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**Факультет математики та інформатики
Кафедра інформаційних технологій**

Хмарні технології

Практична робота №6

Тема: Implement Network Traffic Management

Мета: Навчитися контролю навантаженням

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Група ІПЗ-41
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providers.tf

```
1  terraform {
2    required_version = ">= 1.0"
3    required_providers {
4      azurerm = {
5        source  = "hashicorp/azurerm"
6        version = "~> 3.0"
7      }
8    }
9  }
10
11 provider "azurerm" {
12   features {}
13 }
```

main.tf

```
1  resource "azurerm_resource_group" "rg" {
2    name      = var.resource_group_name
3    location = var.location
4  }
5
6  resource "azurerm_virtual_network" "vnet" {
7    name          = "az104-06-vnet1"
8    address_space = ["10.60.0.0/16"]
9    location      = azurerm_resource_group.rg.location
10   resource_group_name = azurerm_resource_group.rg.name
11 }
12
13 resource "azurerm_subnet" "subnets" {
14   count           = 3
15   name            = "subnet${count.index}"
16   resource_group_name = azurerm_resource_group.rg.name
17   virtual_network_name = azurerm_virtual_network.vnet.name
18   address_prefixes = ["10.60.${count.index}.0/24"]
19 }
```

```
21 resource "azurerm_network_security_group" "nsg" {
22   name          = "az104-06-nsg"
23   location      = azurerm_resource_group.rg.location
24   resource_group_name = azurerm_resource_group.rg.name
25
26   security_rule {
27     name          = "AllowHTTP"
28     priority      = 100
29     direction     = "Inbound"
30     access        = "Allow"
31     protocol      = "Tcp"
32     source_port_range = "*"
33     destination_port_range = "80"
34     source_address_prefix = "*"
35     destination_address_prefix = "*"
36   }
37 }
38
39 resource "azurerm_network_interface" "nics" {
40   count          = 3
41   name          = "az104-06-nic${count.index}"
42   location      = azurerm_resource_group.rg.location
43   resource_group_name = azurerm_resource_group.rg.name
44
45   ip_configuration {
46     name          = "internal"
47     subnet_id    = azurerm_subnet.subnets[count.index].id
48     private_ip_address_allocation = "Dynamic"
49   }
50 }
```

```

52 resource "azurerm_network_interface_security_group_association" "nsg_assoc" {
53   count           = 3
54   network_interface_id    = azurerm_network_interface.nics[count.index].id
55   network_security_group_id = azurerm_network_security_group.nsg.id
56 }
57
58 resource "azurerm_windows_virtual_machine" "vms" {
59   count           = 3
60   name            = "az104-06-vm${count.index}"
61   resource_group_name = azurerm_resource_group.rg.name
62   location         = azurerm_resource_group.rg.location
63   size             = var.vm_size
64   admin_username   = var.admin_username
65   admin_password   = var.admin_password
66   network_interface_ids = [azurerm_network_interface.nics[count.index].id]
67
68   os_disk {
69     caching          = "ReadWrite"
70     storage_account_type = "Standard_LRS"
71   }
72
73   source_image_reference {
74     publisher = "MicrosoftWindowsServer"
75     offer      = "WindowsServer"
76     sku        = "2019-Datacenter"
77     version    = "latest"
78   }
79 }
```

```

81 resource "azurerm_public_ip" "lb_pip" {
82   name           = "az104-lbpip"
83   location       = azurerm_resource_group.rg.location
84   resource_group_name = azurerm_resource_group.rg.name
85   allocation_method = "Static"
86   sku            = "Standard"
87 }
88
89 resource "azurerm_lb" "lb" {
90   name           = "az104-lb"
91   location       = azurerm_resource_group.rg.location
92   resource_group_name = azurerm_resource_group.rg.name
93   sku            = "Standard"
94
95   frontend_ip_configuration {
96     name           = "az104-fe"
97     public_ip_address_id = azurerm_public_ip.lb_pip.id
98   }
99 }
100
101 resource "azurerm_lb_backend_address_pool" "lb_be" {
102   loadbalancer_id = azurerm_lb.lb.id
103   name           = "az104-be"
104 }
105
106 resource "azurerm_lb_backend_address_pool_address" "vm_assoc" {
107   count           = 2
108   name            = "vm${count.index}-address"
109   backend_address_pool_id = azurerm_lb_backend_address_pool.lb_be.id
110   virtual_network_id    = azurerm_virtual_network.vnet.id
111   ip_address          = azurerm_network_interface.nics[count.index].private_ip_address
```

```
114 resource "azurerm_lb_probe" "hp" {
115   loadbalancer_id = azurerm_lb.lb.id
116   name           = "az104-hp"
117   port           = 80
118   protocol       = "Tcp"
119   interval_in_seconds = 5
120 }
121
122 resource "azurerm_lb_rule" "lb_rule" {
123   loadbalancer_id      = azurerm_lb.lb.id
124   name                 = "az104-lbrule"
125   protocol             = "Tcp"
126   frontend_port        = 80
127   backend_port          = 80
128   frontend_ip_configuration_name = "az104-fe"
129   backend_address_pool_ids    = [azurerm_lb_backend_address_pool.lb_be.id]
130   probe_id              = azurerm_lb_probe.hp.id
131 }
132
133 resource "azurerm_subnet" "appgw_subnet" {
134   name           = "subnet-appgw"
135   resource_group_name = azurerm_resource_group.rg.name
136   virtual_network_name = azurerm_virtual_network.vnet.name
137   address_prefixes     = ["10.60.3.224/27"]
138 }
```

```
140 resource "azurerm_public_ip" "appgw_pip" {
141   name          = "az104-gwpip"
142   location      = azurerm_resource_group.rg.location
143   resource_group_name = azurerm_resource_group.rg.name
144   allocation_method = "Static"
145   sku           = "Standard"
146 }
147
148 resource "azurerm_application_gateway" "appgw" {
149   name          = "az104-appgw"
150   resource_group_name = azurerm_resource_group.rg.name
151   location      = azurerm_resource_group.rg.location
152
153   sku {
154     name    = "Standard_v2"
155     tier    = "Standard_v2"
156     capacity = 2
157   }
158
159   ssl_policy {
160     policy_type = "Predefined"
161     policy_name = "AppGwSslPolicy20170401S" # Виправлення помилки TLS
162   }
163
164   gateway_ip_configuration {
165     name      = "my-gateway-ip-configuration"
166     subnet_id = azurerm_subnet.appgw_subnet.id
167   }
}
```

```
169  frontend_port {
170    name = "fe-port"
171    port = 80
172  }
173
174  frontend_ip_configuration {
175    name          = "fe-ip"
176    public_ip_address_id = azurerm_public_ip.appgw_pip.id
177  }
178
179  backend_address_pool {
180    name = "az104-appgwbe"
181    ip_addresses = [
182      azurerm_network_interface.nics[0].private_ip_address,
183      azurerm_network_interface.nics[1].private_ip_address
184    ]
185  }
186
187  backend_address_pool {
188    name = "az104-imagebe"
189    ip_addresses = [azurerm_network_interface.nics[1].private_ip_address]
190  }
191
192  backend_address_pool {
193    name = "az104-videoobe"
194    ip_addresses = [azurerm_network_interface.nics[2].private_ip_address]
195 }
```

```
197  backend_http_settings {
198      name          = "http-settings"
199      cookie_based_affinity = "Disabled"
200      port          = 80
201      protocol      = "Http"
202      request_timeout = 60
203  }
204
205  http_listener {
206      name          = "listener"
207      frontend_ip_configuration_name = "fe-ip"
208      frontend_port_name           = "fe-port"
209      protocol      = "Http"
210  }
211
212  request_routing_rule {
213      name          = "az104-gwrule"
214      rule_type      = "PathBasedRouting"
215      http_listener_name = "listener"
216      url_path_map_name = "url-path-map"
217      priority      = 10
218  }
219
220  url_path_map {
221      name          = "url-path-map"
222      default_backend_address_pool_name = "az104-appgwbe"
223      default_backend_http_settings_name = "http-settings"
224 }
```

```
225     path_rule {
226         name          = "image-rule"
227         paths         = ["/image/*"]
228         backend_address_pool_name = "az104-imagebe"
229         backend_http_settings_name = "http-settings"
230     }
231
232     path_rule {
233         name          = "video-rule"
234         paths         = ["/video/*"]
235         backend_address_pool_name = "az104-videobe"
236         backend_http_settings_name = "http-settings"
237     }
238 }
239 }
```

outputs.tf

```
1  output "lb_public_ip" {
2      value = azurerm_public_ip.lb_pip.ip_address
3  }
4
5  output "appgw_public_ip" [
6      value = azurerm_public_ip.appgw_pip.ip_address
7  ]
```

variables.tf

```
1  variable "resource_group_name" {
2    default = "az104-rg6"
3  }
4
5  variable "location" {
6    default = "North Europe" # Змінено для уникнення SkuNotAvailable
7  }
8
9  variable "admin_username" {
10   default = "localadmin"
11 }
12
13 variable "admin_password" {
14   default = "P@ssw0rd12345!"
15 }
16
17 variable "vm_size" [
18   default = "Standard_B1s" # Мінімальний стабільний розмір
19 ]
```

Висновок

Було зроблено ще одну лабораторну. На цьому по суті все.
Гітхаб: https://github.com/Illoizaur/azure_labs/tree/main/lab6