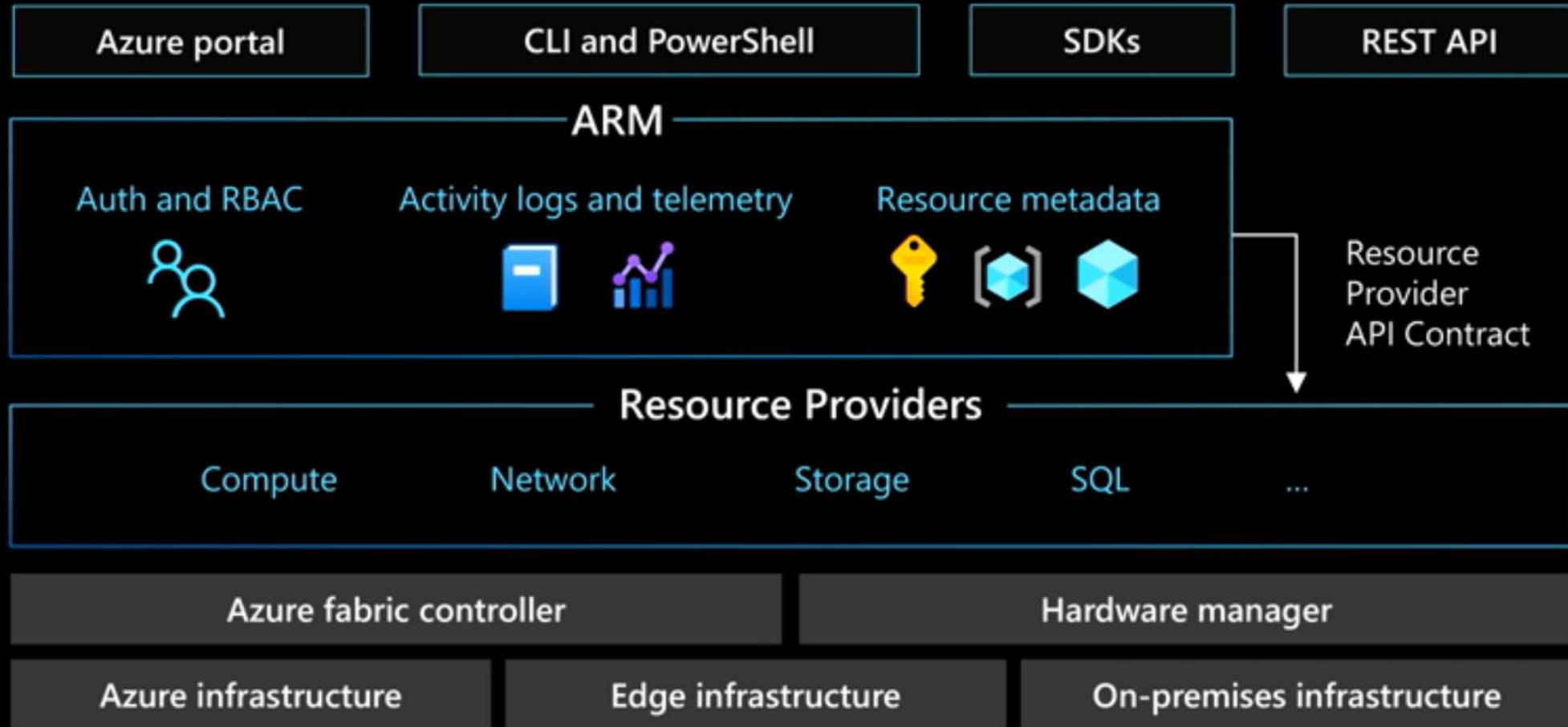


Networking

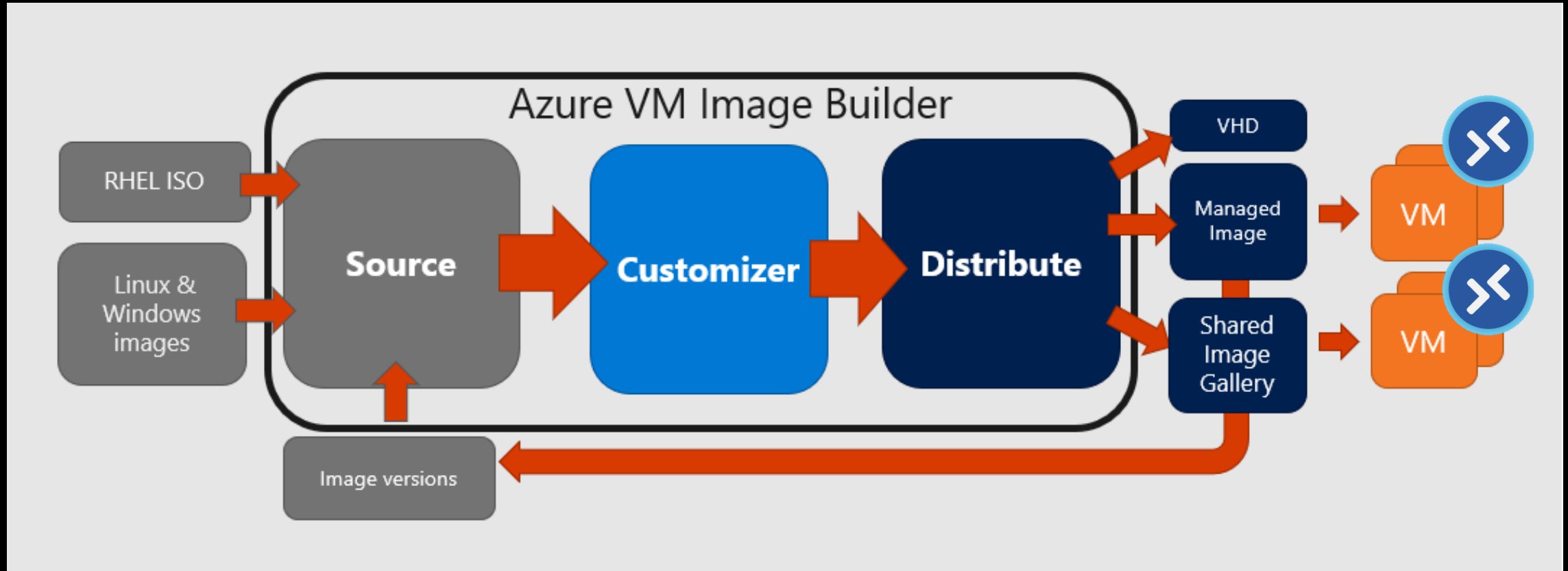


Empowering your WVD deployments with Project Bicep!

Azure Resource Manager



Azure Image Builder Preview



Azure DevOps

The screenshot displays the Azure DevOps web interface. The top navigation bar shows the breadcrumb path: **WVD Host Pool Maintenance** / **Pipelines** / **Releases** / **WVD Acceptance Host Pool** / **Release-32**. The left sidebar contains a menu with the following items: **Overview**, **Boards**, **Repos**, **Pipelines** (highlighted), **Pipelines**, **Environments**, **Releases**, **Library**, **Task groups**, **Deployment groups**, **Test Plans**, and **Artifacts**. The main content area is titled **WVD Acceptance Host Pool > Release-32**. Below the title, there are tabs for **Pipeline**, **Variables**, and **History**, along with action buttons: **+ Deploy**, **Cancel**, **Refresh**, **Edit**, and a menu icon. The **Pipeline** tab is active, showing a **Release** section on the left and a **Stages** section on the right. The **Release** section indicates the release was **Manually triggered** by **Freek Berson** on **21/02/2021, 20:58**. Below this, the **Artifacts** section lists two artifacts: **_WVD Host Pool Maint...** (ID: 49137197, branch: main) and **_fberson_wvd** (ID: 6ec830c68, branch: master). The **Stages** section shows a single stage named **AddHostsToExistingH...** which **Succeeded** on **21/02/2021, 21:09**.



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Infrastructure as code

Language Azure Resource Manager accepts JavaScript Object Notation (JSON) templates that comply with a JSON schema. JSON is an industry standard, human readable language.

```
4. Empty.json
1  {
2    "$schema": "https://schema.management.azure.com/schemas/2019-04-01/deploymentTemplate.json#",
3    "contentVersion": "1.0.0.0",
4    "parameters": {},
5    "functions": [],
6    "variables": {},
7    "resources": [],
8    "outputs": {}
9  }
```

Tooling Although it is possible to create a template for a complete application in simple text editor, there is sophisticated tooling available that provides you with a better authoring experience for Azure Resource Manager templates.



JSON / ARM challenges

```
262 "apiVersion": "[variables('apiVersion')]",
263 "type": "Microsoft.Compute/virtualMachines",
264 "name": "[concat(variables('azureVMName'), '-', copyindex(parameters('sequenceStartNumberWVDHost')))]",
265 "comments": "This resources creates Virtual Machines that wil host the RDSH role",
266 "tags": {
267   "displayName": "WVD Session Host Virtual Machines"
268 },
269 "location": "[resourceGroup().location]",
270 "copy": {
271   "name": "[concat(variables('azureVMName'), 'vm-loop')]",
272   "count": "[parameters('numberOfInstancesWVD')]"
273 },
274 "dependsOn": [
275   "[concat('Microsoft.Network/networkInterfaces/', variables('azureVMName'), '-', copyindex(parameters('sequenceStartNumberWVDHost')), variables('networkAdapterNamePostFix'))]",
276   "[concat('Microsoft.Compute/availabilitySets/', parameters('existingAvailabilitySetName'))]"
277 ],
278 "properties": {
279   "licenseType": "Windows_Client",
280   "hardwareProfile": {
281     "vmSize": "[parameters('virtualMachineSizeWVD')]"
282   },
283   "availabilitySet": {
284     "id": "[resourceId('Microsoft.Compute/availabilitySets', parameters('existingavailabilitySetName'))]"
285   },
286   "osProfile": {
287     "computerName": "[concat(parameters('hostNamePrefixWVD'), '-', copyindex(parameters('sequenceStartNumberWVDHost')))]",
288     "adminUsername": "[concat(parameters('hostNamePrefixWVD'), '-', copyindex(parameters('sequenceStartNumberWVDHost')), '-adm')]",
289     "adminPassword": "[parameters('localAdminPassword')]",
290     "windowsConfiguration": {
291       "timeZone": "[variables('vmTimeZone')]"
292     }
293   },
294   "storageProfile": {
295     "osDisk": {
296       "name": "[concat(variables('azureVMName'), '-', copyindex(parameters('sequenceStartNumberWVDHost')), '-', variables('virtualmachineosdisk').diskName)]",
297       "managedDisk": {
298         "storageAccountType": "[variables('storage').type]"
299       },
300       "osType": "windows",
301       "caching": "[variables('virtualmachineosdisk').cacheOption]",
302       "createOption": "[variables('virtualmachineosdisk').createOption]"
303     },
304     "imageReference": {
```



What is Microsoft 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

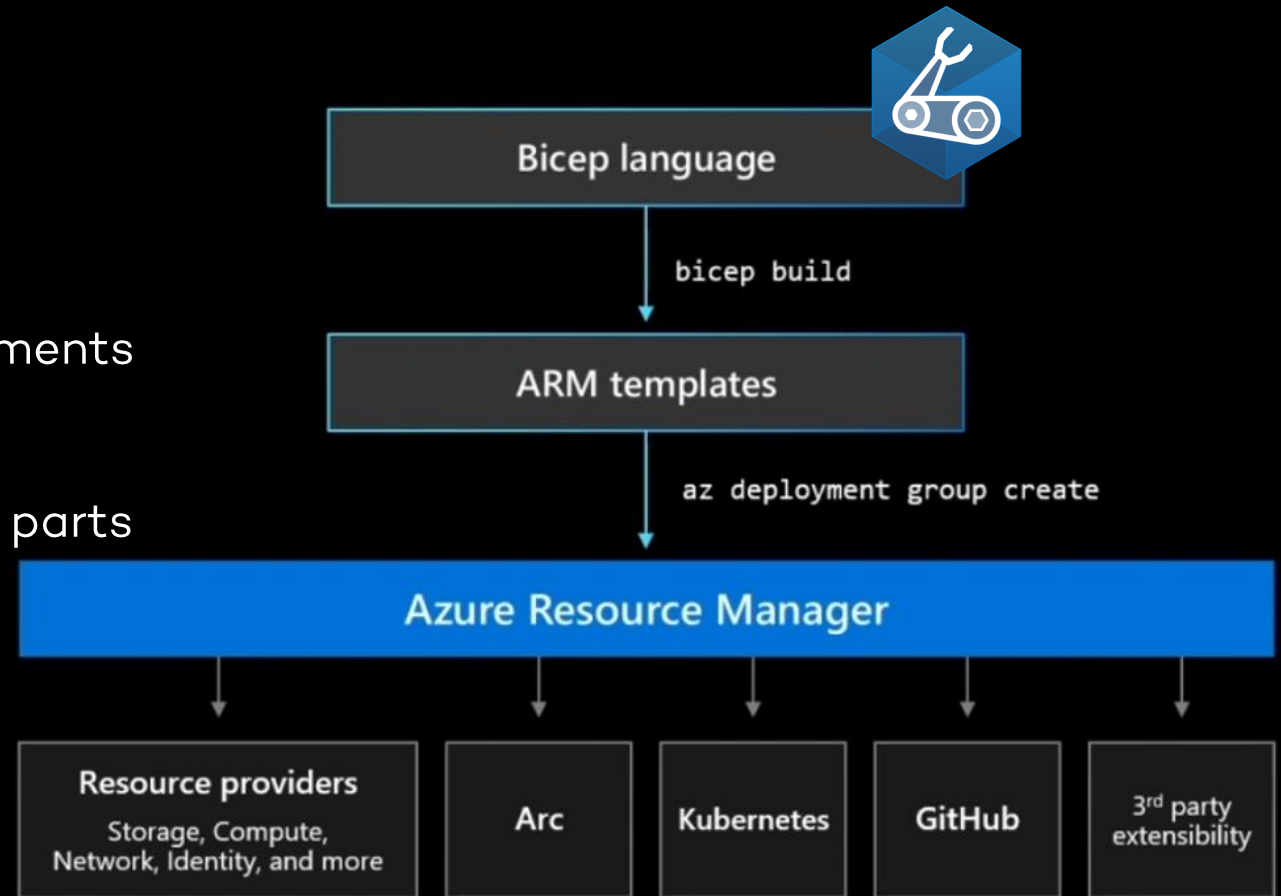
Leverage ARM template knowledge and investments

Modular

Abstract common blocks of code into reusable parts

Open Source

Transparency and community



Empowering your WVD deployments with Project Bicep!

Azure Services Overview

AI + Machine Learning	Analytics	Compute	Databases	Development	Identity + Security	IoT + MR	Integration	Management + Governance	Media + Comms	Migration	Networking	Storage
Bot Service	Analysis Services	App Service	Apache Cassandra MI	App Configuration	Azure Active Directory	Azure Maps	API Management	Automation	Azure CDN	Azure Migrate	Application Gateway	Azure vFXT
Cognitive Search	Azure Purview	App Service (Linux)	Blockchain Service	Azure DevOps	Azure AD B2C	Azure Sphere	Azure API for FHIR	Azure Advisor	Communication Services	Data Box	Azure Bastion	Azure NetApp Files
Cognitive Services	Data Catalog	Azure Batch	Cosmos DB	Azure Spring Cloud	Azure AD DS	Digital Twins	Event Grid	Azure Arc	Media Services	DB Migration Service	Azure DNS	Azure Storage
Machine Learning	Data Explorer	Azure Functions	Database for MariaDB	DevTest Labs	Azure Defender	IoT Central	Logic Apps	Azure Automate		Site Recovery	Azure Firewall	Data Lake Storage
Microsoft Genomics	Data Factory	Azure VMware Solutions	Database for MySQL	Lab Services	Azure Key Vault	IoT Edge	Notification Hubs	Azure Backup			Azure Front Door	Data Share
Open Datasets	Data Lake Analytics	Cloud Services	Database for PostgreSQL	SignalR Service	Azure Sentinel	IoT Hub	Service Bus	Azure Blueprints			Azure Orbital	Managed Disks
	Databricks	Container Instances	Redis Cache	Visual Studio App Center	DDoS Protection	Remote Rendering		Azure Lighthouse			ExpressRoute	StorSimple
	Event Hubs	Container Registry	SQL Database		Dedicated HSM	Spatial Anchors		Azure Monitor			Load Balancer	
	HDInsight	CycleCloud	SQL Server Stretch DB		Information Protection	Time Series Insights		Azure Policy			Network Watcher	
	Power BI Embedded	Dedicated Host			Security Center			Azure Portal			Private Link	
	Stream Analytics	Kubernetes Service						Cloud Shell			Traffic Manager	
	Synapse Analytics	Service Fabric						Cost Management			Virtual Network	
		Virtual Machines						Managed Apps			Virtual WAN	
		VM Scale Sets						Scheduler			VPN Gateway	
		Windows Vm Desktop										



Azure Windows Virt. Desktop 360°

Summary of service references across the documentation/updates/stats, rebuilt daily. Use [Services Overview](#) to check other services.

3	46	0	0	36	1
Updates, 6 months	Regions of presence	Rollout plans	Ref. architectures	Customer stories	Learning modules
Avg: 5 Max: 69	Avg: 39 Max: 52	Avg: 2 Max: 7	Avg: 15 Max: 85	Avg: 59 Max: 563	Avg: 15 Max: 103
360° STATS COMPARED TO: NONE					

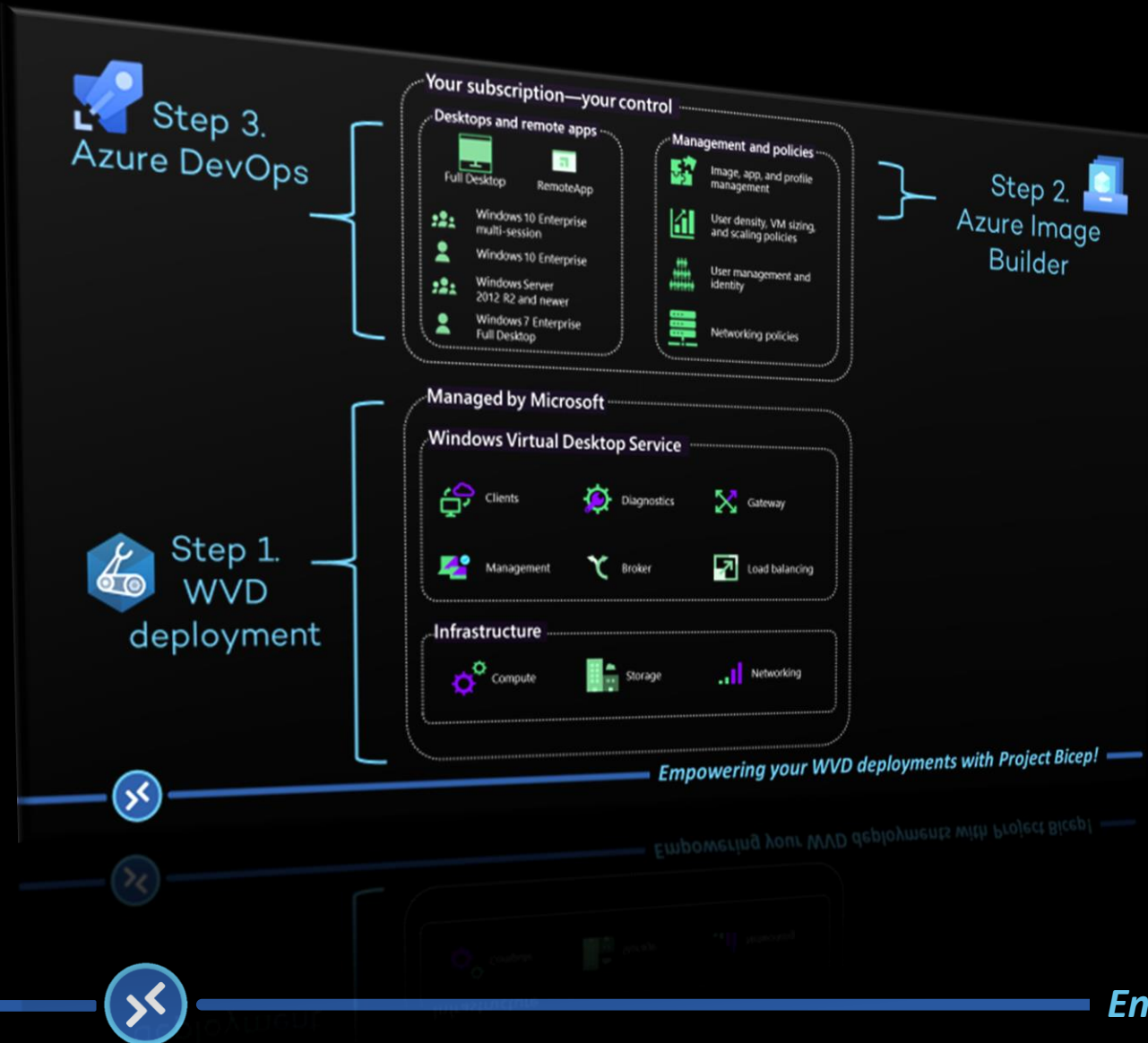
Developed by Alexey Polkovnikov, Microsoft Cloud Solution Architect.

Developed by [Alexey Polkovnikov](#),
Microsoft Cloud Solution Architect.



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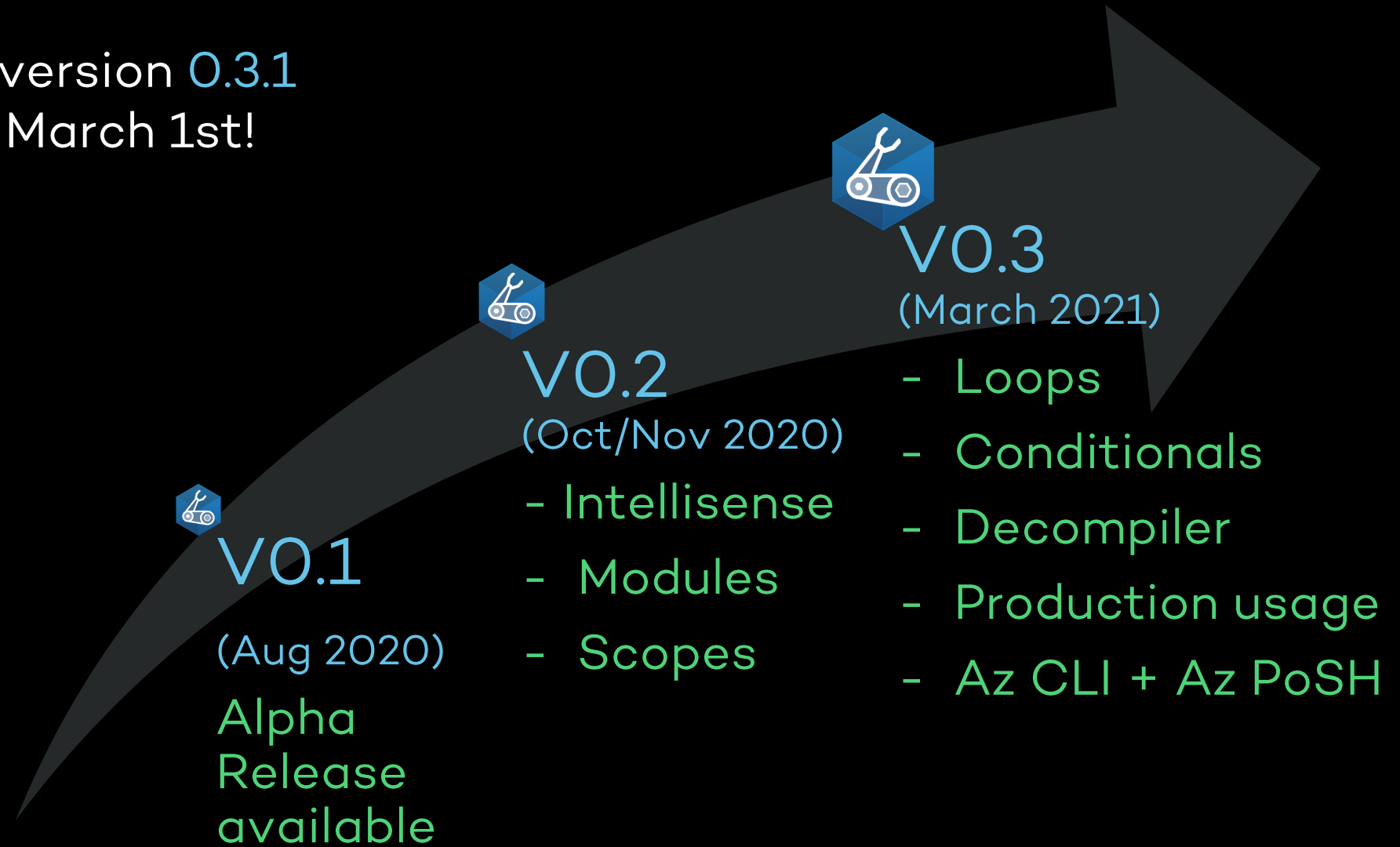
Demo



- Vnet with 2 Subnets
- Peering to ADDS vnet
- WVD Workspaces, hostpools and Appgroups
- WVD Template Host VM
- Azure File Services for Profile Management
- Azure Keyvault with secrets
- Azure Log analytics & diagnostics settings
- Full Azure Image Builder setup **Preview**
- Template Specs **Preview**

Road map

Current release: CLI version 0.3.1
Feature parity since March 1st!



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. It is a Bicep project with a main branch and 19 branches. The repository contains a .config file, a github directory, a pipelines directory, a vscode directory, a Formula directory, a docs directory, a scripts directory, a src directory, a gitattributes file, a gitignore file, a gitmodules file, a Bicep.sln file, a Bicep.sln.DotSettings file, a CODE_OF_CONDUCT.md file, a CONTRIBUTING.md file, a LICENSE file, a NuGet.config file, a README.md file, a SECURITY.md file, a SetBaseline.ps1 file, and an azure-pipelines.yml file. The repository is managed by anthony-c-martin and has 809 commits. The repository is a Bicep project and is licensed under MIT. The repository is a Bicep project and is licensed under MIT.

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 repository has 85 watchers, 827 stars, and 120 forks.

The screenshot shows the Bicep Playground website. The playground is a multi-module WVD deployment with some prerequisites. The playground is a multi-module WVD deployment with some prerequisites. The playground is a multi-module WVD deployment with some prerequisites.



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THANK YOU!

*Empowering your WVD deployments with
Project Bicep, experiences from the field!*

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Microsoft MVP

@fberson

freek.berson@wortell.nl



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