

# Understanding Azure Resource Manager Architecture

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**James Bannan**

MICROSOFT MVP, SOLUTIONS ARCHITECT

@jamesbannan [www.jamesbannan.it](http://www.jamesbannan.it)



# Module Overview



**Explore ARM Architecture**

**ARM Resources & Dependencies**

**ARM Resource Providers & Types**

**ARM REST APIs**

**Explore & Deploy Simple PaaS Solution**

**Explore & Deploy Simple IaaS Solution**



# What Is Azure Resource Manager?

**Resource  
grouping**

**Resource  
dependencies**

**Repeatable  
deployments**

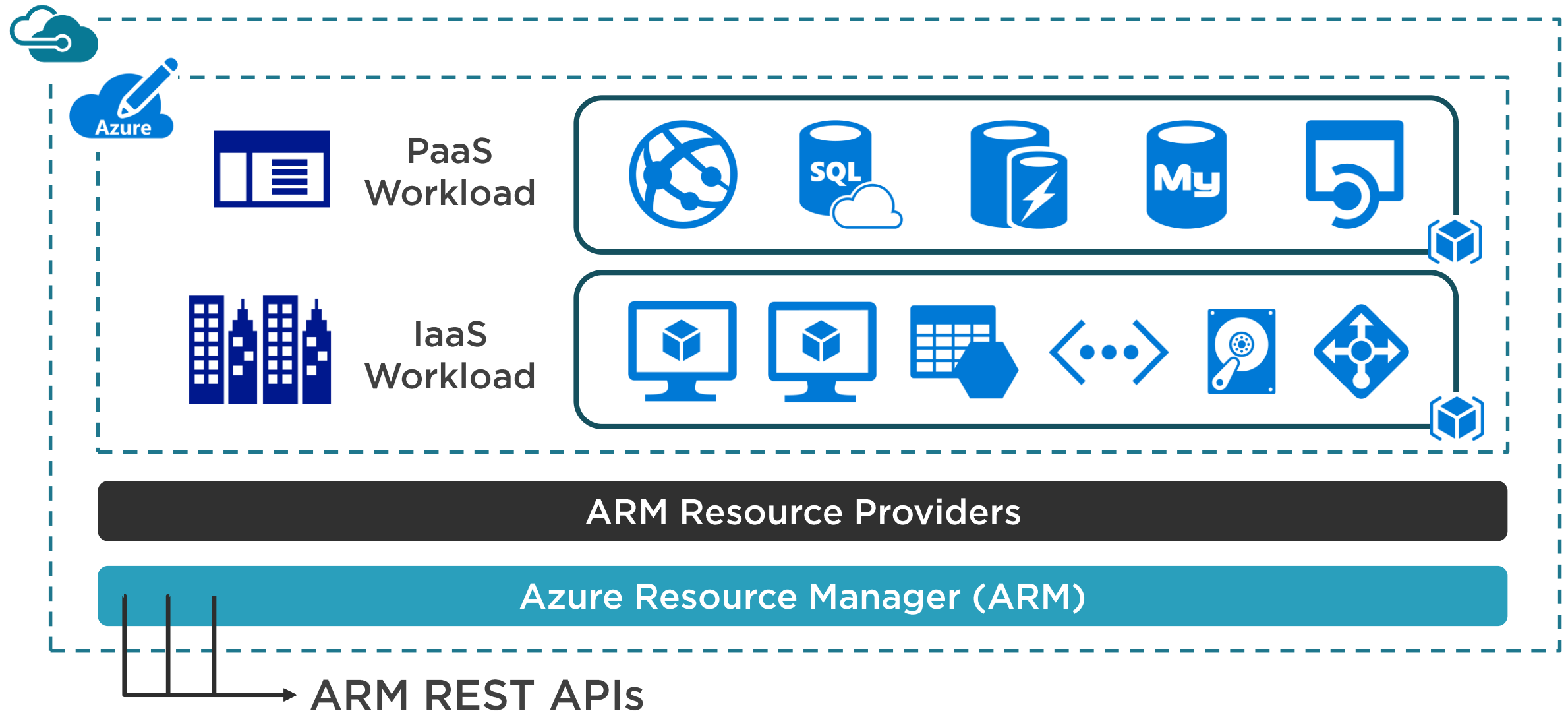
**Deployment  
templates**

**Role Based Access  
Control (RBAC)**

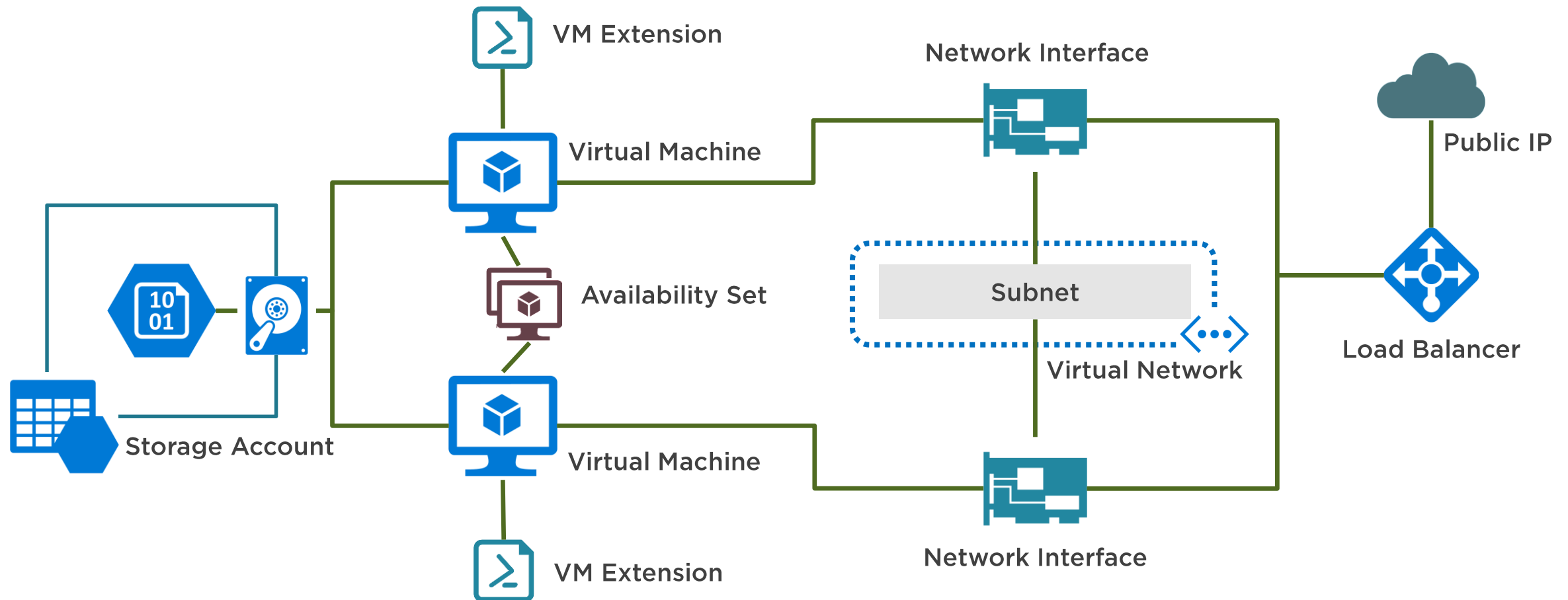
**Granular billing /  
resource tagging**



# Azure Resource Manager Architecture



# Resources & Dependencies



# Resource Providers

Get-AzureRmResourceProvider | `

Select-Object ProviderNamespace,ResourceTypes | `

Sort-Object ProviderNamespace

ProviderNamespace	ResourceTypes
-----	-----
Microsoft.ADHybridHealthService	{services, addsservices, configuration, operations...}
Microsoft.Authorization	{roleAssignments, roleDefinitions, classicAdministrators, permissions...}
Microsoft.Automation	{automationAccounts, automationAccounts/runbooks...}
microsoft.backup	{BackupVault}
Microsoft.Batch	{batchAccounts}
Microsoft.Compute	{availabilitySets, virtualMachines, virtualMachines/extensions...}
Microsoft.DevTestLab	{labs, environments, labs/environments, labs/virtualMachines...}
Microsoft.Features	{features, providers, operations}
Microsoft.KeyVault	{vaults, vaults/secrets, operations}
...	...



# Resource Types

```
Get-AzureRmResourceProvider -ProviderNamespace Microsoft.Compute | `
    Select-Object ResourceTypes,Locations | `
    Sort-Object ResourceTypes
```

## ResourceTypes

-----

```
{availabilitySets}
{virtualMachines}
{virtualMachines/extensions}
{virtualMachineScaleSets}
{virtualMachineScaleSets/extensions}
{virtualMachineScaleSets/virtualMachines}
{virtualMachineScaleSets/networkInterfaces}
{virtualMachineScaleSets/virtualMachines/networkInterfaces}
{virtualMachines/diagnosticSettings}
{virtualMachines/metricDefinitions}
...
```

## Locations

-----

```
{East US, East US 2, West US, Central US...}
{East US, East US 2, West US, Central US...}
{East US, East US 2, West US, Central US...}
{East US, East US 2, West US, Central US...}
{East US, East US 2, West US, Central US...}
{East US, East US 2, West US, Central US...}
{East US, East US 2, West US, Central US...}
{East US, East US 2, West US, Central US...}
{East US, East US 2, West US, Central US...}
...
```



# Azure Resource Manager REST APIs

<https://management.azure.com/subscriptions/{subscription-id}/providers/{provider-name}?&api-version={api-version}>

```
((Get-AzureRmResourceProvider -ProviderNamespace  
Microsoft.Compute).ResourceTypes | Where-Object  
{$_ .ResourceTypeName -eq 'virtualMachines'}).ApiVersions
```

2017-03-30

2016-08-30

2016-04-30-preview

2016-03-30

2015-06-15





# Simple PaaS Solution



## Deploy-SimplePaaS.ps1

### New-AzureRmResourceGroup

```
-Name $resourceGroupName  
-Location $resourceGroupLocation
```

### \$appServicePlan = New-AzureRmAppServicePlan

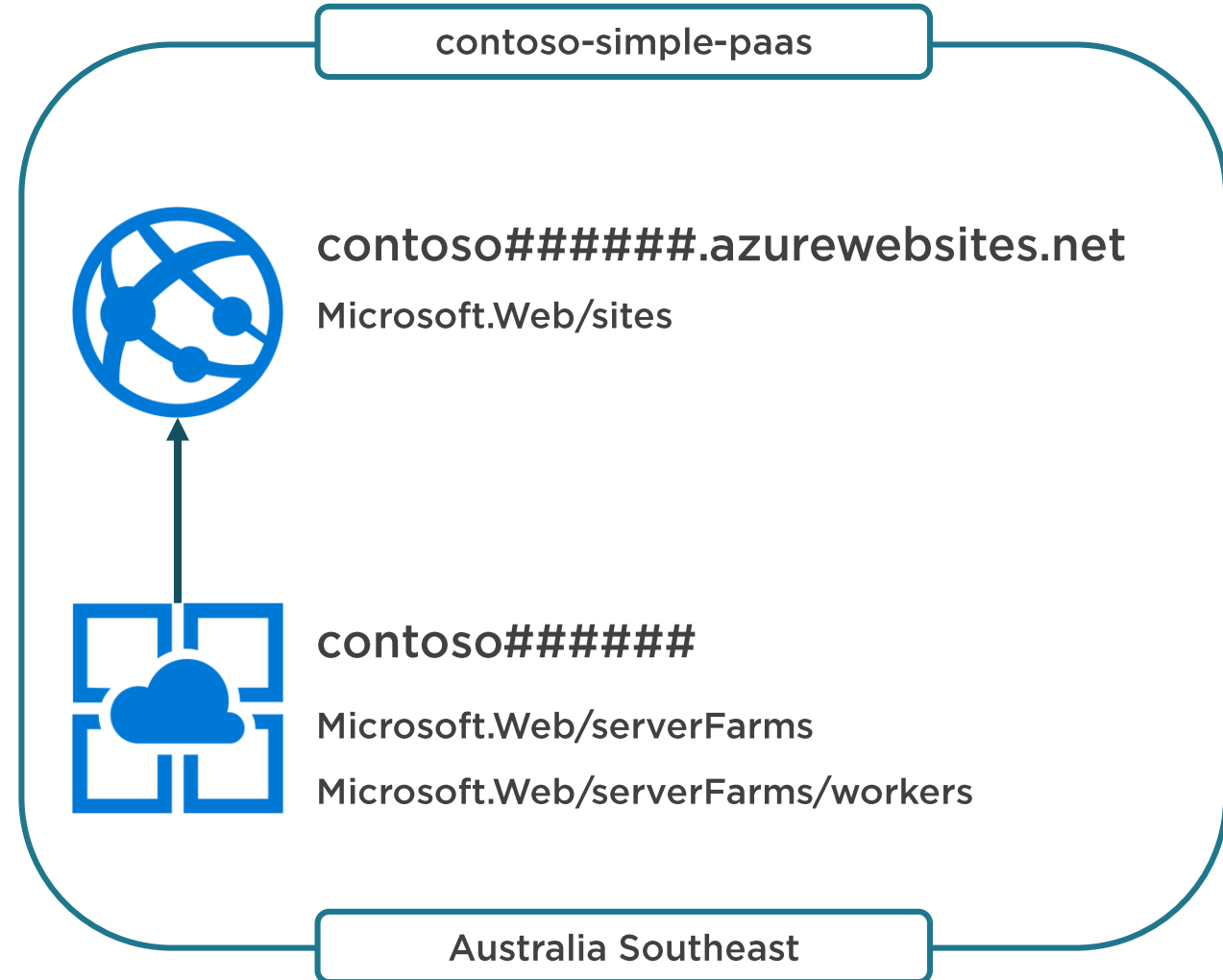
```
-ResourceGroupName $resourceGroupName  
-Location $resourceGroupLocation  
-Name $appServicePlanName  
-Tier Standard  
-WorkerSize Small
```

### New-AzureRmWebApp

```
-ResourceGroupName $resourceGroupName  
-Location $resourceGroupLocation  
-AppServicePlan
```

### \$appServicePlan.ServerFarmWithRichSkuName

```
-Name $webAppName
```



# Demo



Explore simple PaaS deployment

Create new Resource Group

Deploy Azure Web Service Plan

Deploy Azure Web Site



# Simple IaaS Solution



## Deploy-SimpleIaaS.ps1

```
New-AzureRmResourceGroup
```

```
-Name $resourceGroupName  
-Location $resourceGroupLocation
```

```
$vNetSubnet1 = New-AzureRmVirtualNetworkSubnetConfig
```

```
-Name $vNetSubnet1Name  
-AddressPrefix $vNetSubnet1Prefix
```

```
$vNetSubnet2 = New-AzureRmVirtualNetworkSubnetConfig
```

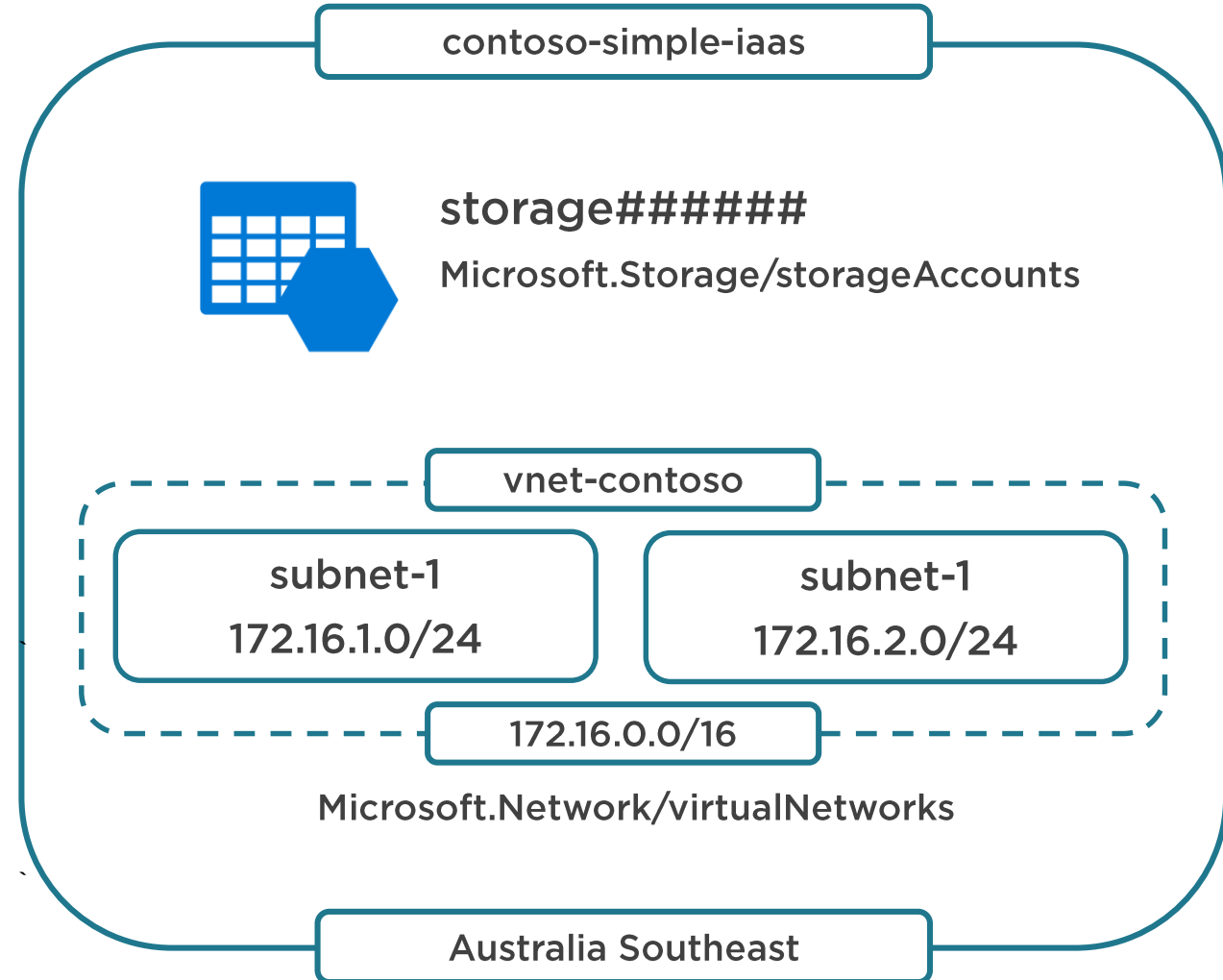
```
-Name $vNetSubnet2Name  
-AddressPrefix $vNetSubnet2Prefix
```

```
$vNet = New-AzureRmVirtualNetwork
```

```
-ResourceGroupName $resourceGroup.ResourceGroupName  
-Location $resourceGroup.Location  
-Name $vNetName  
-AddressPrefix $vNetAddressPrefix  
-Subnet $vNetSubnet1,$vNetSubnet2
```

```
$storageAccount = New-AzureRmStorageAccount
```

```
-ResourceGroupName $resourceGroup.ResourceGroupName  
-Location $resourceGroup.Location  
-Name $storageAccountName  
-Type $storageAccountType
```



# Demo



Explore simple IaaS deployment

Create new Resource Group

Deploy Azure Virtual Network

Deploy Azure Storage account



# Module Summary



**Azure Resource Manager Architecture**

**Resources & Dependencies**

**Resource Providers & Types**

**REST APIs**

**Deploy simple ARM PaaS solution**

**Deploy simple ARM IaaS solution**



Coming next:  
Understanding Azure  
Resource Manager  
Templates

