

Configuring ARM Templates for Multi-VM Deployment



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Overview



Prepare the environment with Azure Policy

Author and validate ARM template

Deploy the ARM template and verify infrastructure



Prepare the Environment with Azure Policy



RBAC vs. Azure Policy

RBAC

Focuses on user actions at different scopes

VM Contributor can manage only VM

Built-in and custom roles

Azure Policy

Focuses on resource properties during deployment for already existing resources

Uses a default allow and explicit deny access system



Some Built-in Azure Policy Definitions

Allowed locations

VM SKUs

**Deploy MMS
extension**



Demo



1

Define subscription-level policy to govern:

- Region selection
- VM instance SKU (2016-Datacenter)

Try to deploy a Server 2012 VM in an unauthorized region



Author and Validate an ARM Template



ARM Template Basic Training

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Mastering Microsoft Azure Resource Manager

★★★★★ By James Bannan

Azure Resource Manager (or ARM) is the newest platform for deploying and managing PaaS and IaaS resources in Microsoft Azure. This course gives you the knowledge and the tools to become instantly productive

See the module "Understanding Azure Resource Manager Templates"

SOLUTION	
Platform as a Service Solution	2m 0s
Course Prerequisites	3m 35s
Understanding Azure Resource Manager Architecture	28m 45s
Understanding Azure Resource Manager Templates	30m 35s
Building Azure Resource Manager Services	20m 8s

Course info

Rating: ★★★★★ (53)
Level: Advanced
Updated: June 19, 2017
Duration: 3h 9m

Description

Deploying resources to the public cloud in a structured, logical, and repeatable manner can quickly result in mess and chaos, impacting your business function. In this course, Mastering Microsoft Azure Resource Manager, you will use the latest tools and techniques to deploy both Platform-as-a-Service and Infrastructure-as-a-Service solutions in to Microsoft Azure. First, you'll learn how to use PowerShell to deploy resources, as well as repeatable deployments using ARM templates. Next, you'll learn to use resource dependencies to create complex solutions. Finally, you'll learn about securing resources using roles and policies. After watching this course, you'll know how to deploy resources and solutions in Azure using a variety of processes and you'll understand how these resources interact and depend on each other, setting the foundation for all your future Azure work.

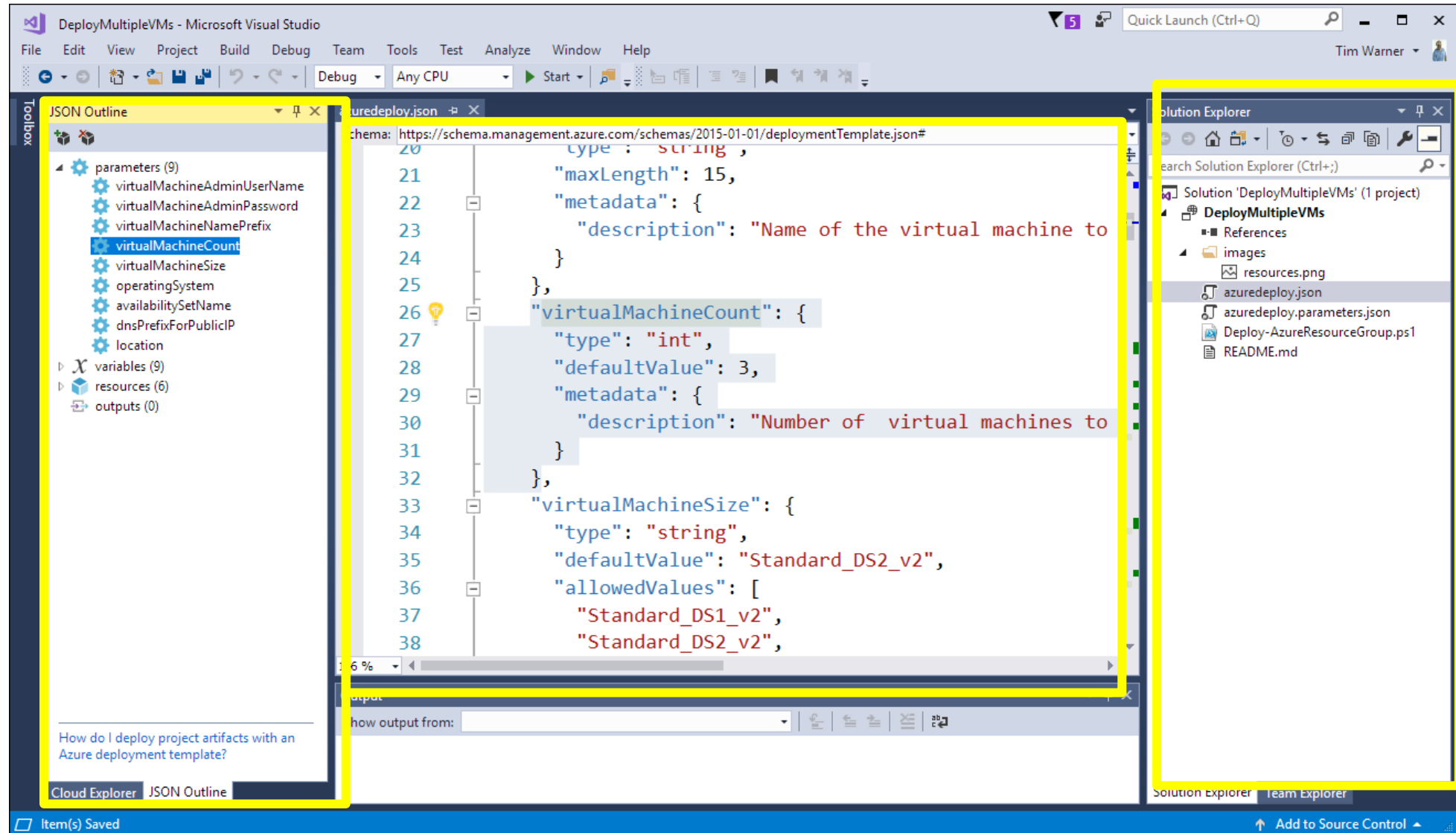
About the author

James Bannan is a Microsoft MVP in Azure and in Cloud and Datacenter Management, who is based in Melbourne, Australia, where he works as a consultant and solution architect.

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Visual Studio as an ARM Template Editor



Deploying Multiple Instances of Azure Resources

```
{
  "$schema": "https://schema.management.azure.com/schemas/2015-01-01/deploymentTemplate.json#",
  "contentVersion": "1.0.0.0",
  "resources": [
    {
      "apiVersion": "2016-01-01",
      "type": "Microsoft.Storage/storageAccounts",
      "name": "[concat(copyIndex(), 'storage', uniqueString(resourceGroup().id))]",
      "location": "[resourceGroup().location]",
      "sku": {
        "name": "Standard_LRS"
      },
      "kind": "Storage",
      "properties": {},
      "copy": {
        "name": "storagecopy",
        "count": 3
      }
    }
  ],
  "outputs": {}
}
```

copyIndex()
function

copy element

0storagethx1138
1storageabc1234
2storage8675309



Demo



2

Deploy Azure Quickstart Template (201-vm-copy-managed-disks) on my host in VS



Deploy the ARM Template and Verify Infrastructure



```
New-AzureRmResourceGroupDeployment  
-Name 'multi-vms'  
-ResourceGroupName 'rg1'  
-Mode Incremental  
-TemplateFile '.\azdeploy.json'  
-TemplateParameterFile 'azpar.json'
```

◀ RG must already exist

◀ Or 'Complete'

◀ Or 'TemplateUri'

◀ Or 'TemplateParameterUri'



Demo



3

Deploy the template

- From Visual Studio
- From Azure Cloud Shell



Summary



Your time spent in mastering ARM templates is wisely invested

- For your career
- For your MSFT certification success

ARM templates are the foundation of automation and DevOps in Azure

Next module: Deploying Azure VM Scale Sets

