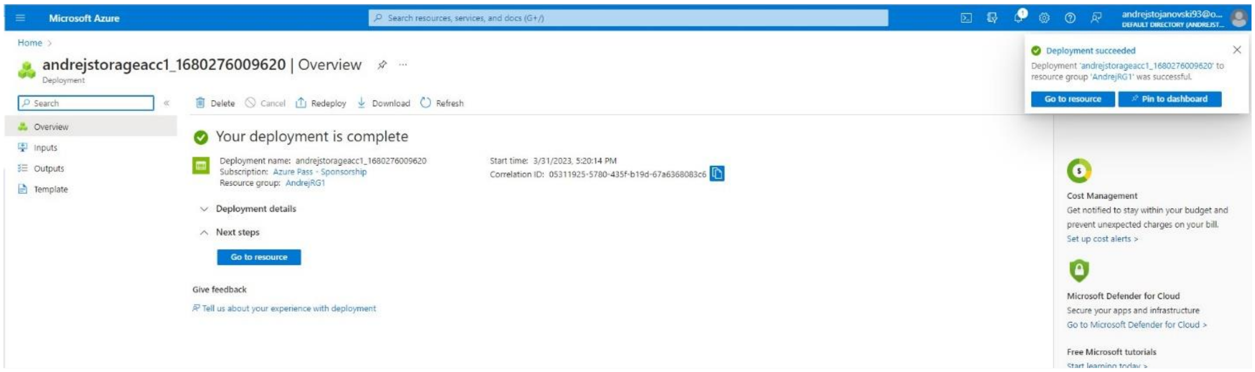
PART 1

Mid-Term Task Part I 1. Host a static website on Blob Storage: build and deploy a static Hello World website to Azure Storage. 2. Verify that the default web page has the Hello World! page. 3. Provide the steps and results.

1.Create an Azure Storage account:


Microsoft Azure
Search resources, services, and docs (G+/)
andrejstojanovski93@o...
DEFAULT DIRECTORY (ANDREJST...
Home >
Search
Overview
Inputs
Outputs
Template
Delete
Cancel
Redeploy
Download
Refresh
Deployment details
Next steps
Go to resource
Give feedback
Tell us about your experience with deployment
Go to resource
Pin to dashboard
Cost Management
Get notified to stay within your budget and prevent unexpected charges on your bill.
Set up cost alerts >
Microsoft Defender for Cloud
Secure your apps and infrastructure
Go to Microsoft Defender for Cloud >
Free Microsoft tutorials
Start learning today >

andrejstorageacc1_1680276009620 | Overview

Deployment

Your deployment is complete

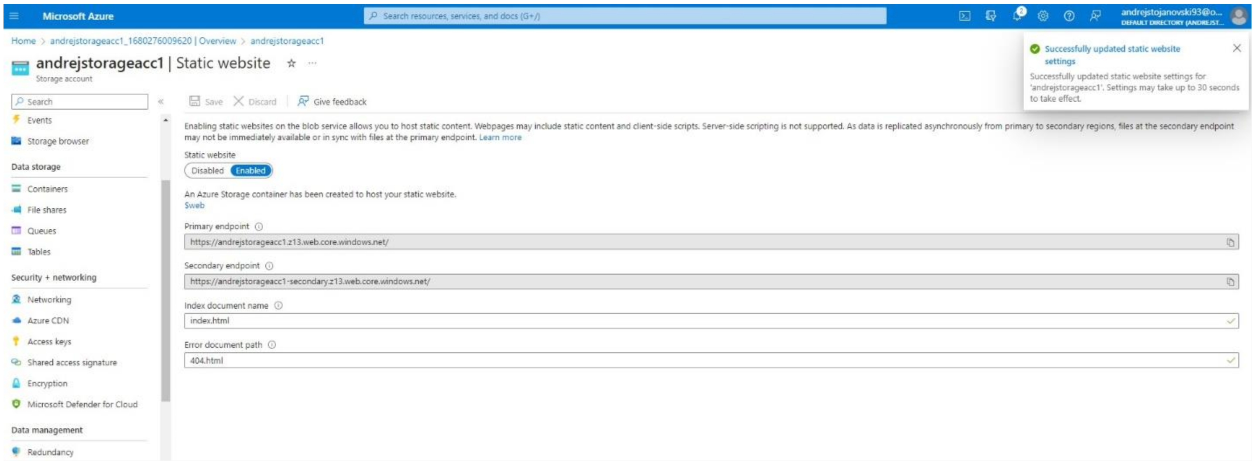
Deployment name: andrejstorageacc1_1680276009620
Subscription: Azure Pass - Sponsorship
Resource group: AndrejRG1

Start time: 3/31/2023, 5:20:14 PM
Correlation ID: 05311925-5780-435f-b19d-67a6368083c6

Deployment succeeded

Deployment 'andrejstorageacc1_1680276009620' to resource group 'AndrejRG1' was successful.

2.Enable static website hosting:



andrejstorageacc1 | Static website

Storage account

Enabling static websites on the blob service allows you to host static content. Webpages may include static content and client-side scripts. Server-side scripting is not supported. As data is replicated asynchronously from primary to secondary regions, files at the secondary endpoint may not be immediately available or in sync with files at the primary endpoint. Learn more

Static website: Disabled [✓ Enabled]

An Azure Storage container has been created to host your static website.
$web

Primary endpoint: https://andrejstorageacc1.z13.web.core.windows.net/

Secondary endpoint: https://andrejstorageacc1-secondary.z13.web.core.windows.net/

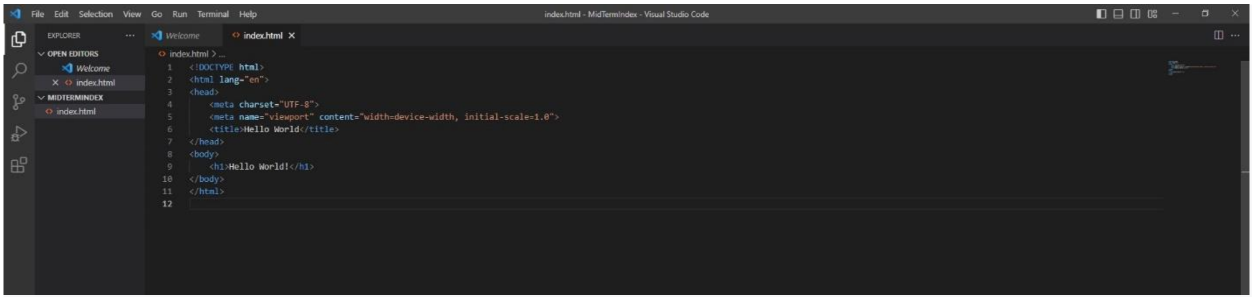
Index document name: index.html

Error document path: 404.html

Successfully updated static website settings

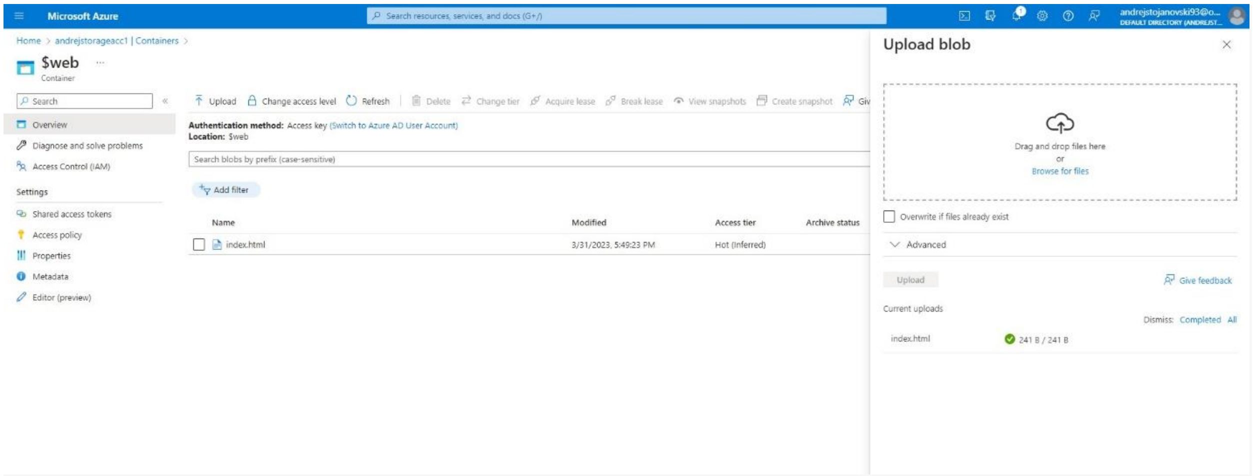
Successfully updated static website settings for 'andrejstorageacc1'. Settings may take up to 30 seconds to take effect.

3.Build your "Hello World" website



```html
<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>Hello World</title>
</head>
<body>
    <h1>Hello World!</h1>
</body>
</html>
```

4.Deploy your "Hello World" website to Azure Storage:



Authentication method: Access key (Switch to Azure AD User Account)
Location: $web

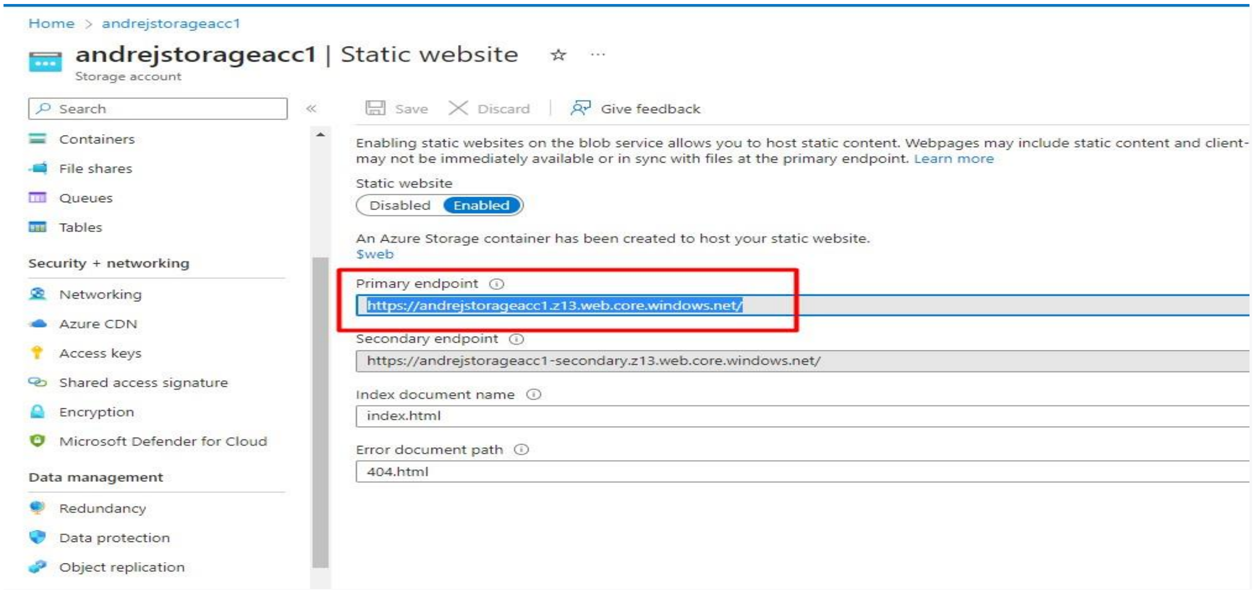
	Name	Modified	Access tier	Archive status
□	index.html	3/31/2023, 5:49:23 PM	Hot (Inferred)	

□ Overwrite if files already exist

Current uploads

index.html ✓ 241 B / 241 B

5.Verify that the default web page has the "Hello World!" page:



Enabling static websites on the blob service allows you to host static content. Webpages may include static content and client-
may not be immediately available or in sync with files at the primary endpoint. Learn more

Static website

○ Disabled ● Enabled

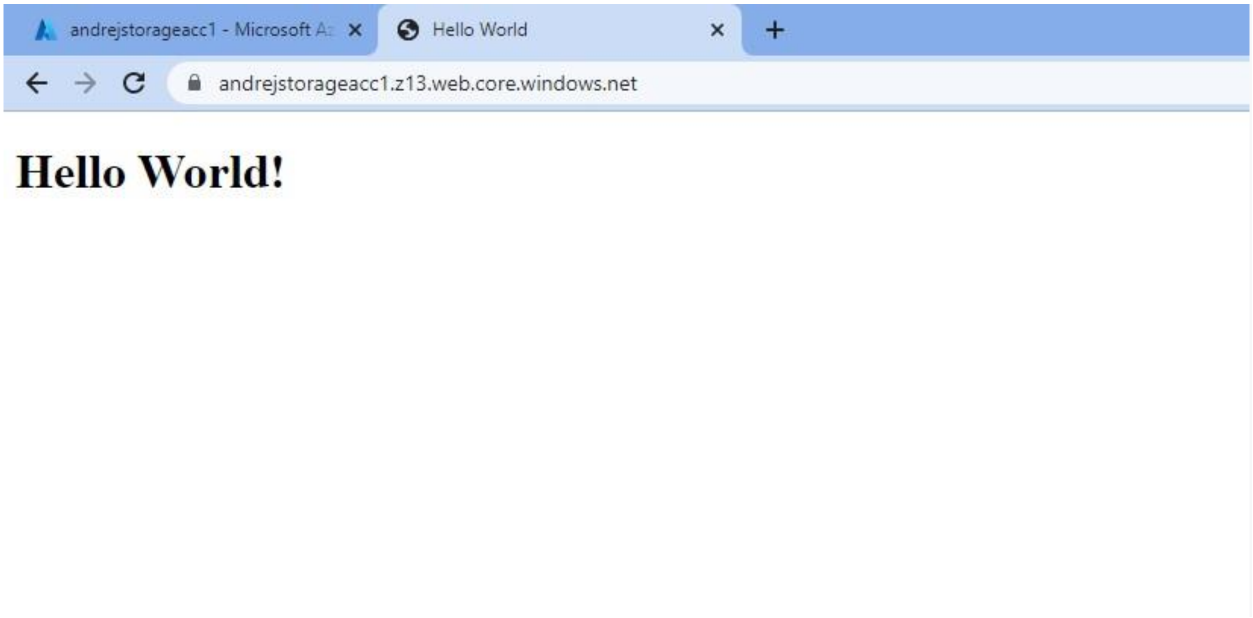
An Azure Storage container has been created to host your static website.
$web

Primary endpoint ⓘ
https://andrejstorageacc1.z13.web.core.windows.net/

Secondary endpoint ⓘ
https://andrejstorageacc1-secondary.z13.web.core.windows.net/

Index document name ⓘ
index.html

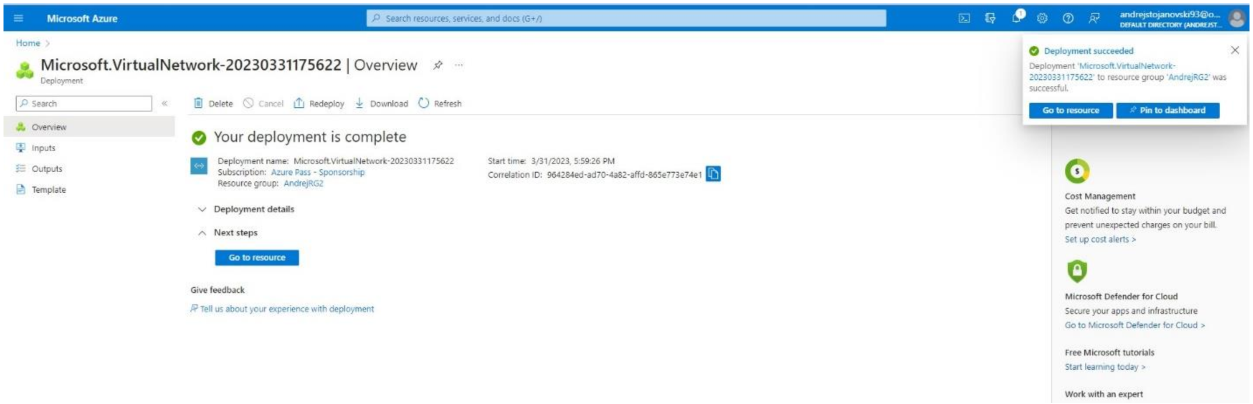
Error document path ⓘ
404.html


andrejstorageacc1 - Microsoft Az
Hello World
andrejstorageacc1.z13.web.core.windows.net

Hello World!

PART 2

1. Create a Virtual Network:



Microsoft.VirtualNetwork-20230331175622 | Overview

Deployment

Your deployment is complete

Deployment name: Microsoft.VirtualNetwork-20230331175622
Subscription: Azure Pass - Sponsorship
Resource group: AndrejRG2

Start time: 3/31/2023, 5:59:26 PM
Correlation ID: 964284ed-ad70-4a82-affd-865e773e74e1

Deployment details

Next steps

Give feedback

Tell us about your experience with deployment

Deployment succeeded

Deployment 'Microsoft.VirtualNetwork-20230331175622' to resource group 'AndrejRG2' was successful.

Cost Management

Get notified to stay within your budget and prevent unexpected charges on your bill.

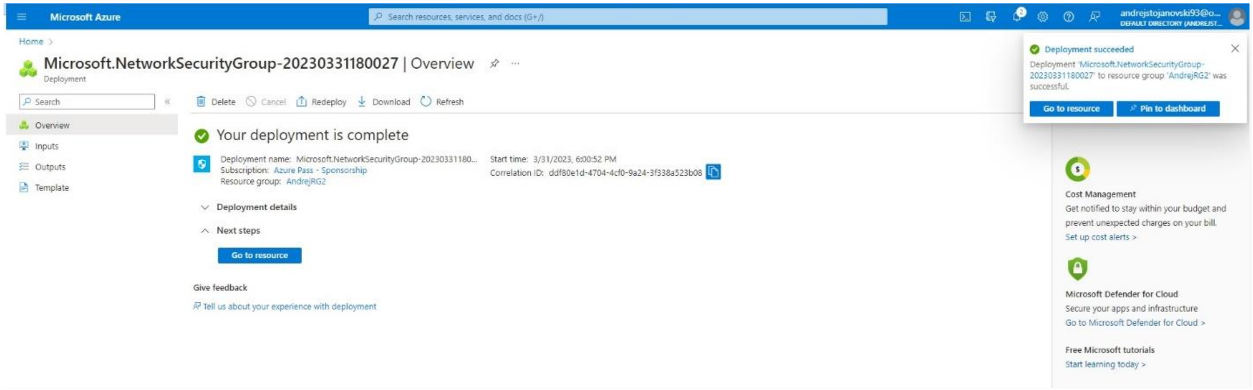
Microsoft Defender for Cloud

Secure your apps and infrastructure

Free Microsoft tutorials

Work with an expert

2. Modify the network security group:



Microsoft.NetworkSecurityGroup-20230331180027 | Overview

Deployment

Your deployment is complete

Deployment name: Microsoft.NetworkSecurityGroup-20230331180...
Subscription: Azure Pass - Sponsorship
Resource group: AndrejRG2

Start time: 3/31/2023, 6:00:52 PM
Correlation ID: ddf80e1d-4704-4cf0-9a24-3f338a523b08

Deployment details

Next steps

Give feedback

Tell us about your experience with deployment

Deployment succeeded

Deployment 'Microsoft.NetworkSecurityGroup-20230331180027' to resource group 'AndrejRG2' was successful.

Cost Management

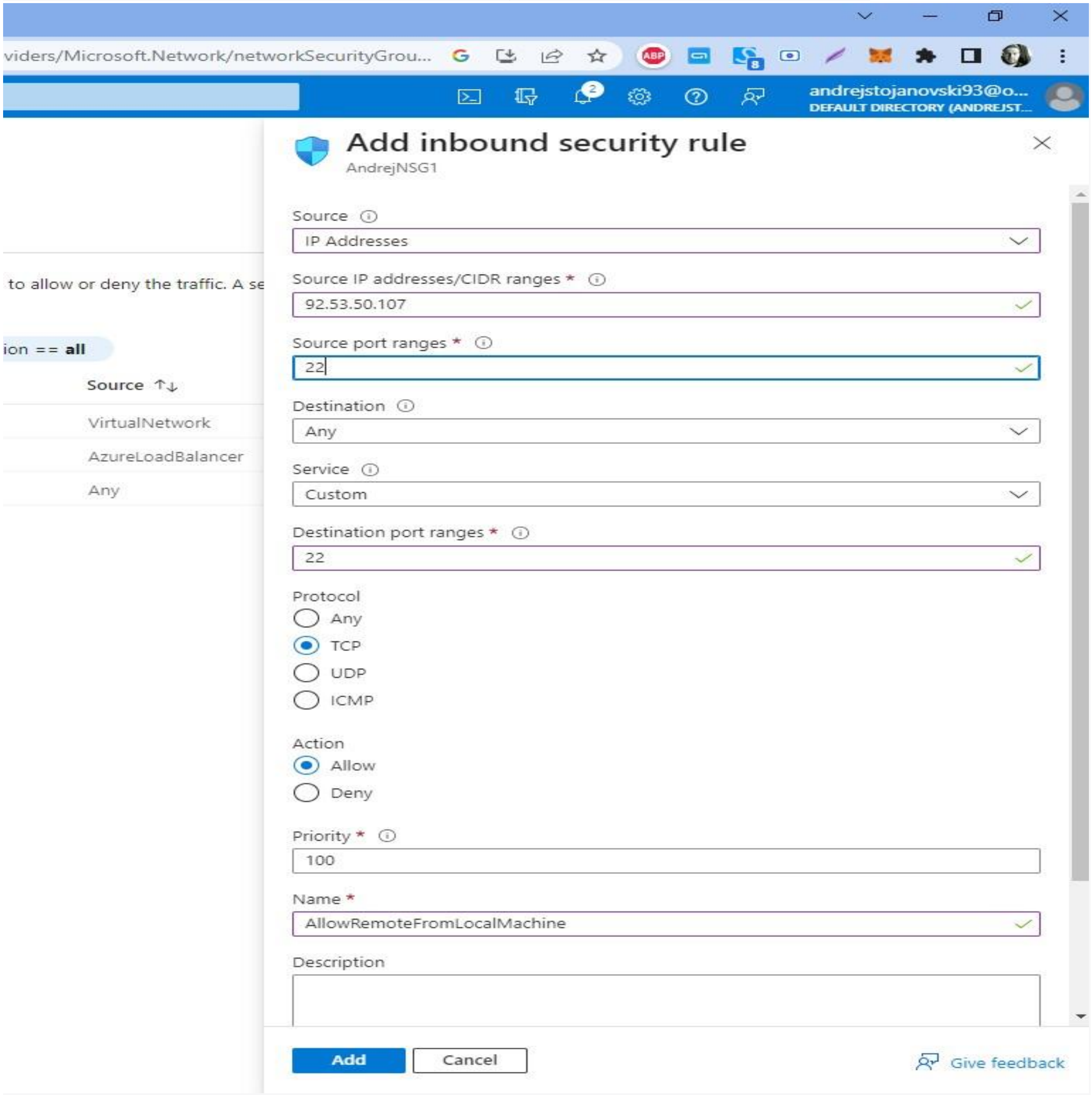
Get notified to stay within your budget and prevent unexpected charges on your bill.

Microsoft Defender for Cloud

Secure your apps and infrastructure

Free Microsoft tutorials

3. Create a rule that allows SSH (port 22) from your local machine's IP address.



viders/Microsoft.Network/networkSecurityGrou...
andrejstojanovski93@o...
DEFAULT DIRECTORY (ANDREJST...
to allow or deny the traffic. A se
ion == all
Source ↑↓
VirtualNetwork
AzureLoadBalancer
Any

Add inbound security rule

AndrejNSG1

Source: IP Addresses

Source IP addresses/CIDR ranges *: 92.53.50.107

Source port ranges *: 22

Destination: Any

Service: Custom

Destination port ranges *: 22

Protocol

○ Any
● TCP
○ UDP
○ ICMP

Action

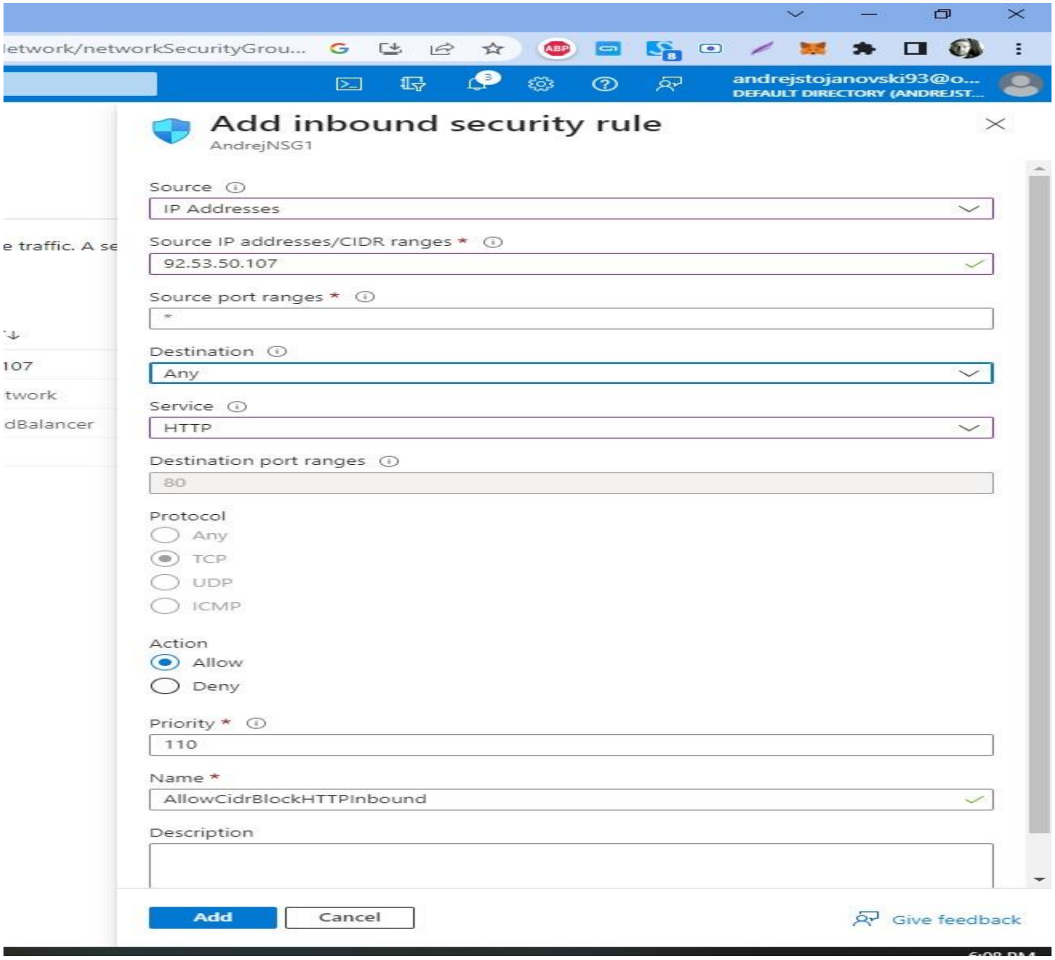
● Allow
○ Deny

Priority *: 100

Name *: AllowRemoteFromLocalMachine

Description:

4. Create another rule that allows HTTP (port 80) from your local machine's IP address.



letwork/networkSecurityGrou...
andrejstojanovski93@o...
DEFAULT DIRECTORY (ANDREJST...
e traffic. A se
107
twork
dBalancer

Add inbound security rule

AndrejNSG1

Source: IP Addresses

Source IP addresses/CIDR ranges *: 92.53.50.107

Source port ranges *: *

Destination: Any

Service: HTTP

Destination port ranges: 80

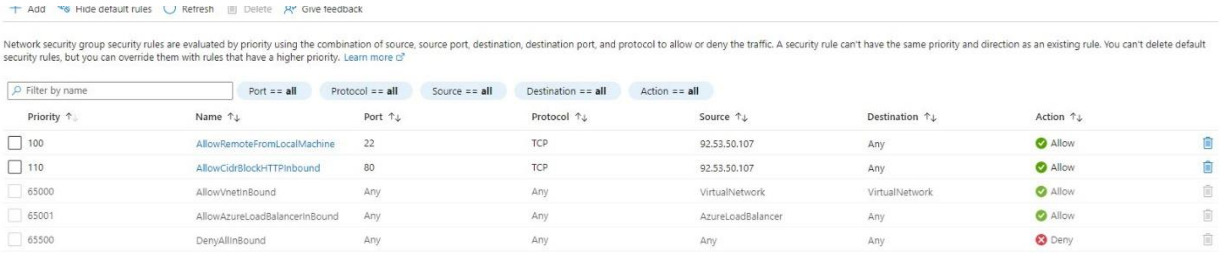
Protocol
○ Any
● TCP
○ UDP
○ ICMP

Action
● Allow
○ Deny

Priority *: 110

Name *: AllowCidrBlockHTTPInbound

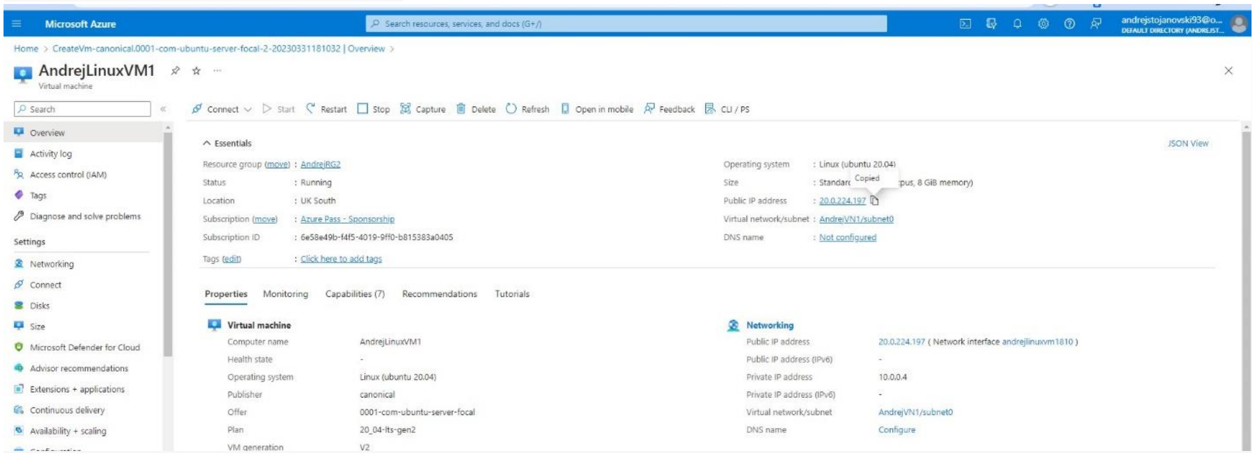
Description



Network security group security rules are evaluated by priority using the combination of source, source port, destination, destination port, and protocol to allow or deny the traffic. A security rule can't have the same priority and direction as an existing rule. You can't delete default security rules, but you can override them with rules that have a higher priority. Learn more

Priority ↑↓	Name ↑↓	Port ↑↓	Protocol ↑↓	Source ↑↓	Destination ↑↓	Action ↑↓
□ 100	AllowRemoteFromLocalMachine	22	TCP	92.53.50.107	Any	✓ Allow
□ 110	AllowCidrBlockHTTPInbound	80	TCP	92.53.50.107	Any	✓ Allow
□ 65000	AllowVnetInBound	Any	Any	VirtualNetwork	VirtualNetwork	✓ Allow
□ 65001	AllowAzureLoadBalancerInBound	Any	Any	AzureLoadBalancer	Any	✓ Allow
□ 65500	DenyAllInBound	Any	Any	Any	Any	✗ Deny

5. Create a Linux Virtual Machine:



AndrejLinuxVM1
Virtual machine

Resource group (move) : AndrejRG2
Status : Running
Location : UK South
Subscription (move) : Azure Pass - Sponsorship
Subscription ID : 6e58e49b-f4f5-4019-9ff0-b815383a0405
Tags (edit) : Click here to add tags

Operating system : Linux (ubuntu 20.04)
Size : Standarc pus, 8 GiB memory)
Public IP address : 20.0.224.197
Virtual network/subnet : AndrejVN1/subnet0
DNS name : Not configured

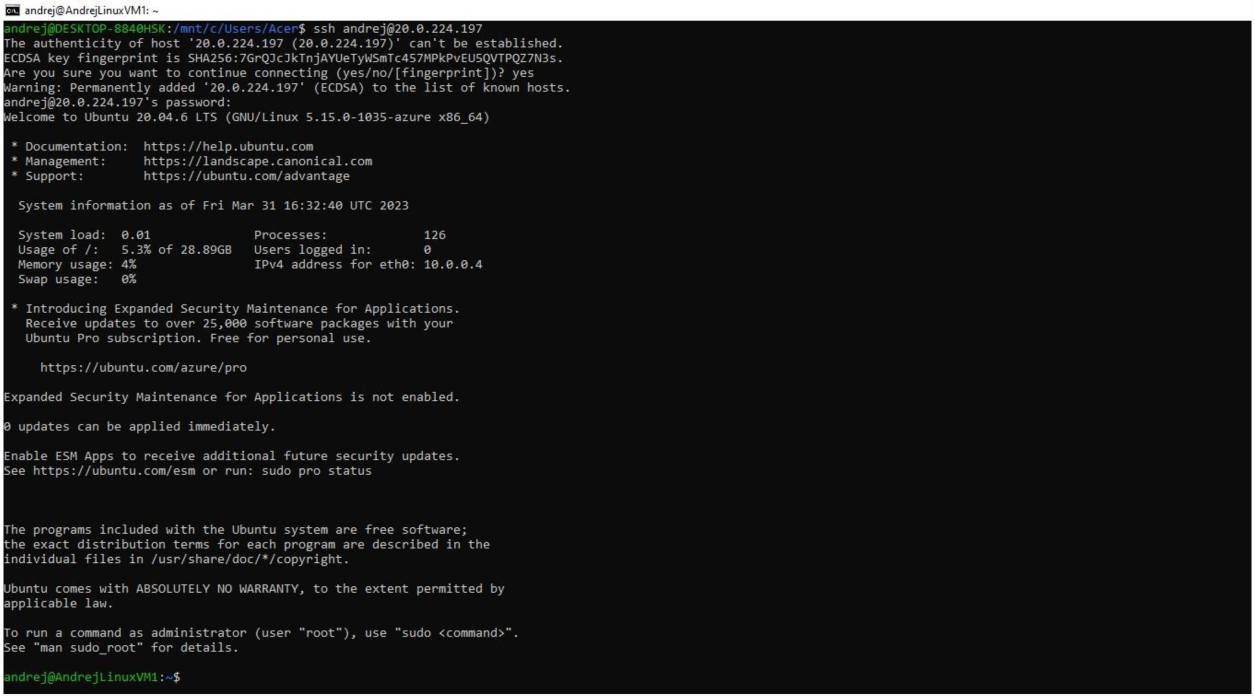
Virtual machine

Computer name AndrejLinuxVM1
Health state -
Operating system Linux (ubuntu 20.04)
Publisher canonical
Offer 0001-com-ubuntu-server-focal
Plan 20_04-lts-gen2
VM generation V2

Networking

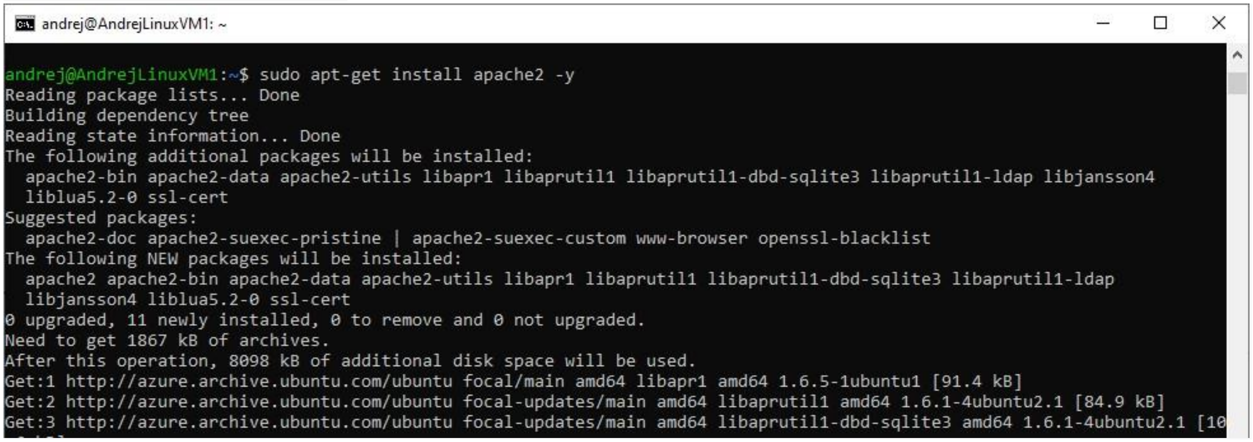
Public IP address 20.0.224.197 (Network interface andrejlinuxvm1810)
Public IP address (IPv6) -
Private IP address 10.0.0.4
Private IP address (IPv6) -
Virtual network/subnet AndrejVN1/subnet0
DNS name Configure

6. Connect to the VM:



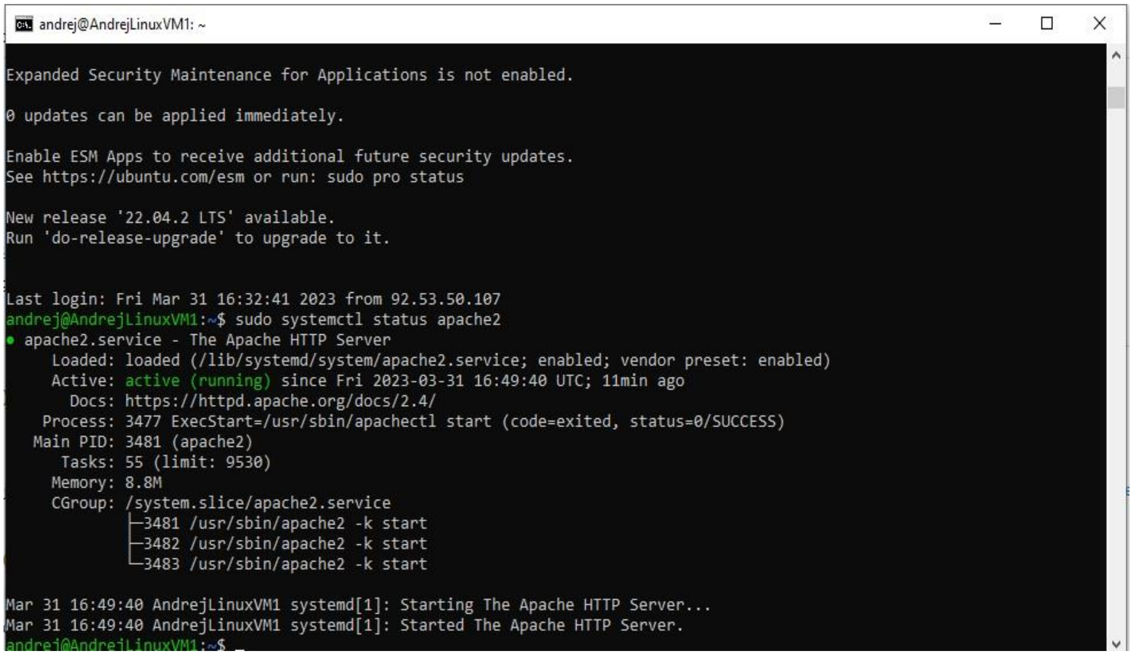
```
andrej@AndrejLinuxVM1: ~
andrej@DESKTOP-8840HSK:/mnt/c/Users/Acer$ ssh andrej@20.0.224.197
The authenticity of host '20.0.224.197 (20.0.224.197)' can't be established.
ECDSA key fingerprint is SHA256:7GrQJcJkTnjAYUeTyWSmTc457MPkPvEU5QVTPQZ7N3s.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added '20.0.224.197' (ECDSA) to the list of known hosts.
andrej@20.0.224.197's password:
Welcome to Ubuntu 20.04.6 LTS (GNU/Linux 5.15.0-1035-azure x86_64)

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

  System information as of Fri Mar 31 16:32:40 UTC 2023

  System load:  0.01              Processes:             126
  Usage of /:   5.3% of 28.89GB   Users logged in:       0
  Memory usage: 4%                IPv4 address for eth0: 10.0.0.4
  Swap usage:   0%

 * Introducing Expanded Security Maintenance for Applications.
   Receive updates to over 25,000 software packages with your
   Ubuntu Pro subscription. Free for personal use.

     https://ubuntu.com/azure/pro

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 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.

andrej@AndrejLinuxVM1:~$
```

7. Install Apache Web Server:



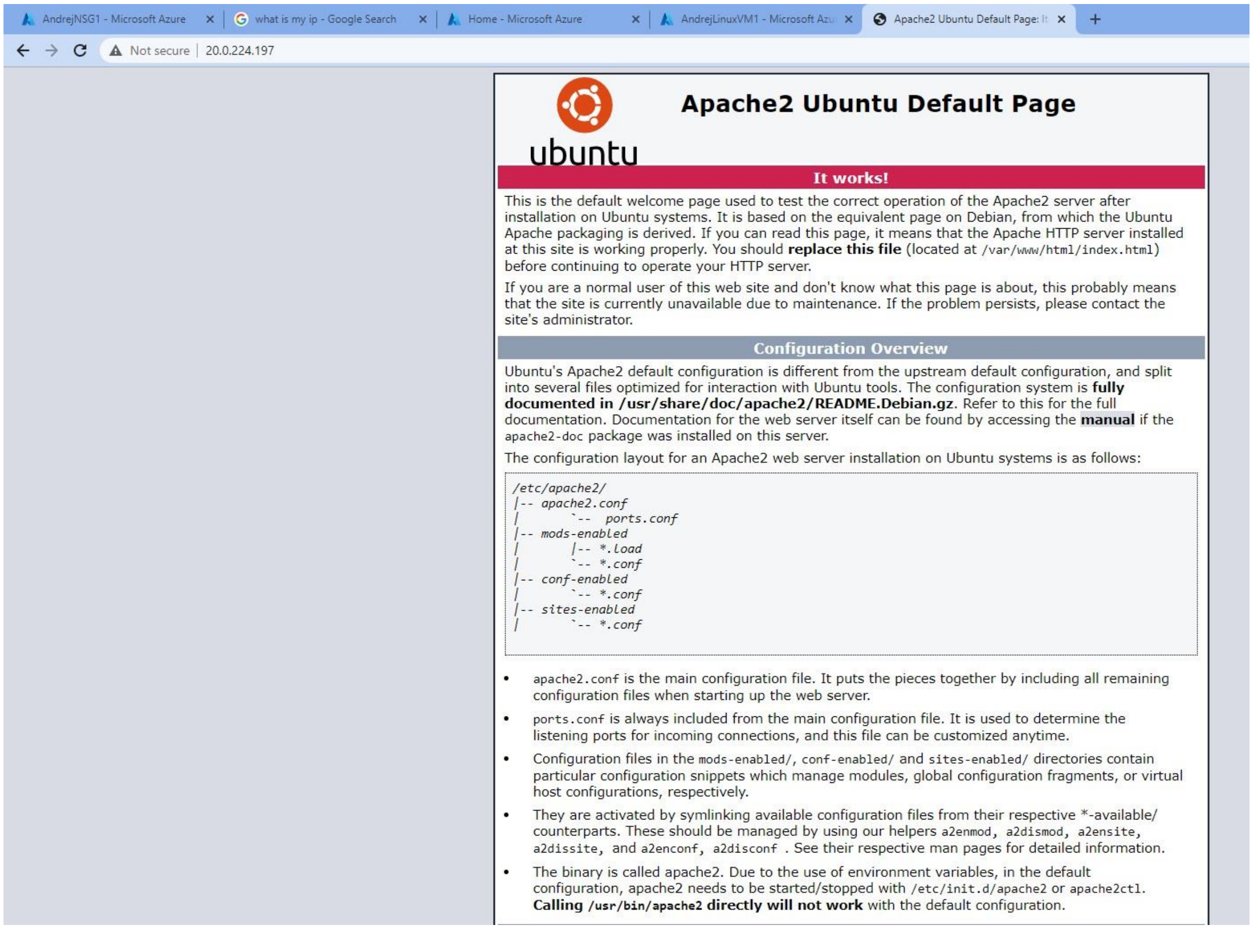
```
andrej@AndrejLinuxVM1:~$ sudo apt-get install apache2 -y
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following additional packages will be installed:
  apache2-bin apache2-data apache2-utils libapr1 libaprutil1 libaprutil1-dbd-sqlite3 libaprutil1-ldap libjansson4
  liblua5.2-0 ssl-cert
Suggested packages:
  apache2-doc apache2-suexec-pristine | apache2-suexec-custom www-browser openssl-blacklist
The following NEW packages will be installed:
  apache2 apache2-bin apache2-data apache2-utils libapr1 libaprutil1 libaprutil1-dbd-sqlite3 libaprutil1-ldap
  libjansson4 liblua5.2-0 ssl-cert
0 upgraded, 11 newly installed, 0 to remove and 0 not upgraded.
Need to get 1867 kB of archives.
After this operation, 8098 kB of additional disk space will be used.
Get:1 http://azure.archive.ubuntu.com/ubuntu focal/main amd64 libapr1 amd64 1.6.5-1ubuntu1 [91.4 kB]
Get:2 http://azure.archive.ubuntu.com/ubuntu focal-updates/main amd64 libaprutil1 amd64 1.6.1-4ubuntu2.1 [84.9 kB]
Get:3 http://azure.archive.ubuntu.com/ubuntu focal-updates/main amd64 libaprutil1-dbd-sqlite3 amd64 1.6.1-4ubuntu2.1 [10
```

8. Check the status of Apache Web Serv



```
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

New release '22.04.2 LTS' available.
Run 'do-release-upgrade' to upgrade to it.


Last login: Fri Mar 31 16:32:41 2023 from 92.53.50.107
andrej@AndrejLinuxVM1:~$ sudo systemctl status apache2
● apache2.service - The Apache HTTP Server
     Loaded: loaded (/lib/systemd/system/apache2.service; enabled; vendor preset: enabled)
     Active: active (running) since Fri 2023-03-31 16:49:40 UTC; 11min ago
       Docs: https://httpd.apache.org/docs/2.4/
    Process: 3477 ExecStart=/usr/sbin/apachectl start (code=exited, status=0/SUCCESS)
   Main PID: 3481 (apache2)
      Tasks: 55 (limit: 9530)
     Memory: 8.8M
     CGroup: /system.slice/apache2.service
             ├─3481 /usr/sbin/apache2 -k start
             ├─3482 /usr/sbin/apache2 -k start
             └─3483 /usr/sbin/apache2 -k start

Mar 31 16:49:40 AndrejLinuxVM1 systemd[1]: Starting The Apache HTTP Server...
Mar 31 16:49:40 AndrejLinuxVM1 systemd[1]: Started The Apache HTTP Server.
andrej@AndrejLinuxVM1:~$ _
```

9.Connect to the public IP of the Linux VM, without the change in HTML page (default)


AndrejNSG1 - Microsoft Azure
what is my ip - Google Search
Home - Microsoft Azure
AndrejLinuxVM1 - Microsoft Azu
Apache2 Ubuntu Default Page: It
Not secure | 20.0.224.197
ubuntu

Apache2 Ubuntu Default Page

It works!

This is the default welcome page used to test the correct operation of the Apache2 server after installation on Ubuntu systems. It is based on the equivalent page on Debian, from which the Ubuntu Apache packaging is derived. If you can read this page, it means that the Apache HTTP server installed at this site is working properly. You should **replace this file** (located at `/var/www/html/index.html`) before continuing to operate your HTTP server.

If you are a normal user of this web site and don't know what this page is about, this probably means that the site is currently unavailable due to maintenance. If the problem persists, please contact the site's administrator.

Configuration Overview

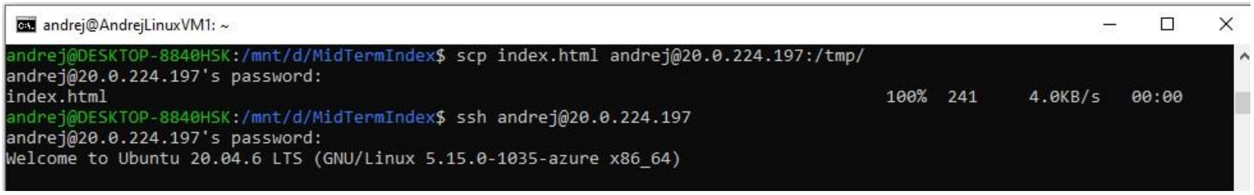
Ubuntu's Apache2 default configuration is different from the upstream default configuration, and split into several files optimized for interaction with Ubuntu tools. The configuration system is **fully documented in /usr/share/doc/apache2/README.Debian.gz**. Refer to this for the full documentation. Documentation for the web server itself can be found by accessing the **manual** if the `apache2-doc` package was installed on this server.

The configuration layout for an Apache2 web server installation on Ubuntu systems is as follows:

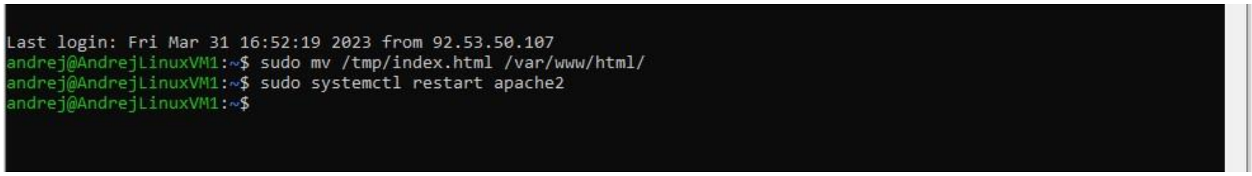
```
/etc/apache2/
|-- apache2.conf
|       `--  ports.conf
|-- mods-enabled
|       |-- *.load
|       `-- *.conf
|-- conf-enabled
|       `-- *.conf
|-- sites-enabled
|       `-- *.conf
```

- `apache2.conf` is the main configuration file. It puts the pieces together by including all remaining configuration files when starting up the web server.
- `ports.conf` is always included from the main configuration file. It is used to determine the listening ports for incoming connections, and this file can be customized anytime.
- Configuration files in the `mods-enabled/`, `conf-enabled/` and `sites-enabled/` directories contain particular configuration snippets which manage modules, global configuration fragments, or virtual host configurations, respectively.
- They are activated by symlinking available configuration files from their respective *-available/ counterparts. These should be managed by using our helpers `a2enmod`, `a2dismod`, `a2ensite`, `a2dissite`, and `a2enconf`, `a2disconf` . See their respective man pages for detailed information.
- The binary is called apache2. Due to the use of environment variables, in the default configuration, apache2 needs to be started/stopped with `/etc/init.d/apache2` or `apache2ctl`. **Calling `/usr/bin/apache2` directly will not work** with the default configuration.

10.Change the HTML page to Hello World!

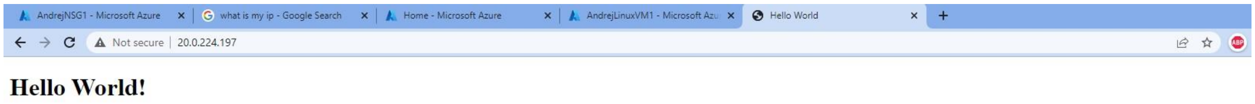


```
andrej@DESKTOP-8840HSK:/mnt/d/MidTermIndex$ scp index.html andrej@20.0.224.197:/tmp/
andrej@20.0.224.197's password:
index.html                                                      100%  241     4.0KB/s   00:00
andrej@DESKTOP-8840HSK:/mnt/d/MidTermIndex$ ssh andrej@20.0.224.197
andrej@20.0.224.197's password:
Welcome to Ubuntu 20.04.6 LTS (GNU/Linux 5.15.0-1035-azure x86_64)
```



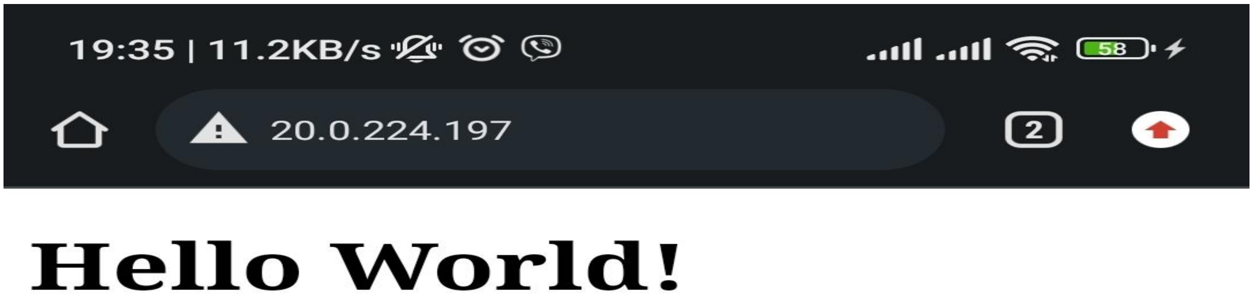
```
Last login: Fri Mar 31 16:52:19 2023 from 92.53.50.107
andrej@AndrejLinuxVM1:~$ sudo mv /tmp/index.html /var/www/html/
andrej@AndrejLinuxVM1:~$ sudo systemctl restart apache2
andrej@AndrejLinuxVM1:~$
```

11. Reload the page after changing the html page on apache web server


AndrejNSG1 - Microsoft Azure
what is my ip - Google Search
Home - Microsoft Azure
AndrejLinuxVM1 - Microsoft Azu
Hello World
Not secure
20.0.224.197

Hello World!

12. From cellphone



Hello World!