# Sample Application for Use with Security Boundary Environments

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These PowerShell scripts can be run locally on the IIS01 and AppVM01 servers to install and setup a very simple web application that displays an html page from the front end IIS01 server with content from the backend AppVM01 server.

This will app provides a simple testing environment for many of the DMZ Examples and how changes on the Endpoints, NSGs, UDR, and Firewall rules can effect traffic flows.

## Firewall Rule to Allow ICMP

This simple PowerShell statement can be run on any Windows VM to allow ICMP (Ping) traffic. This will allow for easier testing and troubleshooting by allowing the ping protocol to pass through the windows firewall (for most Linux distros ICMP is on by default).

# Turn On ICMPv4  
New-NetFirewallRule -Name Allow\_ICMPv4 -DisplayName "Allow ICMPv4" `  
 -Protocol ICMPv4 -Enabled True -Profile Any -Action Allow

**Note:** If you use the below scripts, this firewall rule addition is the first statement.

## IIS01 - Web Application Installation Script

This script will;

1. Open IMCPv4 (Ping) on the local server windows firewall for easier testing
2. Install IIS and the .Net Framework v4.5
3. Create an ASP.NET web page and a Web.config file
4. Change the Default application pool to make file access easier
5. Set the Anonymous user to your admin account and password

This PowerShell script should be run locally while RDP’d into IIS01.

# IIS Server Post Build Config Script  
# Get Admin Account and Password  
 Write-Host "Please enter the admin account information used to create this VM:" -ForegroundColor Cyan  
 $theAdmin = Read-Host -Prompt "The Admin Account Name (no domain or machine name)"  
 $thePassword = Read-Host -Prompt "The Admin Password"  
   
# Turn On ICMPv4  
 Write-Host "Creating ICMP Rule in Windows Firewall" -ForegroundColor Cyan  
 New-NetFirewallRule -Name Allow\_ICMPv4 -DisplayName "Allow ICMPv4" -Protocol ICMPv4 -Enabled True -Profile Any -Action Allow  
   
# Install IIS  
 Write-Host "Installing IIS and .Net 4.5, this can take some time, like 15+ minutes..." -ForegroundColor Cyan  
 add-windowsfeature Web-Server, Web-WebServer, Web-Common-Http, Web-Default-Doc, Web-Dir-Browsing, Web-Http-Errors, Web-Static-Content, Web-Health, Web-Http-Logging, Web-Performance, Web-Stat-Compression, Web-Security, Web-Filtering, Web-App-Dev, Web-ISAPI-Ext, Web-ISAPI-Filter, Web-Net-Ext, Web-Net-Ext45, Web-Asp-Net45, Web-Mgmt-Tools, Web-Mgmt-Console  
   
# Create Web App Pages  
 Write-Host "Creating Web page and Web.Config file" -ForegroundColor Cyan  
 $MainPage = '<%@ Page Language="vb" AutoEventWireup="false" %>  
 <%@ Import Namespace="System.IO" %>  
 <script language="vb" runat="server">  
 Protected Sub Page\_Load(ByVal sender As Object, ByVal e As System.EventArgs) Handles Me.Load  
 Dim FILENAME As String = "\\10.0.2.5\WebShare\Rand.txt"  
 Dim objStreamReader As StreamReader  
 objStreamReader = File.OpenText(FILENAME)  
 Dim contents As String = objStreamReader.ReadToEnd()  
 lblOutput.Text = contents  
 objStreamReader.Close()  
 lblTime.Text = Now()  
 End Sub  
 </script>  
   
 <!DOCTYPE html>  
 <html xmlns="http://www.w3.org/1999/xhtml">  
 <head runat="server">  
 <title>DMZ Example App</title>  
 </head>  
 <body style="font-family: Optima,Segoe,Segoe UI,Candara,Calibri,Arial,sans-serif;">  
 <form id="frmMain" runat="server">  
 <div>  
 <h1>Looks like you made it!</h1>  
 This is a page from the inside (a web server on a private network),<br />  
 and it is making its way to the outside! (If you are viewing this from the internet)<br />  
 <br />  
 The following sections show:  
 <ul style="margin-top: 0px;">  
 <li> Local Server Time - Shows if this page is or isnt cached anywhere</li>  
 <li> File Output - Shows that the web server is reaching AppVM01 on the backend subnet and successfully returning content</li>  
 <li> Image from the Internet - Doesnt really show anything, but it made me happy to see this when the app worked</li>  
 </ul>  
 <div style="border: 2px solid #8AC007; border-radius: 25px; padding: 20px; margin: 10px; width: 650px;">  
 <b>Local Web Server Time</b>: <asp:Label runat="server" ID="lblTime" /></div>  
 <div style="border: 2px solid #8AC007; border-radius: 25px; padding: 20px; margin: 10px; width: 650px;">  
 <b>File Output from AppVM01</b>: <asp:Label runat="server" ID="lblOutput" /></div>  
 <div style="border: 2px solid #8AC007; border-radius: 25px; padding: 20px; margin: 10px; width: 650px;">  
 <b>Image File Linked from the Internet</b>:<br />  
 <br />  
 <img src="http://sd.keepcalm-o-matic.co.uk/i/keep-calm-you-made-it-7.png" alt="You made it!" width="150" length="175"/></div>  
 </div>  
 </form>  
 </body>  
 </html>'  
   
 $WebConfig ='<?xml version="1.0" encoding="utf-8"?>  
 <configuration>  
 <system.web>  
 <compilation debug="true" strict="false" explicit="true" targetFramework="4.5" />  
 <httpRuntime targetFramework="4.5" />  
 <identity impersonate="true" />  
 <customErrors mode="Off"/>  
 </system.web>  
 <system.webServer>  
 <defaultDocument>  
 <files>  
 <add value="Home.aspx" />  
 </files>  
 </defaultDocument>  
 </system.webServer>  
 </configuration>'  
   
 $MainPage | Out-File -FilePath "C:\inetpub\wwwroot\Home.aspx" -Encoding ascii  
 $WebConfig | Out-File -FilePath "C:\inetpub\wwwroot\Web.config" -Encoding ascii  
  
# Set App Pool to Clasic Pipeline to remote file access will work easier  
 Write-Host "Updaing IIS Settings" -ForegroundColor Cyan  
 c:\windows\system32\inetsrv\appcmd.exe set app "Default Web Site/" /applicationPool:".NET v4.5 Classic"  
 c:\windows\system32\inetsrv\appcmd.exe set config "Default Web Site/" /section:system.webServer/security/authentication/anonymousAuthentication /userName:$theAdmin /password:$thePassword /commit:apphost  
   
# Make sure the IIS settings take  
 Write-Host "Restarting the W3SVC" -ForegroundColor Cyan  
 Restart-Service -Name W3SVC  
   
 Write-Host  
 Write-Host "Web App Creation Successfull!" -ForegroundColor Green  
 Write-Host

## AppVM01 - File Server Installation Script

This script sets up the back end for this simple application. This script will;

1. Open IMCPv4 (Ping) on the firewall for easier testing
2. Create a new directory
3. Create a text file to be remotely access by the web page above
4. Set permissions on the directory and file to Anonymous to allow access
5. Turn off IE Enhanced Security to allow easier browsing from this server

[AZURE.IMPORTANT] **Best Practice**: Never turn off IE Enhanced Security on a production server, plus it’s generally a bad idea to surf the web from a production server. Also, opening up file shares for anonymous access is a bad idea, but done here for simplicity.

This PowerShell script should be run locally while RDP’d into AppVM01. PowerShell is required to be run as Administrator to ensure successful execution.

# AppVM01 Server Post Build Config Script  
# PowerShell must be run as Administrator for Net Share commands to work  
  
# Turn On ICMPv4  
 New-NetFirewallRule -Name Allow\_ICMPv4 -DisplayName "Allow ICMPv4" -Protocol ICMPv4 -Enabled True -Profile Any -Action Allow  
  
# Create Directory  
 New-Item "C:\WebShare" -ItemType Directory  
  
# Write out Rand.txt  
 $FileContent = "Hello, I'm the contents of a remote file on AppVM01."  
 $FileContent | Out-File -FilePath "C:\WebShare\Rand.txt" -Encoding ascii  
  
# Set Permissions on share  
 $Acl = Get-Acl "C:\WebShare"  
 $AccessRule = New-Object system.security.accesscontrol.filesystemaccessrule("Everyone","ReadAndExecute, Synchronize","ContainerInherit, ObjectInherit","InheritOnly","Allow")  
 $Acl.SetAccessRule($AccessRule)  
 Set-Acl "C:\WebShare" $Acl  
  
# Create network share  
 Net Share WebShare=C:\WebShare "/grant:Everyone,READ"  
  
# Turn Off IE Enhanced Security Configuration for Admins  
 Set-ItemProperty -Path "HKLM:\SOFTWARE\Microsoft\Active Setup\Installed Components\{A509B1A7-37EF-4b3f-8CFC-4F3A74704073}" -Name "IsInstalled" -Value 0  
  
 Write-Host  
 Write-Host "File Server Setup Successfull!" -ForegroundColor Green  
 Write-Host

## DNS01 - DNS Server Installation Script

There is no script included in this sample application to setup the DNS server. If testing of the firewall rules, NSG, or UDR needs to include DNS traffic, the DNS01 server will need to be setup manually. The Network Configuration xml file for both examples includes DNS01 as the primary DNS server and the public DNS server hosted by Level 3 as the backup DNS server. The Level 3 DNS server would be the actual DNS server used for non-local traffic, and with DNS01 not setup, no local DNS would occur.