



Infrastructure as Code with Bicep *On tour!*

Esther Barthel
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```
var privateIPAllocationMethod = 'Dynamic'

resource vnet 'Microsoft.Network/virtualNetworks'
  name: vnetName
  location: defaultLocation
  properties: {
    addressSpace: {
      addressPrefixes: [
        vnetConfig.vnetprefix
      ]
    }
  }
  subnets: [
```





Esther Barthel

Solutions Architect and owner @ cognition IT
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- Loves workflows, DevOps, Bicep & scripting
- Women in Tech Mentorship advocate
- Microsoft MVP RDS/CDM/Azure since 2017



Freek Berson

Principal Outbound Product Manager
Parallels (Alludo)

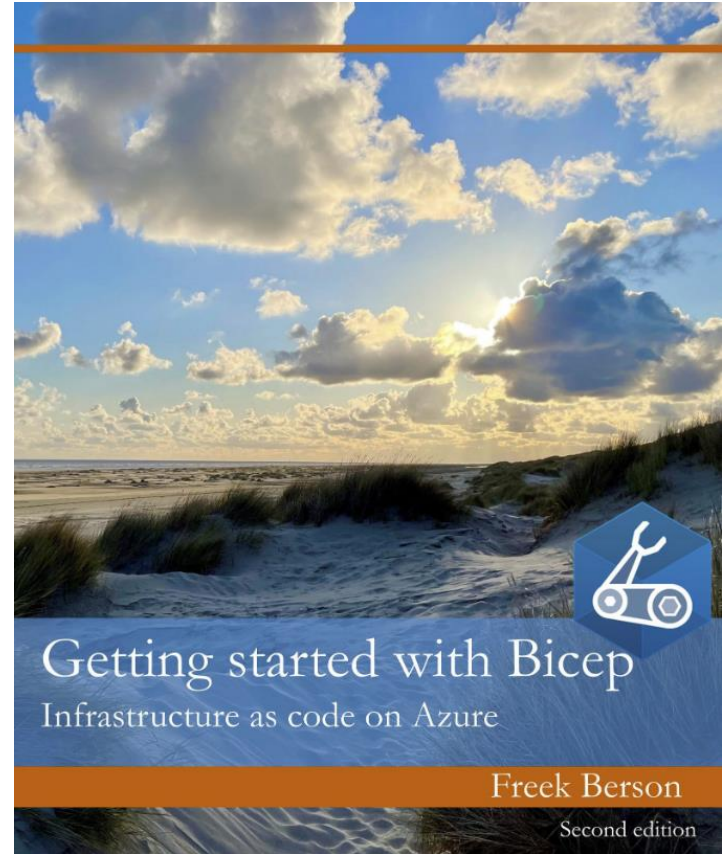
@fberson

- Fell in love with Project Bicep since its inception.
- Book author: 'Getting started with Bicep'
- Microsoft MVP on Enterprise Mobility since 2011

Tweet to win!

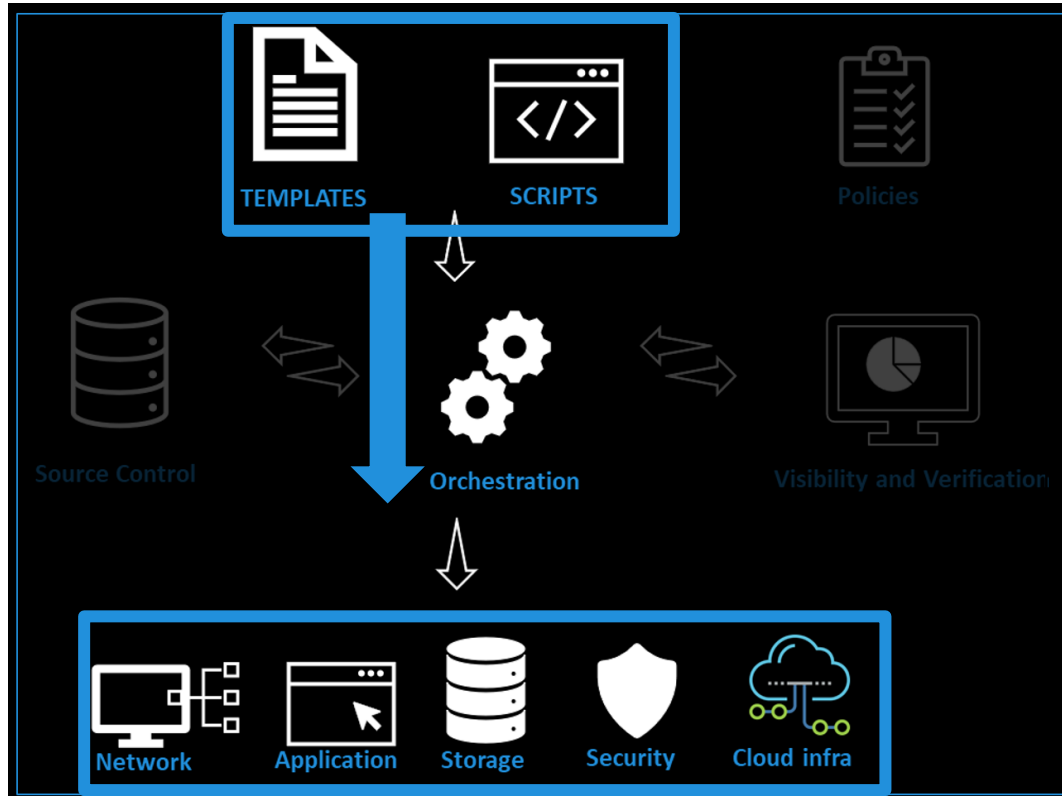
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Infrastructure as Code (IaC)

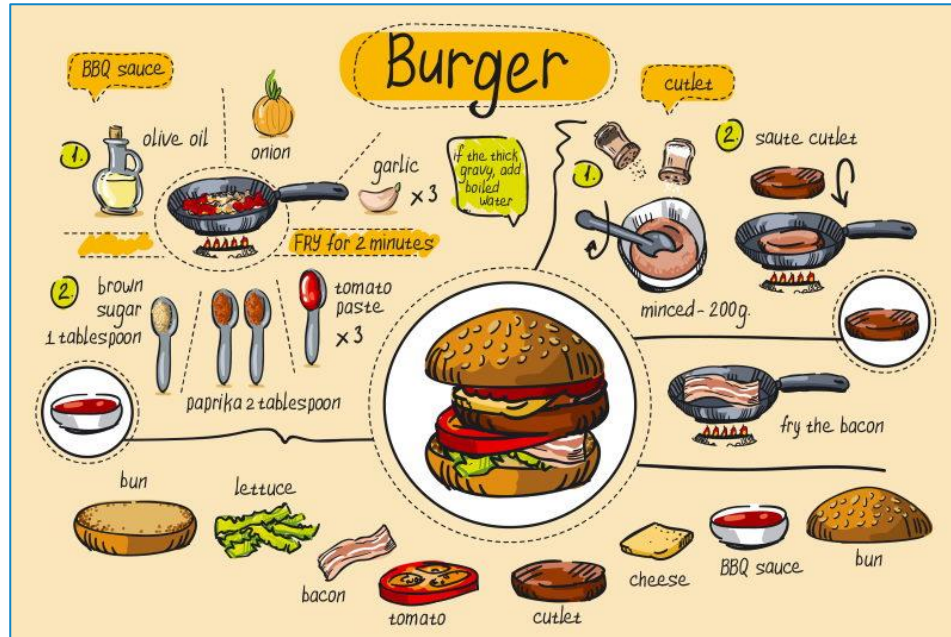
"..the process of **provisioning infrastructure resources** similar to how software is deployed."



Imperative code

You **execute a sequence of commands**, in a specific order, to reach an end configuration.
This process defines what the code should accomplish, and it defines how to accomplish the task.

Like a **step-by-step instruction** manual



Imperative code

You **execute a sequence of commands**, in a specific order, to reach an end configuration.

Using **scripts**.

```
# Step 1: Create a new resource group in Azure
New-AzResourceGroup -Name "_rg-ctt-01" -Location "westeurope"

# Step 2: Create a new storage account in the resource group
New-AzStorageAccount -Name "sacttlab01" `
    -ResourceGroupName "_rg-ctt-01" `
    -SkuName Standard_LRS `
    -Kind StorageV2 `
    -AccessTier cool `
    -EnableHttpsTrafficOnly
```



Declarative code

You **specify only the end configuration**. The code doesn't define how to accomplish the task.

Like **ordering from a menu**.



Declarative code

You **specify only the end configuration**. The code doesn't define how to accomplish the task.

Using **templates**.

```
✓ resource stg 'Microsoft.Storage/storageAccounts@2021-06-01' = {  
  name: 'saiacrab01'  
  location: 'westeurope'  
  sku: {  
    name: 'Standard_LRS'  
  }  
  kind: 'StorageV2'  
  properties: {  
    accessTier: 'Cool'  
    supportsHttpsTrafficOnly: true  
  }  
  tags: {  
    environment: 'iac-lab'  
  }  
}
```




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 complexity



```
605     "hostPoolArmPath": "[resourceId('Microsoft.DesktopVirtualization/hostPools', format('{0}-REMOTEAPP', parameters('hostpoolName')))]"
606   },
607   "dependsOn": [
608     "[resourceId('Microsoft.DesktopVirtualization/hostPools', format('{0}-REMOTEAPP', parameters('hostpoolName')))]"
609   ]
610 },
611 {
612   "type": "Microsoft.DesktopVirtualization/workspaces",
613   "apiVersion": "2019-12-10-preview",
614   "name": "[parameters('workspaceName')]",
615   "location": "[parameters('AVDBackplaneLocation')]",
616   "properties": {
617     "friendlyName": "[parameters('workspaceNameFriendlyName')]",
618     "applicationGroupReferences": [
619       "[resourceId('Microsoft.DesktopVirtualization/applicationGroups', parameters('appgroupName'))]",
620       "[if(parameters('createRemoteAppHostpool'), resourceId('Microsoft.DesktopVirtualization/applicationGroups', format('{0}-REMOTEAPP', parameters('appgroupName'))), '')]"
621     ]
622   },
623   "dependsOn": [
624     "[resourceId('Microsoft.DesktopVirtualization/applicationGroups', parameters('appgroupName'))]",
625     "[resourceId('Microsoft.DesktopVirtualization/applicationGroups', format('{0}-REMOTEAPP', parameters('appgroupName')))]"
626   ]
627 }
628 ]
629 }
630 },
631 "dependsOn": [
632   "[subscriptionResourceId('Microsoft.Resources/resourceGroups', format('{0}BACKPLANE{1}', parameters('resourceGroupProdPrefix'), parameters('resourceGroupPostfix')))]"
633 ]
634 },
635 {
636   "type": "Microsoft.Resources/deployments",
637   "apiVersion": "2020-06-01",
```

What is 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."

What is Bicep?

Intuitive

Easy to read and to author

Transpiles to ARM Templates

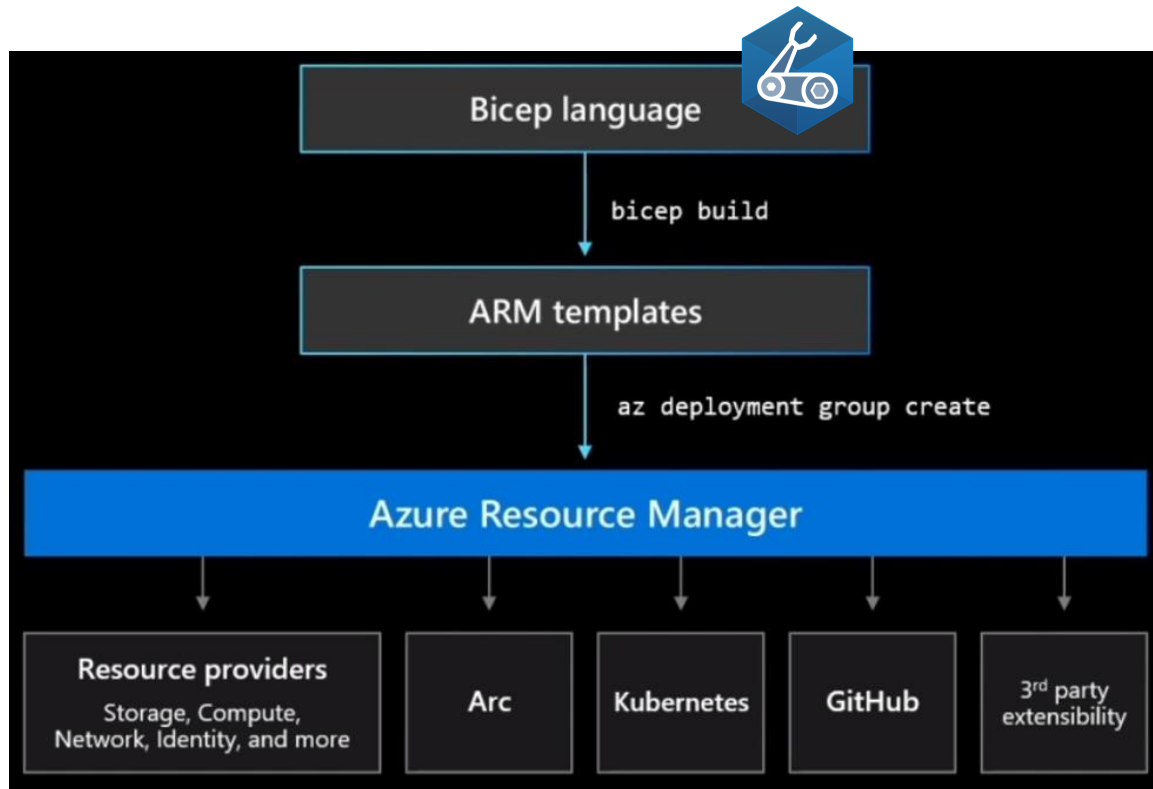
Leverage ARM template knowledge and investments

Modular

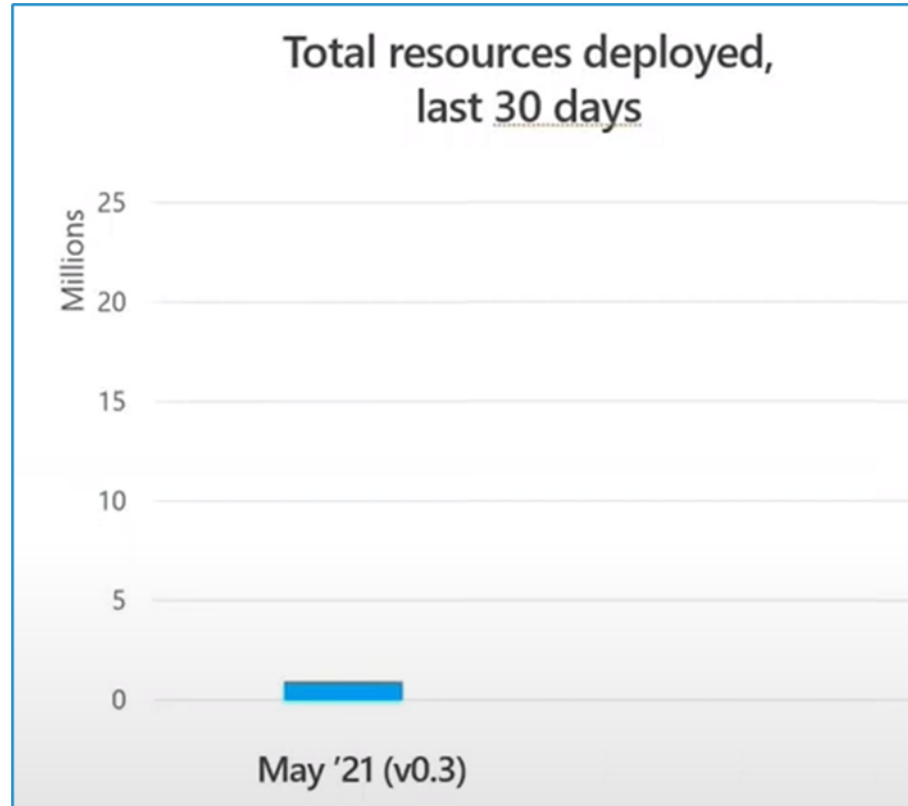
Abstract common blocks of code into reusable parts

Open Source

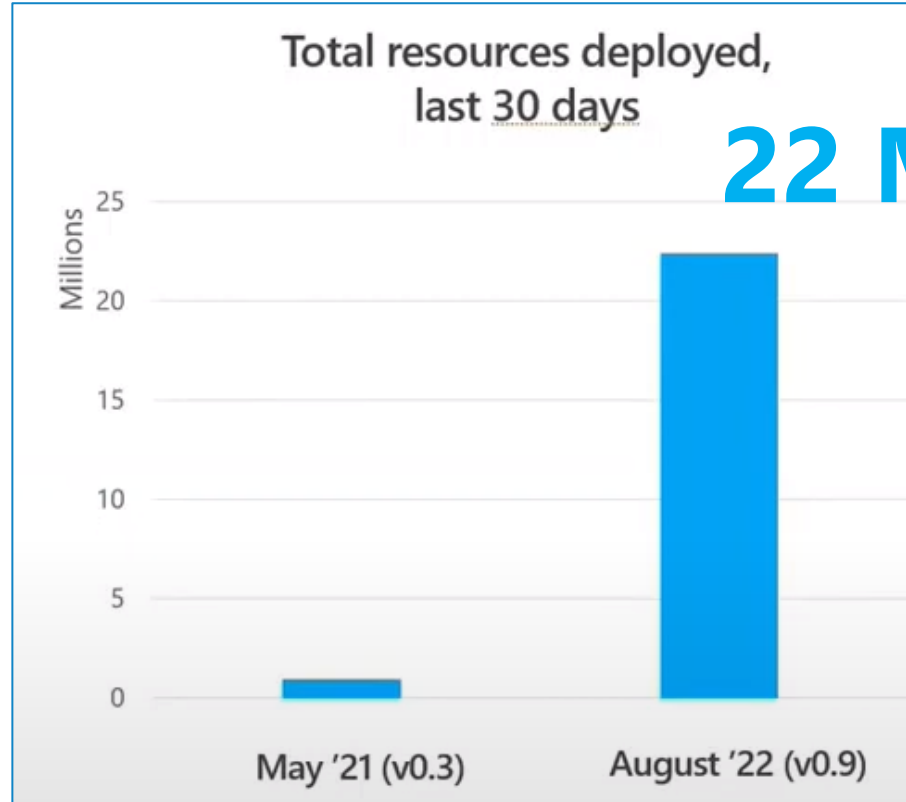
Transparency and community



What is the Bicep usage?



What is the Bicep usage?

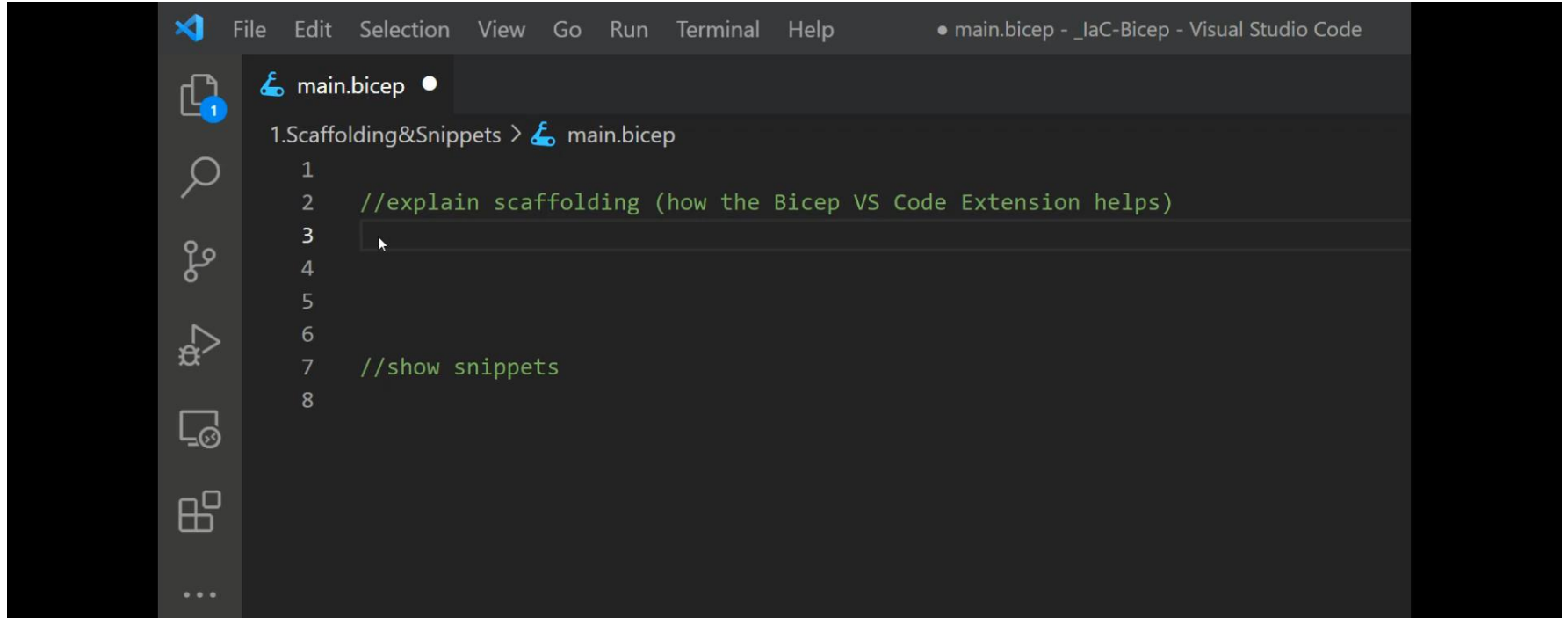


22 Million!!!

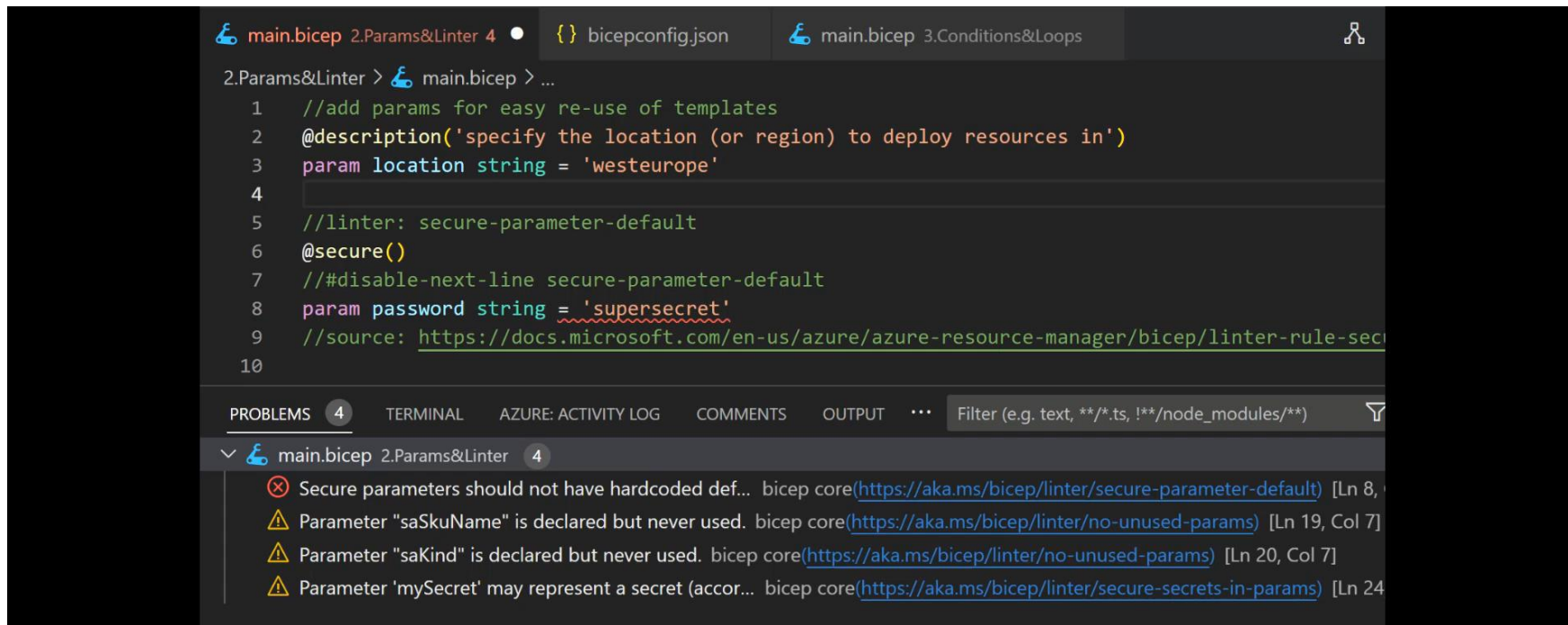
DEMO!



Why we recommend VS Code (and the Bicep extension)



Linters FTW!



The screenshot shows the Visual Studio Code editor with a Bicep file named `main.bicep` open. The file content is as follows:

```
1 //add params for easy re-use of templates
2 @description('specify the location (or region) to deploy resources in')
3 param location string = 'westeurope'
4
5 //linter: secure-parameter-default
6 @secure()
7 //disable-next-line secure-parameter-default
8 param password string = 'supersecret'
9 //source: https://docs.microsoft.com/en-us/azure/azure-resource-manager/bicep/linter-rule-sec
10
```

The editor shows four linting errors in the `PROBLEMS` panel:

- ❌ Secure parameters should not have hardcoded def... bicep core(<https://aka.ms/bicep/linter/secure-parameter-default>) [Ln 8, ...]
- ⚠️ Parameter "saSkuName" is declared but never used. bicep core(<https://aka.ms/bicep/linter/no-unused-params>) [Ln 19, Col 7]
- ⚠️ Parameter "saKind" is declared but never used. bicep core(<https://aka.ms/bicep/linter/no-unused-params>) [Ln 20, Col 7]
- ⚠️ Parameter 'mySecret' may represent a secret (accor... bicep core(<https://aka.ms/bicep/linter/secure-secrets-in-params>) [Ln 24, ...]

Call to action!

- Bicep MS Docs:

[Aka.ms/bicep](https://aka.ms/bicep)

- Bicep Monthly Community call

surveymonkey.com/r/ARMnews

- Bicep GitHub location

github.com/Azure/bicep

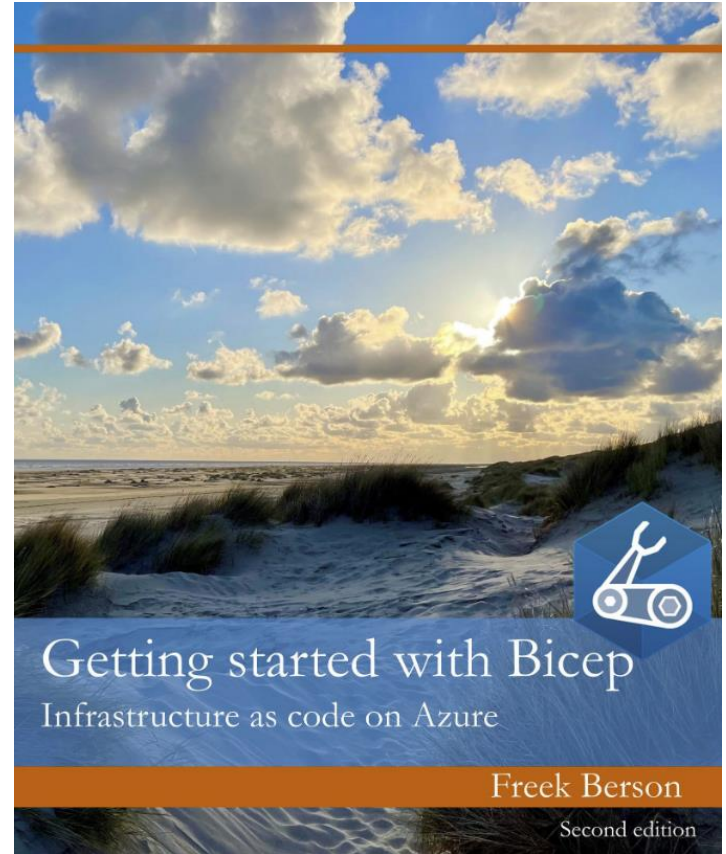
- Bicep Learning path

docs.microsoft.com/en-us/azure/azure-resource-manager/bicep/learn-bicep

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Thank you!



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