Unit 3

Exercise - Create a VM to host your web application

Create an Ubuntu Linux VM

Зазвичай, я створюю групу ресурсів перед тим, як створювати інші ресурси на Azure. Група ресурсів - це контейнер, що містить ресурси, які пов'язані з рішенням Azure. Для цього вправи Azure sandbox надає для мене групу ресурсів. Однак, працюючи у власній підписці Azure, я б виконав наступну команду, щоб створити групу ресурсів у локації, найближчій до мене.

```
24360bf01211:/# az group create --name panchenko-serhii_group2 --location canadacentral
{
  "id": "/subscriptions/83e76598-1d8e-490d-92ea-741241e0e33e/resourceGroups/panchenko-serhii_group2",
  "location": "canadacentral",
  "managedBy": null,
  "name": "panchenko-serhii_group2",
  "properties": {
    "provisioningState": "Succeeded"
  },
  "tags": null,
  "type": "Microsoft.Resources/resourceGroups"
}
```

3 Cloud Shell я запускаю команду az vm create, щоб створити VM на Ubuntu. Виконання команди займає близько двох хвилин. Коли команда завершується, я бачу вивід, схожий на цей:

```
24360bf01211:/# az vm create --resource-group panchenko-serhii_group2 --name PanchenkoSerhiiStack --image
 Canonical:0001-com-ubuntu-server-focal:20_04-lts:latest --admin-username azureuser --generate-ssh-keys
SSH key files '/root/.ssh/id_rsa' and '/root/.ssh/id_rsa.pub' have been generated under ~/.ssh to allow S
SH access to the VM. If using machines without permanent storage, back up your keys to a safe location.
Consider upgrading security for your workloads using Azure Trusted Launch VMs. To know more about Trusted
 Launch, please visit https://aka.ms/TrustedLaunch.
{
  "fqdns": "",
  "id": "/subscriptions/83e76598-1d8e-490d-92ea-741241e0e33e/resourceGroups/panchenko-serhii_group2/provi
ders/Microsoft.Compute/virtualMachines/PanchenkoSerhiiStack",
  "location": "canadacentral",
  "macAddress": "00-0D-3A-E8-CE-A5",
  "powerState": "VM running",
  "privateIpAddress": "10.0.0.4",
  "publicIpAddress": "52.228.22.44",
  "resourceGroup": "panchenko-serhii_group2",
  "zones": ""
}
```

Відкриваю порт 80 на ВМ, щоб дозволити вхідний HTTP-трафік до веб-додатку, який я створю пізніше.

```
24360bf01211:/# az vm open-port --port 80 --resource-group panchenko-serhii_group2 --name PanchenkoSerhii
Stack
{
  "defaultSecurityRules": [
    {
      "access": "Allow",
      "description": "Allow inbound traffic from all VMs in VNET",
      "destinationAddressPrefix": "VirtualNetwork",
      "destinationAddressPrefixes": [],
      "destinationPortRange": "*",
      "destinationPortRanges": [],
      "direction": "Inbound",
      "etag": "W/\"75c249b8-7d11-4043-bbb2-2e7738678dae\"",
      "id": "/subscriptions/83e76598-1d8e-490d-92ea-741241e0e33e/resourceGroups/panchenko-serhii_group2/p
roviders/Microsoft.Network/networkSecurityGroups/PanchenkoSerhiiStackNSG/defaultSecurityRules/AllowVnetIn
Bound",
      "name": "AllowVnetInBound",
      "priority": 65000,
      "protocol": "*",
      "provisioningState": "Succeeded",
      "resourceGroup": "panchenko-serhii_group2",
      "sourceAddressPrefix": "VirtualNetwork",
      "sourceAddressPrefixes": [],
      "sourcePortRange": "*",
      "sourcePortRanges": [],
      "type": "Microsoft.Network/networkSecurityGroups/defaultSecurityRules"
```

Створюю SSH-з'єднання з моєю ВМ. Хоча вивід з команди az vm create показує публічну IP-адресу моєї ВМ, мені може бути корисно зберегти адресу в змінній Bash. Я починаю з запуску команди az vm show. Ця команда зберігає IP-адресу в змінній Bash під назвою ipaddress.

```
24360bf01211:/# ipaddress=$(az vm show --name PanchenkoSerhiiStack --resource-group panchenko-serhii_grou
p2 --show-details --query [publicIps] --output tsv)
24360bf01211:/#
```

Копіюю приватний ключ SSH:

```
24360bf01211:~/.ssh# cat id_rsa
-----BEGIN RSA PRIVATE KEY-----
MIIEpAIBAAKCAQEAr42rO5FOAnwUIlcoQ8RzYbFLiy9V5TiFH9a3roeblZYe8nNW
XcWwC55IYA1c4t9KQeGnw+R6+5GGnnCe7o8kF+FE+6vxd87kK8LJBC6CqoO9w3qH
orvdCRYtwy/aPYyh0W8MfNdYKQO46CUIkyHo8Wl1X7EaBscvofiNfDuZpN86/Nrg
u7GakoPYv6+S+QWPF2gy2fkXkEQE50vOM1VXA/pSy/r/aZ+HP5GtmSCYnAmyRh2N
jJp3mIs5u6blLGfD4Z07DyfJlGjVRbgy9JNxI/oOeSWgl1cerfVtpgUmI9wpD0LY
4ETfw3M0Vvo9nZNHsoL6fe8P3jbseC6Yw1dvxQIDAQABAoIBAAOhabx49s9frYhA
RoQ67dVEC2HngAlA2qVGlX812BEx4kCgA1XmdAuUIb8Kx7RRayxi9Es9exBKJCnm
qQLEpw8aCN6DjHeD1H2AhmkLD9y4OMEa1ESYn1ZEGnzXjSs0sKwEyzynChsJtACT
s30HeH/K7zMkFdEKEYFyAyBh7dLWWi1NOYIF6w5qZ+RR5XcMqY4y+MUzA7s2P5oj
dEsVN2TjfQvndgnLv78stnH6/MsCOPlRg64PVp9eHsNzWVa+k56vUB6m7E96FpqS
sXhJMRpgHOW1QmOrFQwHY02DP5vZgQmq6VSvYgzyDfDTOXZhZKfA2BdvLa0UFwec
DtbYAgkCgYEA7jNL0fwQJHtGZX0tkL+IABETJq5RHvcp7enfsWIUDl/sn9Wl/Tb2
GjgIVJ6/fdXXh2zJQxCpGmXv9Ynrl/6QYCKY962i4HABo4P2gk+pypdy8uqT8KDz
ta6s5Tc1LHrcqbrv21XdztjNqG26oFDREZT9/0NG8/FHu5vPhQcPnc8CgYEAvKv0
Raq1yGGChgLUx75wue1tCqCNekFWgTH79c5TU5OEVIJjP6mSmCwX1mRC3PJ0Z+HM
vGX3R4gX55i2/zcs8q54dqNONF5AhV7J3erM7gdS/L1h8cVApXtcTZU9kVCkafQA
048NhbXdilwfEntwq4KaixsP6UGZKl6fFjWisisCgYEA1CXJlIa71dIZW5CGgZGk
TfLnLJ86TqrxpByVB0YD+N2EQMKm6IQH4kgfW0Zb5HYNVGcWRW3UPlelxPkGZEPs
UELgHE+AbgYz329LoLnUzkPes+0qv7iJ9jlRcYCfEjOGzoBY2e968pvzZtv7yIbR
/afGJI/F5MPzEGtwAtnMFc8CgYEAqvd7C+JMhb7uovdPz4zf42ulwtqIOX+Znssn
ka+czIBBir74psjHwUM7epgyCrteBoCToSkY8eX+G2zEbvKVtXeqS39iL4w1FWY2
sPTDLPLQHZyTc52WHh5yHw+c0eBsjGKCmTLpQv/xOB6QPZREHfbkiidEvM8nt0A1
EtAZlS8CgYB07cr52Y3WT8ZHpad9fVSb5zhMFME/zA9Fwb7bIvRKj2ykotzxXKXk
31DUctkOngywsELVn3vekbk88Pf8WLI/ms8+Kw9Fl144//Sk7dDepIw2QrBwnRzZ
f5J+vx9IqfX4pzhmC+nsi3fd9XBo98mpMBMxsXF0gi1Y4SArUWd7ww==
-----END RSA PRIVATE KEY-----
```

```
 GNU nano 6.2                                  id_rsa *
-----BEGIN RSA PRIVATE KEY-----
MIIEpAIBAAKCAQEAr42rO5FOAnwUIlcoQ8RzYbFLiy9V5TiFH9a3roeblZYe8nNW
XcWwC55IYA1c4t9KQeGnw+R6+5GGnnCe7o8kF+FE+6vxd87kK8LJBC6CqoO9w3qH
orvdCRYtwy/aPYyh0W8MfNdYKQO46CUIkyHo8Wl1X7EaBscvofiNfDuZpN86/Nrg
u7GakoPYv6+S+QWPF2gy2fkXkEQE50vOM1VXA/pSy/r/aZ+HP5GtmSCYnAmyRh2N
jJp3mIs5u6blLGfD4Z07DyfJlGjVRbgy9JNxI/oOeSWgl1cerfVtpgUmI9wpD0LY
4ETfw3M0Vvo9nZNHsoL6fe8P3jbseC6Yw1dvxQIDAQABAoIBAAOhabx49s9frYhA
RoQ67dVEC2HngAlA2qVGlX812BEx4kCgA1XmdAuUIb8Kx7RRayxi9Es9exBKJCnm
qQLEpw8aCN6DjHeD1H2AhmkLD9y4OMEa1ESYn1ZEGnzXjSs0sKwEyzynChsJtACT
s30HeH/K7zMkFdEKEYFyAyBh7dLWWi1NOYIF6w5qZ+RR5XcMqY4y+MUzA7s2P5oj
dEsVN2TjfQvndgnLv78stnH6/MsCOPlRg64PVp9eHsNzWVa+k56vUB6m7E96FpqS
sXhJMRpgHOW1QmOrFQwHY02DP5vZgQmq6VSvYgzyDfDTOXZhZKfA2BdvLa0UFwec
DtbYAgkCgYEA7jNL0fwQJHtGZX0tkL+IABETJq5RHvcp7enfsWIUDl/sn9Wl/Tb2
GjgIVJ6/fdXXh2zJQxCpGmXv9Ynrl/6QYCKY962i4HABo4P2gk+pypdy8uqT8KDz
ta6s5Tc1LHrcqbrv21XdztjNqG26oFDREZT9/0NG8/FHu5vPhQcPnc8CgYEAvKv0
Raq1yGGChgLUx75wue1tCqCNekFWgTH79c5TU5OEVIJjP6mSmCwX1mRC3PJ0Z+HM
vGX3R4gX55i2/zcs8q54dqNONF5AhV7J3erM7gdS/L1h8cVApXtcTZU9kVCkafQA
048NhbXdilwfEntwq4KaixsP6UGZKl6fFjWisisCgYEA1CXJlIa71dIZW5CGgZGk
TfLnLJ86TqrxpByVB0YD+N2EQMKm6IQH4kgfW0Zb5HYNVGcWRW3UPlelxPkGZEPs
UELgHE+AbgYz329LoLnUzkPes+0qv7iJ9jlRcYCfEjOGzoBY2e968pvzZtv7yIbR
/afGJI/F5MPzEGtwAtnMFc8CgYEAqvd7C+JMhb7uovdPz4zf42ulwtqIOX+Znssn
ka+czIBBir74psjHwUM7epgyCrteBoCToSkY8eX+G2zEbvKVtXeqS39iL4w1FWY2
sPTDLPLQHZyTc52WHh5yHw+c0eBsjGKCmTLpQv/xOB6QPZREHfbkiidEvM8nt0A1
EtAZlS8CgYB07cr52Y3WT8ZHpad9fVSb5zhMFME/zA9Fwb7bIvRKj2ykotzxXKXk
31DUctkOngywsELVn3vekbk88Pf8WLI/ms8+Kw9Fl144//Sk7dDepIw2QrBwnRzZ
f5J+vx9IqfX4pzhmC+nsi3fd9XBo98mpMBMxsXF0gi1Y4SArUWd7ww==
-----END RSA PRIVATE KEY-----

^G Help      ^O Write Out  ^W Where Is   ^K Cut       ^T Execute   ^C Location  M-U Undo
^X Exit      ^R Read File  ^\ Replace    ^U Paste     ^J Justify   ^/ Go To Line M-E Redo
```

Логінюся за допомогою публічної IP:

```
{
  "fqdns": "",
  "id": "/subscriptions/83e76598-1d8e-490d-92ea-741241e0e33e/resourceGroups/panchenko-ser
ders/Microsoft.Compute/virtualMachines/PanchenkoSerhiiStack",
  "location": "canadacentral",
  "macAddress": "00-0D-3A-E8-CE-A5",
  "powerState": "VM running",
  "privateIpAddress": "10.0.0.4",
  "publicIpAddress": "52.228.22.44",
  "resourceGroup": "panchenko-serhii_group2",
  "zones": ""
}
24360bf01211:/# az vm open-port --port 80 --resource-group panchenko-serhii_group2 --name
Stack
{
  "defaultSecurityRules": [
    {
```

```
sideshowbobgot@localhost:~/university/Infrastracture/Lab1/5_BuildAndRunAWebApplication/Unit3$ ssh -i id_r
sa azureuser@52.228.22.44
Welcome to Ubuntu 20.04.6 LTS (GNU/Linux 5.15.0-1054-azure x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:     https://landscape.canonical.com
 * Support:        https://ubuntu.com/pro

  System information as of Mon Feb 26 20:08:31 UTC 2024

  System load:  0.0               Processes:             109
  Usage of /:   5.2% of 28.89GB   Users logged in:       0
  Memory usage: 8%                IPv4 address for eth0: 10.0.0.4
  Swap usage:   0%

 * Strictly confined Kubernetes makes edge and IoT secure. Learn how MicroK8s
   just raised the bar for easy, resilient and secure K8s cluster deployment.

   https://ubuntu.com/engage/secure-kubernetes-at-the-edge

Expanded Security Maintenance for Applications is not enabled.

0 updates can be applied immediately.

Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo pro status


The list of available updates is more than a week old.
To check for new updates run: sudo apt update


The programs included with the Ubuntu system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.

To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

azureuser@PanchenkoSerhiiStack:~$
```