KIRK DAHL
McKesson **Assignment 11** Deep Azure

Handed out: 12/21/2017 Due by 11:59 PM, midnight (CST) on Tuesday, 01/09/2018

You can do this assignment in Java, C# or Python. You do not have to all parts of the assignment in the same language.

Problem 01. Create your own Virtual Network with two subnets. Add a pool of VMs to the front-end subnet. Let every VM have a simple Web server on them. You are welcome to configure your own VMs or use one already offered by Azure. Let `index.html` or any other home page (`index,jsp, index.php, …`) running on those servers return your name, date and time and the IP address of the server (machine) on which it is running. Add a load balancer that would send outside requests to those Web servers. Add a VM with a database server of some kind to the back-end subnet. You will not be using that server in this problem. Associate a public static IP address with the load balancer. Demonstrate that as you repeatedly type the URL of the load balancer in your Web browser the return page will show response coming from VMs in the front-end subnet. You can work with Linux or Windows VMs and use the database server you are comfortable with.
(95%)

CREATE RESOURCE GROUP

```
kirks-macbook:~ el5vgxz$ az group create --name rg-kirkdahl --location eastus
{
  "id": "/subscriptions/6f5d1e5e-5295-4b19-9069-76eaa53bdb9c/resourceGroups/rg-
kirkdahl",
  "location": "eastus",
  "managedBy": null,
  "name": "rg-kirkdahl",
  "properties": {
    "provisioningState": "Succeeded"
  },
  "tags": null
}
```

CREATE STORAGE ACCOUNT

```
kirks-macbook:~ el5vgxz$ az storage account create --sku Standard_LRS -g rg-kirkdahl
--name sakirkdahl
{
  "accessTier": null,
  "creationTime": "2018-01-03T21:17:53.271717+00:00",
  "customDomain": null,
  "enableHttpsTrafficOnly": false,
  "encryption": {
    "keySource": "Microsoft.Storage",
    "keyVaultProperties": null,
    "services": {
      "blob": {
        "enabled": true,
        "lastEnabledTime": "2018-01-03T21:17:53.311720+00:00"
      },
      "file": {
```

```
        "enabled": true,
        "lastEnabledTime": "2018-01-03T21:17:53.311720+00:00"
      },
      "queue": null,
      "table": null
    }
  },
  "id": "/subscriptions/6f5d1e5e-5295-4b19-9069-76eaa53bdb9c/resourceGroups/rg-
kirkdahl/providers/Microsoft.Storage/storageAccounts/sakirkdahl",
  "identity": null,
  "kind": "Storage",
  "lastGeoFailoverTime": null,
  "location": "eastus",
  "name": "sakirkdahl",
  "networkAcls": {
    "bypass": "AzureServices",
    "defaultAction": "Allow",
    "ipRules": [],
    "virtualNetworkRules": []
  },
  "primaryEndpoints": {
    "blob": "https://sakirkdahl.blob.core.windows.net/",
    "file": "https://sakirkdahl.file.core.windows.net/",
    "queue": "https://sakirkdahl.queue.core.windows.net/",
    "table": "https://sakirkdahl.table.core.windows.net/"
  },
  "primaryLocation": "eastus",
  "provisioningState": "Succeeded",
  "resourceGroup": "rg-kirkdahl",
  "secondaryEndpoints": null,
  "secondaryLocation": null,
  "sku": {
    "name": "Standard_LRS",
    "tier": "Standard"
  },
  "statusOfPrimary": "available",
  "statusOfSecondary": null,
  "tags": {},
  "type": "Microsoft.Storage/storageAccounts"
}
```


CREATE VNET

```
kirks-macbook:~ el5vgxz$ az network vnet create -g rg-kirkdahl -n vnet-kirk
```


```
{
  "newVNet": {
    "addressSpace": {
      "addressPrefixes": [
        "10.0.0.0/16"
      ]
    },
    "dhcpOptions": {
      "dnsServers": []
    },
    "enableDdosProtection": false,
    "enableVmProtection": false,
    "etag": "W/\"fb8cfdea-ea4a-43a4-a1c0-ae81bd0aab31\"",
    "id": "/subscriptions/6f5d1e5e-5295-4b19-9069-76eaa53bdb9c/resourceGroups/rg-
kirkdahl/providers/Microsoft.Network/virtualNetworks/vnet-kirk",
    "location": "eastus",
    "name": "vnet-kirk",
    "provisioningState": "Succeeded",
    "resourceGroup": "rg-kirkdahl",
    "resourceGuid": "27a60eed-b13e-4a8b-87bc-ef530a8d749f",
```

```
    "subnets": [],
    "tags": {},
    "type": "Microsoft.Network/virtualNetworks",
    "virtualNetworkPeerings": []
  }
}
```

CREATE TWO /25 SUBNETS IN MY VNET

```
kirks-macbook:~ el5vgxz$ az network vnet subnet create --address-prefix
10.10.10.0/25 --name subnet1 --resource-group rg-kirkdahl --vnet-name vnet-kirk
{
  "addressPrefix": "10.10.10.0/25",
  "etag": "W/\"1dd0465b-6b97-4fe6-b849-45ba67ff6bb3\"",
  "id": "/subscriptions/6f5d1e5e-5295-4b19-9069-76eaa53bdb9c/resourceGroups/rg-
kirkdahl/providers/Microsoft.Network/virtualNetworks/vnet-kirk/subnets/subnet1",
  "ipConfigurations": null,
  "name": "subnet1",
  "networkSecurityGroup": null,
  "provisioningState": "Succeeded",
  "resourceGroup": "rg-kirkdahl",
  "resourceNavigationLinks": null,
  "routeTable": null,
  "serviceEndpoints": null
}
kirks-macbook:~ el5vgxz$ az network vnet subnet create --address-prefix
10.10.10.128/25 --name subnet2 --resource-group rg-kirkdahl --vnet-name vnet-kirk
{
  "addressPrefix": "10.10.10.128/25",
  "etag": "W/\"f4535de0-4b75-4cf8-bde9-f8877348f3fd\"",
  "id": "/subscriptions/6f5d1e5e-5295-4b19-9069-76eaa53bdb9c/resourceGroups/rg-
kirkdahl/providers/Microsoft.Network/virtualNetworks/vnet-kirk/subnets/subnet2",
  "ipConfigurations": null,
  "name": "subnet2",
  "networkSecurityGroup": null,
  "provisioningState": "Succeeded",
  "resourceGroup": "rg-kirkdahl",
  "resourceNavigationLinks": null,
  "routeTable": null,
  "serviceEndpoints": null
}
```

CREATE 3 WEB SERVERS

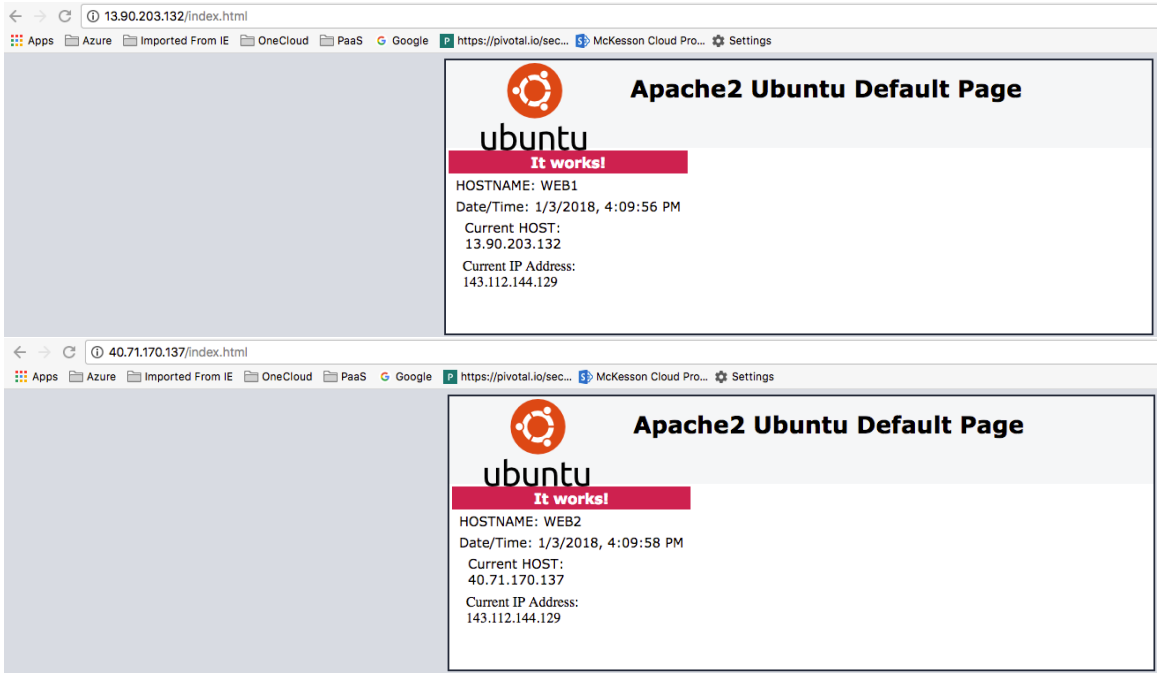
```
kirks-macbook:~ el5vgxz$ az vm create --name web1 --admin-password 1qaz2wsx#EDC$RFV
--admin-username el5vgxz --resource-group rg-kirkdahl --vnet-name vnet-kirk --subnet
subnet1 --image UbuntuLTS
 - Running ..
  "fqdns": "",
```

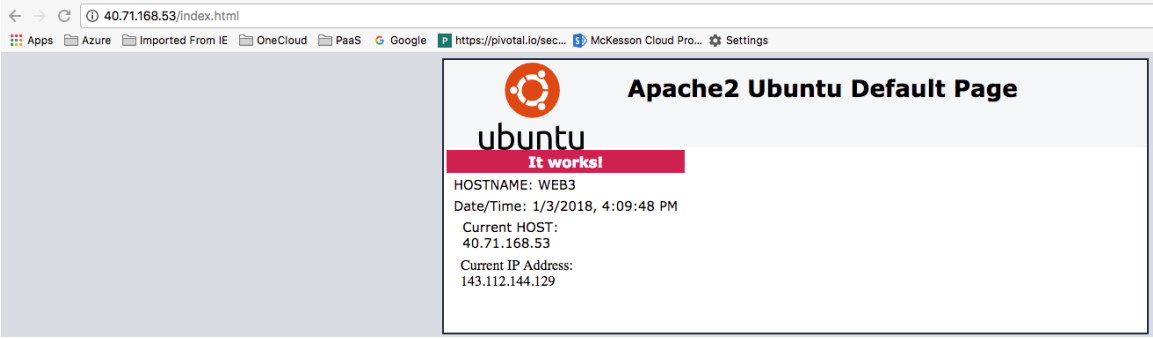
```
  "id": "/subscriptions/6f5d1e5e-5295-4b19-9069-76eaa53bdb9c/resourceGroups/rg-
kirkdahl/providers/Microsoft.Compute/virtualMachines/web1",
  "location": "eastus",
  "macAddress": "00-0D-3A-12-8E-CA",
  "powerState": "VM running",
  "privateIpAddress": "10.10.10.4",
  "publicIpAddress": "40.71.229.37",
  "resourceGroup": "rg-kirkdahl",
  "zones": ""
}

kirks-macbook:~ el5vgxz$ az vm create --name web2 --admin-password 1qaz2wsx#EDC$RFV
--admin-username el5vgxz --resource-group rg-kirkdahl --vnet-name vnet-kirk --subnet
subnet1 --image UbuntuLTS
 - Running ..

kirks-macbook:~ el5vgxz$ az vm create --name web3 --admin-password 1qaz2wsx#EDC$RFV
--admin-username el5vgxz --resource-group rg-kirkdahl --vnet-name vnet-kirk --subnet
subnet1 --image UbuntuLTS
 - Running ..
```

INSTALL APACHE2

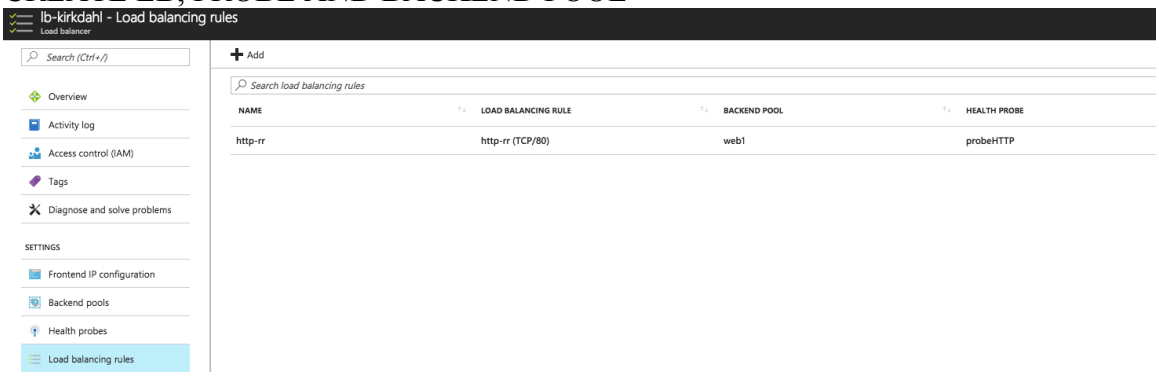
```
apt-get install apache2
```

MODIFY /VAR/WWW/HTML/INDEX.HTML HITTING EACH SERVER BY ITS ADDRESS

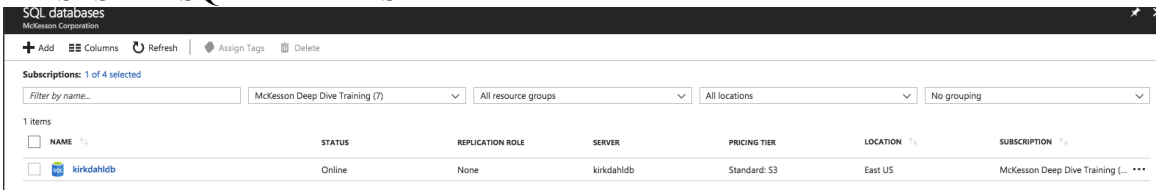




CREATE LB, PROBE AND BACKEND POOL



THIS IS MY SQL DATABASE



Problem 02 Optional. Modify the default page of your Web servers residing in the front-end subnet so that it somehow fetches a value from a row in a table in a database on the database server residing on the VM in the back-end subnet. Make several Web browser calls to the URL of your load balancer and show that all Web servers make successful calls to the database. Execute an update statement on your database table, commit the updates and then demonstrate that update values will show in your browser. (50%)

Problem 3. Remove all resources from Azure using CLI commands. Demonstrate that you have successfully done it.
(5%)

DELETE RESOURCE GROUP WITH CLI

```
kirks-macbook:~ el5vgxz$ az group delete --name rg-kirkdahl
Are you sure you want to perform this operation? (y/n): y
kirks-macbook:~ el5vgxz$
```

SUBMISSION INSTRUCTIONS:

Your main submission should be a MS Word or PDF document containing descriptions of your action while configuring Azure services. If your MS Word document is larger than 1 MB, save it as a MINIMIZED PDF. Please be merciful and capture small JPGs. Describe the purpose of every action and the significance of the results. Start with the text of this homework assignment as the template. Please add the entire text of your JAVA, C# or Python programs to the end of your MS Word/PDF document. Please write your solution as if you are writing a tutorial for your colleagues. Please make your text readable. Make sure that your fonts, especially in captured images are not unreadable. Please do not provide ZIP or RAR or any other archives. Canvas cannot open those archives and they turn into a nuisance for us.