

OpenShift Local Installation on CentOS Stream-9

Login with Red hat account and download “OpenShift Local” , “Pull secret” at this url

<https://console.redhat.com/openshift/create/local>

The screenshot shows the Red Hat Hybrid Cloud Console interface. The left sidebar contains navigation links for OpenShift, Overview, Cluster Management, Dashboard, Cluster List, Advisor, Vulnerability Dashboard, Subscriptions, Cost Management, Products, Advanced Cluster Security, OpenShift AI, OpenShift Virtualization, Resources, Learning Resources, Developer Sandbox, Downloads, and Releases. The main content area is titled "Select an OpenShift cluster type to create" and features tabs for "Cloud" and "Datacenter". Under the "Cloud" tab, the "Red Hat OpenShift Local" option is selected, with a sub-label "local sandbox". Below this, a note states: "Note: Your OpenShift Local installation won't appear in the OpenShift Cluster Manager unless you enable cluster monitoring and telemetry." The page is divided into two numbered steps:

- 1 Download what you need to get started**
 - OpenShift Local**
Download and extract the OpenShift Local archive for your operating system and place the binary in your \$PATH.
A dropdown menu shows "Linux" and "x86_64", with a "Download OpenShift Local" button.
 - Pull secret**
Download or copy your pull secret. You'll be prompted for this information during installation.
Buttons for "Download pull secret" and "Copy pull secret" are provided.
- 2 Follow the documentation to install OpenShift Local**
 - Run `crc setup` to set up your host operating system for the OpenShift Local virtual machine.
 - Then, run `crc start` to create a minimal OpenShift 4 cluster on your computer.
 - A link to "View the OpenShift Local Getting started guide" is provided.

<https://developers.redhat.com/products/openshift-local/overview?source=sso>

Lab Environment

HostOS:

KVM/QEMU (Standard PC (Q35 + ICH9, 2009) pc-q35-8.2) Fedora 41 hosted on HP Laptop

IP: 192.168.124.1

Guest OS:

CentOS Stream 9 x86_64 with minimal installation

Memory: 16000 MiB

Storage: 45 GiB

IP Address: 192.168.124.95

Operation User: admin

```
adrian@ADRIAN:~$ ssh admin@192.168.124.95
#####
#
# This system is created by Adrian for lab purpose.
# System Name  openshift-local
# This system is running CentOS Stream release 9
# kernel is 5.14.0-536.el9.x86_64
#
#####
admin@192.168.124.95's password:
#####
#
# This system is created by Adrian for lab purpose.
# System Name  openshift-local
# This system is running CentOS Stream release 9
# kernel is 5.14.0-536.el9.x86_64
#
#####
Web console: https://localhost:9090/

Last login: Fri Mar  7 16:09:11 2025 from ::ffff:192.168.124.1

..
.PLTJ.
<<<<<<>>>>>>
KKSSV' 4KKK LJ KKKL.'VSSKK
KKV' 4KKKKK LJ KKKKAL 'VKK
V' ' 'VKKKK LJ KKKKV' ' 'V
.4MA.' 'VKK LJ KKV' '.4Mb.
. KKKKKA.' 'V LJ V' '.4KKKKK .
.4D KKKKKKKA.' LJ ' '.4KKKKKKK FA.
<QDD ++++++++ ++++++++ GFD>
'VD KKKKKKKK'.. LJ ..'KKKKKKKK FV
' VKKKKK'. .4 LJ K. .'KKKKKV '
'VK'. .4KK LJ KKA. .'KV'
A. . .4KKKK LJ KKKKA. . .4
KKA. 'KKKKK LJ KKKKK' .4KK
KKSSA. VKKK LJ KKKV .4SSKK
<<<<<<>>>>>>
'MKKM'
''

admin@openshift-local
-----
OS: CentOS Stream 9 x86_64
Host: KVM/QEMU (Standard PC (Q35 + ICH9, 2009) pc-q35-8.2)
Kernel: 5.14.0-570.el9.x86_64
Uptime: 11 secs
Packages: 758 (rpm)
Shell: bash 5.1.8
Resolution: 1024x768
Terminal: /dev/pts/0
CPU: Intel i5-8350U (1) @ 1.896GHz
GPU: 00:01.0 Red Hat, Inc. QXL paravirtual graphic card
Memory: 327MiB / 15355MiB

IP Address => 192.168.124.95
Hostname => openshift-local

[admin@openshift-local ~]$
[admin@openshift-local ~]$
```

Prerequisites:

#Copy the downloaded file to the VM that OpenShift local will be installed with **non-root** user

#Create user for crc installation (it is better the user has sudo privilege) if there is no normal user in the VM.

#Disable IPV6 before installation Openshift Local on CentOS Stream 9 under
“/etc/NetworkManager/system-connections/ “

```
dnf update -y
```

```
dnf install libvirt* NetworkManager -y
```

```
systemctl status libvirtd
```

```
systemctl start libvirtd
```

```
systemctl enable dbus
```

```
systemctl start dbus
```

```
systemctl enable systemd-user-sessions.service
```

```
systemctl start systemd-user-sessions.service
```

```
systemctl start NetworkManager
```

```
systemctl enable NetworkManager
```

Start Installation <https://www.redhat.com/en/blog/install-openshift-local>

```
cd /home/admin/

ls -lrt /home/admin/

tar xvf crc-linux-amd64.tar.xz

ls -lrt crc-linux-2.16.0-amd64/

mkdir -p ~/local/bin

mv crc-linux-*-amd64/crc ~/local/bin/

export PATH=$HOME/local/bin:$PATH

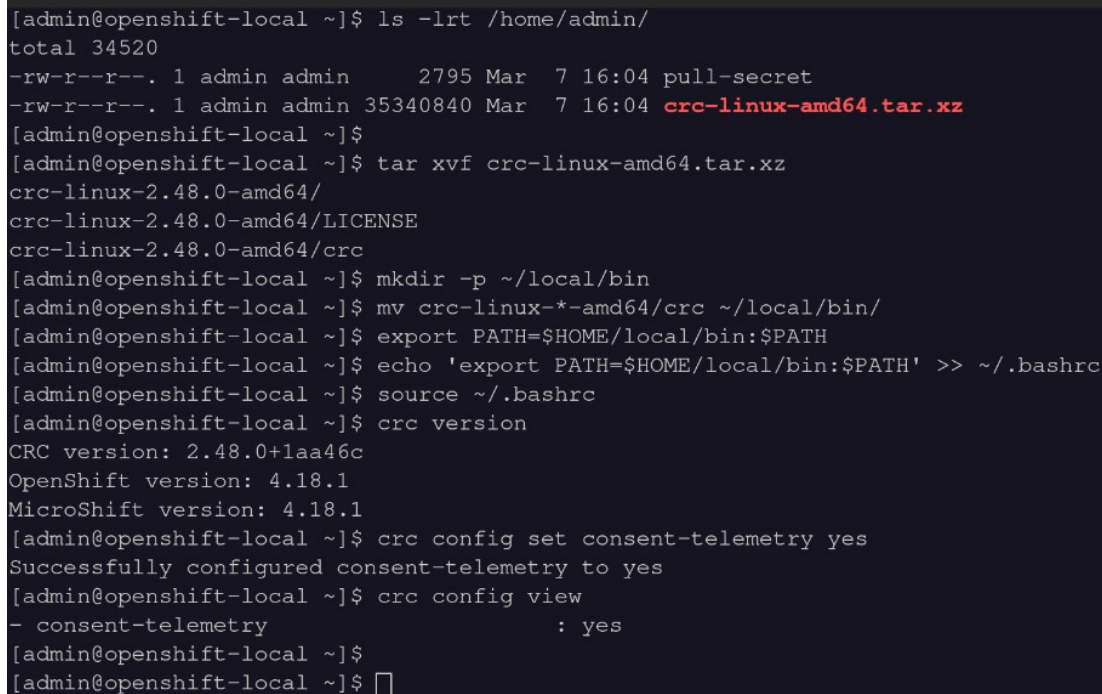
echo 'export PATH=$HOME/local/bin:$PATH' >> ~/.bashrc

source ~/.bashrc

#Check crc version
crc version

crc config set consent-telemetry yes

crc config view
```



```
[admin@openshift-local ~]$ ls -lrt /home/admin/
total 34520
-rw-r--r--. 1 admin admin      2795 Mar  7 16:04 pull-secret
-rw-r--r--. 1 admin admin 35340840 Mar  7 16:04 crc-linux-amd64.tar.xz
[admin@openshift-local ~]$
[admin@openshift-local ~]$ tar xvf crc-linux-amd64.tar.xz
crc-linux-2.48.0-amd64/
crc-linux-2.48.0-amd64/LICENSE
crc-linux-2.48.0-amd64/crc
[admin@openshift-local ~]$ mkdir -p ~/local/bin
[admin@openshift-local ~]$ mv crc-linux-*-amd64/crc ~/local/bin/
[admin@openshift-local ~]$ export PATH=$HOME/local/bin:$PATH
[admin@openshift-local ~]$ echo 'export PATH=$HOME/local/bin:$PATH' >> ~/.bashrc
[admin@openshift-local ~]$ source ~/.bashrc
[admin@openshift-local ~]$ crc version
CRC version: 2.48.0+1aa46c
OpenShift version: 4.18.1
MicroShift version: 4.18.1
[admin@openshift-local ~]$ crc config set consent-telemetry yes
Successfully configured consent-telemetry to yes
[admin@openshift-local ~]$ crc config view
- consent-telemetry           : yes
[admin@openshift-local ~]$
[admin@openshift-local ~]$
```

#Openshift local installation start

crc config set network-mode system

```
[admin@openshift-local ~]$ crc config set network-mode system
Network mode changed. Please run `crc cleanup` and `crc setup`.
[admin@openshift-local ~]$ crc cleanup
INFO Removing vsock configuration
INFO Using root access: Removing udev rule in /etc/udev/rules.d/99-crc-vssock.rules
INFO Using root access: Removing vsock module autoload file /etc/modules-load.d/vhost_vssock.conf
INFO Removing 'crc' network from libvirt
INFO Removing /etc/NetworkManager/dnsmasq.d/crc.conf file
INFO Removing /etc/NetworkManager/conf.d/crc-nm-dnsmasq.conf file
INFO Removing crc daemon systemd socket units
INFO Removing crc daemon systemd service
INFO Removing crc's virtual machine
INFO Removing crc libvirt storage pool
INFO Removing CRC manpages
INFO Removing CRC Specific entries from user's known_hosts file
INFO Removing hosts file records added by CRC
INFO Removing pull secret from the keyring
INFO Removing older logs
Cleanup finished
[admin@openshift-local ~]$ crc setup
```

crc setup (this may take about 2 hours)

```
[admin@openshift-local ~]$
[admin@openshift-local ~]$ crc setup
INFO Using bundle path /home/admin/.crc/cache/crc_libvirt_4.18.1_amd64.crcbundle
INFO Checking if running as non-root
INFO Checking if running inside WSL2
INFO Checking if crc-admin-helper executable is cached
INFO Checking if running on a supported CPU architecture
INFO Checking if crc executable symlink exists
INFO Creating symlink for crc executable
INFO Checking minimum RAM requirements
INFO Check if Podman binary exists in: /home/admin/.crc/bin/oc
INFO Checking if Virtualization is enabled
INFO Checking if KVM is enabled
INFO Checking if libvirt is installed
INFO Checking if user is part of libvirt group
INFO Checking if active user/process is currently part of the libvirt group
INFO Checking if libvirt daemon is running
INFO Checking if a supported libvirt version is installed
INFO Checking if crc-driver-libvirt is installed
INFO Checking crc daemon systemd service
INFO Setting up crc daemon systemd service
INFO Checking crc daemon systemd socket units
INFO Setting up crc daemon systemd socket units
INFO Checking if vsock is correctly configured
INFO Setting up vsock support
INFO Using root access: Setting CAP_NET_BIND_SERVICE capability for /home/admin/local/bin/crc executable
INFO Using root access: Creating udev rule for /dev/vssock
INFO Using root access: Changing permissions for /etc/udev/rules.d/99-crc-vssock.rules to 644
INFO Using root access: Reloading udev rules database
INFO Using root access: Loading vhost_vssock kernel module
INFO Using root access: Creating file /etc/modules-load.d/vhost_vssock.conf
INFO Using root access: Changing permissions for /etc/modules-load.d/vhost_vssock.conf to 644
INFO Checking if CRC bundle is extracted in '$HOME/.crc'
INFO Checking if /home/admin/.crc/cache/crc_libvirt_4.18.1_amd64.crcbundle exists
INFO Getting bundle for the CRC executable
INFO Downloading bundle: /home/admin/.crc/cache/crc_libvirt_4.18.1_amd64.crcbundle...
5.69 GiB / 5.69 GiB [-----] 100.00% 1.32 MiB/s
INFO Uncompressing /home/admin/.crc/cache/crc_libvirt_4.18.1_amd64.crcbundle
crc.qcow2: 20.11 GiB / 20.11 GiB [-----] 100.00%
oc: 176.49 MiB / 176.49 MiB [-----] 100.00%
Your system is correctly setup for using CRC. Use 'crc start' to start the instance
[admin@openshift-local ~]$
```


#select and copy “pull-secret” entry then paste in installation terminal

[illegible]

```
#crc start and paste "pull-secret" then ENTER to continue
```

```
[admin@openshift-local ~]$ admin@openshift-local -j$ crc start
INFO Using bundle path /home/admin/.crc/cache/crc_libvirt_4.18-1_amd64.crcbundle
INFO Checking if running as non-root
INFO Checking if running inside WSL2
INFO Checking if crc-admin-helper executable is cached
INFO Checking if running on a supported CPU architecture
INFO Checking if crc executable symlink exists
INFO Checking minimum RAM requirements
INFO Check if Podman binary exists in: /home/admin/.crc/bin/oc
INFO Checking if Virtualization is enabled
INFO Checking if KVM is enabled
INFO Checking if libvirt is installed
INFO Checking if user is part of libvirt group
INFO Checking if active user/process is currently part of the libvirt group
INFO Checking if libvirt daemon is running
INFO Checking if a supported libvirt version is installed
INFO Checking if crc-driver-libvirt is installed
INFO Checking crc daemon systemd socket units
INFO Checking if vavck is correctly configured
INFO Loading bundles: crc_libvirt_4.18-1_amd64.*
CRC requires a pull secret to download Content from Red Hat.
You can copy it from the Pull Secret section of https://console.redhat.com/openshift/create/local.
? Please enter the pull secret *****
*****[
```

```
[admin@openshift-local ~]$ crc start
INFO Using bundle path /home/admin/.crc/cache/crc_libvirt_4.18.1_amd64.crcbundle
INFO Checking if running as non-root
INFO Checking if running inside WSL2
INFO Checking if crc-admin-helper executable is cached
INFO Checking if running on a supported CPU architecture
INFO Checking if crc executable symlink exists
INFO Checking minimum RAM requirements
INFO Check if Podman binary exists in: /home/admin/.crc/bin/oc
INFO Checking if Virtualization is enabled
INFO Checking if KVM is enabled
INFO Checking if libvirt is installed
INFO Checking if user is part of libvirt group
INFO Checking if active user/process is currently part of the libvirt group
INFO Checking if libvirt daemon is running
INFO Checking if a supported libvirt version is installed
INFO Checking if crc-driver-libvirt is installed
INFO Checking crc daemon systemd socket units
INFO Checking if systemd-networkd is running
INFO Checking if NetworkManager is installed
INFO Checking if NetworkManager service is running
INFO Checking if /etc/NetworkManager/conf.d/crc-nm-dnsmasq.conf exists
INFO Checking if /etc/NetworkManager/dnsmasq.d/crc.conf exists
INFO Checking if libvirt 'crc' network is available
INFO Checking if libvirt 'crc' network is active
INFO Loading bundle: crc_libvirt_4.18.1_amd64...
CRC requires a pull secret to download content from Red Hat.
You can copy it from the Pull Secret section of https://console.redhat.com/openshift/create/local.
? Please enter the pull secret *****
WARN Cannot add pull secret to keyring: The name is not activatable
INFO Creating CRC VM for OpenShift 4.18.1...
INFO Generating new SSH key pair...
INFO Generating new password for the kubeadmin user
INFO Starting CRC VM for openshift 4.18.1...
INFO CRC instance is running with IP 192.168.130.11
INFO CRC VM is running
INFO Updating authorized keys...
INFO Configuring shared directories
INFO Check internal and public DNS query...
INFO Check DNS query from host...
INFO Verifying validity of the kubelet certificates...
INFO Starting kubelet service
INFO Waiting for kube-apiserver availability... [takes around 2min]
INFO Adding user's pull secret to the cluster...
INFO Updating SSH key to machine config resource...
INFO Waiting until the user's pull secret is written to the instance disk...
```

INFO CRC instance is running with IP **192.168.130.11**

```
INFO Changing the password for the kubeadmin user
INFO Updating cluster ID...
INFO Updating root CA cert to admin-kubeconfig-client-ca configmap...
INFO Starting openshift instance... [waiting for the cluster to stabilize]
INFO 2 operators are progressing: authentication, console
INFO 2 operators are progressing: authentication, console
INFO 2 operators are progressing: authentication, console
INFO Operator authentication is progressing
INFO All operators are available. Ensuring stability...
INFO Operators are stable (2/3)...
INFO Operators are stable (3/3)...
INFO Adding crc-admin and crc-developer contexts to kubeconfig...
Started the OpenShift cluster.
```

The server is accessible via web console at:
<https://console-openshift-console.apps-crc.testing>

Log in as administrator:
Username: kubeadmin
Password: jL5ou-pRq7U-DqH7V-K43Iq

Log in as user:
Username: developer
Password: developer

Use the 'oc' command line interface:
\$ eval \$(crc oc-env)
\$ oc login -u developer https://api.crc.testing:6443
[admin@openshift-local ~]\$
[admin@openshift-local ~]\$

The server is accessible via web console at:
<https://console-openshift-console.apps-crc.testing>

Log in as administrator:
Username: kubeadmin
Password: jL5ou-pRq7U-DqH7V-K43Iq

Log in as user:
Username: developer
Password: developer

Use the 'oc' command line interface:
\$ eval \$(crc oc-env)
\$ oc login -u developer https://api.crc.testing:6443


```
[admin@openshift-local ~]$ crc ip
192.168.130.11
[admin@openshift-local ~]$ crc status
CRC VM:           Running
OpenShift:        Running (v4.18.1)
Disk Usage:       21.29GB of 32.68GB (Inside the CRC VM)
Cache Usage:      27.93GB
Cache Directory:  /home/admin/.crc/cache
[admin@openshift-local ~]$
```

```
[admin@openshift-local ~]$ ip a
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1000
   link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
   inet 127.0.0.1/8 scope host lo
       valid_lft forever preferred_lft forever
   inet6 ::1/128 scope host
       valid_lft forever preferred_lft forever
2: enp1s0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq_codel state UP group default qlen 1000
   link/ether 52:54:00:ca:d9:55 brd ff:ff:ff:ff:ff:ff
   inet 192.168.124.95/24 brd 192.168.124.255 scope global dynamic noprefixroute enp1s0
       valid_lft 3290sec preferred_lft 3290sec
3: virbr0: <NO-CARRIER,BROADCAST,MULTICAST,UP> mtu 1500 qdisc noqueue state DOWN group default qlen 1000
   link/ether 52:54:00:9a:48:64 brd ff:ff:ff:ff:ff:ff
   inet 192.168.122.1/24 brd 192.168.122.255 scope global noprefixroute virbr0
       valid_lft forever preferred_lft forever
4: crc: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc noqueue state UP group default qlen 1000
   link/ether 52:54:00:fd:be:d9 brd ff:ff:ff:ff:ff:ff
   inet 192.168.130.1/24 brd 192.168.130.255 scope global crc
       valid_lft forever preferred_lft forever
5: vnet0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc noqueue master crc state UNKNOWN group default qlen 1000
   link/ether fe:fd:fc:07:21:82 brd ff:ff:ff:ff:ff:ff
   inet6 fe80::fed:fc07:2182/64 scope link
       valid_lft forever preferred_lft forever
[admin@openshift-local ~]$
```

HostOS IP = 192.168.124.1 [cannot access to the Openshift Console URL from this external IP]
 VM ip = 192.168.124.95 [external IP]
 crc ip = 192.168.130.11 [console-openshift-console.apps-crc.testing Openshift console url resolving]

In this case, we will need to login with GUI to VM and then we can access URL in browser.
 But VM was installed minimal without GUI. So, HAProxy can help to access this url from external IP.

#####

Configure HAProxy after crc installation finishing in OpenShift local VM, the idea is to access from external HOST to VM's openshift console url

```
sudo dnf install -y haproxy
```

```
sudo cp -p /etc/haproxy/haproxy.cfg /etc/haproxy/haproxy.cfg_origin
```

```
sudo tee /etc/haproxy/haproxy.cfg &>/dev/null <EOF
```

```
global
```

```
    log /dev/log local0
```

```
defaults
```

```
    balance roundrobin
```

```
    log global
```

```
    maxconn 100
```

```
    mode tcp
```

```
    timeout connect 5s
```

```
    timeout client 500s
```

```
    timeout server 500s
```

```
listen app
```

```
    bind 0.0.0.0:80
```

```
    server crcvm 192.168.130.11:80 check
```

```
listen apps_ssl
```

```
    bind 0.0.0.0:443
```

```
    server crcvm 192.168.130.11:443 check
```

```
listen api
```

```
    bind 0.0.0.0:6443
```

```
    server crcvm 192.168.130.11:6443 check
```

```
EOF
```

Note:

It can be verified by typing in terminal “ **crc ip** ”

If selinux enable and firewall service is running, please do this below actions.

```
sudo firewall-cmd --add-port=80/tcp --permanent
```

```
sudo firewall-cmd --add-port=6443/tcp --permanent
```

```
sudo firewall-cmd --add-port=443/tcp --permanent
```

```
sudo firewall-cmd --reload
```

```
sudo semanage port -a -t http_port_t -p tcp 6443
```

```
sudo systemctl enable haproxy && sudo systemctl start haproxy
```

```
sudo systemctl restart haproxy
```

In the OpenShift Local machine(CentOS Stream 9) **/etc/hosts** entry, if there is no auto update in the **/etc/hosts** entries, please add this:

Added by CRC

192.168.130.11 api.crc.testing canary-openshift-ingress-canary.apps-crc.testing console-openshift-console.apps-crc.testing default-route-openshift-image-registry.apps-crc.testing downloads-openshift-console.apps-crc.testing host.crc.testing oauth-openshift.apps-crc.testing

End of CRC section

#####

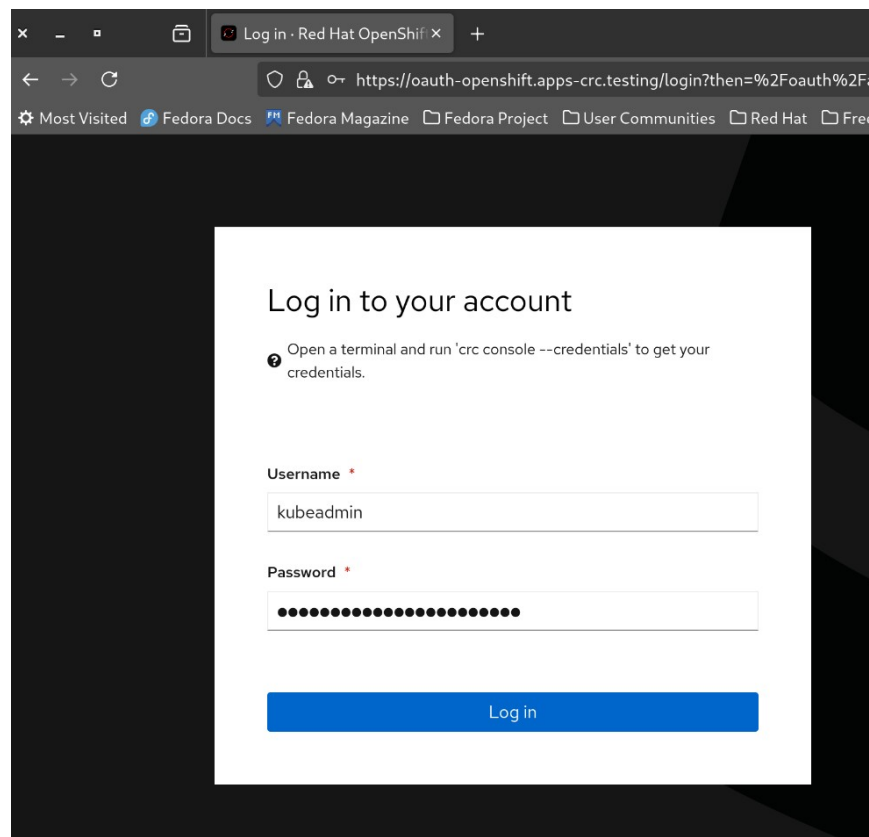
In the client machine **/etc/hosts** entry, please add this below

192.168.124.95 api.crc.testing canary-openshift-ingress-canary.apps-crc.testing console-openshift-console.apps-crc.testing default-route-openshift-image-registry.apps-crc.testing downloads-openshift-console.apps-crc.testing host.crc.testing oauth-openshift.apps-crc.testing

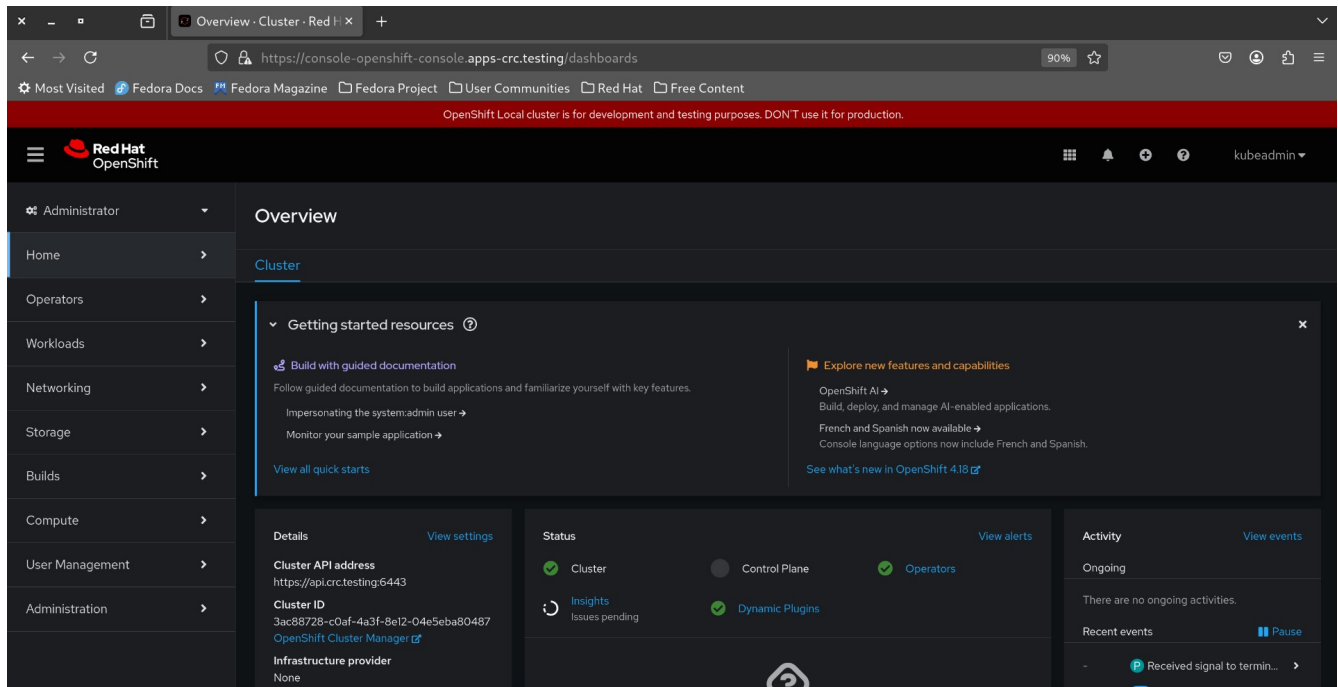
#####

Then try to access web console from Client:

<https://console-openshift-console.apps-crc.testing>



Now OpenShift Console URL can be accessible via external Host through HAProxy service
Login successful via WEB URL



To check credentials
crc console --credentials

```
[admin@openshift-local ~]$ crc console --credentials
To login as a regular user, run 'oc login -u developer -p developer https://api.crc.testing:6443'.
To login as an admin, run 'oc login -u kubeadmin -p jL5ou-pRq7U-DqH7V-K43Iq https://api.crc.testing:6443'
[admin@openshift-local ~]$
```

If the error with “**-bash: oc: command not found**”

cp ~/.crc/cache/crc_libvirt_4.18.1_amd64/oc ~/local/bin/

```
[admin@openshift-local ~]$ oc
-bash: oc: command not found
[admin@openshift-local ~]$ ls -lrt ~/.crc/cache/crc_libvirt_4.18.1_amd64/oc
-rwxr-xr-x. 1 admin admin 185062488 Mar  7 21:13 /home/admin/.crc/cache/crc_libvirt_4.18.1_amd64/oc
[admin@openshift-local ~]$ cp ~/.crc/cache/crc_libvirt_4.18.1_amd64/oc ~/local/bin/
[admin@openshift-local ~]$ oc get pods
No resources found in default namespace.
[admin@openshift-local ~]$ oc --version
error: unknown flag: --version
See 'oc --help' for usage.
[admin@openshift-local ~]$ oc version
Client Version: 4.18.1
Kustomize Version: v5.4.2
Server Version: 4.18.1
Kubernetes Version: v1.31.5
```

Login successful with “oc” command

```
[admin@openshift-local ~]$ oc login -u kubeadmin -p jL5ou-pRq7U-DqH7V-K43Iq https://api.crc.testing:6443
Login successful.

You have access to 65 projects, the list has been suppressed. You can list all projects with 'oc projects'

Using project "default".
[admin@openshift-local ~]$ 
[admin@openshift-local ~]$
```

```
[admin@openshift-local ~]$ oc login -u developer -p developer https://api.crc.testing:6443
Login successful.

You don't have any projects. You can try to create a new project, by running

    oc new-project <projectname>

[admin@openshift-local ~]$
```

Useful urls:

<https://www.redhat.com/en/blog/install-openshift-local>

https://docs.openshift.com/container-platform/4.17/cli_reference/openshift_cli/getting-started-cli.html

<https://akos.ma/blog/openshift-local-crc-from-another-machine/>