

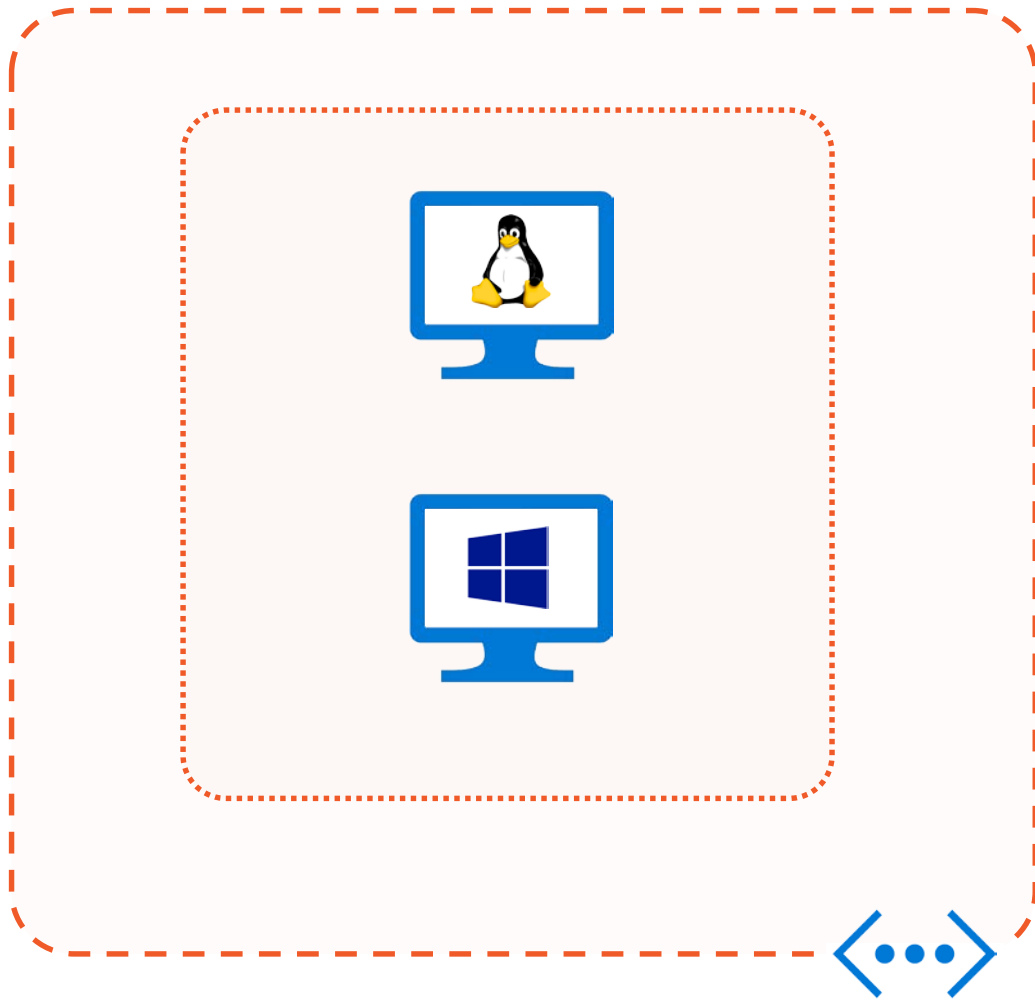
PowerShell DSC & ARM Templates

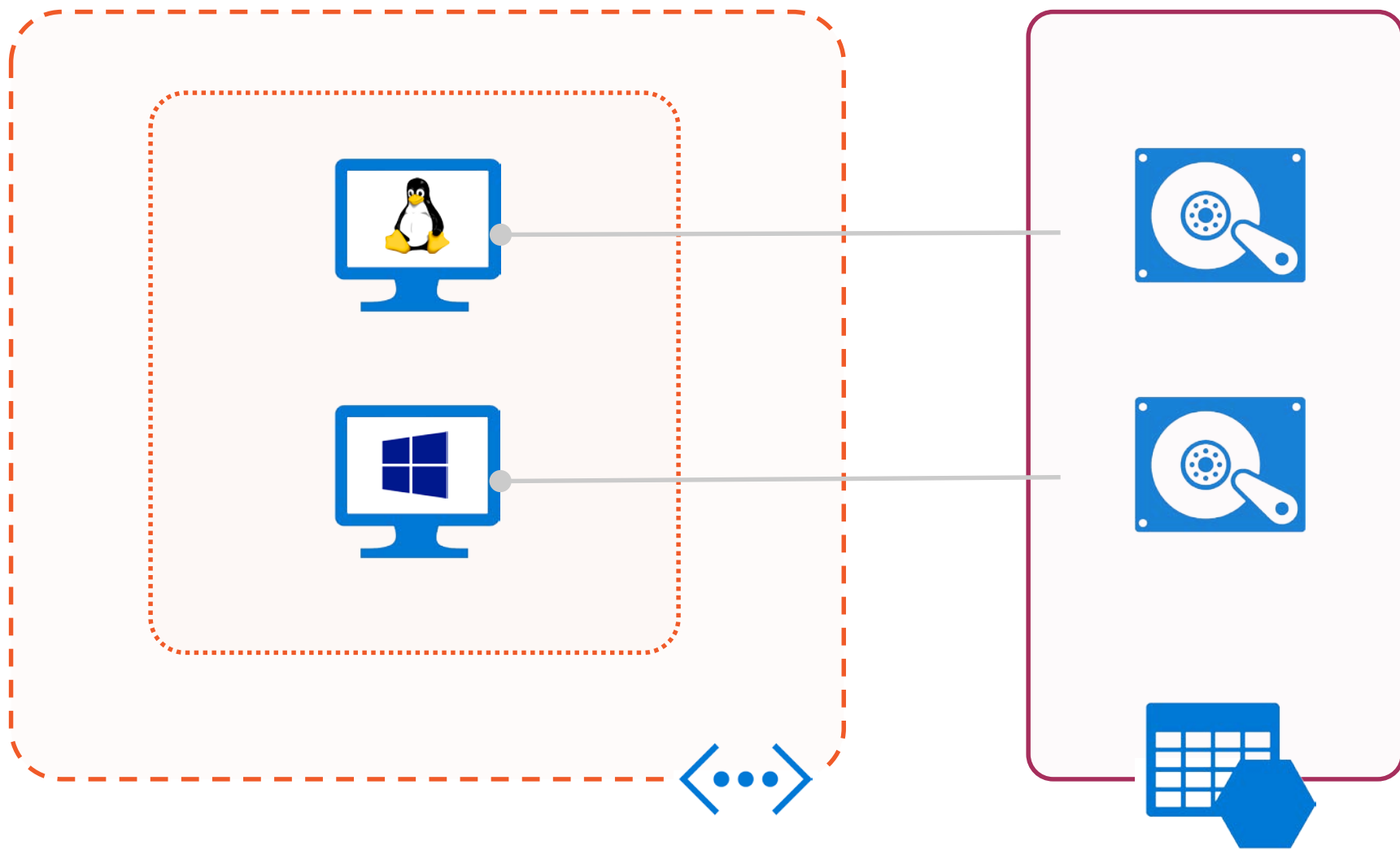


Elton Stoneman

SOFTWARE ARCHITECT

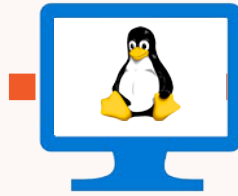
@EltonStoneman blog.sixeyed.com

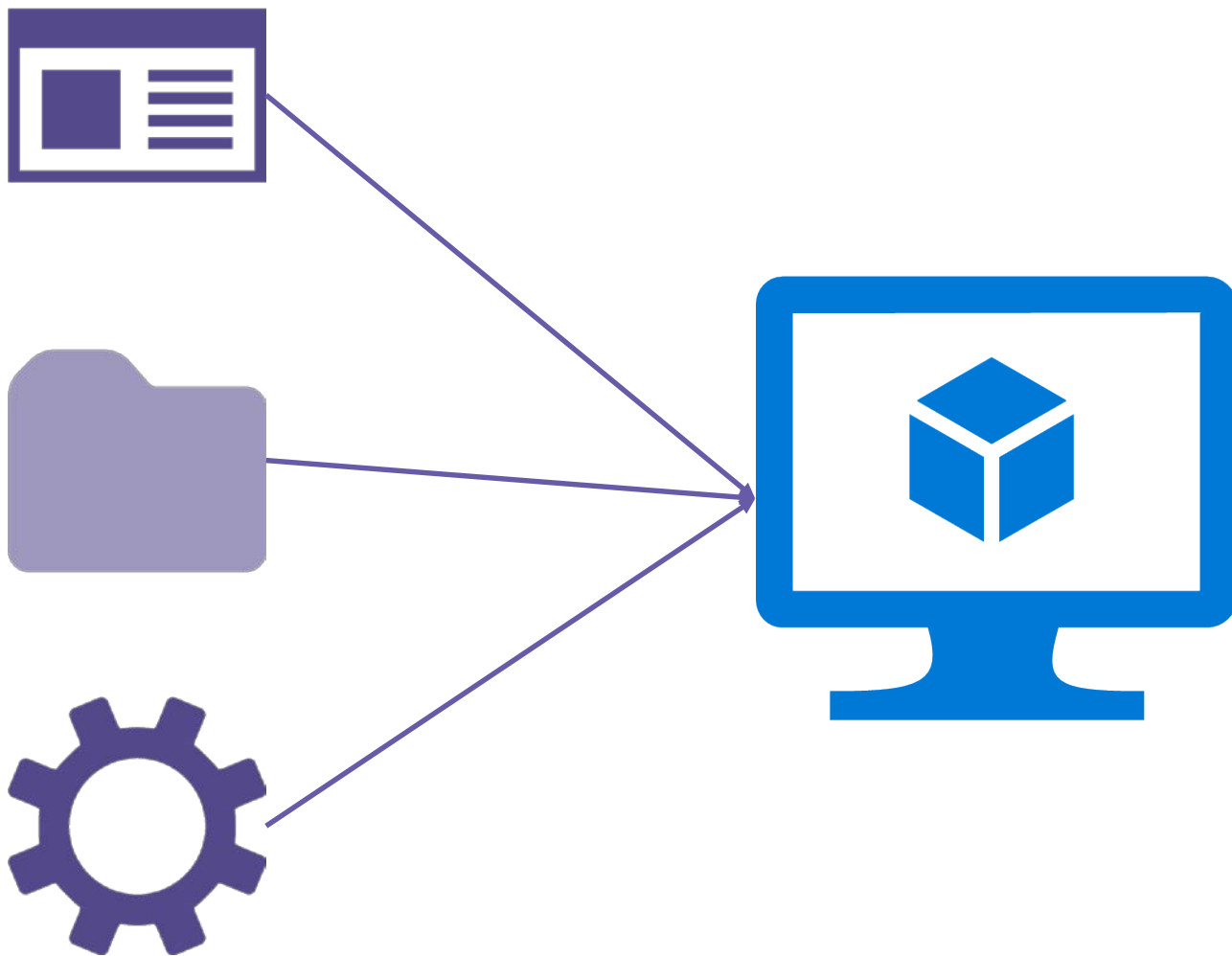


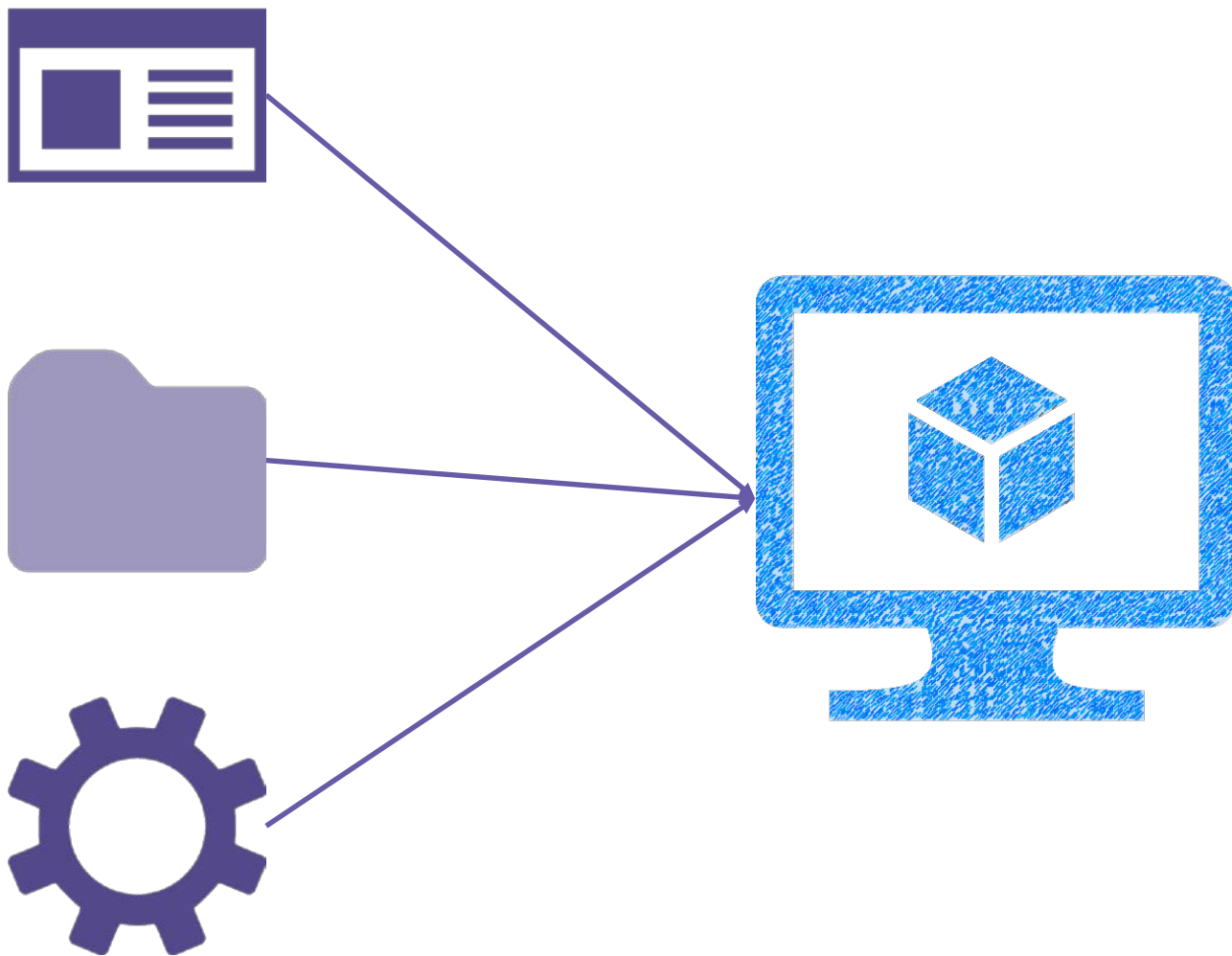


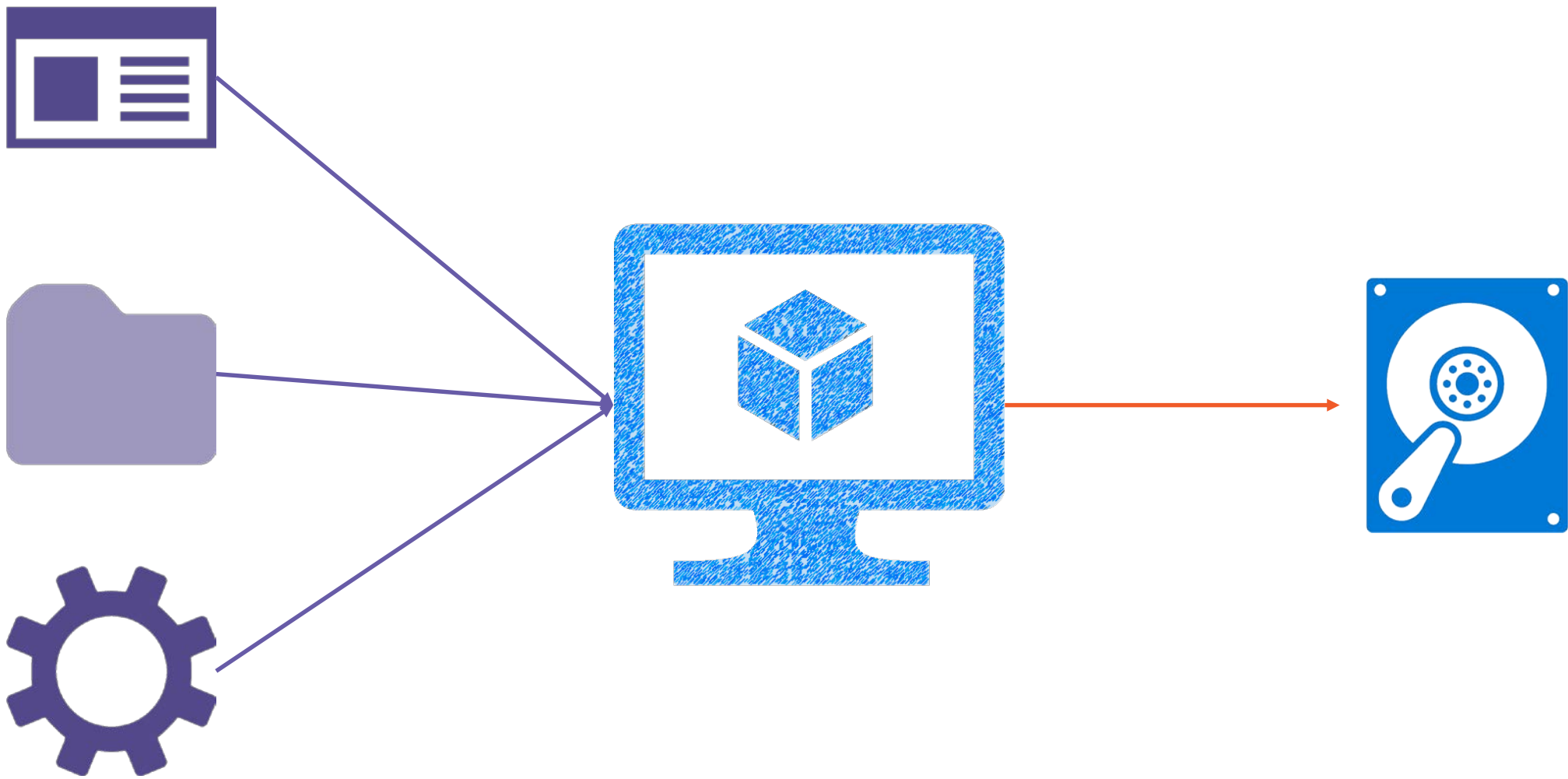


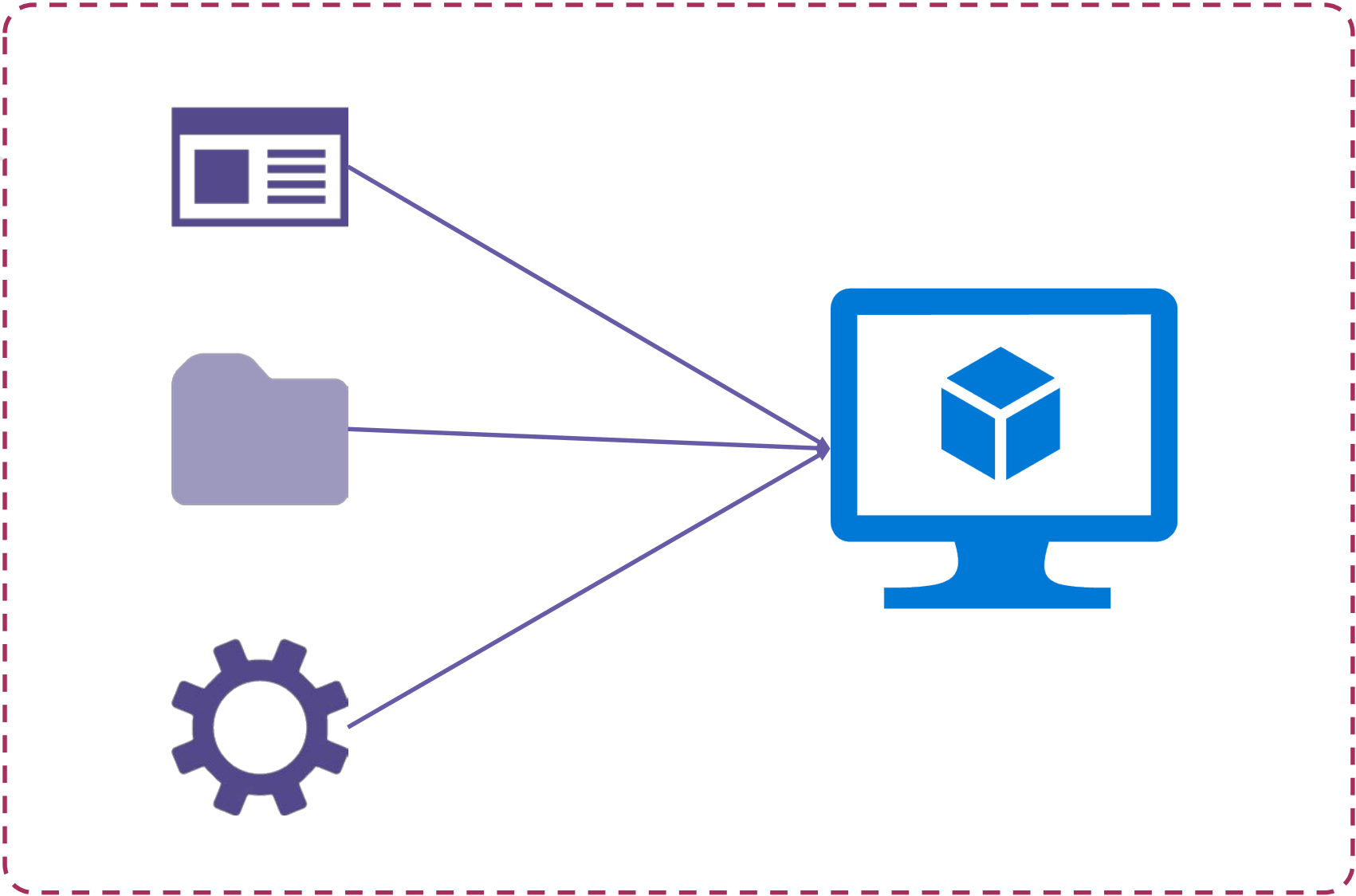
my.site.com

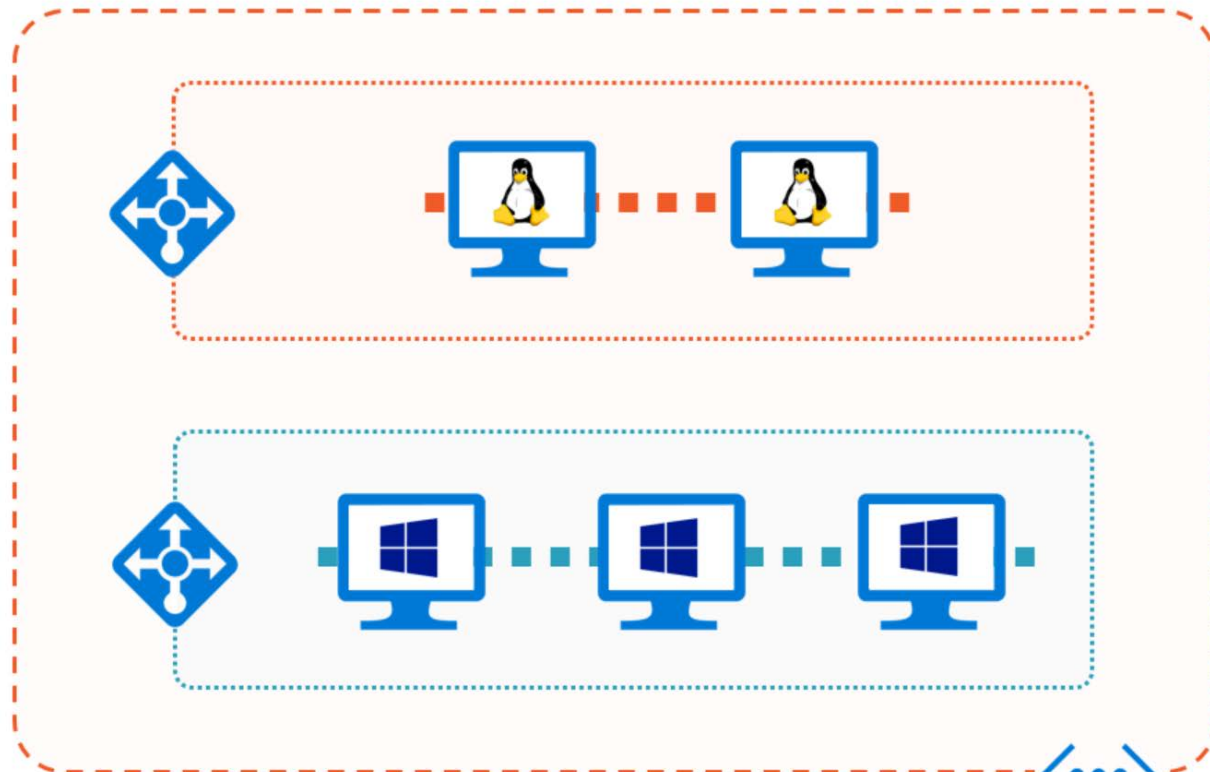
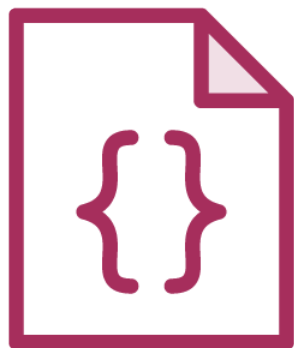


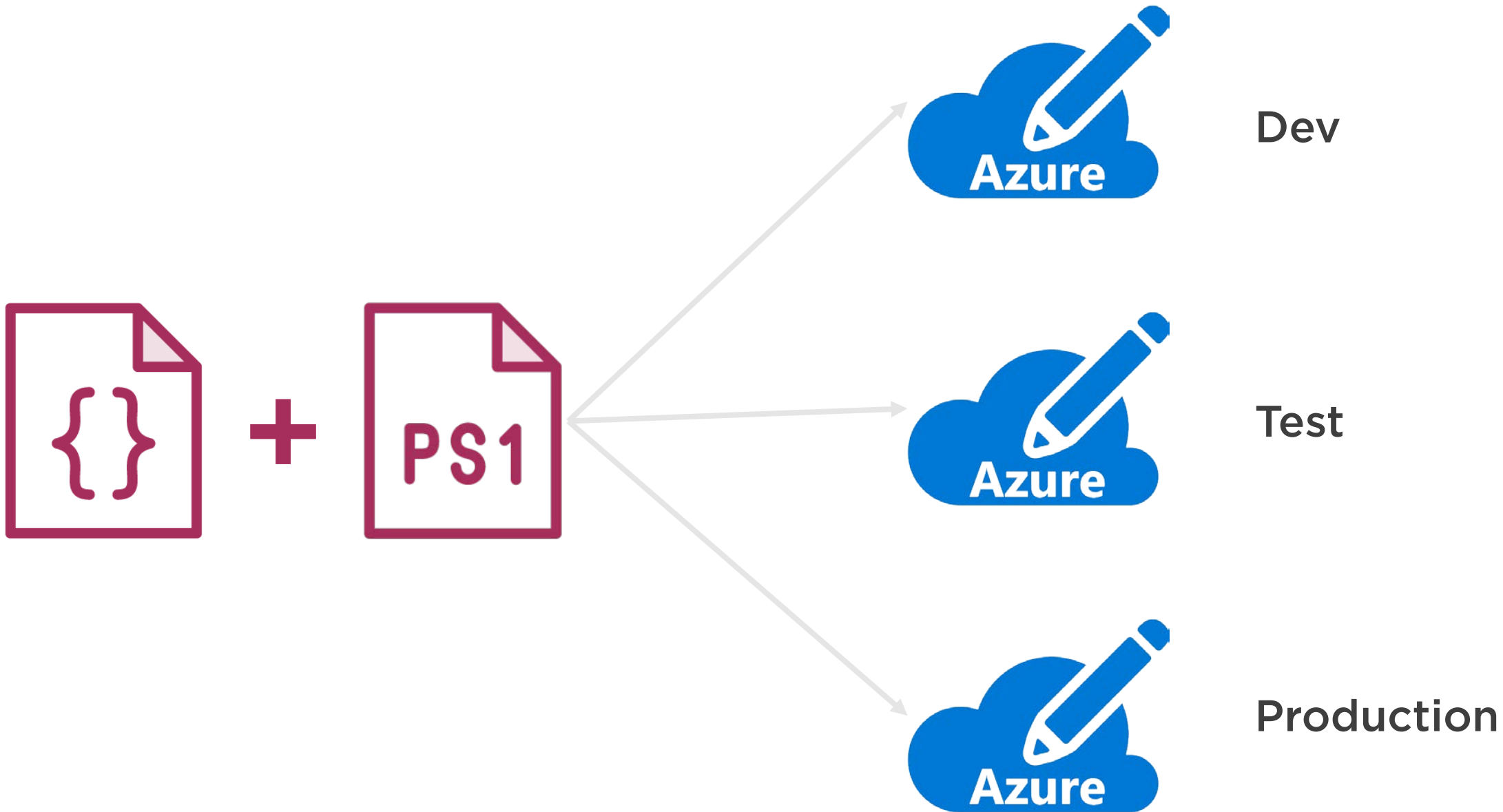


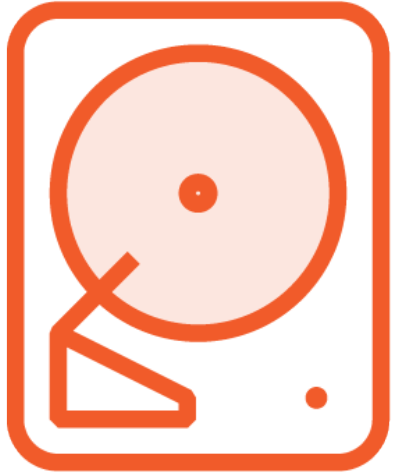












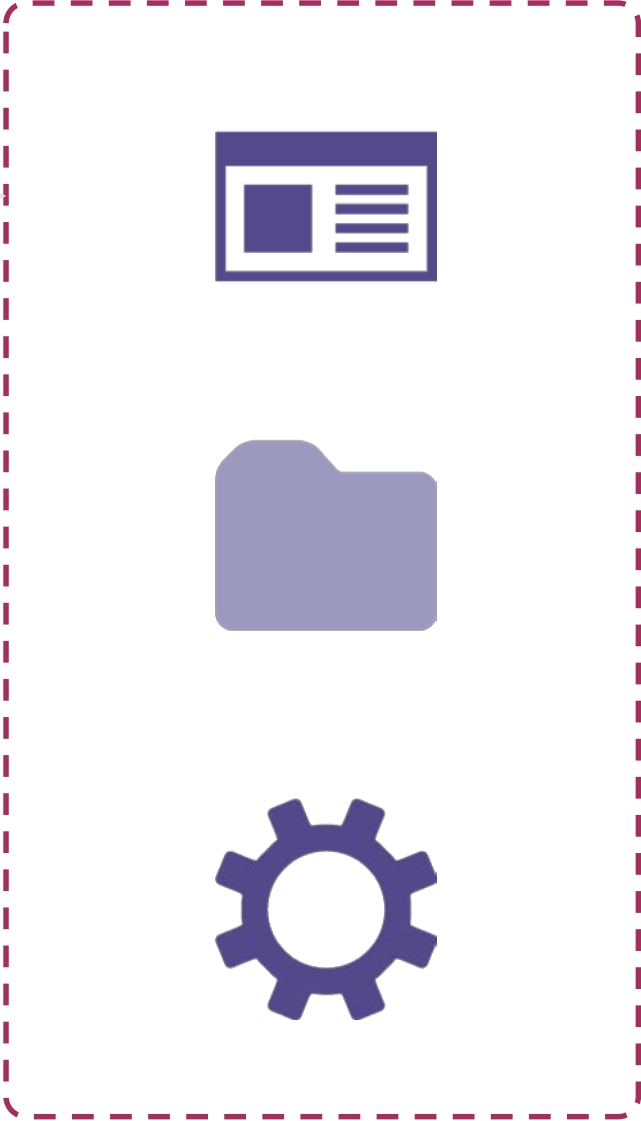
Custom Images

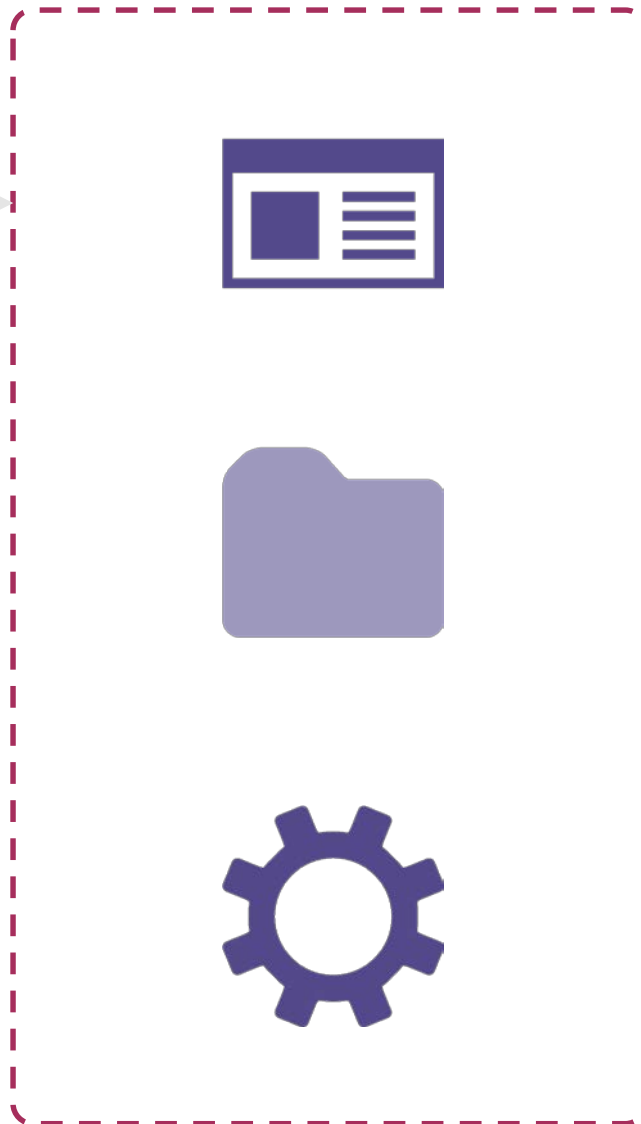
PowerShell



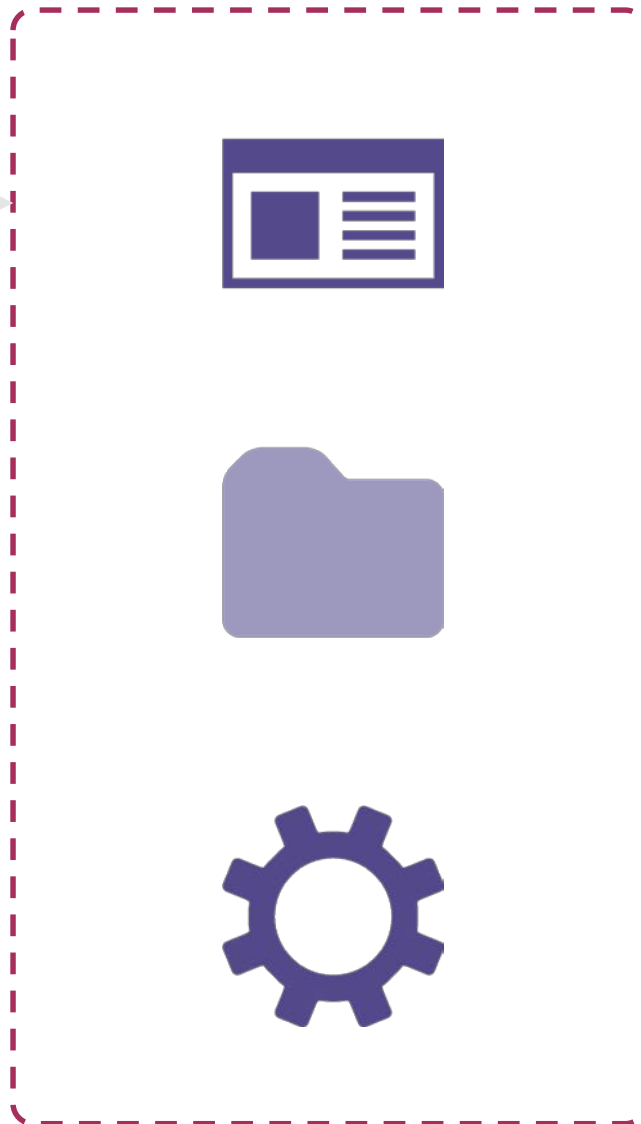
ARM Templates

PowerShell DSC





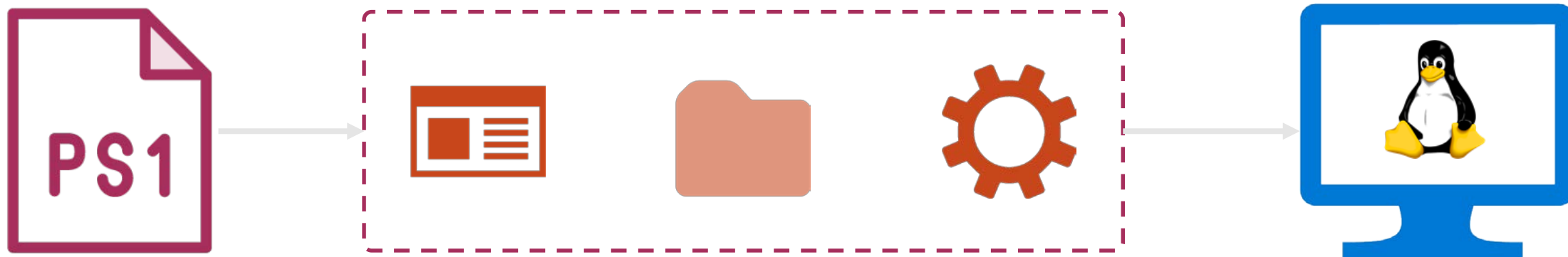
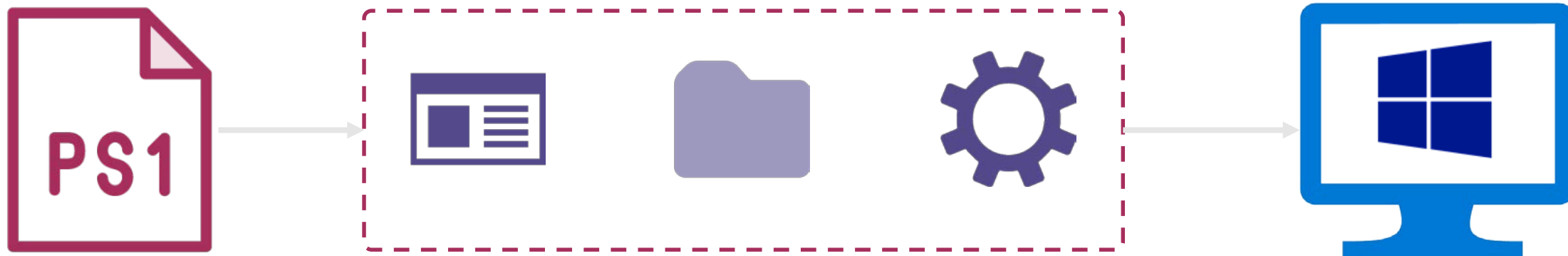
Web Server
Ensure = Present



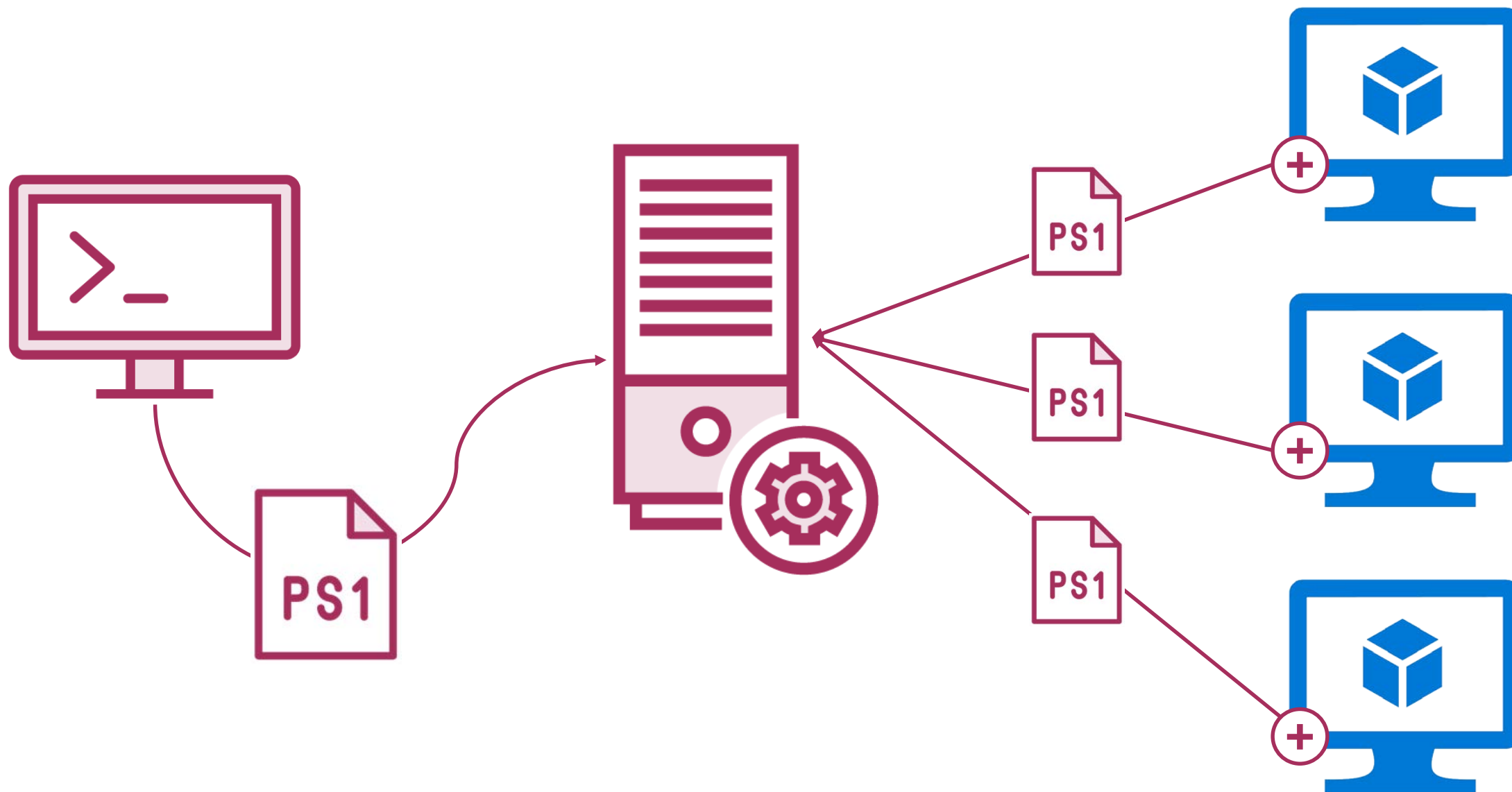
App Files

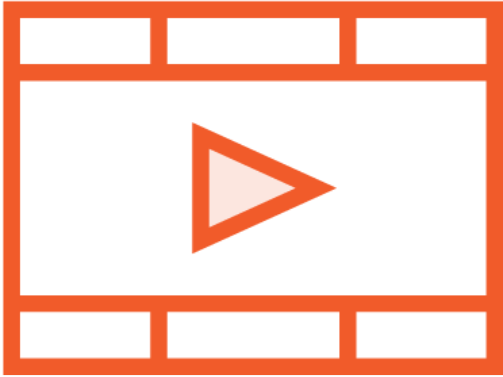
Source = `https://...`

Target = `c:\...`







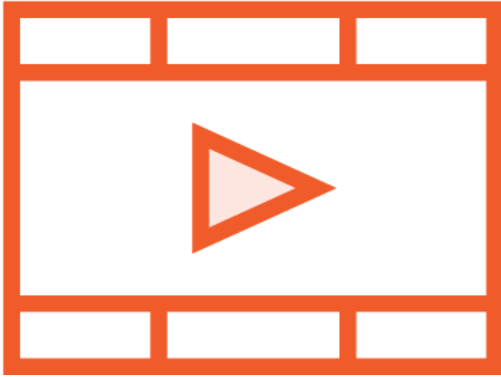


Windows PowerShell Desired State Configuration Fundamentals



Jeff Hicks

@JeffHicks jdhitsolutions.com/blog



Advanced Windows PowerShell Desired State Configuration



Jeff Hicks

@JeffHicks jdhitsolutions.com/blog



Configuration WebServer

xRemoteFile WebAppDownload

Archive WebAppExtract

xWebsite WebAppWebSite

**Windows
Resources**



Configuration WebServer

xRemoteFile WebAppDownload

Archive WebAppExtract

xWebsite WebAppWebSite

Download ZIP



Configuration WebServer

xRemoteFile WebAppDownload

Archive WebAppExtract

xWebsite WebAppWebSite

Unzip to *Inetpub*



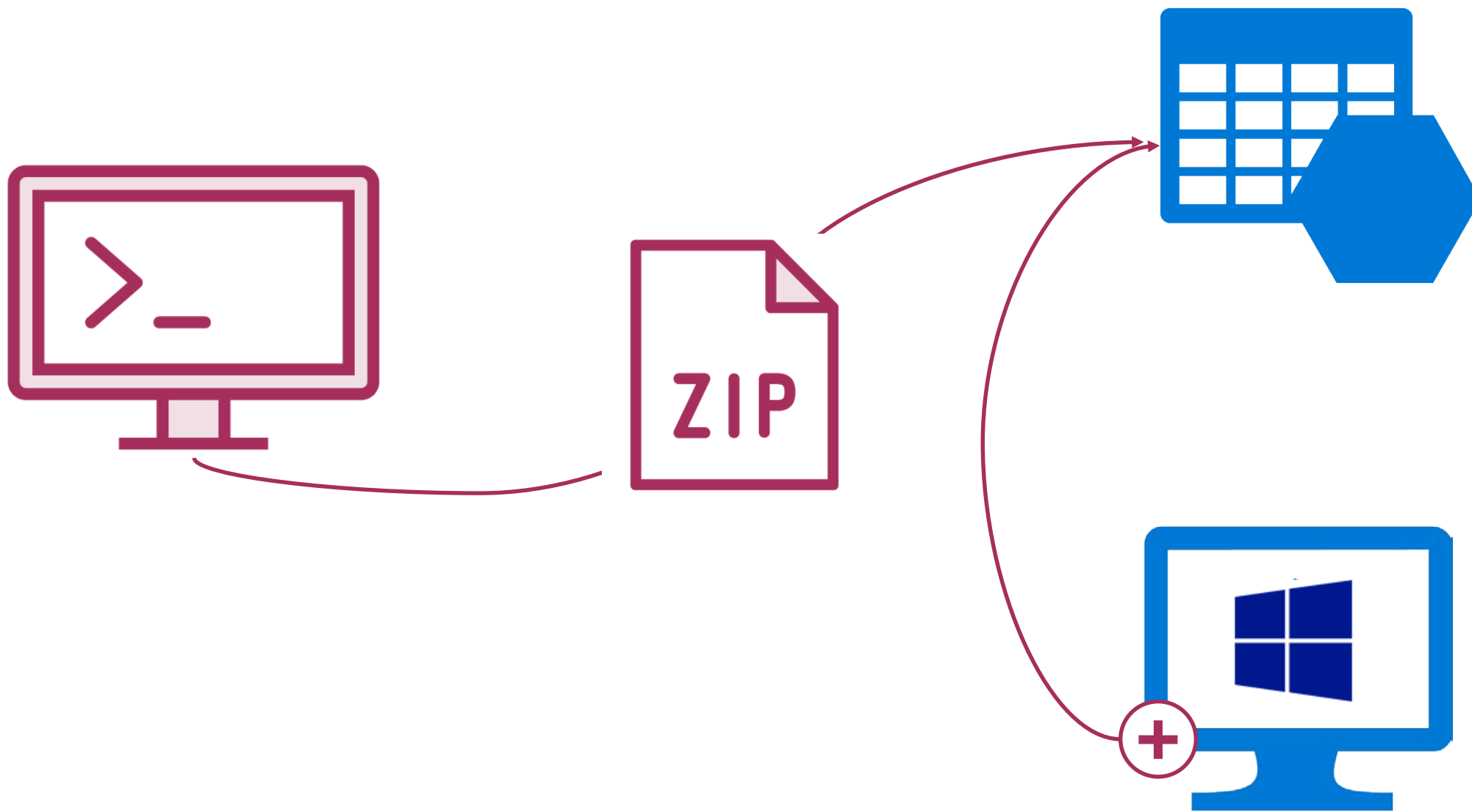
Configuration WebServer

xRemoteFile WebAppDownload

Archive WebAppExtract

xWebsite WebAppWebSite

Configure IIS





Configuration WebProxy

nxPackage Nginx

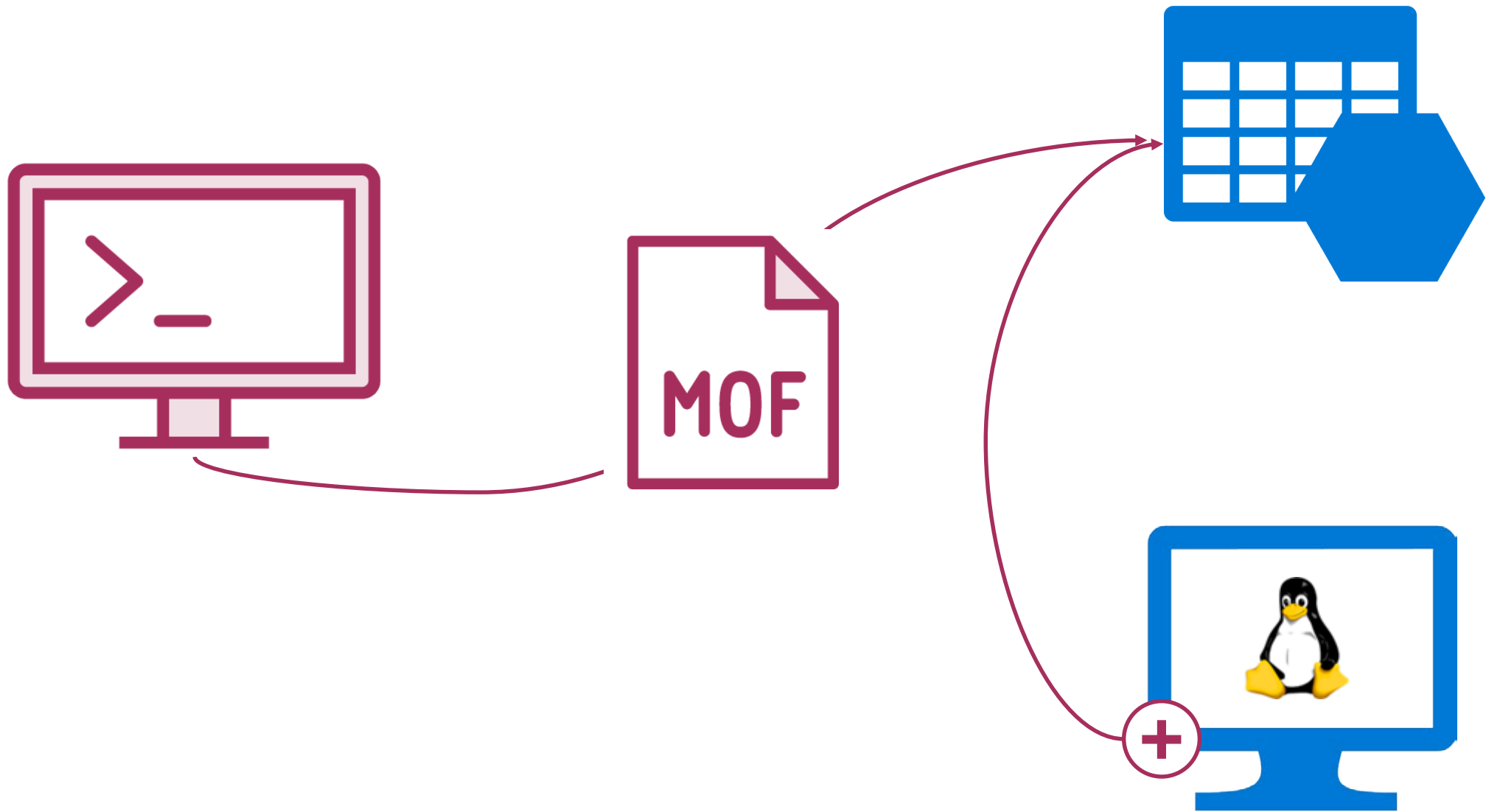
nxFile ProxyConf

nxService NginxStart

**Linux
Resources**







Demo



Linux VM Setup with DSC

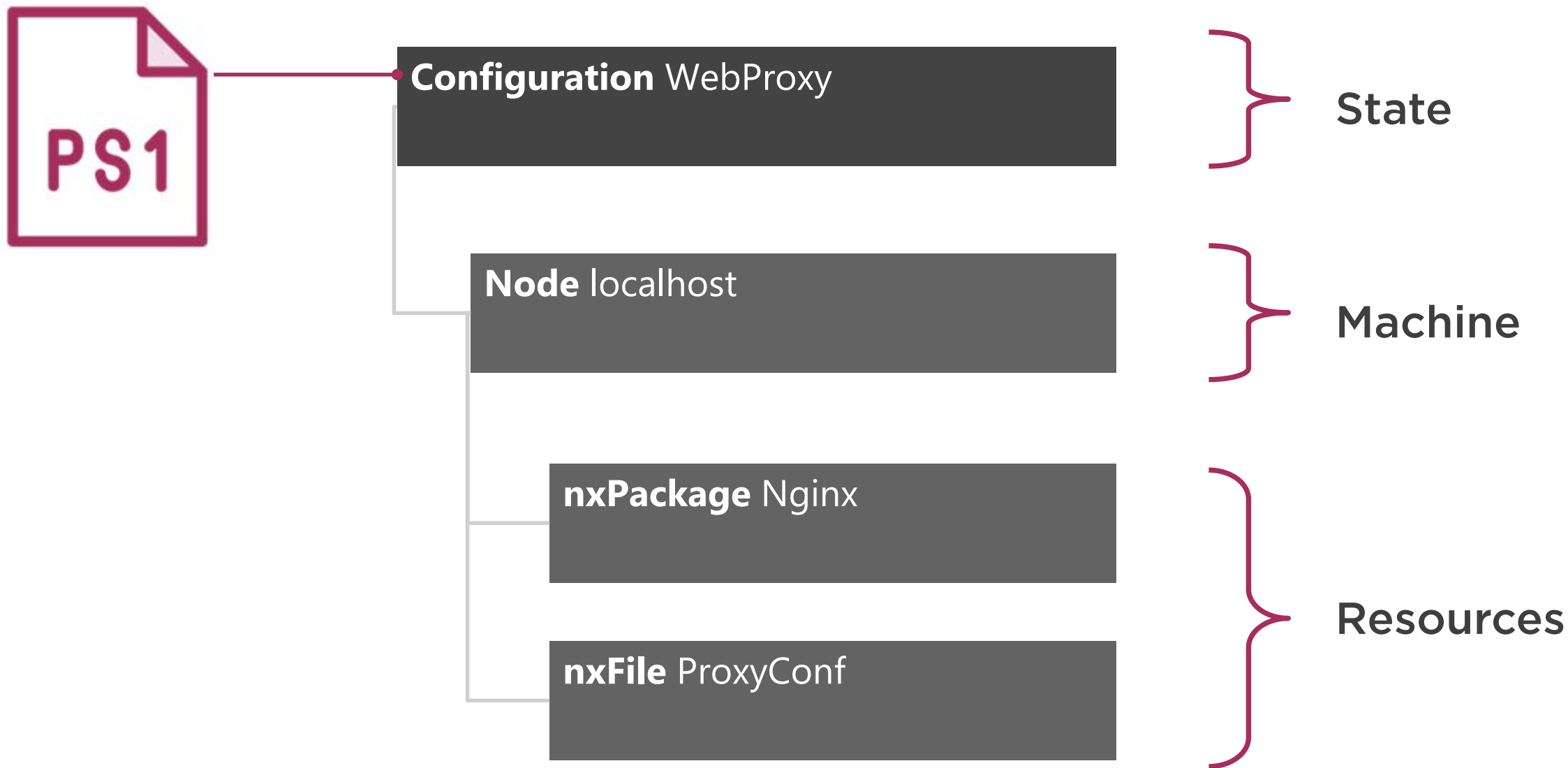
- Install NGINX
- Download configuration
- Run service

Demo



Deploying DSC for Linux

- Generate MOF
- Upload MOF
- Add VM extension



Import-DscResource -Module nx

`nxPackage { ... }`

`nxFile { ... }`

`nxScript { ... }`

◀ Import Linux resources

◀ Install packages

◀ Add/remove files

◀ Run script


```
nxScript EnableProxy
```

```
{
```

```
    TestScript = { ... }
```

```
    SetScript = { ... }
```

```
    GetScript = { ... }
```

```
}
```

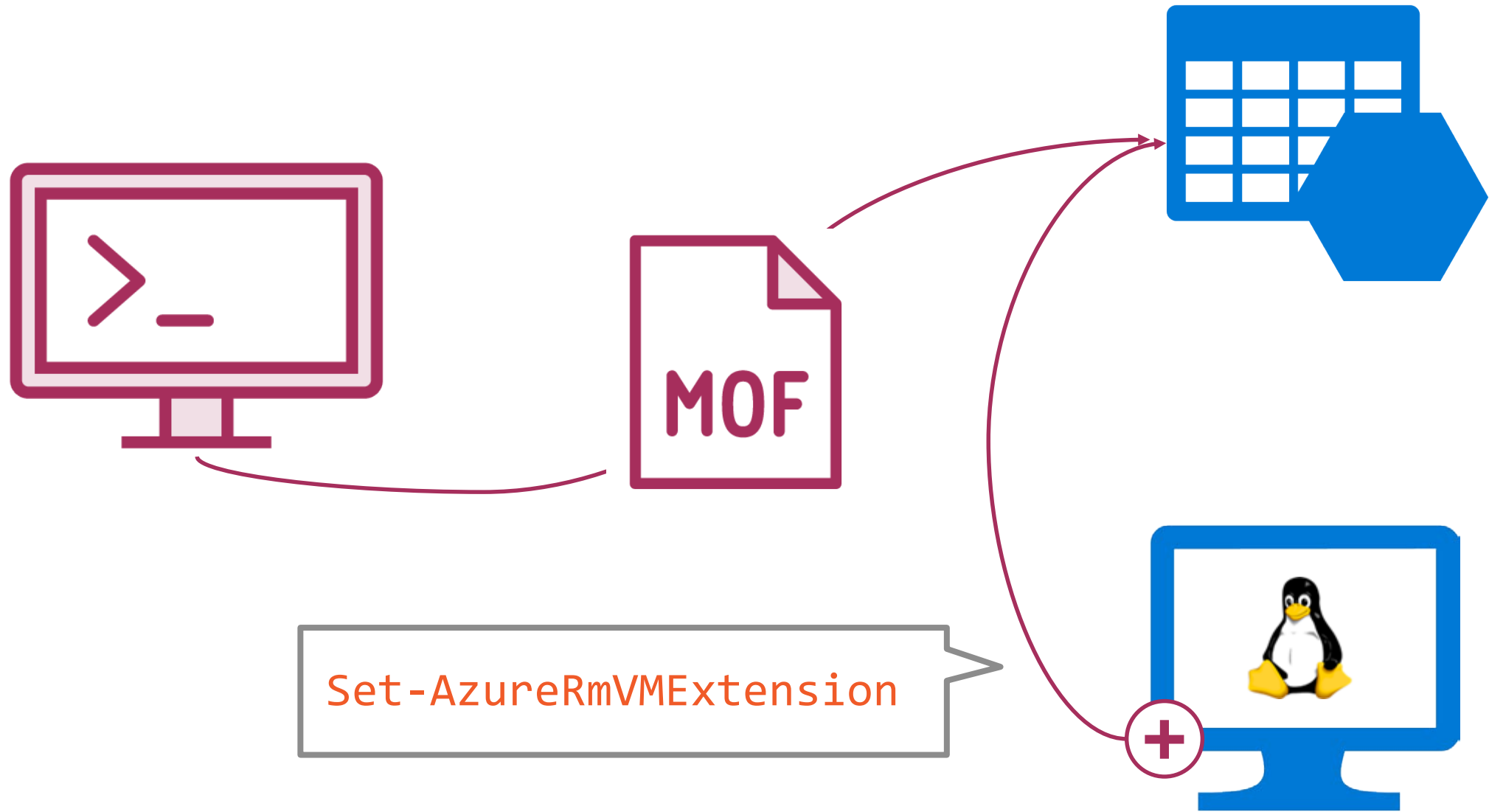
◀ Check if action needed

◀ Perform action

◀ Report outcome



WebProxy -OutputPath



Demo



Windows VM Setup with DSC

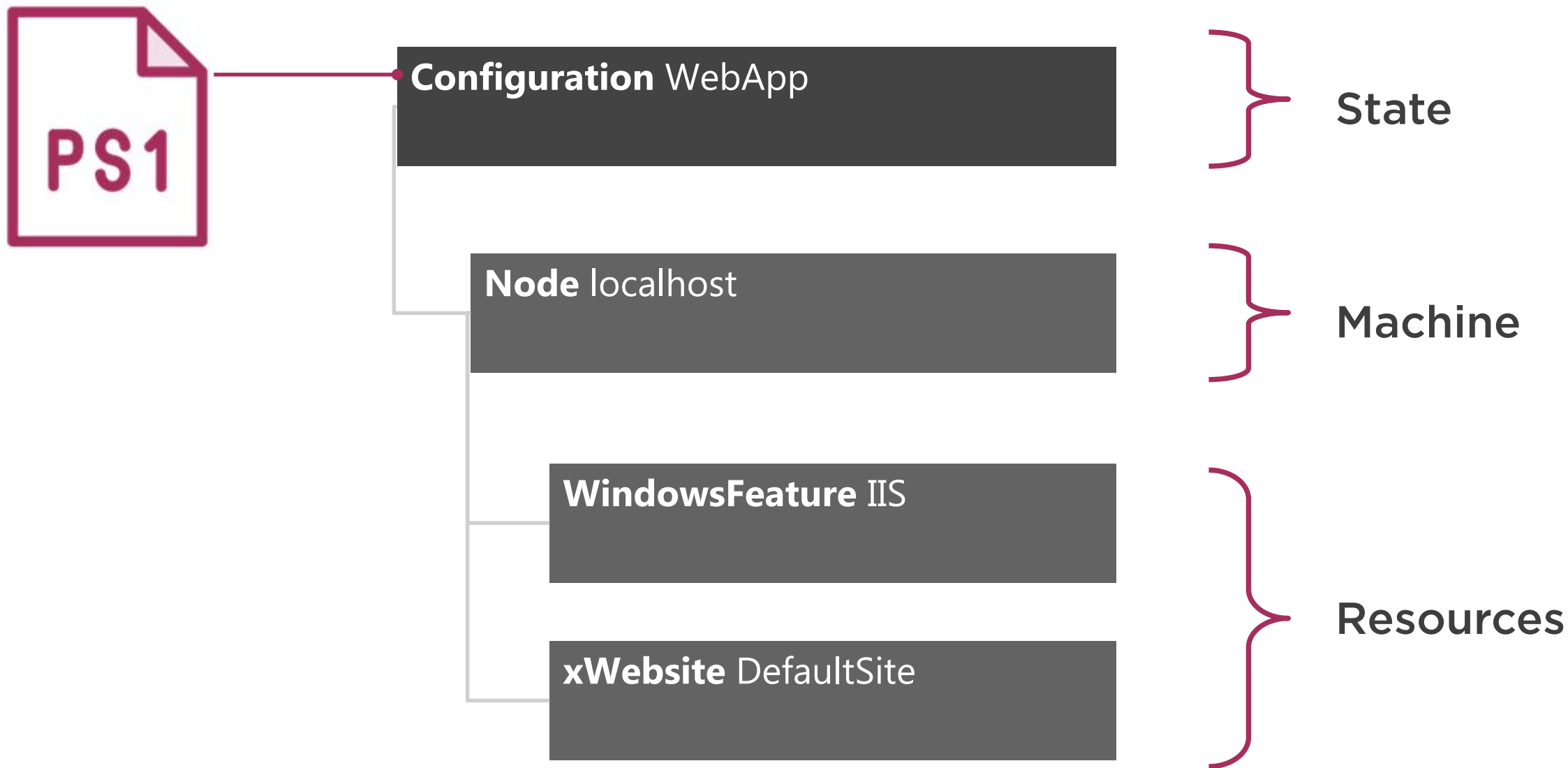
- Install IIS
- Install .NET Core
- Configure Web App

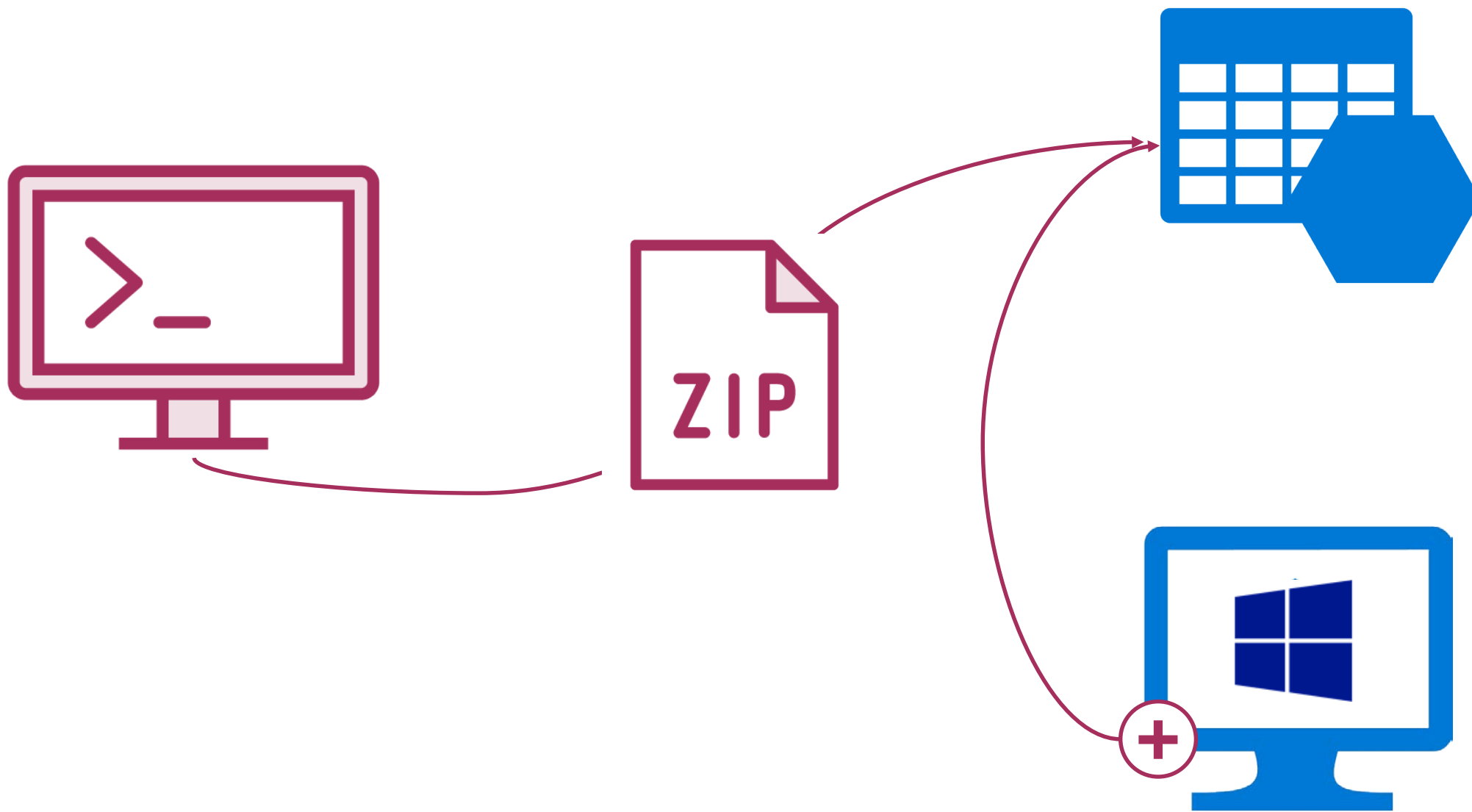
Demo



Deploying DSC for Windows

- Publish PS1
- Add VM extension





WindowsFeature { ... }

◀ **Install feature**

Script { ... }

◀ **Run PowerShell script**

xRemoteFile { ... }

◀ **Download file**

Package { ... }

◀ **Install MSI**

Archive { ... }

xWebAppPool { ... }

xWebsite { ... }

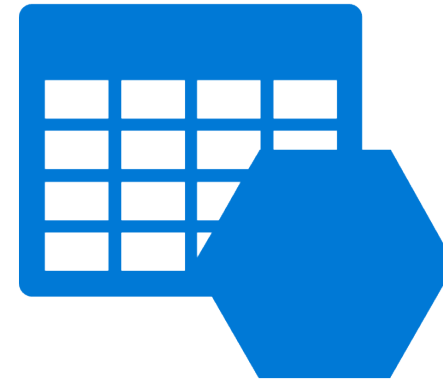
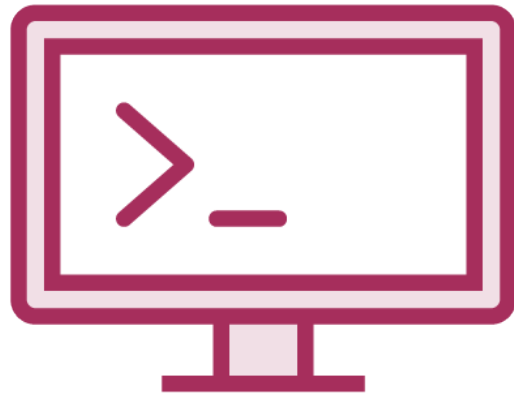
xFirewall { ... }

◀ Extract ZIP file

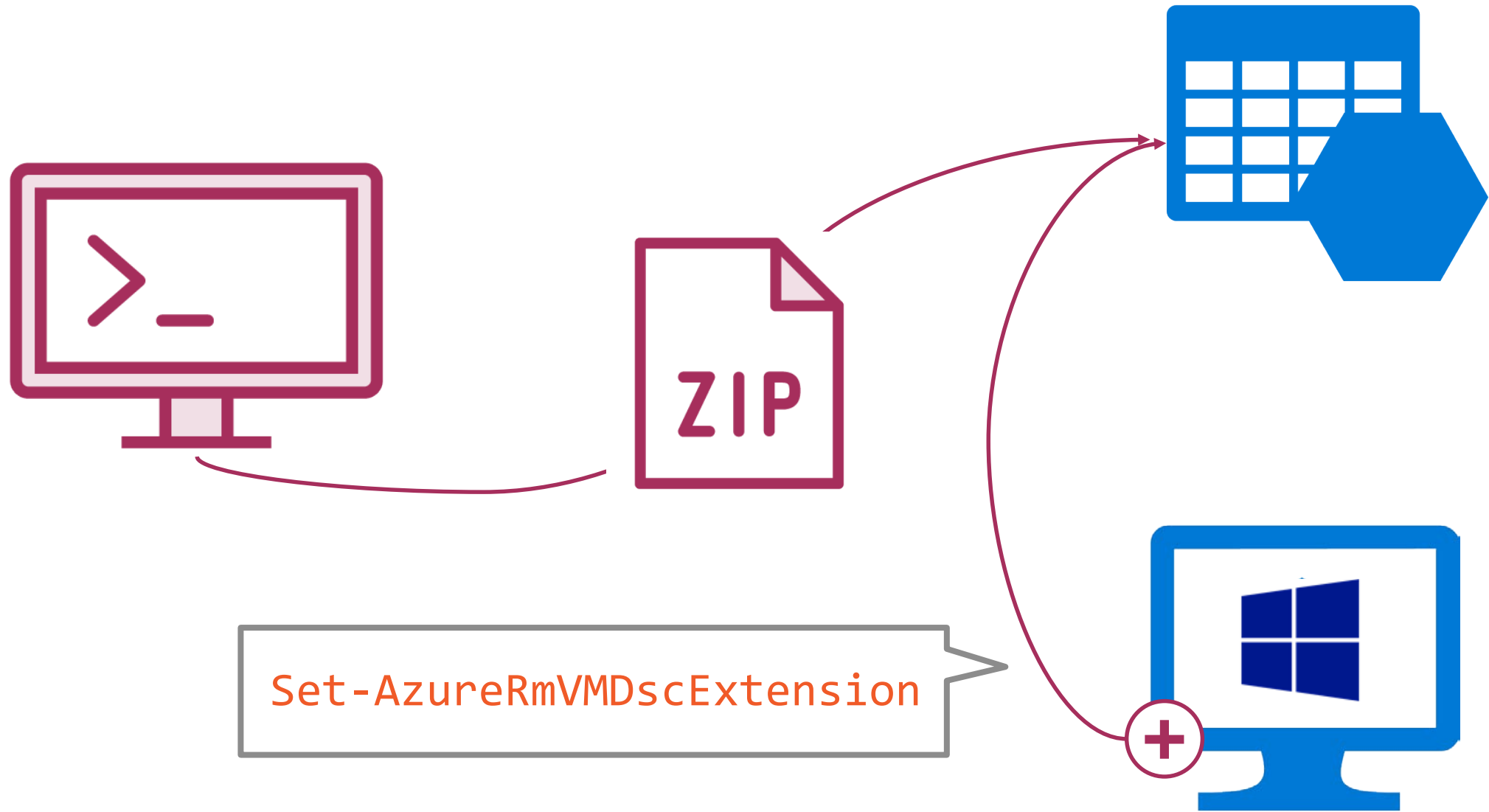
◀ Create IIS App Pool

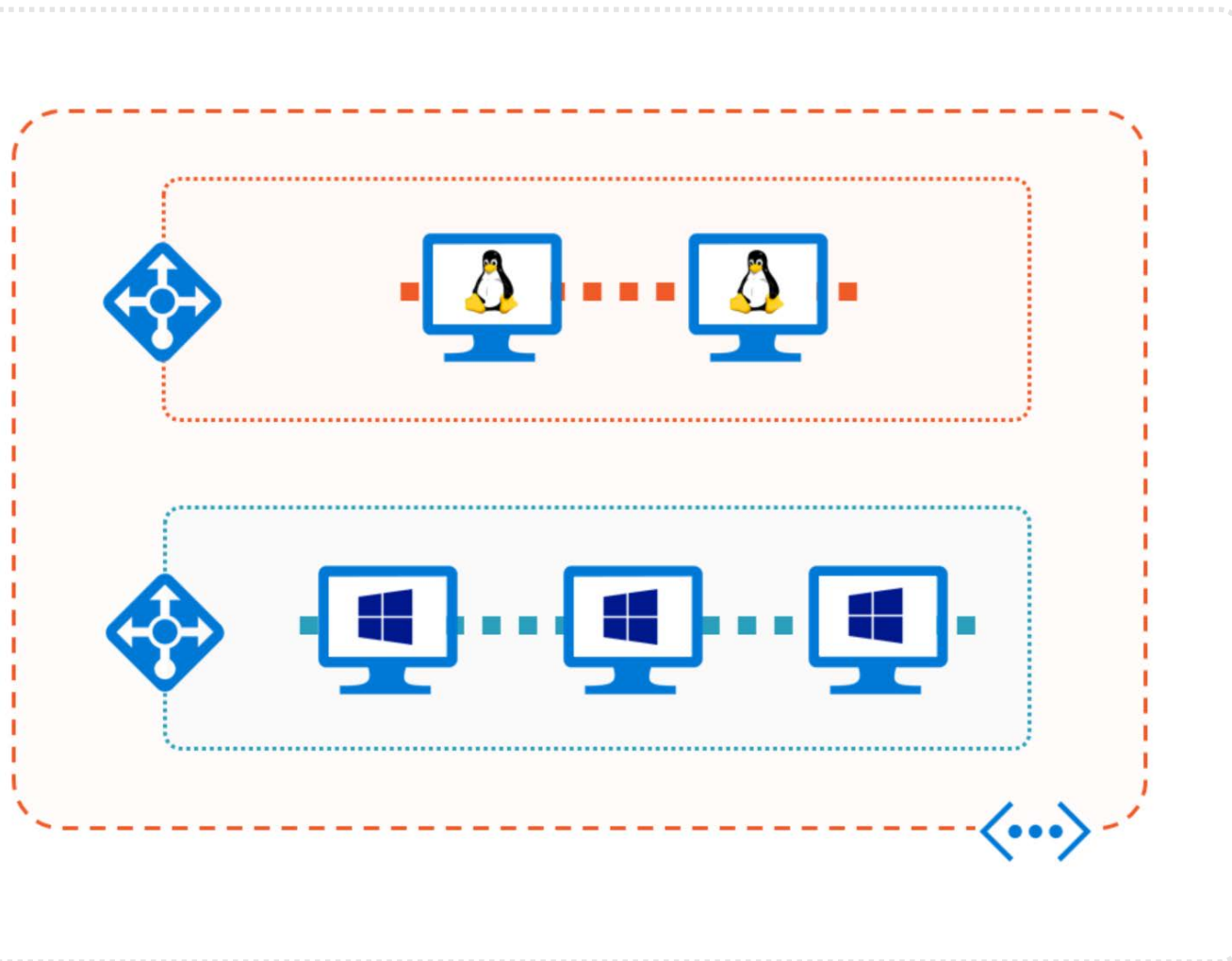
◀ Create IIS Website

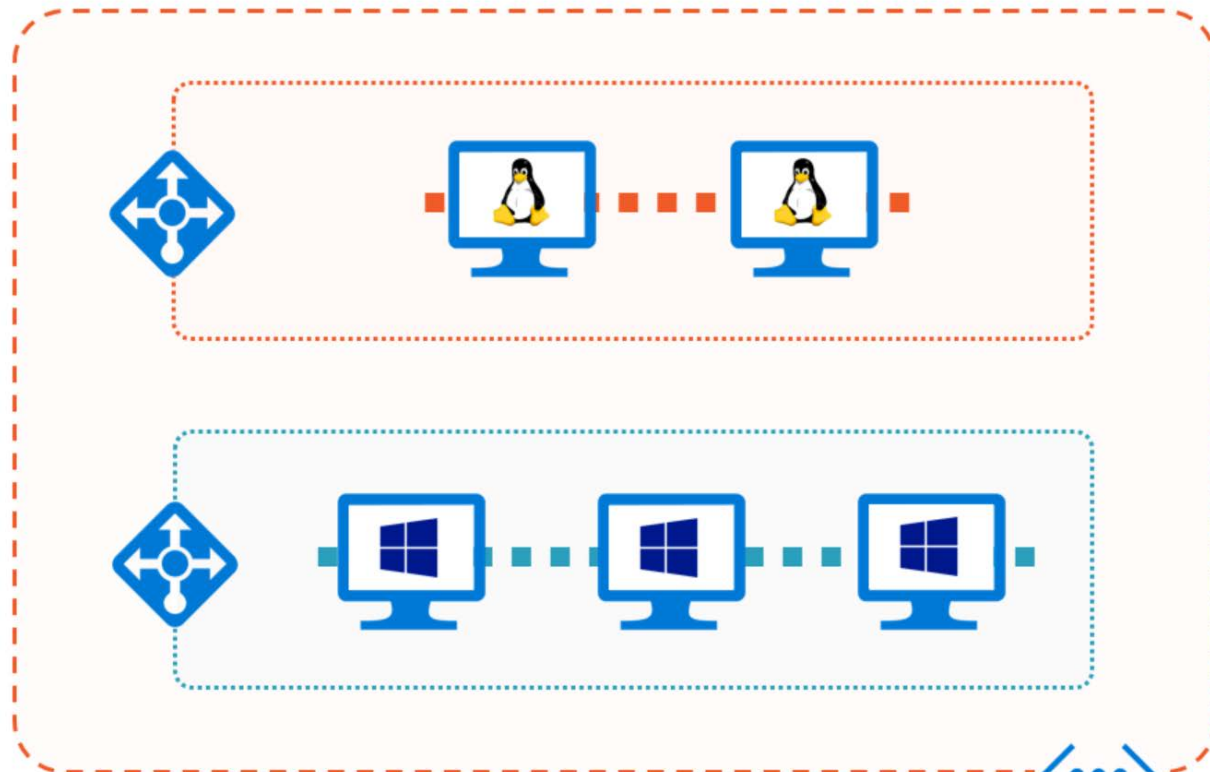
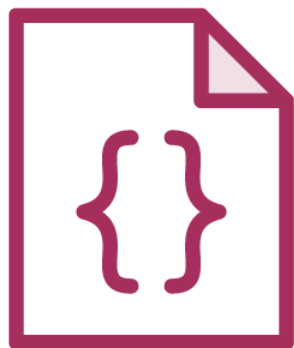
◀ New firewall rule

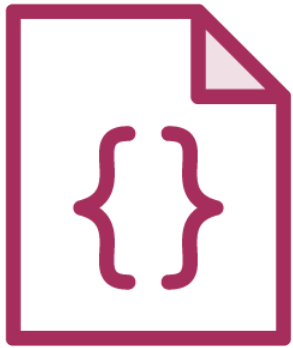


Publish-AzureRmVMDscConfiguration









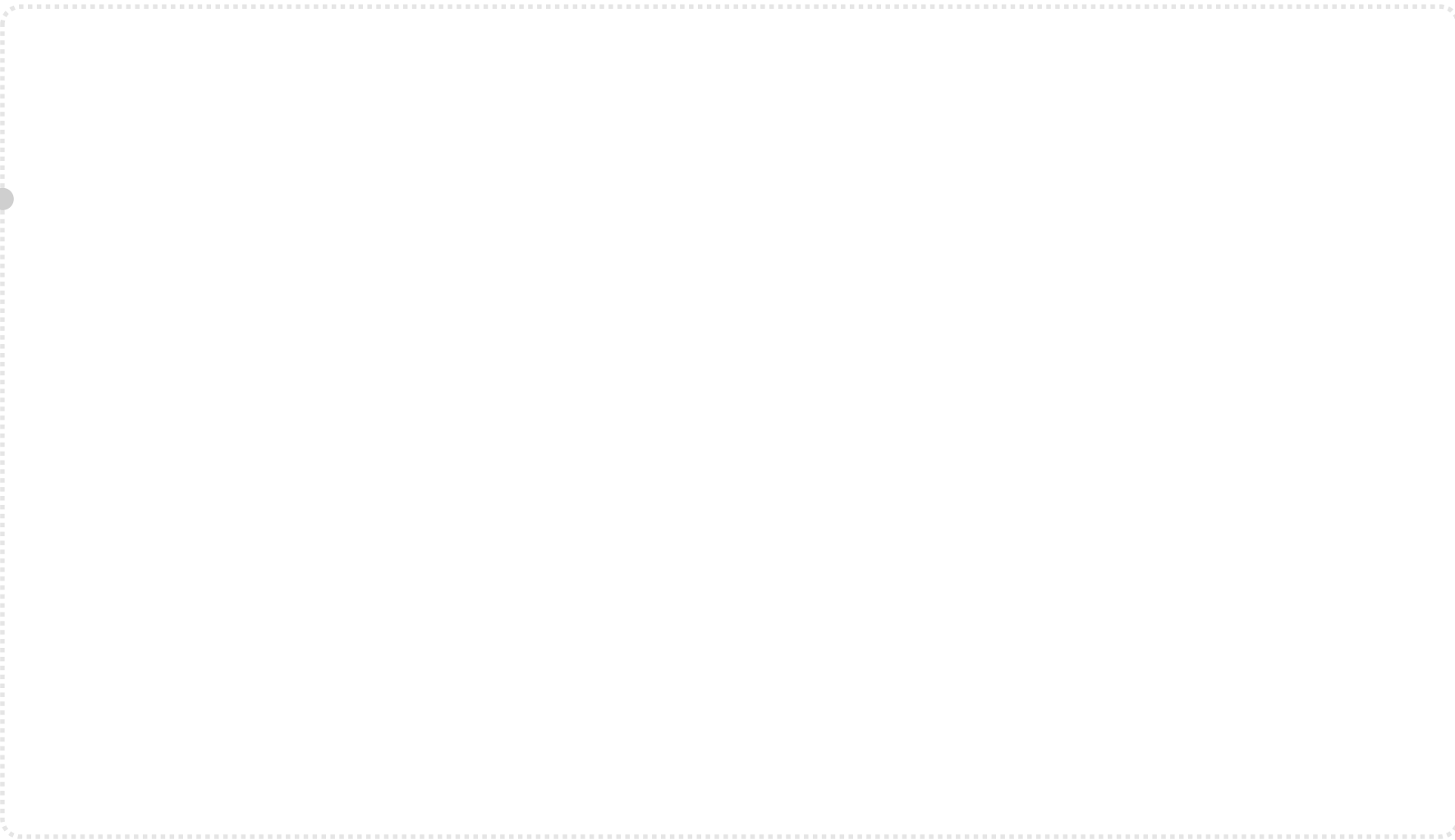
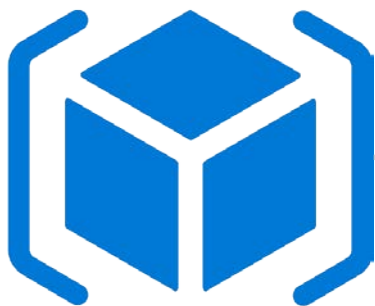
Load Balancer iaas-public

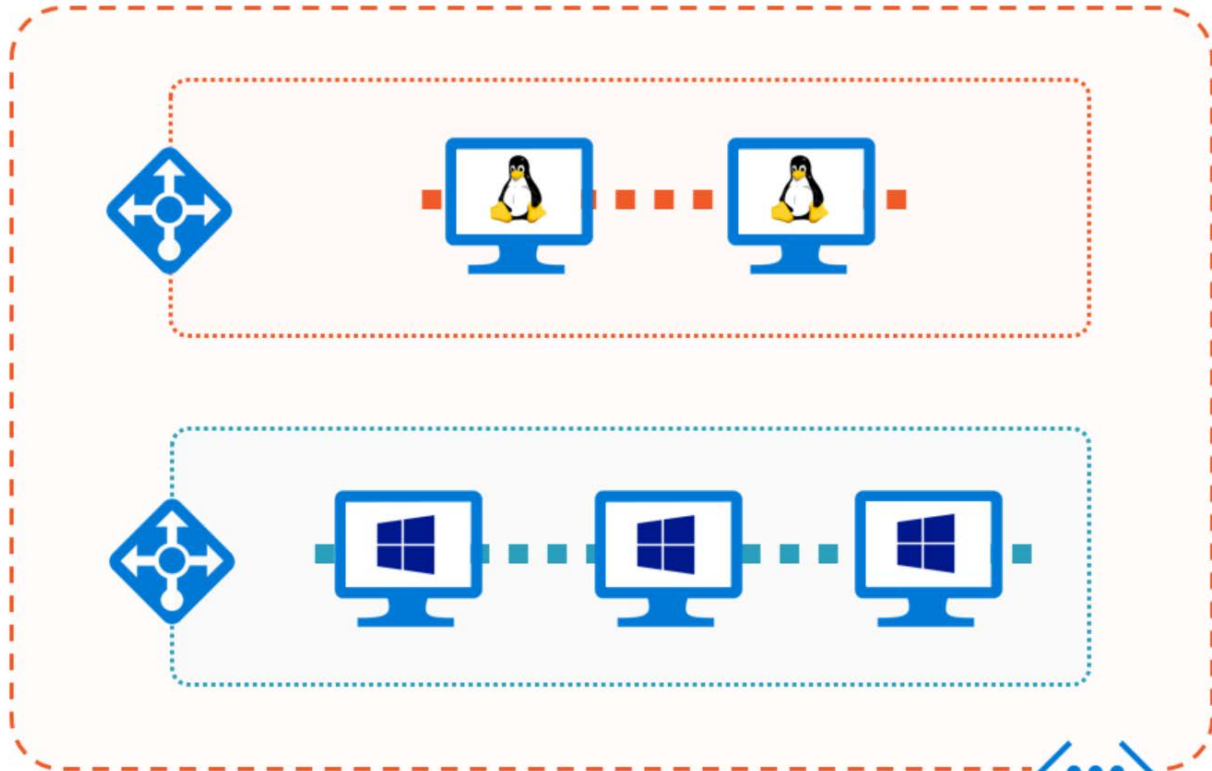
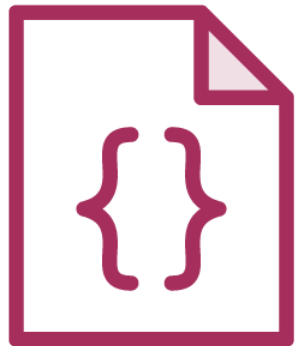
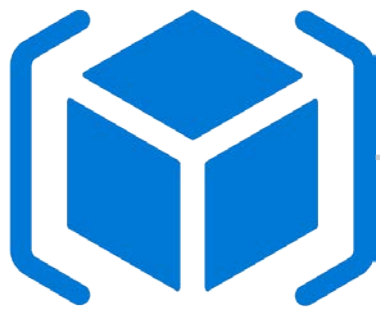
Virtual Machine ub-proxy-0

Nic nic-ub-proxy-0

Extension dsc-ub-proxy-0

Resources







Visual Studio
+ Azure SDK



ARM Template
Sample Gallery



Capture Group
Web Tool

Demo



Working with ARM Templates

- Visual Studio 2015
- GitHub gallery
- Capture Group website

Demo



Adding DSC to ARM Templates

- Windows PowerShell DSC Extension
- Linux DSC Extension

Demo



Deploying ARM Templates

- Create Resource Group
- Deploy Template

Summary

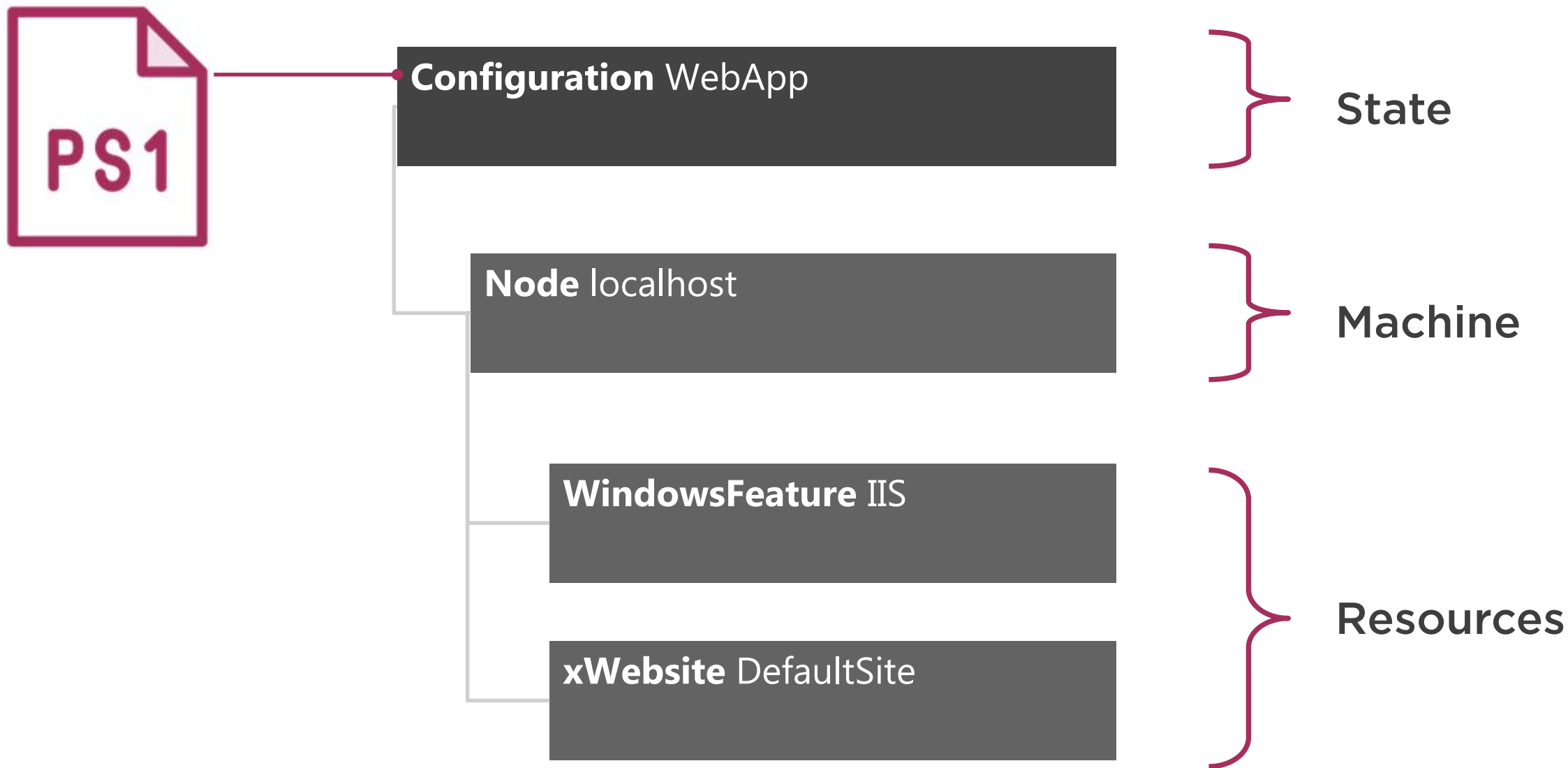


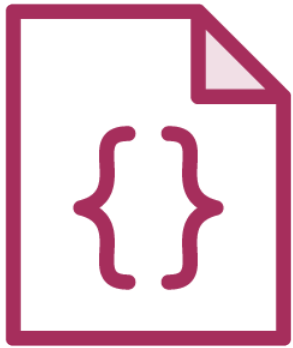
PowerShell DSC

- Automate VM setup
- Desired resources
- Packages, scripts, apps

ARM Templates

- Resource Group definition
- Components
- Relationships





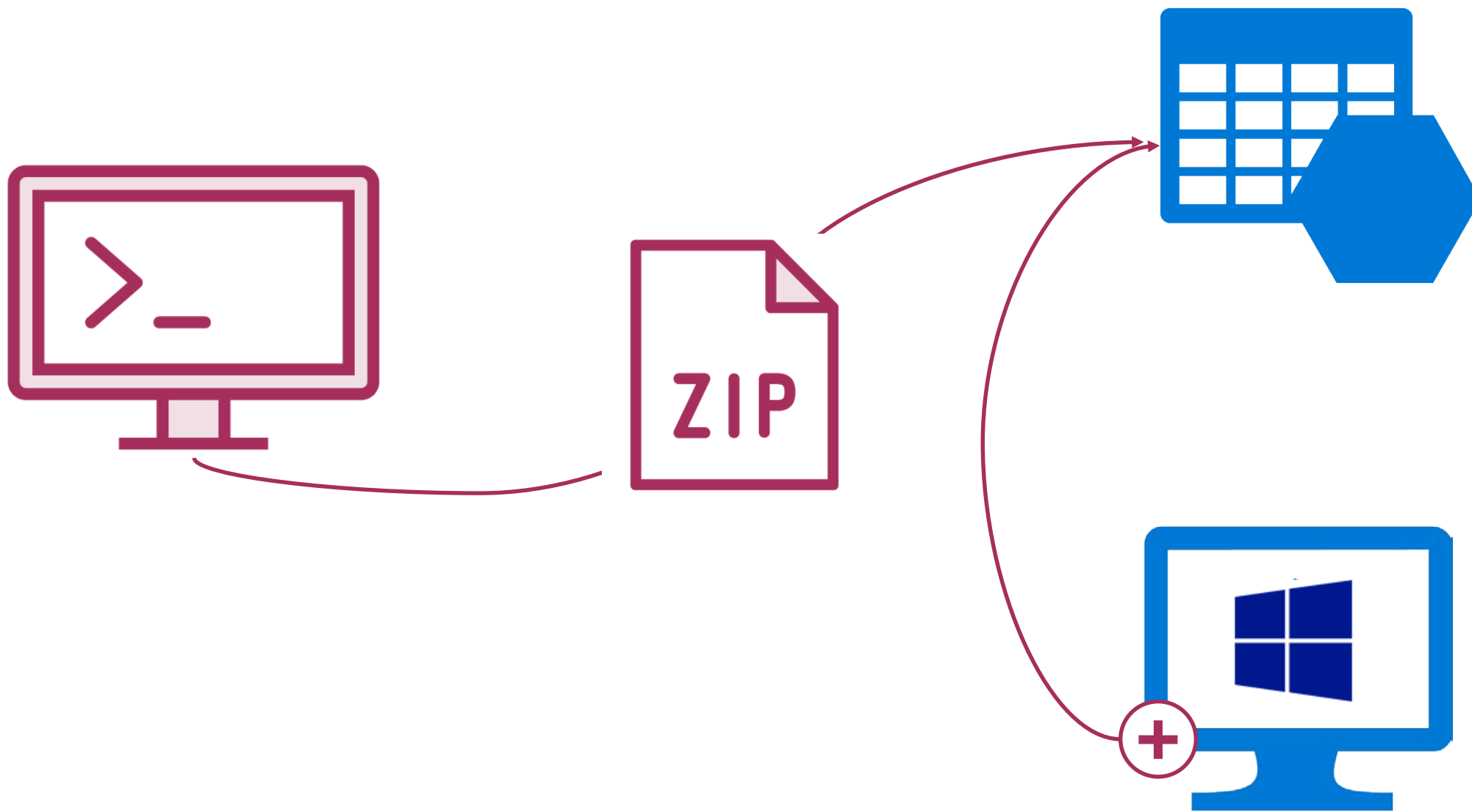
Load Balancer iaas-public

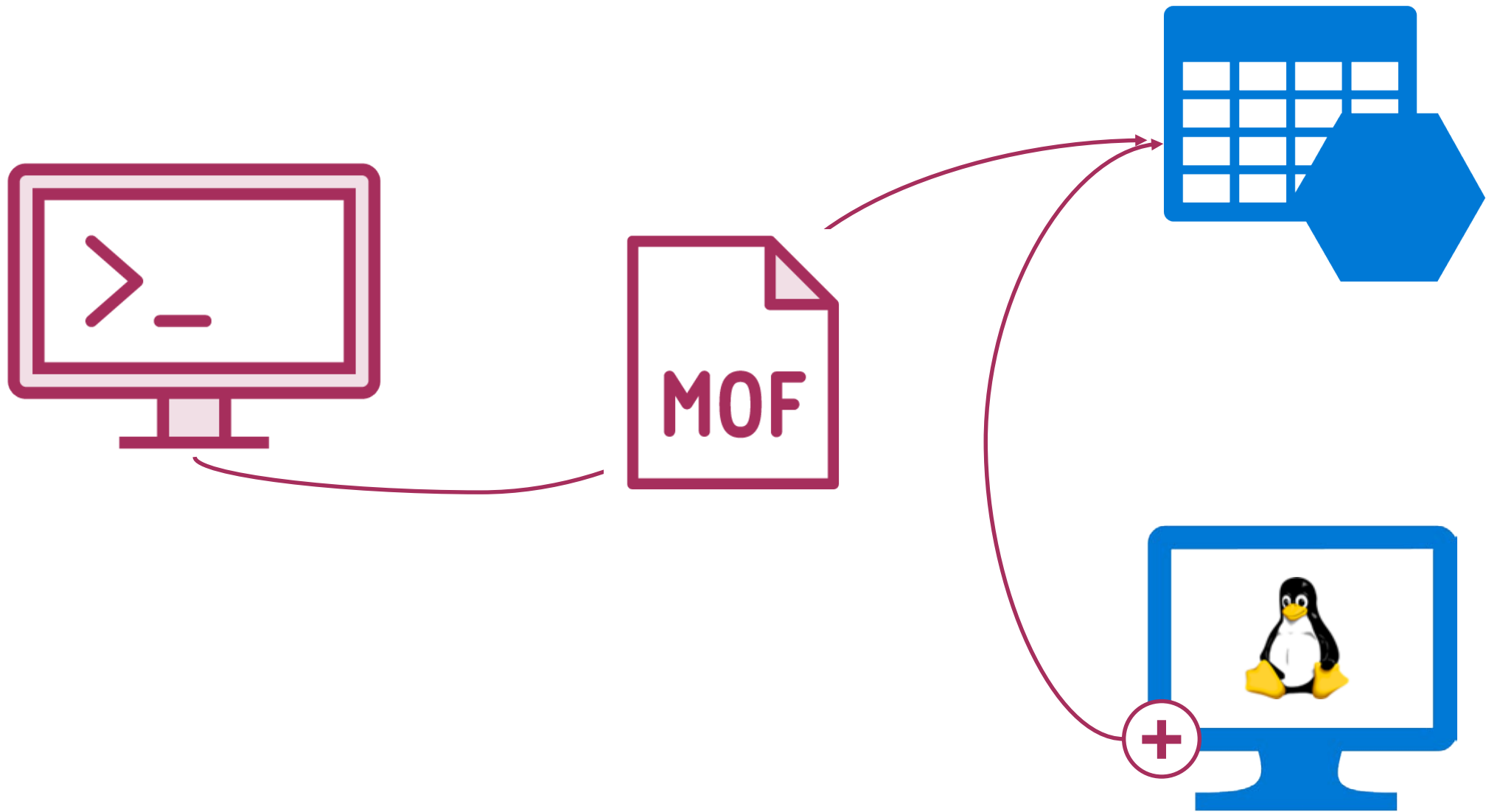
Virtual Machine ub-proxy-0

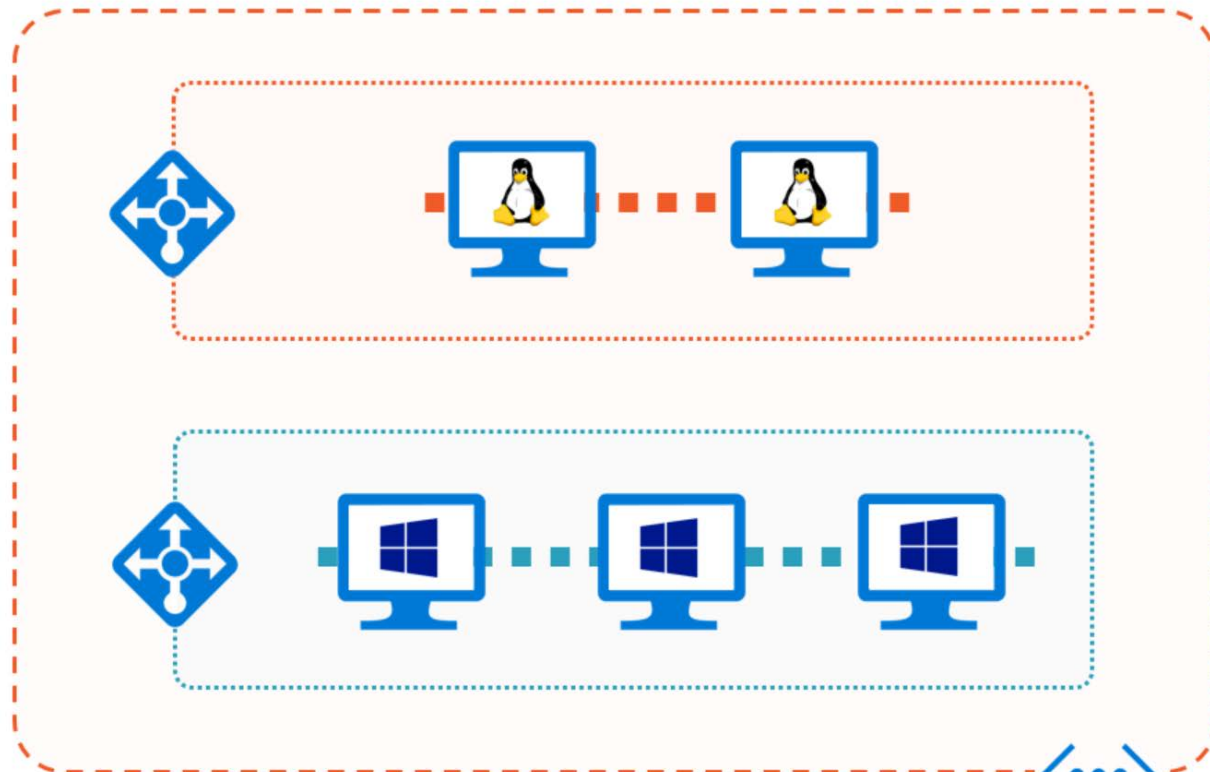
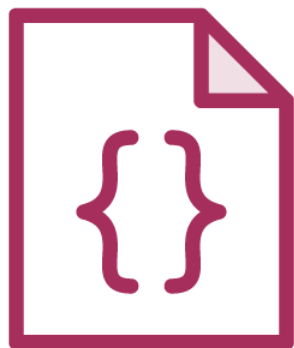
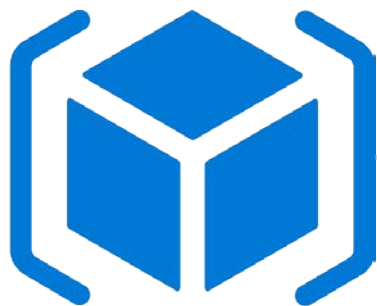
Nic nic-ub-proxy-0

Extension dsc-ub-proxy-0

Resources







```

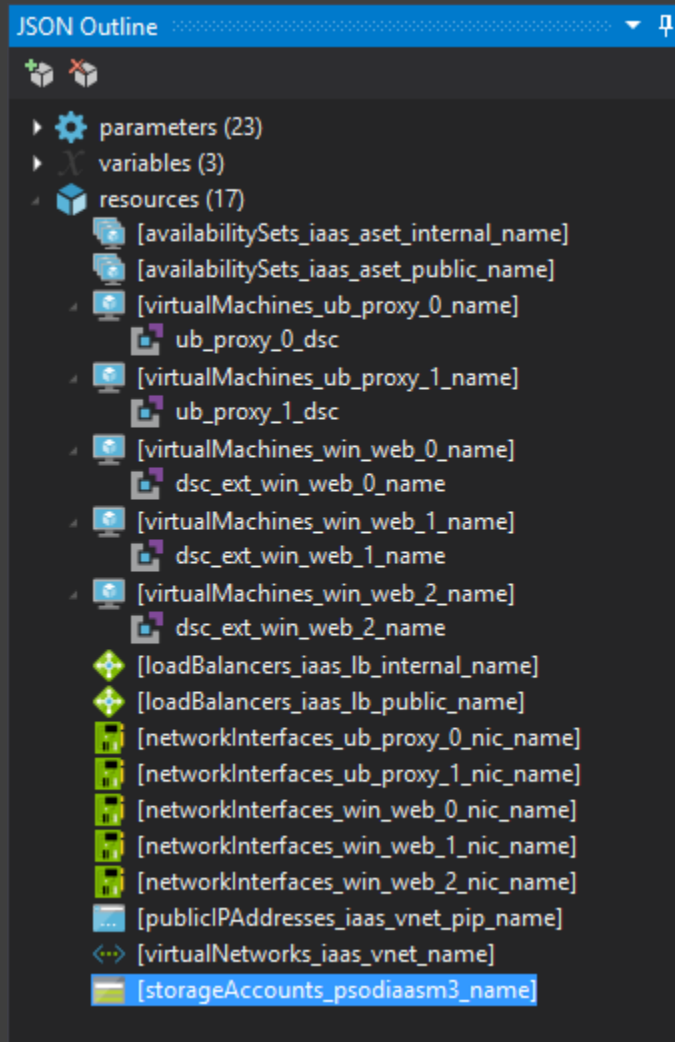
{
  "$schema": "http://schema.management.azure.com/schemas/2015-01-01/deploymentTemplate.json#",
  "contentVersion": "1.0.0.0",
  "parameters": {
    "virtualMachines_ub_proxy_0_adminPassword": {
      "type": "secureString",
      "defaultValue": null
    },
  },
  ...
},
"variables": {
  "dsc_ext_win_web_0_nameConfigurationFunction": "win-web-server-dsc.ps1\\WebApp",
  "win_web_dscModulesUri": "https://psodiaasbak.blob.core.windows.net/setup-win-web-server/win-web-server-dsc.ps1.zip?st=2016-03-27T09%3A32%3A00Z&se=2017-03-28T09%3A32%3A00Z&sp=r&sv=2015-02-21&sr=b&sig=q4SG6WMzllk2Fea2F5FJZKte1pWsbJWmmYqT71R7hXg%3D",
  "ub_proxy_dscMofUri": "https://psodiaasbak.blob.core.windows.net/setup-ub-proxy-server/localhost.mof?st=2016-03-27T09%3A32%3A00Z&se=2017-03-28T09%3A32%3A00Z&sp=r&sv=2015-02-21&sr=b&sig=jgdZGUGGcKNCIfaw1DpHiBOJtD5gLo8on6p7%2FntQlmc%3D"
},
"resources": [
  {
    "comments": "Generalized from resource: /subscriptions/3481cd2a-ed2d-4afd-8bbb-96ea65c835f2/resourceGroups/psod-iaas-m3/providers/Microsoft.Compute/availabilitySets/iaas-aset-internal",
    "type": "Microsoft.Compute/availabilitySets",
    "name": "[parameters('availabilitySets_iaas_aset_internal_name')]",
    "apiVersion": "2015-06-15",
    "location": "northeurope",
    "properties": {
      "platformUpdateDomainCount": 5,
      "platformFaultDomainCount": 3
    }
  },
  {
    "comments": "Generalized from resource: /subscriptions/3481cd2a-ed2d-4afd-8bbb-96ea65c835f2/resourceGroups/psod-iaas-m3/providers/Microsoft.Compute/availabilitySets/iaas-aset-public",
    "type": "Microsoft.Compute/availabilitySets",
    "name": "[parameters('availabilitySets_iaas_aset_public_name')]",
    "apiVersion": "2015-06-15",
    "location": "northeurope",
    "properties": {
      "platformUpdateDomainCount": 5,
      "platformFaultDomainCount": 3
    }
  },
  {
    "comments": "Generalized from resource: /subscriptions/3481cd2a-ed2d-4afd-8bbb-96ea65c835f2/resourceGroups/psod-iaas-m3/providers/Microsoft.Compute/virtualMachines/ub-proxy-0",
    "type": "Microsoft.Compute/virtualMachines",
    "name": "[parameters('virtualMachines_ub_proxy_0_name')]",
    "apiVersion": "2015-06-15",
    "location": "northeurope",
    "properties": {
      "availabilitySet": {
        "id": "[resourceId('Microsoft.Compute/availabilitySets', parameters('availabilitySets_iaas_aset_public_name'))]"
      },
      "hardwareProfile": {
        "vmSize": "Standard_A1"
      },
      "storageProfile": {
        "imageReference": {
          "publisher": "Canonical",
          "offer": "UbuntuServer",
          "sku": "14.04.3-LTS" ...

```

◀ Resource Group

◀ 17 resources

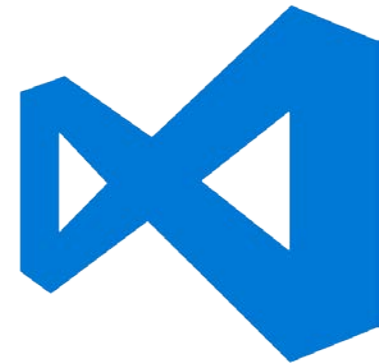
◀ 860 lines JSON

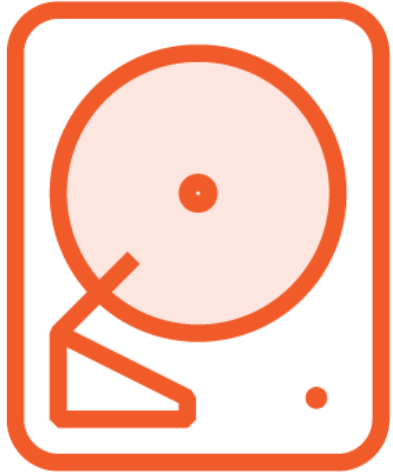


◀ Resource Group

◀ 17 resources

◀ 860 lines JSON





Custom Images

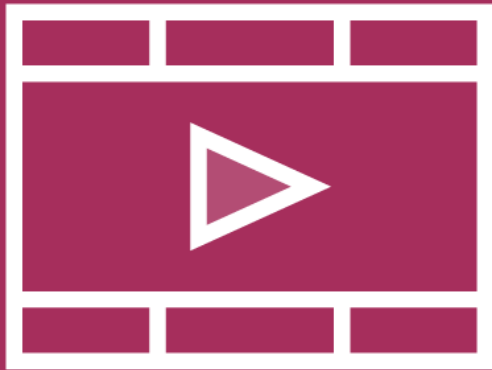
PowerShell



ARM Templates

PowerShell DSC

Coming Next



Administrating Azure IaaS

- Security
- OS updates
- Disk management
- Scaling