

RDPCodec User Guide

- Introduction

RDP Protocol Tool Set is a set of tools developed for RDP protocol testing. It contains RDP Codec Tool and Image Comparison tool.

This user guide provides how to setup RDPCodec environment, in this guide you will learn how to do the following:

- Install .NET SDK.
- Build and publish RDPCodec.
- Configure Nginx for Linux platform.
- Configure IIS for Windows platform.

- Requirements

Requirement	Description
Operation System	Ubuntu 18.04
Memory	2GB RAM
Disk space	10 GB of hard-driver free space
Internet access	Require internet access to install required package

- Setup steps

1. Prepare an Ubuntu 18.04 or windows 10 VM and can reach internet.
2. Install .NET 5.0 SDK and runtime.

2.1 Install .NET 5.0 on Linux.

Follow this document: <https://docs.microsoft.com/zh-cn/dotnet/core/install/linux-ubuntu>

Install steps:

```
Step1: Add Microsoft source package to repo:
wget https://packages.microsoft.com/config/ubuntu/18.04/packages-microsoft-prod.deb -O packages-microsoft-prod.deb
sudo dpkg -i packages-microsoft-prod.deb

Step2: Install SDK
sudo apt-get update
sudo apt-get install -y apt-transport-https
sudo apt-get update
sudo apt-get install -y dotnet-sdk-5.0

Install Runtime if need:
sudo apt-get update
sudo apt-get install -y apt-transport-https
sudo apt-get update
sudo apt-get install -y aspnetcore-runtime-5.0
```

2.2 Install .NET 5.0 on Windows

Follow this document: <https://docs.microsoft.com/zh-cn/dotnet/core/install/windows>
download .NET 5.0 SDK and install the msi step by step.

Check .NET Core version:

```
iolab@victoruv: /etc/systemd/system
File Edit View Search Terminal Help
iolab@victoruv:/etc/systemd/system$ dotnet --version
5.0.100
iolab@victoruv:/etc/systemd/system$
```

3. Clone and Build RDPCodec project.

First clone RDPCodec code from our [github portal](#) and then locate to folder
“[WindowsProtocolTestSuites\TestSuites\RDP\Tools\RDPToolSet](#)”

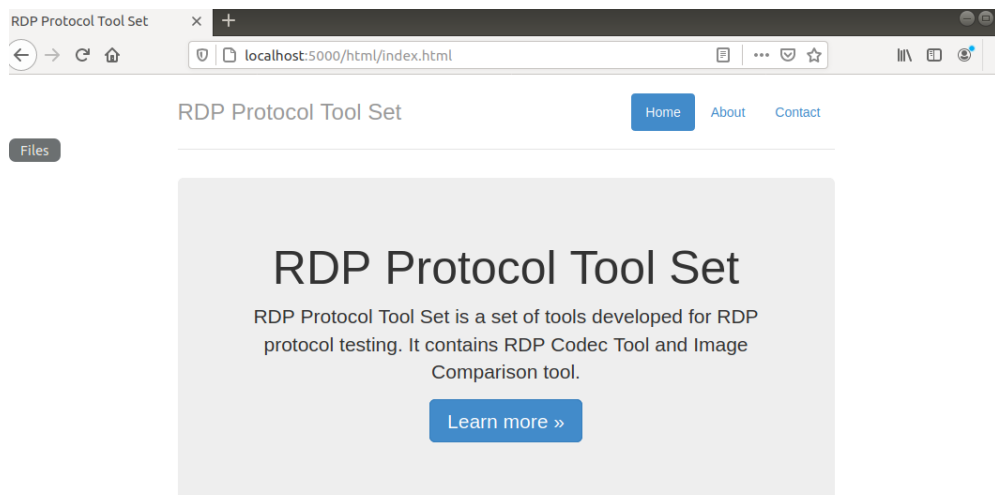
Use below command to build and publish RDPCodec binary.

```
dotnet restore
dotnet build --configuration Release
dotnet publish -c Release
```

4. Copy binary files to your Ubuntu VM and check if RDPCodec can work.

execute dotnet run to check your app can work correctly in Ubuntu system.

```
dotnet RDPToolSet.Web.dll
```



5. Install and configure web proxy tool.

5.1 Install Nginx on Linux platform:


Install Nginx:

```
sudo apt-get install nginx
```

```
iolab@victoruv: /etc/systemd/system
File Edit View Search Terminal Help
iolab@victoruv:/etc/systemd/system$ sudo nginx -t
nginx: the configuration file /etc/nginx/nginx.conf syntax is ok
nginx: configuration file /etc/nginx/nginx.conf test is successful
iolab@victoruv:/etc/systemd/system$ 1
```

Configure Nginx:

```
edit nginx.conf
sudo vim /etc/nginx/nginx.conf
```

Open  nginx.conf [Read-Only]
/etc/nginx

```
user www-data;
worker_processes auto;
pid /run/nginx.pid;
include /etc/nginx/modules-enabled/*.conf;

events {
    worker_connections 768;
    # multi_accept on;
}

http {

    ##
    # Basic Settings
    ##

    sendfile on;
    tcp_nopush on;
    tcp_nodelay on;
    keepalive_timeout 65;
    types_hash_max_size 2048;
    # server_tokens off;

    # server_names_hash_bucket_size 64;
    # server_name_in_redirect off;

    include /etc/nginx/mime.types;
    default_type application/octet-stream;

    ##
    # SSL Settings
    ##

    ssl_protocols TLSv1 TLSv1.1 TLSv1.2; # Dropping SSLv3, ref: P00DLE
    ssl_prefer_server_ciphers on;

    ##
    # Logging Settings
    ##

    access_log /var/log/nginx/access.log;
    error_log /var/log/nginx/error.log;
}
```

```
sudo vim /etc/sites-available/default
edit default as below:
```

```
server {
    listen 80;
    location / {
        proxy_pass http://localhost:5000;
        proxy_http_version 1.1;
        proxy_set_header Upgrade $http_upgrade;
        proxy_set_header Connection keep-alive;
        proxy_set_header Host $host;
        proxy_cache_bypass $http_upgrade;
    }
}
```

```
Save above changes and execute below command:
sudo nginx -s reload
```

Create the service file.

The server is setup to forward requests made to `http://<serveraddress>:80` on to the ASP.NET Core app running on Kestrel at `http://127.0.0.1:5000`. However, Nginx isn't set up to manage the Kestrel process. systemd can be used to create a service file to start and monitor the underlying web app. systemd is an init system that provides many powerful features for starting, stopping, and managing processes.

Create the service file.

```
sudo vim /etc/systemd/system/rdpcodec.service
```

```
[Unit]
Description=RDP Codec on linux

[Service]
WorkingDirectory=/home/iolab/www
ExecStart=/usr/bin/dotnet /home/iolab/www/RDPToolSet.Web.dll
Restart=always
# Restart service after 10 seconds if the dotnet service crashes
RestartSec=10
KillSignal=SIGINT
SyslogIdentifier=rdpcodec
User=root
Environment=ASPNETCORE_ENVIRONMENT=Production
Environment=DOTNET_PRINT_TELEMETRY_MESSAGE=false

[Install]
WantedBy=multi-user.target
```

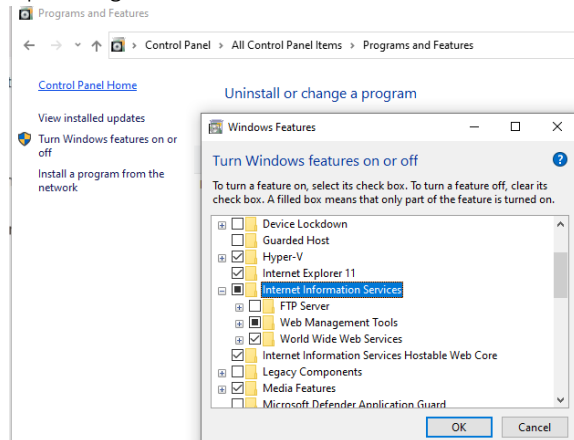
Save the service file and enable the service

```
sudo systemctl enable rdpcodec.service
```

check the output and verify service is running, any error you can check the log file which configured in /etc/nginx/nginx.conf file.

5.2 Install and config IIS on Windows platform:

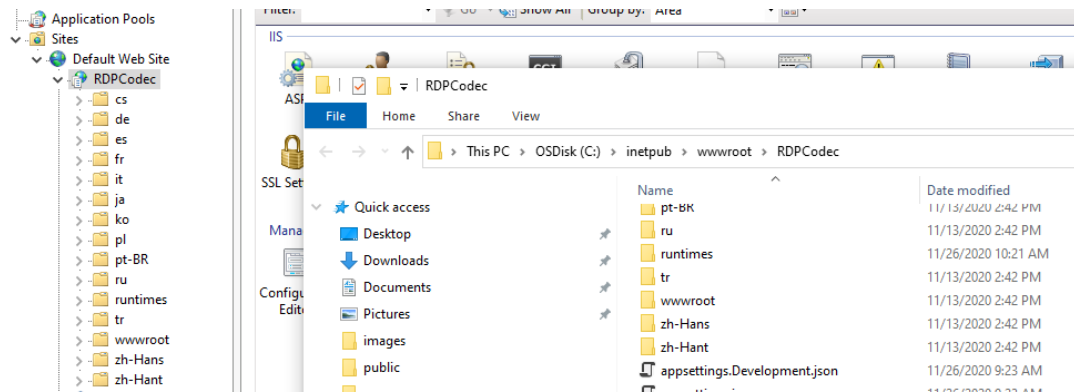
Open Programs on windows and then click "Turn Windows features on or off"



Create the IIS site: on the IIS server, create a folder to contain the app's published folders and files. In IIS Manager open the server's node in the **Connections** panel, Right-click the Sites folder and select **Add Website** from the contextual menu. Then provider a Site name and set the physical path to the app's deployment folder that you created.

Publish and deploy the app:

1. In a command shell, publish the app in Release configuration with the [dotnet publish](#) command:
`dotnet publish --configuration Release`
2. Move the contents of the bin/Release/{TARGET FRAMEWORK}/publish folder to the IIS site folder on the server, which is the site's **Physical path** in IIS Manager.



- Check and verify RDPCoDec web site.
Open your internet browser and launch RDPCoDec site and check if it works.

