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BDF101 - Ajouter un Hôte et des Services à un Cluster HDP Existant

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LAB #1 - Préparer l'hôte worker4

Commencez par configurer la redirection de port pour la VM sur nic1 :

```
desktop@serverXX:~$ VBoxManage modifyvm "CentOS_7_8" --natpf1 "centos_7_8,tcp,,3022,,22"
```

Configurez ensuite nic3 en Réseau Privé Hôte :

```
desktop@serverXX:~$ VBoxManage modifyvm CentOS_7_8 --nic3 hostonly --hostonlyadapter2 vboxnet0
```

Afin d'éviter un conflit d'adresse IP avec **master1**, désactivez nic2 :

```
desktop@serverXX:~$ VBoxManage modifyvm CentOS_7_8 --nic2 none
```

Démarrez maintenant la VM **CentOS_7_8** :

```
desktop@serverXX:~$ VBoxManage startvm CentOS_7_8 --type headless
```

Éditez le fichier /etc/hosts du serverXX en ajoutant la ligne pour **worker4.ittraining.loc** :

```
desktop@serverXX:~$ sudo su -
[sudo] password for desktop:
root@serverXX:~# vi /etc/hosts
root@serverXX:~# cat /etc/hosts
127.0.0.1    localhost
127.0.1.1   serverXX.ittraining.network    serverXX

# The following lines are desirable for IPv6 capable hosts
::1 localhost    ip6-localhost ip6-loopback
ff02::1 ip6-allnodes
ff02::2 ip6-allrouters
XXX.XXX.XXX.XXX serverXX.ittraining.network    serverXX
```

```
192.168.56.2 master1.ittraining.loc master1
192.168.56.3 master2.ittraining.loc master2
192.168.56.4 master3.ittraining.loc master3
192.168.56.5 worker1.ittraining.loc worker1
192.168.56.6 worker2.ittraining.loc worker2
192.168.56.7 worker3.ittraining.loc worker3
192.168.56.8 worker4.ittraining.loc worker4
root@serverXX:~# exit
logout
```

Connectez-vous à la VM **CentOS_7_8** en utilisant la redirection de port de nic1 :

```
desktop@server40:~$ ssh -l trainee localhost -p 3022
trainee@localhost's password: trainee
Last login: Tue Sep 15 06:53:32 2020 from 192.168.56.1
```

Devenez root :

```
[trainee@centos7 ~]$ su -
Password: fenestros
Last login: Tue Sep 15 06:54:53 CEST 2020 on pts/1
```

Editez le fichier /etc/hosts de la VM en ajoutant la ligne pour **worker4.ittraining.loc** :

```
[root@centos7 ~]# vi /etc/hosts
[root@centos7 ~]# cat /etc/hosts
127.0.0.1 localhost.localdomain localhost
::1 localhost6.localdomain6 localhost6
192.168.56.2 master1.ittraining.loc master1
192.168.56.3 master2.ittraining.loc master2
192.168.56.4 master3.ittraining.loc master3
192.168.56.5 worker1.ittraining.loc worker1
192.168.56.6 worker2.ittraining.loc worker2
192.168.56.7 worker3.ittraining.loc worker3
```

```
192.168.56.8 worker4.ittraining.loc worker4
```

Configurez ensuite la troisième interface **enp0s9** réseau en IP fixe :

```
[root@centos7 ~]# nmcli connection add con-name ip_enp0s9 ifname enp0s9 type ethernet ip4 192.168.56.8/24 gw4 10.0.2.2
Connection 'ip_enp0s9' (2d9b46b3-c575-4a16-86b5-dc4ed540f866) successfully added.
[root@centos7 ~]# nmcli connection up ip_enp0s9
```

Fermez le terminal figé et ouvrez un nouveau terminal. Connectez-vous à votre serverXX :

```
$ ssh desktop@serverXX.ittraining.network
desktop@serverX.ittraining.network's password:
```

Reconnectez-vous à la VM en utilisant l'adresse 192.168.56.8 :

```
desktop@serverXX:~$ ssh -l trainee 192.168.56.8
The authenticity of host '192.168.56.8 (192.168.56.8)' can't be established.
ECDSA key fingerprint is SHA256:p5z2DKHnUDZcE3RKKo5AbZiVHEe4MPj0qMRug9tAq7M.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added '192.168.56.8' (ECDSA) to the list of known hosts.
trainee@192.168.56.8's password:
Last login: Thu Sep 17 06:29:24 2020 from gateway
[trainee@centos7 ~]$
```

Configurez la première interface réseau **enp0s3** en IP fixe :

```
[trainee@centos7 ~]$ su -
Password: fenestros
Last login: Thu Sep 17 06:31:56 CEST 2020 on pts/0
[root@centos7 ~]# nmcli connection add con-name ip_enp0s3 ifname enp0s3 type ethernet ip4 10.0.2.15/24 gw4 10.0.2.2
Warning: There is another connection with the name 'ip_enp0s3'. Reference the connection by its uuid 'blece19a-6dee-49a9-b2f1-95004af3cdc2'
```

```
Connection 'ip_enp0s3' (blece19a-6dee-49a9-b2f1-95004af3cdc2) successfully added.
[root@centos7 ~]# nmcli connection mod ip_enp0s3 ipv4.dns 8.8.8.8
[root@centos7 ~]# nmcli connection up ip_enp0s3
Connection successfully activated (D-Bus active path: /org/freedesktop/NetworkManager/ActiveConnection/4)
```

Dernièrement modifiez le nom d'hôte de la VM :

```
[root@centos7 ~]# nmcli general hostname worker4.ittraining.loc
```

Arrêtez la VM et supprimez la redirection de port de la VM :

```
[root@centos7 ~]# exit
logout
[trainee@centos7 ~]$ exit
logout
Connection to localhost closed.
desktop@serverXX:~$ VBoxManage controlvm CentOS_7_8 poweroff
0%...10%...20%...30%...40%...50%...60%...70%...80%...90%...100%
desktop@serverXX:~$ VBoxManage modifyvm CentOS_7_8 --natpf1 delete centos_7_8
```

LAB #2 - Configurer l'hôte worker4

Démarrez la VM **CentOS_7_8** :

```
desktop@serverXX:~$ VBoxManage startvm CentOS_7_8 --type headless
Waiting for VM "CentOS_7_8" to power on...
VM "CentOS_7_8" has been successfully started.
```

Connectez-vous à la VM en utilisant l'adresse 192.168.56.8 :

```
desktop@serverXX:~$ ssh -l trainee 192.168.56.8
trainee@192.168.56.8's password:
```

```
Last login: Thu Sep 17 06:33:32 2020 from 192.168.56.1
```

Devenez root :

```
[trainee@worker4 ~]$ su -  
Password: fenestros  
Last login: Thu Sep 17 06:34:38 CEST 2020 on pts/1
```

Editer /etc/sysconfig/network :

```
[root@worker4 ~]# vi /etc/sysconfig/network  
[root@worker4 ~]# cat /etc/sysconfig/network  
# Created by anaconda  
NETWORKING=yes  
HOSTNAME=worker4.ittraining.loc
```

Créez le repository ambari dans yum :

```
[root@worker4 ~]# vi /etc/yum.repos.d/ambari.repo  
[root@worker4 ~]# cat /etc/yum.repos.d/ambari.repo  
[ambari]  
name = Ambari Repo  
baseurl = http://master1.ittraining.loc/ambari/centos7/2.7.4.0-118  
gpgcheck = 0
```

Mettez à jour la base de données des dépôts dans yum :

```
[root@worker4 ~]# yum clean all  
Loaded plugins: fastestmirror  
Cleaning repos: ambari base extras updates  
Cleaning up list of fastest mirrors  
  
[root@worker4 ~]# yum makecache  
Loaded plugins: fastestmirror
```

Determining fastest mirrors

```
* base: ftp.rezopole.net
* extras: centos.mirror.fr.planethoster.net
* updates: centos.crazyfrogs.org
```

ambari

```
| 2.9 kB 00:00:00
```

base

```
| 3.6 kB 00:00:00
```

extras

```
| 2.9 kB 00:00:00
```

updates

```
| 2.9 kB 00:00:00
```

```
(1/13): ambari/filelists_db
```

```
| 104 kB 00:00:00
```

```
(2/13): ambari/other_db
```

```
| 1.4 kB 00:00:00
```

```
(3/13): ambari/primary_db
```

```
| 25 kB 00:00:00
```

```
(4/13): base/7/x86_64/group_gz
```

```
| 153 kB 00:00:00
```

```
(5/13): base/7/x86_64/filelists_db
```

```
| 7.1 MB 00:00:00
```

```
(6/13): base/7/x86_64/other_db
```

```
| 2.6 MB 00:00:00
```

```
(7/13): base/7/x86_64/primary_db
```

```
| 6.1 MB 00:00:00
```

```
(8/13): extras/7/x86_64/primary_db
```

```
| 206 kB 00:00:01
```

```
(9/13): extras/7/x86_64/other_db
```

```
| 124 kB 00:00:00
```

```
(10/13): extras/7/x86_64/filelists_db
```

```
| 217 kB 00:00:01
```

```
(11/13): updates/7/x86_64/primary_db
```

```
| 4.5 MB 00:00:00
```

```
(12/13): updates/7/x86_64/filelists_db
| 2.4 MB 00:00:00
(13/13): updates/7/x86_64/other_db
| 318 kB 00:00:00
Metadata Cache Created
```

Installez ambari agent :

```
[root@worker2 ~]# yum -y install ambari-agent
```

Modifiez le fichier /etc/ambari-agent/conf/ambari-agent.ini :

```
[root@worker2 ~]# vi /etc/ambari-agent/conf/ambari-agent.ini
...
[server]
hostname=master1.ittraining.loc <-----modifier de localhost à master1.ittraining.loc
...
```

Modifiez le fichier /etc/hosts de la VM **master1** et vérifiez le contenu du fichier :

```
[root@worker4 ~]# ssh -l root 192.168.56.2
The authenticity of host '192.168.56.2 (192.168.56.2)' can't be established.
ECDSA key fingerprint is SHA256:p5z2DKHnUDZcE3RKKo5AbZiVHEe4MPj0qMRug9tAq7M.
ECDSA key fingerprint is MD5:03:f0:db:ae:0c:0a:5e:47:9b:7e:8c:5b:87:c1:0e:6f.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added '192.168.56.2' (ECDSA) to the list of known hosts.
root@192.168.56.2's password: fenestros
Last login: Tue Sep 15 22:15:44 2020

[root@master1 ~]# echo "192.168.56.8 worker4.ittraining.loc worker4" >> /etc/hosts
[root@master1 ~]# cat /etc/hosts
127.0.0.1 localhost localhost.localdomain localhost4 localhost4.localdomain4
::1 localhost localhost.localdomain localhost6 localhost6.localdomain6
192.168.56.2 master1.ittraining.loc master1
```

```
192.168.56.3  master2.ittraining.loc  master2
192.168.56.4  master3.ittraining.loc  master3
192.168.56.5  worker1.ittraining.loc  worker1
192.168.56.6  worker2.ittraining.loc  worker2
192.168.56.7  worker3.ittraining.loc  worker3
192.168.56.8  worker4.ittraining.loc  worker4
```

```
[root@master1 ~]# exit
logout
Connection to 192.168.56.2 closed.
```

Modifiez le fichier `/etc/hosts` de la VM **master2** :

```
[root@worker4 ~]# ssh -l root 192.168.56.3
The authenticity of host '192.168.56.3 (192.168.56.3)' can't be established.
ECDSA key fingerprint is SHA256:p5z2DKHnUDZcE3RKKo5AbZiVHEe4MPj0qMRug9tAq7M.
ECDSA key fingerprint is MD5:03:f0:db:ae:0c:0a:5e:47:9b:7e:8c:5b:87:c1:0e:6f.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added '192.168.56.3' (ECDSA) to the list of known hosts.
root@192.168.56.3's password: fenestros
Last login: Tue Sep 15 22:17:53 2020

[root@master2 ~]# echo "192.168.56.8  worker4.ittraining.loc  worker4" >> /etc/hosts
[root@master2 ~]# exit
logout
Connection to 192.168.56.3 closed.
```

Modifiez le fichier `/etc/hosts` des VMs **master3**, **worker1**, **worker2** et **worker3** :

```
[root@worker4 ~]# ssh -l root 192.168.56.4
The authenticity of host '192.168.56.4 (192.168.56.4)' can't be established.
ECDSA key fingerprint is SHA256:p5z2DKHnUDZcE3RKKo5AbZiVHEe4MPj0qMRug9tAq7M.
ECDSA key fingerprint is MD5:03:f0:db:ae:0c:0a:5e:47:9b:7e:8c:5b:87:c1:0e:6f.
Are you sure you want to continue connecting (yes/no)? yes
```

```
Warning: Permanently added '192.168.56.4' (ECDSA) to the list of known hosts.
root@192.168.56.4's password: fenestros
Last login: Tue Sep 15 22:17:11 2020
[root@master3 ~]# echo "192.168.56.8 worker4.ittraining.loc worker4" >> /etc/hosts
[root@master3 ~]# exit
logout
Connection to 192.168.56.4 closed.
[root@worker4 ~]# ssh -l root 192.168.56.5
The authenticity of host '192.168.56.5 (192.168.56.5)' can't be established.
ECDSA key fingerprint is SHA256:p5z2DKHnUDZcE3RKKo5AbZiVHEe4MPj0qMRug9tAq7M.
ECDSA key fingerprint is MD5:03:f0:db:ae:0c:0a:5e:47:9b:7e:8c:5b:87:c1:0e:6f.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added '192.168.56.5' (ECDSA) to the list of known hosts.
root@192.168.56.5's password: fenestros
Last login: Tue Sep 15 22:18:22 2020
[root@worker1 ~]# echo "192.168.56.8 worker4.ittraining.loc worker4" >> /etc/hosts
[root@worker1 ~]# exit
logout
Connection to 192.168.56.5 closed.
[root@worker4 ~]# ssh -l root 192.168.56.6
The authenticity of host '192.168.56.6 (192.168.56.6)' can't be established.
ECDSA key fingerprint is SHA256:p5z2DKHnUDZcE3RKKo5AbZiVHEe4MPj0qMRug9tAq7M.
ECDSA key fingerprint is MD5:03:f0:db:ae:0c:0a:5e:47:9b:7e:8c:5b:87:c1:0e:6f.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added '192.168.56.6' (ECDSA) to the list of known hosts.
root@192.168.56.6's password: fenestros
Last login: Tue Sep 15 22:18:45 2020
[root@worker2 ~]# echo "192.168.56.8 worker4.ittraining.loc worker4" >> /etc/hosts
[root@worker2 ~]# exit
logout
Connection to 192.168.56.6 closed.
[root@worker4 ~]# ssh -l root 192.168.56.7
The authenticity of host '192.168.56.7 (192.168.56.7)' can't be established.
ECDSA key fingerprint is SHA256:p5z2DKHnUDZcE3RKKo5AbZiVHEe4MPj0qMRug9tAq7M.
```

```
ECDSA key fingerprint is MD5:03:f0:db:ae:0c:0a:5e:47:9b:7e:8c:5b:87:c1:0e:6f.  
Are you sure you want to continue connecting (yes/no)? yes  
Warning: Permanently added '192.168.56.7' (ECDSA) to the list of known hosts.  
root@192.168.56.7's password: fenestros  
Last login: Tue Sep 15 22:19:13 2020  
[root@worker3 ~]# echo "192.168.56.8 worker4.ittraining.loc worker4" >> /etc/hosts  
[root@worker3 ~]# exit  
logout  
Connection to 192.168.56.7 closed.
```

Arrêtez la VM CentOS_7_8 :

```
[root@worker4 ~]# shutdown -h now  
Connection to 192.168.56.8 closed by remote host.  
Connection to 192.168.56.8 closed.
```

LAB #3 - Ajouter l'hôte worker4 au Cluster

Démarrez la VM **CentOS_7_8** :

```
desktop@serverXX:~$ VBoxManage startvm CentOS_7_8 --type headless  
Waiting for VM "CentOS_7_8" to power on...  
VM "CentOS_7_8" has been successfully started.
```

Connectez-vous à la VM en utilisant l'adresse 192.168.56.8 :

```
desktop@serverXX:~$ ssh -l trainee 192.168.56.8  
trainee@192.168.56.8's password:  
Last login: Thu Sep 17 11:12:31 2020 from 192.168.56.1
```

Vérifiez que le service ambari-client est en cours d'exécution :

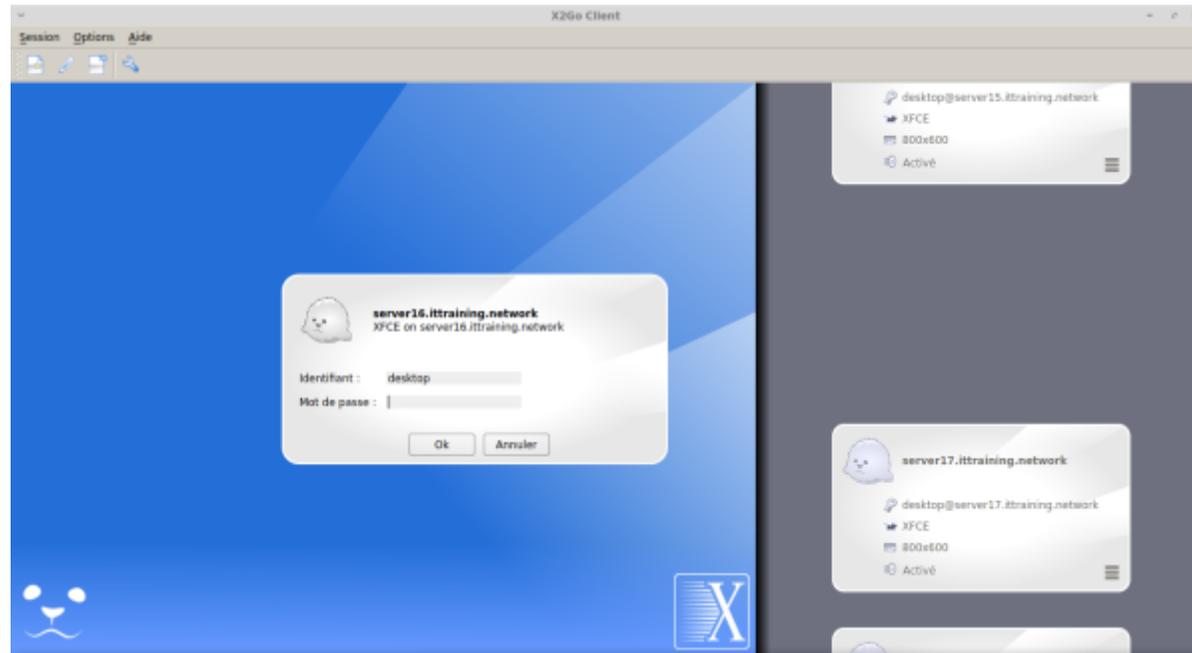
```
[trainee@worker4 ~]$ su -
Password: fenestros
Last login: Thu Sep 17 11:12:36 CEST 2020 on pts/0
[root@worker4 ~]# systemctl status ambari-agent
● ambari-agent.service - LSB: ambari-agent daemon
   Loaded: loaded (/etc/rc.d/init.d/ambari-agent; bad; vendor preset: disabled)
   Active: active (running) since Thu 2020-09-17 11:20:34 CEST; 1min 26s ago
     Docs: man:systemd-sysv-generator(8)
  Process: 873 ExecStart=/etc/rc.d/init.d/ambari-agent start (code=exited, status=0/SUCCESS)
   CGroup: /system.slice/ambari-agent.service
           └─1168 /usr/bin/python /usr/lib/ambari-agent/lib/ambari_agent/AmbariAgent.py start
           └─1172 /usr/bin/python /usr/lib/ambari-agent/lib/ambari_agent/main.py start

Sep 17 11:20:32 worker4.ittraining.loc ambari-agent[873]: Checking ambari-common dir...
Sep 17 11:20:32 worker4.ittraining.loc ambari-agent[873]: Starting ambari-agent
Sep 17 11:20:34 worker4.ittraining.loc ambari-agent[873]: Verifying ambari-agent process status...
Sep 17 11:20:34 worker4.ittraining.loc ambari-agent[873]: tput: No value for $TERM and no -T specified
Sep 17 11:20:34 worker4.ittraining.loc ambari-agent[873]: Ambari Agent successfully started
Sep 17 11:20:34 worker4.ittraining.loc ambari-agent[873]: tput: No value for $TERM and no -T specified
Sep 17 11:20:34 worker4.ittraining.loc ambari-agent[873]: Agent PID at: /run/ambari-agent/ambari-agent.pid
Sep 17 11:20:34 worker4.ittraining.loc ambari-agent[873]: Agent out at: /var/log/ambari-agent/ambari-agent.out
Sep 17 11:20:34 worker4.ittraining.loc ambari-agent[873]: Agent log at: /var/log/ambari-agent/ambari-agent.log
Sep 17 11:20:34 worker4.ittraining.loc systemd[1]: Started LSB: ambari-agent daemon.
```

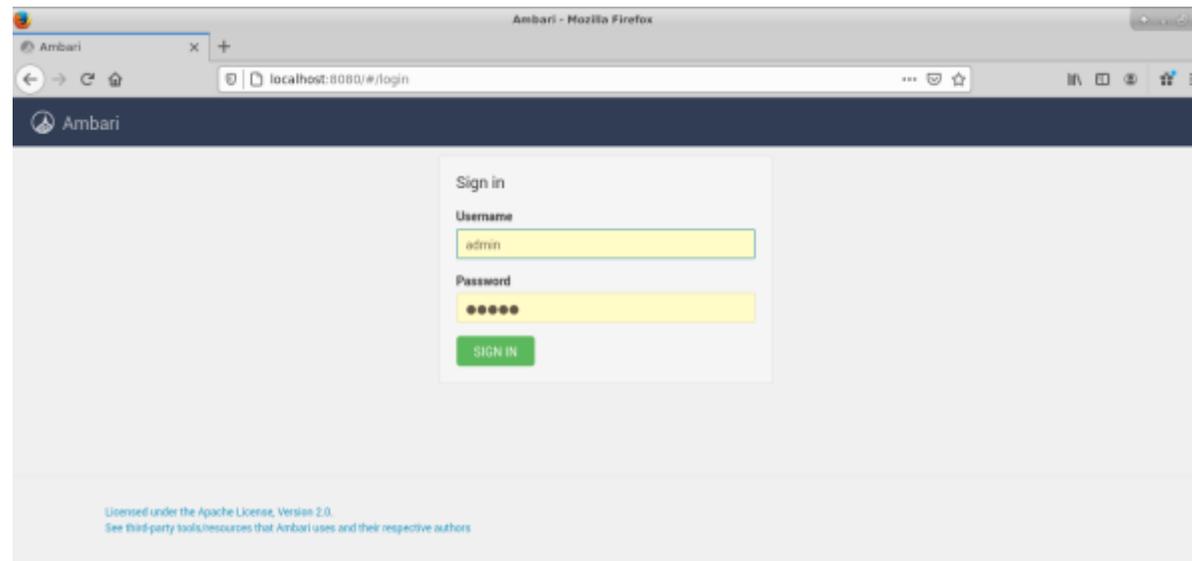
LAB #3 - Ajouter l'hôte worker4 au Cluster

3.1 - Accéder à la Console d'Ambari

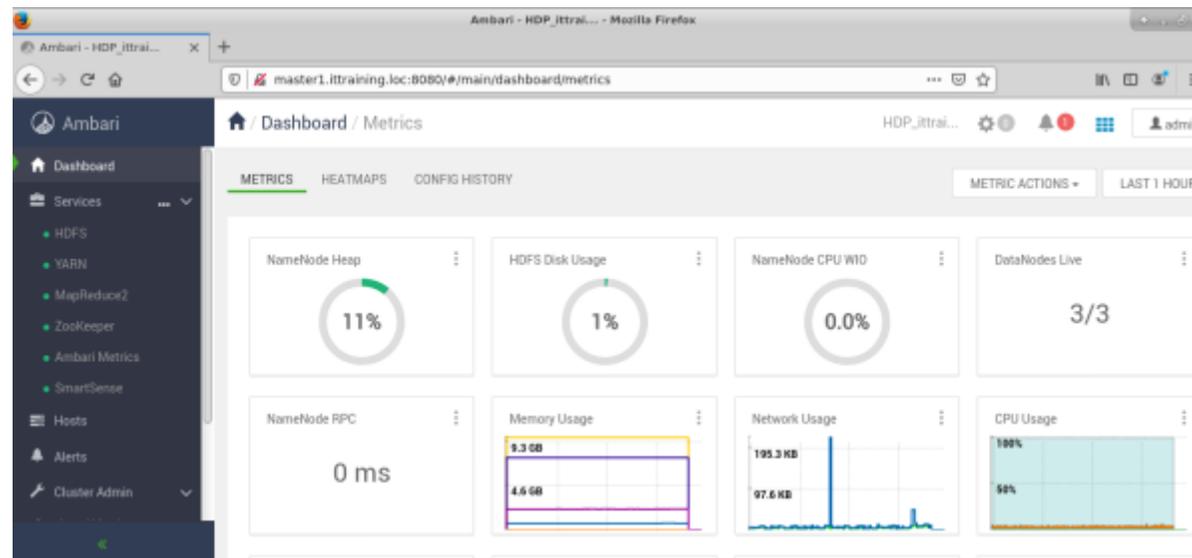
Connectez-vous au serverXX en utilisant le client **X2Go** :



Ouvrez le navigateur Firefox et saisissez l'URL <http://master1.ittraining.loc:8080>. Entrez l'utilisateur **admin** et le mot de passe **admin** et cliquez sur le bouton **SIGN IN** :

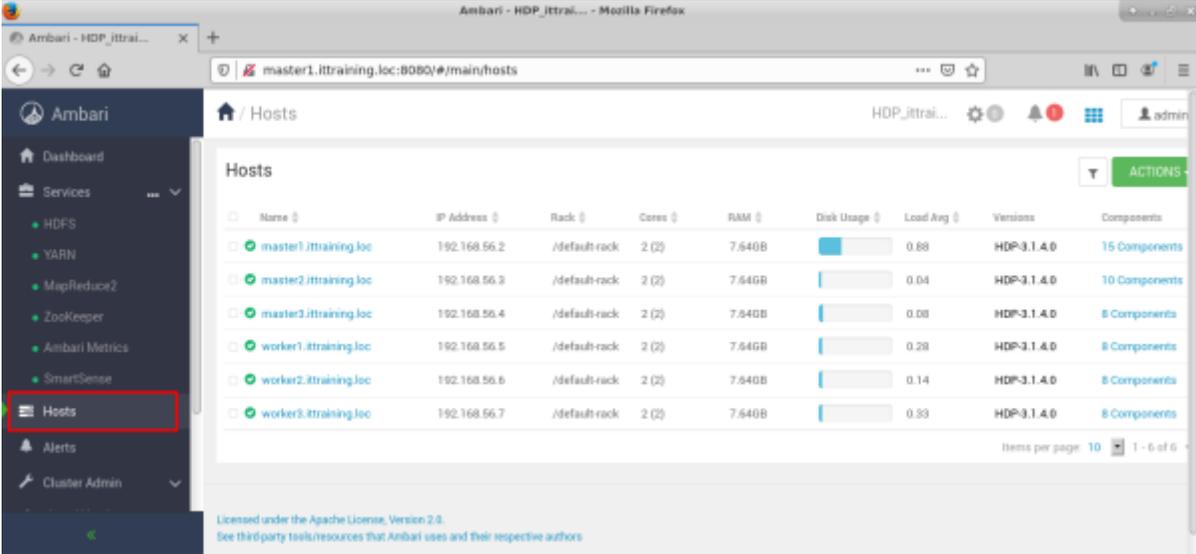


Vous êtes maintenant dans la console d'Ambari :



3.2 - Ajouter l'hôte worker4

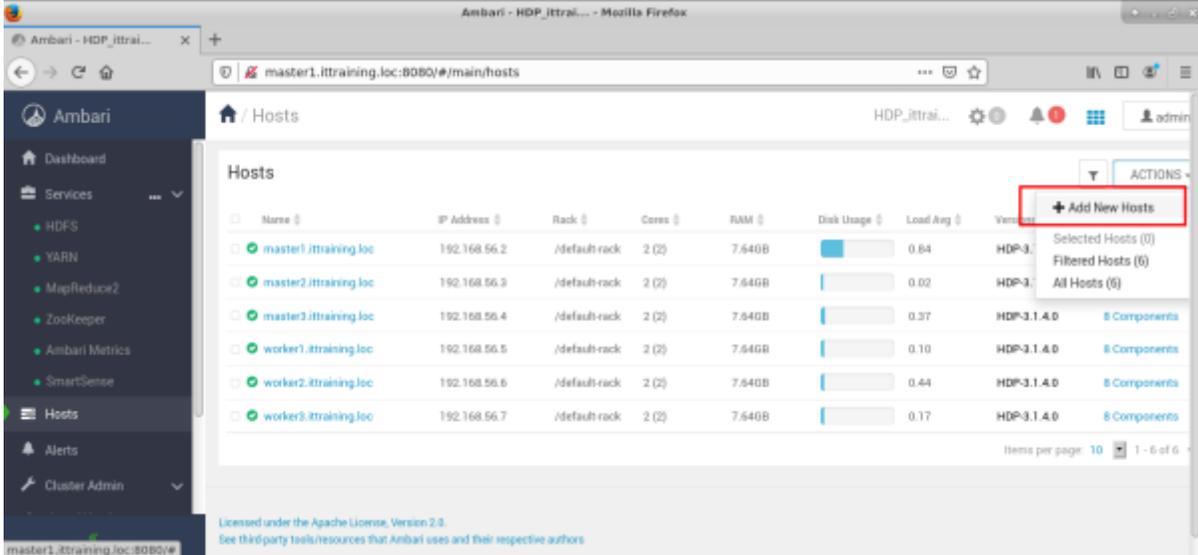
Cliquez sur le lien **Hosts** :



The screenshot shows the Ambari interface for managing hosts. The left sidebar has a red box around the 'Hosts' menu item. The main content area displays a table of hosts with columns for Name, IP Address, Rack, Cores, RAM, Disk Usage, Load Avg, Versions, and Components. A green 'ACTIONS' button is visible in the top right corner of the table area.

Name	IP Address	Rack	Cores	RAM	Disk Usage	Load Avg	Versions	Components
master1.ittraining.loc	192.168.56.2	/default-rack	2 (2)	7.64GB	0.68	0.68	HDP-3.1.4.0	15 Components
master2.ittraining.loc	192.168.56.3	/default-rack	2 (2)	7.64GB	0.04	0.04	HDP-3.1.4.0	10 Components
master3.ittraining.loc	192.168.56.4	/default-rack	2 (2)	7.64GB	0.08	0.08	HDP-3.1.4.0	8 Components
worker1.ittraining.loc	192.168.56.5	/default-rack	2 (2)	7.64GB	0.28	0.28	HDP-3.1.4.0	8 Components
worker2.ittraining.loc	192.168.56.6	/default-rack	2 (2)	7.64GB	0.14	0.14	HDP-3.1.4.0	8 Components
worker3.ittraining.loc	192.168.56.7	/default-rack	2 (2)	7.64GB	0.33	0.33	HDP-3.1.4.0	8 Components

Cliquez sur le bouton **Actions** puis le lien **Add New Hosts** :

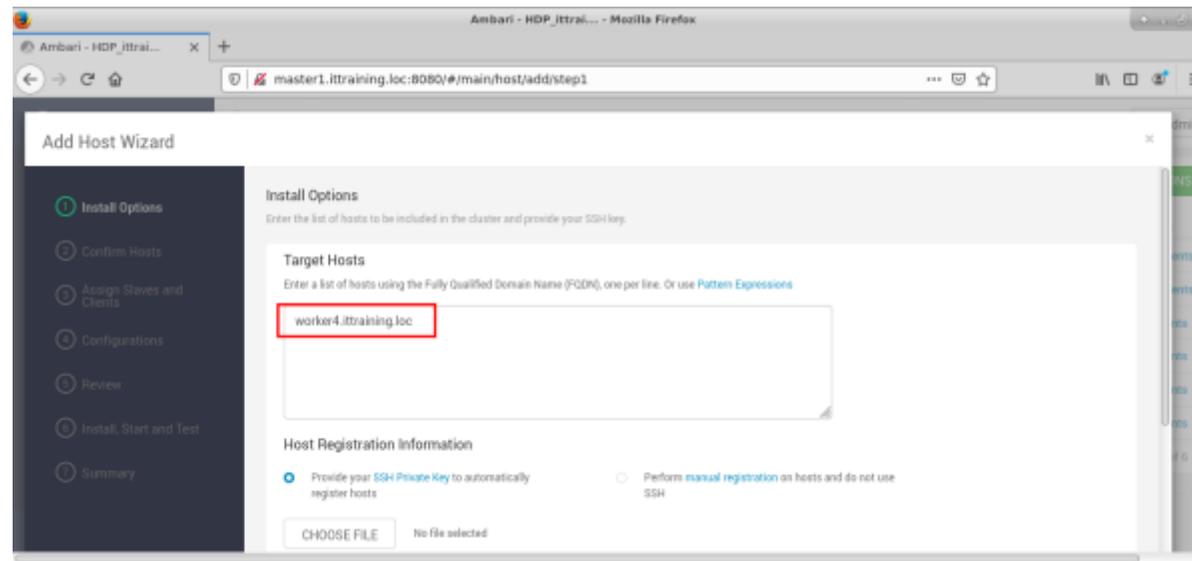


The screenshot shows the Ambari web interface for an HDP cluster. The left sidebar contains navigation options: Dashboard, Services (HDFS, YARN, MapReduce2, ZooKeeper, Ambari Metrics, SmartSense), Hosts, Alerts, and Cluster Admin. The main content area is titled 'Hosts' and displays a table of cluster nodes. A red box highlights the '+ Add New Hosts' button in the top right corner of the table. A dropdown menu is visible below this button, showing 'Selected Hosts (0)', 'Filtered Hosts (0)', and 'All Hosts (6)'. The table lists six hosts with columns for Name, IP Address, Rack, Cores, RAM, Disk Usage, Load Avg, and Version.

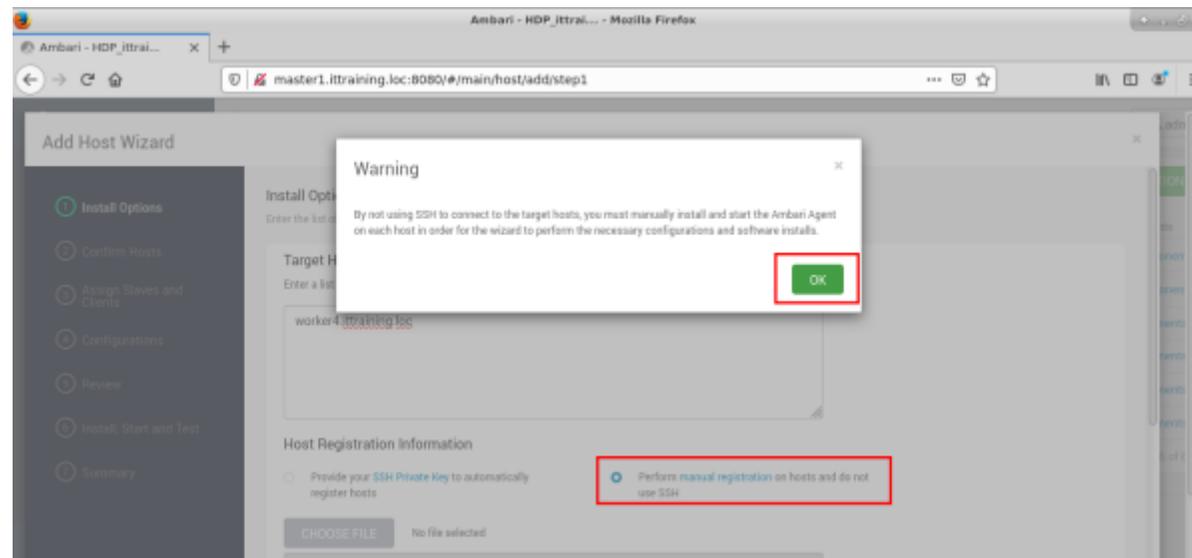
Name	IP Address	Rack	Cores	RAM	Disk Usage	Load Avg	Version
master1.ittraining.loc	192.168.56.2	/default-rack	2 (2)	7.64GB		0.84	HDP-3.1.4.0
master2.ittraining.loc	192.168.56.3	/default-rack	2 (2)	7.64GB		0.02	HDP-3.1.4.0
master3.ittraining.loc	192.168.56.4	/default-rack	2 (2)	7.64GB		0.37	HDP-3.1.4.0
worker1.ittraining.loc	192.168.56.5	/default-rack	2 (2)	7.64GB		0.10	HDP-3.1.4.0
worker2.ittraining.loc	192.168.56.6	/default-rack	2 (2)	7.64GB		0.44	HDP-3.1.4.0
worker3.ittraining.loc	192.168.56.7	/default-rack	2 (2)	7.64GB		0.17	HDP-3.1.4.0

Install Options

Entrez le nom de worker4.ittraining.loc dans l'emplacement prévu :

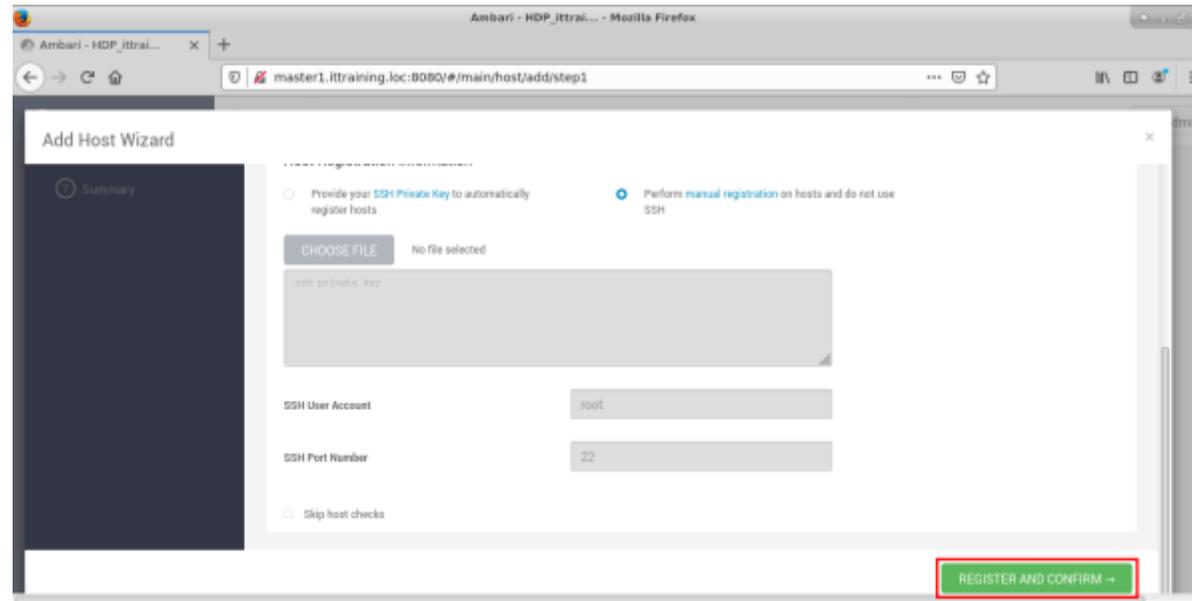


Choisissez l'option **Perform manual registration and do not use SSH** puis cliquez sur le bouton **OK** pour valider la boîte d'avertissement :

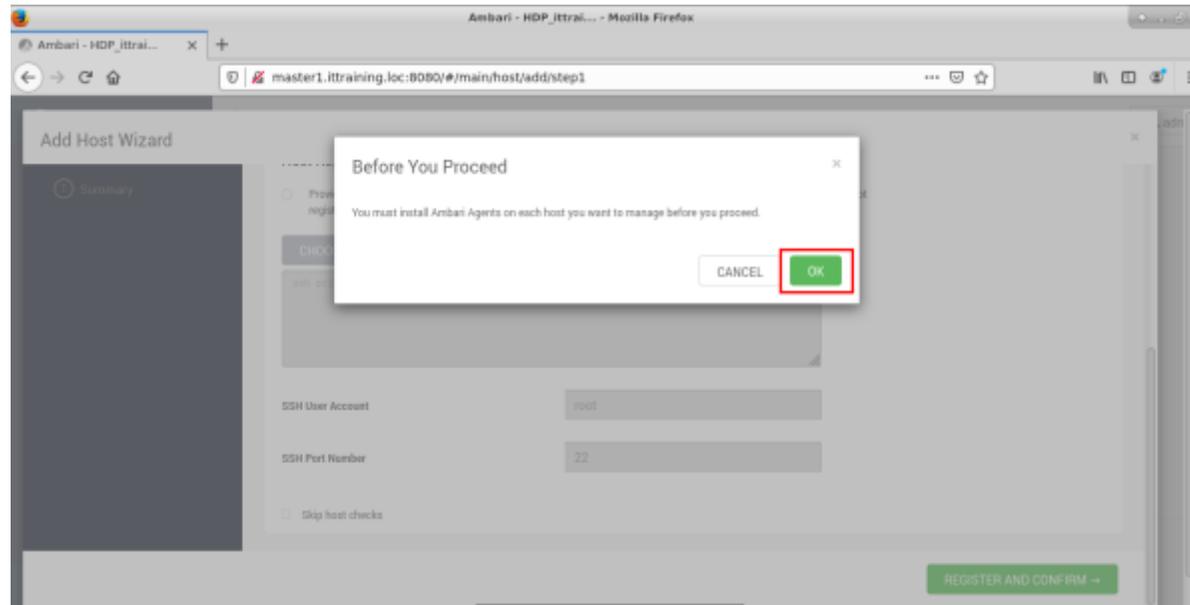


Confirm Hosts

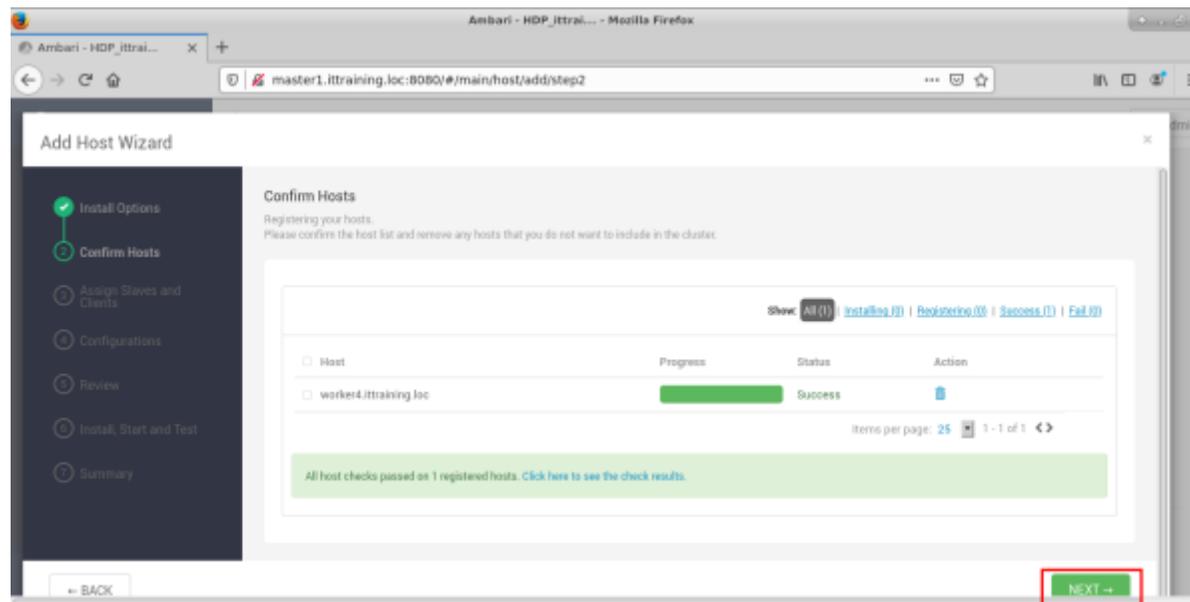
Cliquez sur le bouton **REGISTER AND CONFIRM** :



Cliquez sur le bouton **OK** de la boîte d'avertissement **Before You Proceed** :

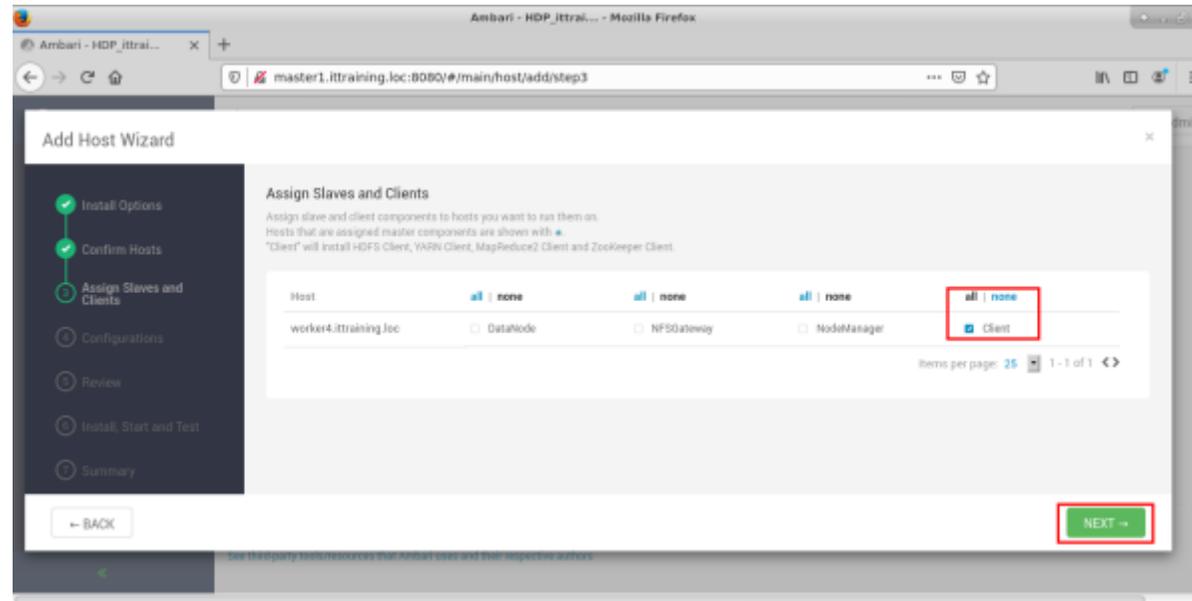


L'assistant initialise le nœud puis vérifie que les pré-requis pour continuer sont satisfaits. Cliquez sur le bouton **NEXT** :



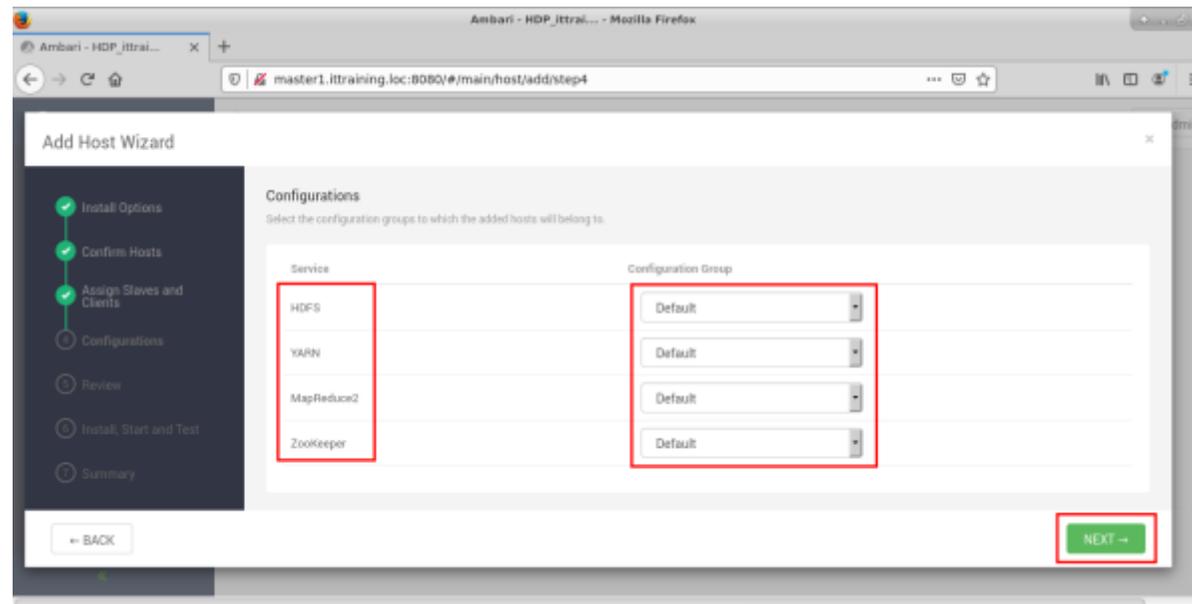
Assign Slaves and Clients

L'assistant vous propose maintenant d'assigner des composants à l'hôte. Cochez **Client** pour l'hôte puis cliquez sur le bouton **NEXT** :



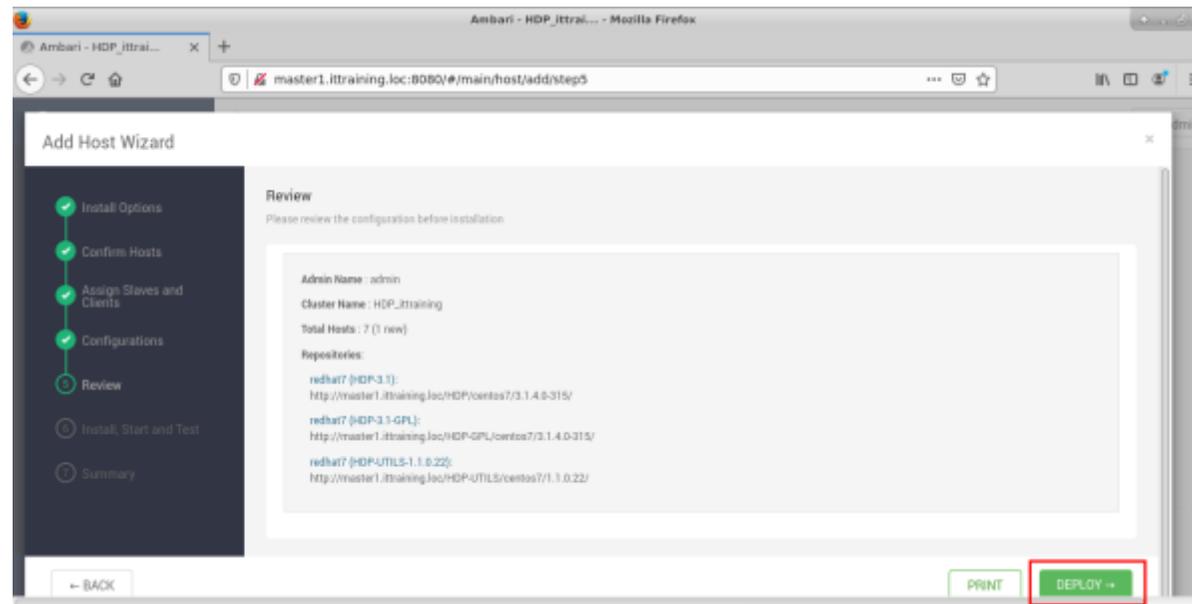
Configurations

L'assistant vous demande de sélectionner les groupes de configurations auxquels l'hôte va être rattaché. Cliquez simplement sur le bouton **NEXT** :



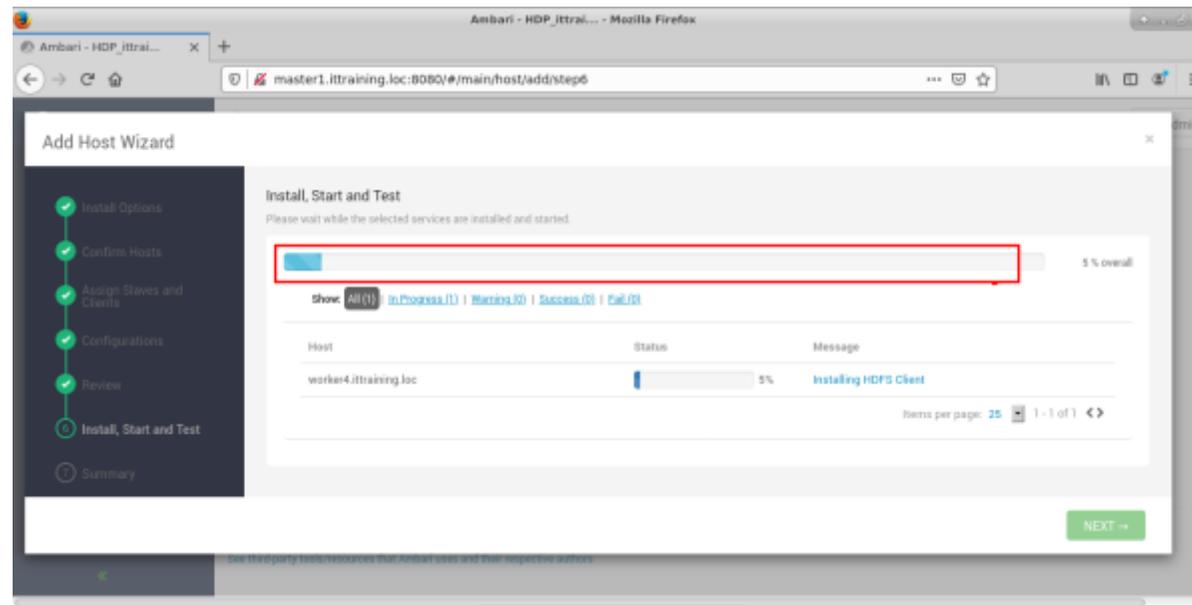
Review

L'assistant vous propose maintenant un résumé de vos choix. Cliquez sur le bouton **DEPLOY** :

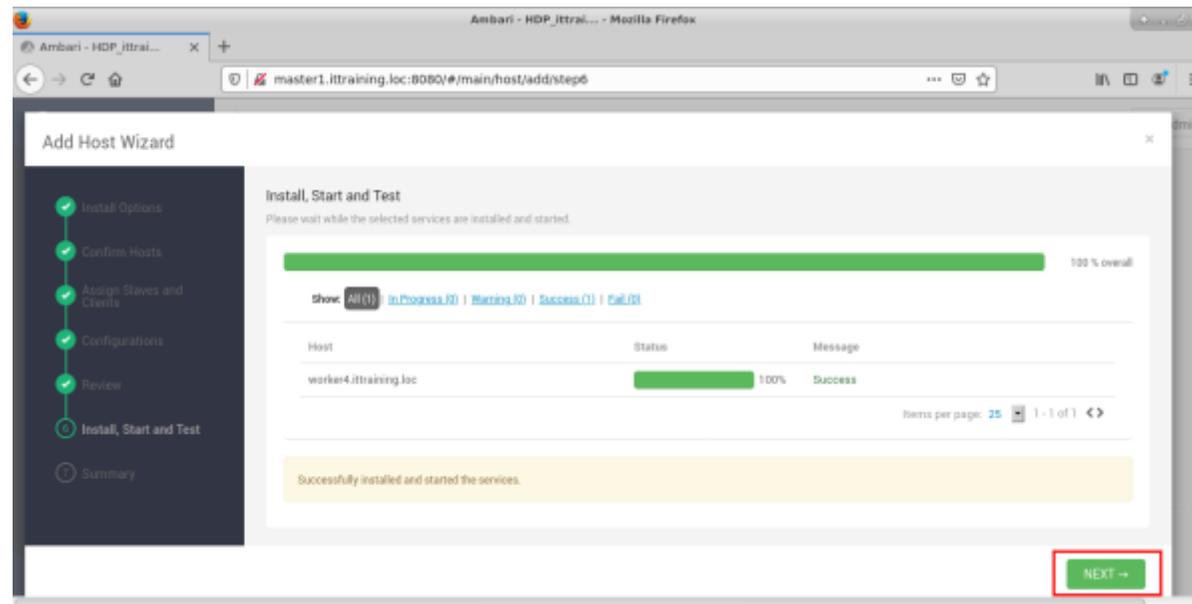


Install, Start and Test

Le déploiement peut prendre jusqu'à 10 minutes :

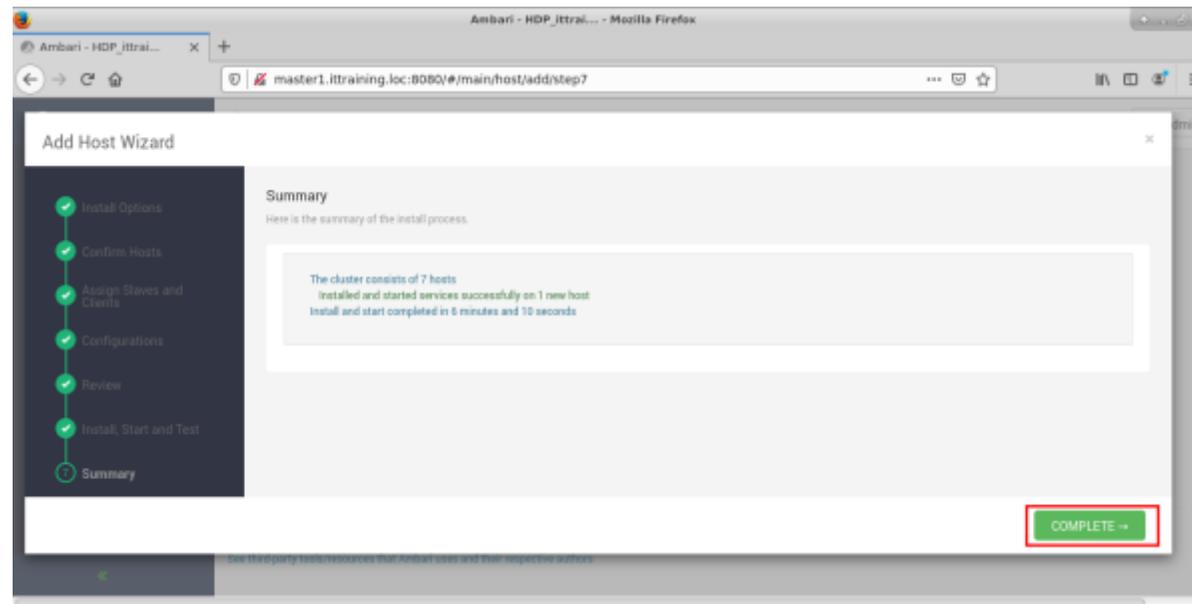


A l'issu du déploiement, un résumé de la situation vous informe d'éventuelles erreurs. Dans le cas où il n'y ait pas d'erreurs, cliquez sur le bouton **NEXT** :

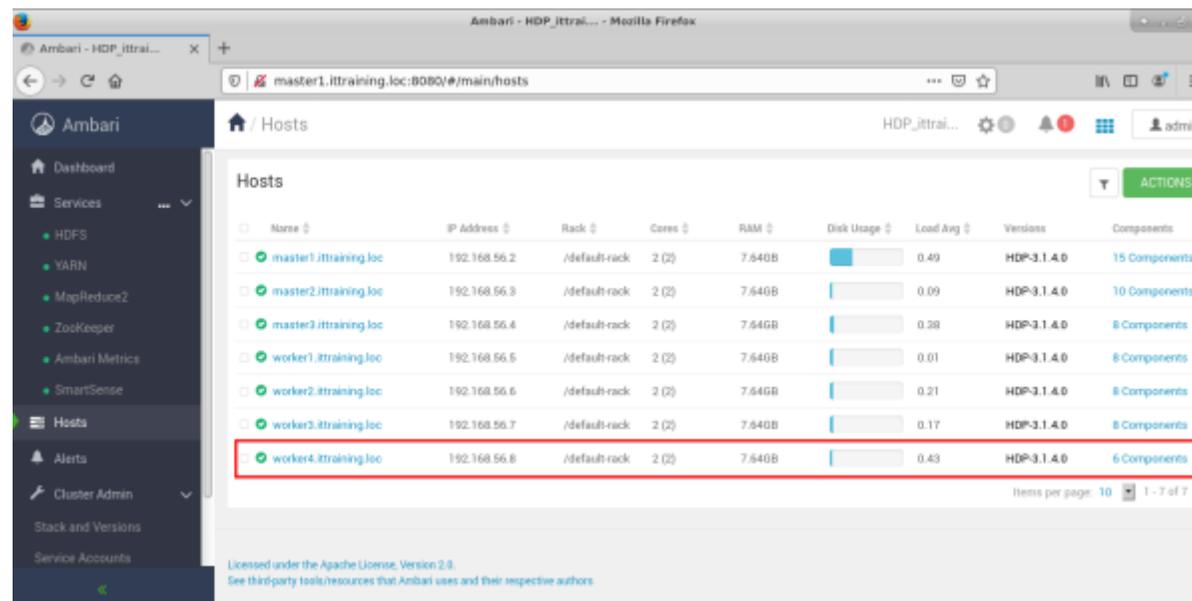


Summary

L'assistant vous propose maintenant un sommaire. Cliquez sur le bouton **COMPLETE** :



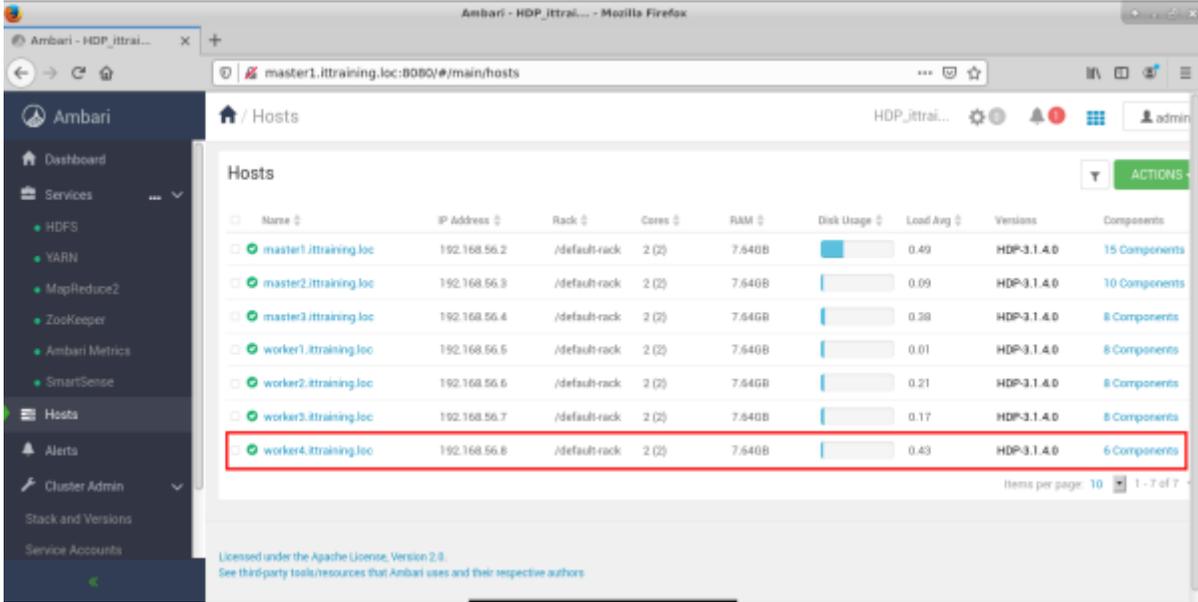
Vous arrivez sur la liste des hôtes dans la console de gestion :



LAB #4 - Ajouter les Services DataNode et NodeManager au worker4

4.1 - Le Service DataNode

Cliquez sur le lien **worker4.ittraining.loc** :



The screenshot shows the Ambari interface in a browser window. The page title is "Ambari - HDP_itrai... - Mozilla Firefox". The address bar shows "master1.ittraining.loc:8080/#/main/hosts". The page content is titled "Hosts" and displays a table of hosts. The table has columns for Name, IP Address, Rack, Cores, RAM, Disk Usage, Load Avg, Versions, and Components. The host "worker4.ittraining.loc" is highlighted with a red box. Below the table, there is a license notice: "Licensed under the Apache License, Version 2.0. See third-party tools/resources that Ambari uses and their respective authors."

Name	IP Address	Rack	Cores	RAM	Disk Usage	Load Avg	Versions	Components
master1.ittraining.loc	192.168.56.2	/default-rack	2 (2)	7.640B	0.49	0.49	HDP-3.1.4.0	15 Components
master2.ittraining.loc	192.168.56.3	/default-rack	2 (2)	7.640B	0.09	0.09	HDP-3.1.4.0	10 Components
master3.ittraining.loc	192.168.56.4	/default-rack	2 (2)	7.640B	0.38	0.38	HDP-3.1.4.0	8 Components
worker1.ittraining.loc	192.168.56.5	/default-rack	2 (2)	7.640B	0.01	0.01	HDP-3.1.4.0	8 Components
worker2.ittraining.loc	192.168.56.6	/default-rack	2 (2)	7.640B	0.21	0.21	HDP-3.1.4.0	8 Components
worker3.ittraining.loc	192.168.56.7	/default-rack	2 (2)	7.640B	0.17	0.17	HDP-3.1.4.0	8 Components
worker4.ittraining.loc	192.168.56.8	/default-rack	2 (2)	7.640B	0.43	0.43	HDP-3.1.4.0	6 Components

Cliquez sur le bouton **ADD** et choisissez **DataNode** dans la liste proposée :

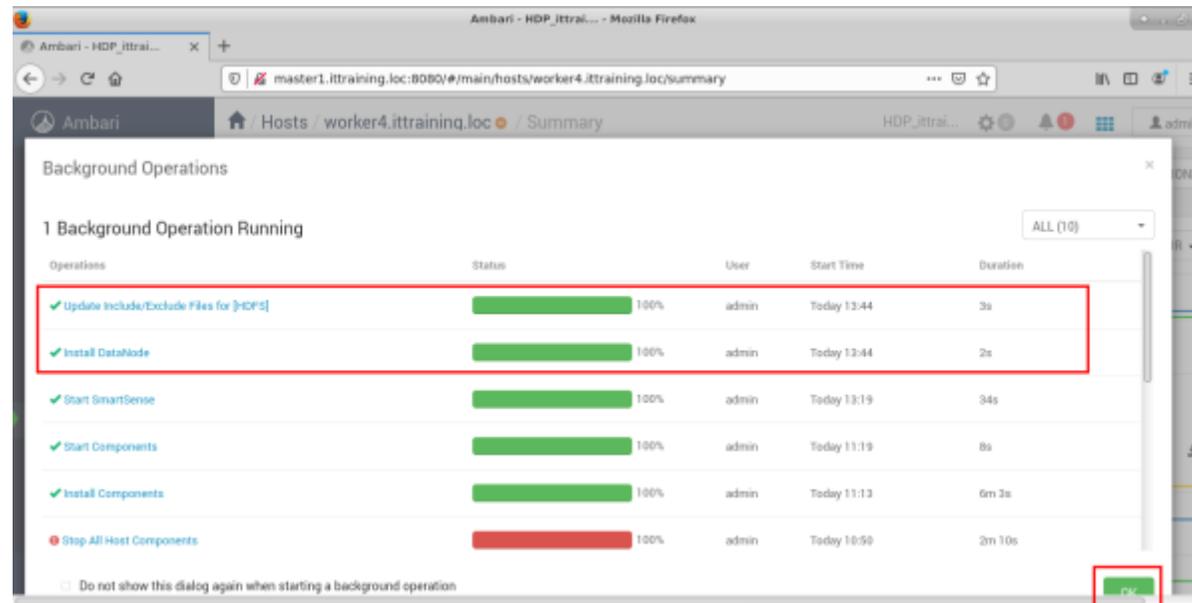
The screenshot shows the Ambari interface for a host named 'worker4.ittraining.loc'. The 'Components' section is active, and a red box highlights the '+ ADD' button. A dropdown menu is open, listing the following services: DataNode, NFSGateway, NodeManager, Timeline Service V2.0 Reader, ZooKeeper Server, Metrics Collector, Activity Analyzer, and Activity Explorer. The 'DataNode' service is selected. The background shows a table of components and host metrics graphs.

Status	Name	Type	Action
✓	HST Agent / SmartSense	Slave	...
✓	Metrics Monitor / Ambari Metrics	Slave	...
✓	HDFS Client / HDFS	Client	...
✓	MapReduce2 Client / MapReduce2	Client	...
✓	YARN Client / YARN	Client	...
✓	ZooKeeper Client / ZooKeeper	Client	...

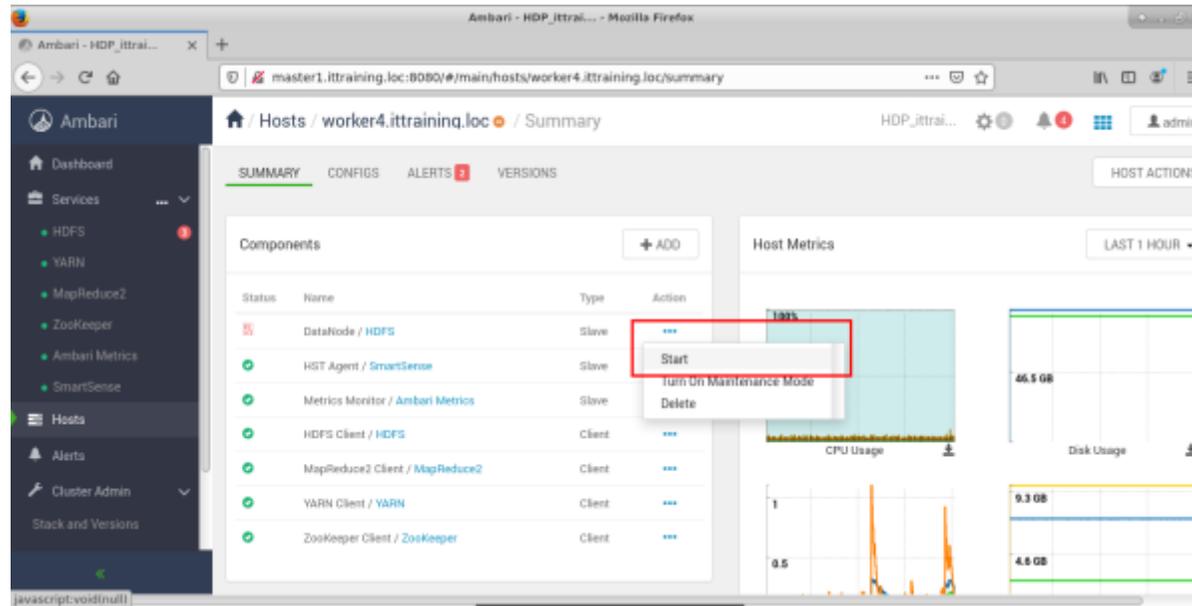
Dans la boîte de dialogue qui apparaît, cliquez sur le bouton **CONFIRM ADD** :

The screenshot shows the Ambari interface with a 'Confirmation' dialog box open. The dialog asks 'Are you sure you want to add DataNode?' and has two buttons: 'CANCEL' and 'CONFIRM ADD'. The 'CONFIRM ADD' button is highlighted with a red box.

Attendez que le service ait été ajouté et cliquez sur le bouton **OK** :



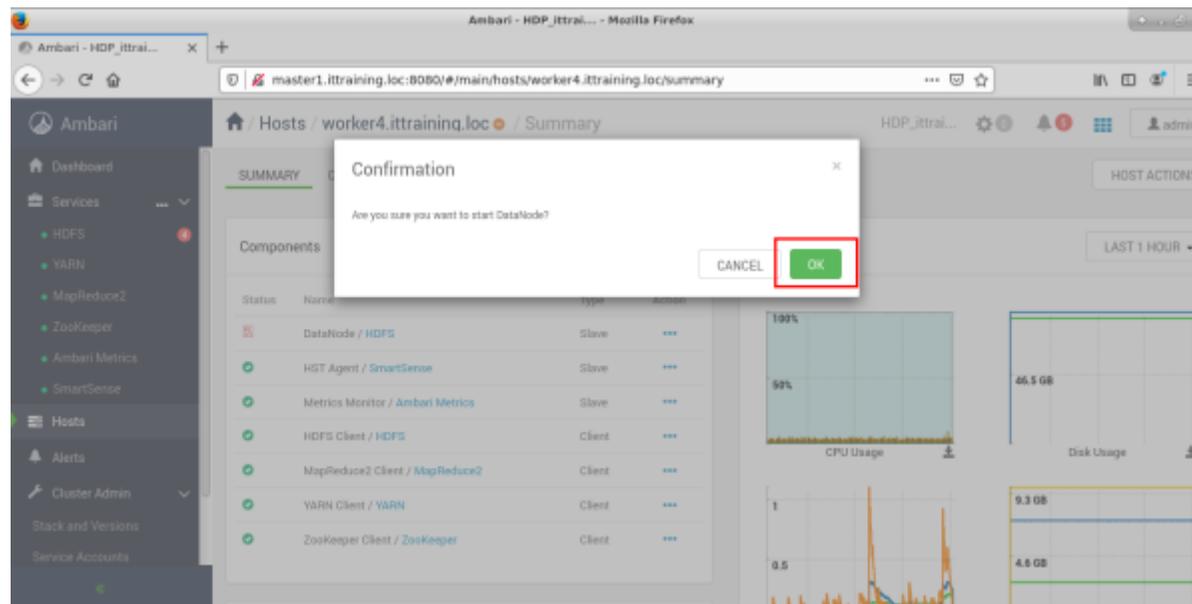
Pour démarrer le service, cliquez sur les trois points horizontaux puis sur **Start** de la ligne du service **DataNode** :



The screenshot shows the Ambari interface for a host named worker4.ittraining.loc. The 'Components' table lists several services, with 'DataNode / HDFS' in a failed state (red icon). A context menu is open over this component, showing options: Start, Turn On Maintenance Mode, and Delete. The 'Start' option is highlighted with a red box.

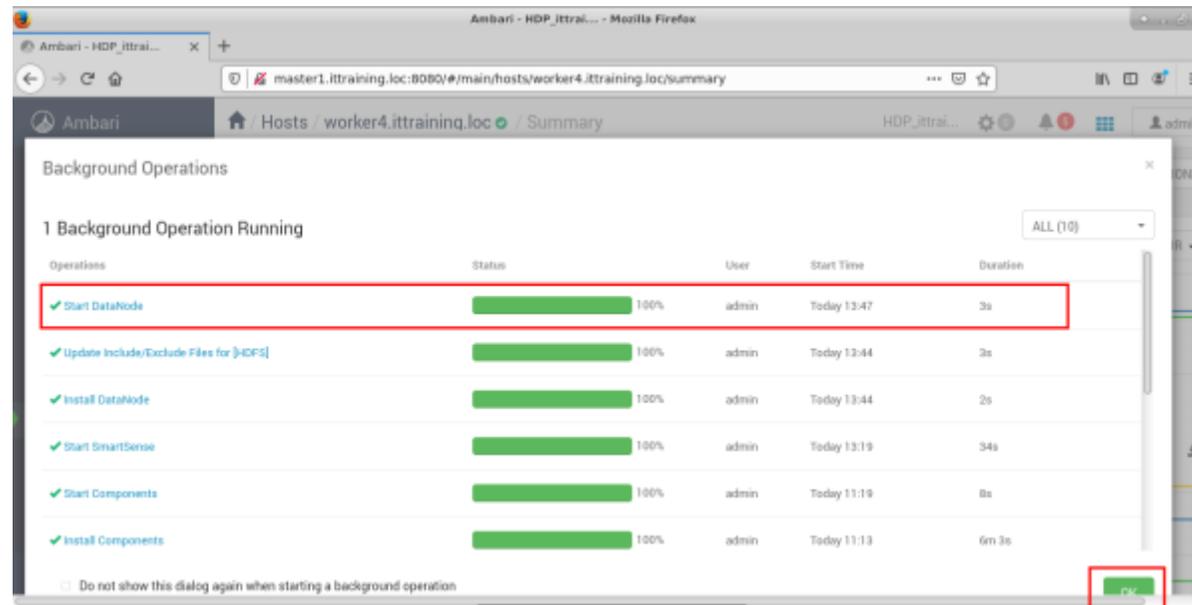
Status	Name	Type	Action
Failed	DataNode / HDFS	Slave	Start
Running	HST Agent / SmartSense	Slave	Start
Running	Metrics Monitor / Ambari Metrics	Slave	Start
Running	HDFS Client / HDFS	Client	Start
Running	MapReduce2 Client / MapReduce2	Client	Start
Running	YARN Client / YARN	Client	Start
Running	ZooKeeper Client / ZooKeeper	Client	Start

Cliquez sur le bouton **OK** dans la boîte de dialogue de confirmation :

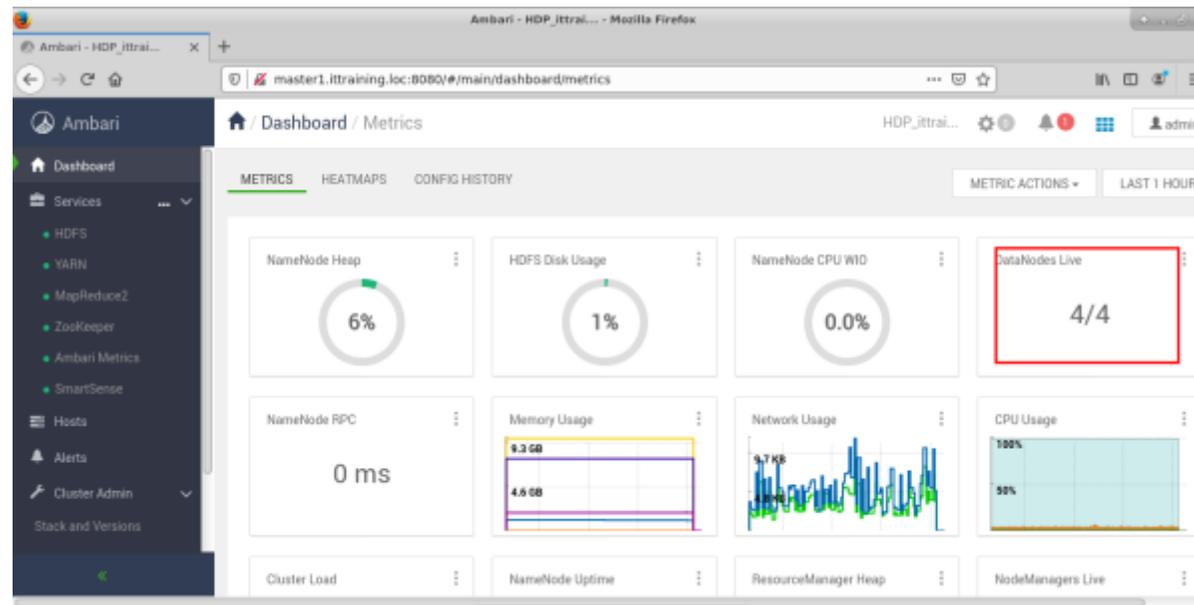


The screenshot shows the same Ambari interface as above, but with a 'Confirmation' dialog box overlaid. The dialog asks 'Are you sure you want to start DataNode?' and has two buttons: 'CANCEL' and 'OK'. The 'OK' button is highlighted with a red box.

Attendez que le service ait été démarré puis cliquez sur le bouton **OK** :

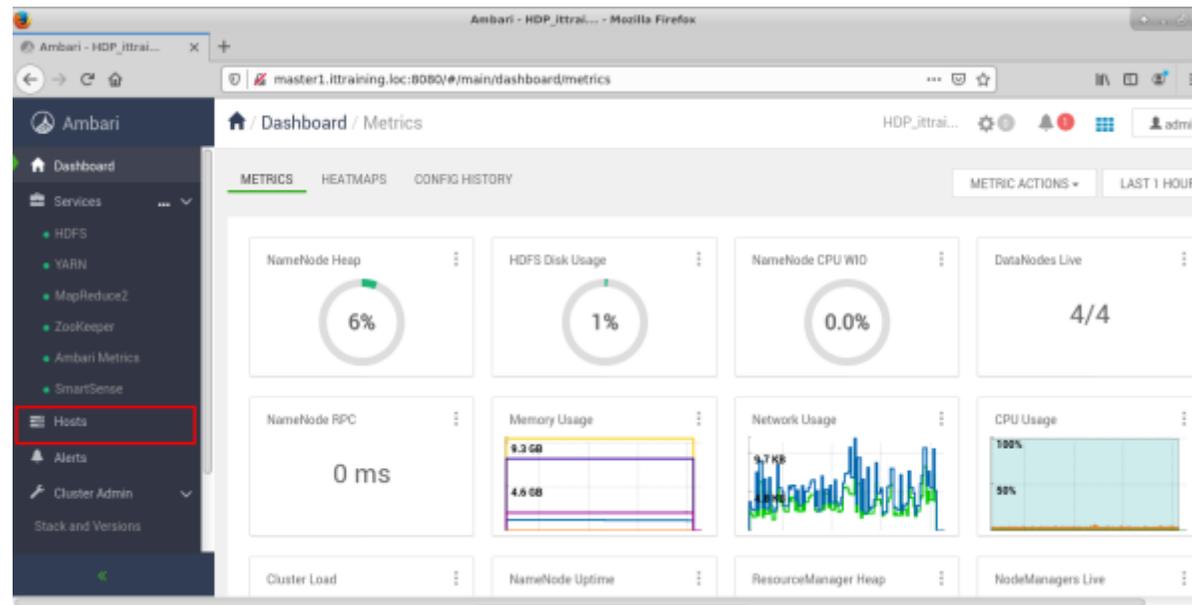


Retournez au **Dashboard** et notez que le nombre de **DataNodes Live** est passé à **4** :



4.2 - Le Service Node Manager

Cliquez sur le lien **Hosts** :

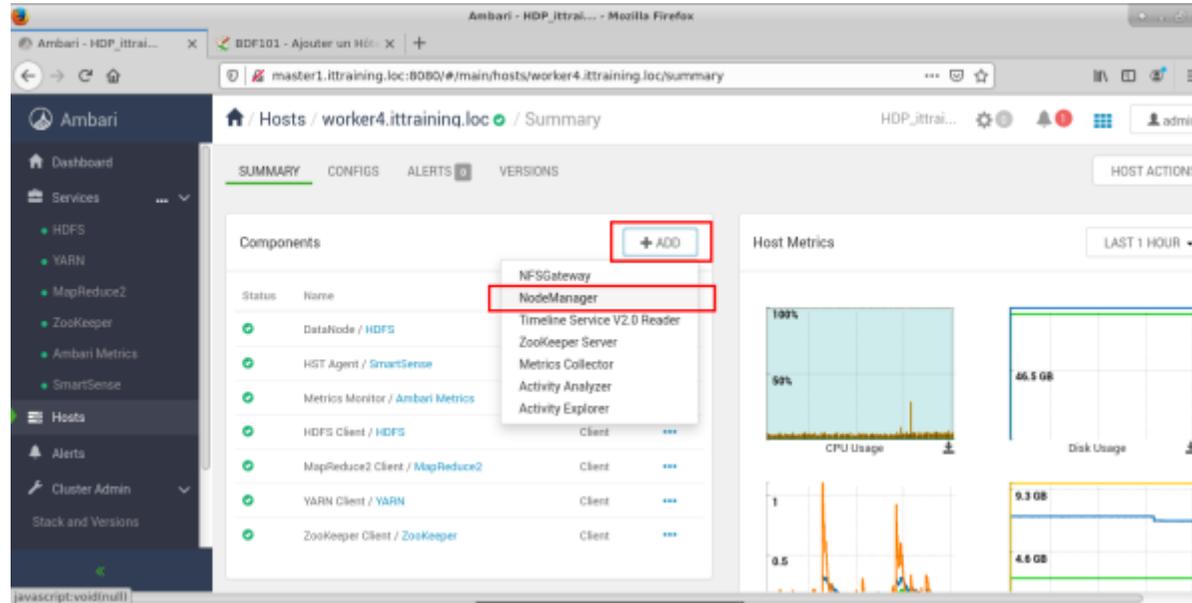


Cliquez sur le lien **worker4.ittraining.loc** :

The screenshot shows the Ambari Hosts page. The table below lists the hosts in the cluster:

Name	IP Address	Rack	Cores	RAM	Disk Usage	Load Avg	Versions	Components
master1.ittraining.loc	192.168.56.2	/default-rack	2 (2)	7.64GB		2.21	HDP-3.1.4.0	15 Components
master2.ittraining.loc	192.168.56.3	/default-rack	2 (2)	7.64GB		0.93	HDP-3.1.4.0	10 Components
master3.ittraining.loc	192.168.56.4	/default-rack	2 (2)	7.64GB		0.18	HDP-3.1.4.0	8 Components
worker1.ittraining.loc	192.168.56.5	/default-rack	2 (2)	7.64GB		0.12	HDP-3.1.4.0	8 Components
worker2.ittraining.loc	192.168.56.6	/default-rack	2 (2)	7.64GB		0.06	HDP-3.1.4.0	8 Components
worker3.ittraining.loc	192.168.56.7	/default-rack	2 (2)	7.64GB		0.02	HDP-3.1.4.0	8 Components
worker4.ittraining.loc	192.168.56.8	/default-rack	2 (2)	7.64GB		0.03	HDP-3.1.4.0	7 Components

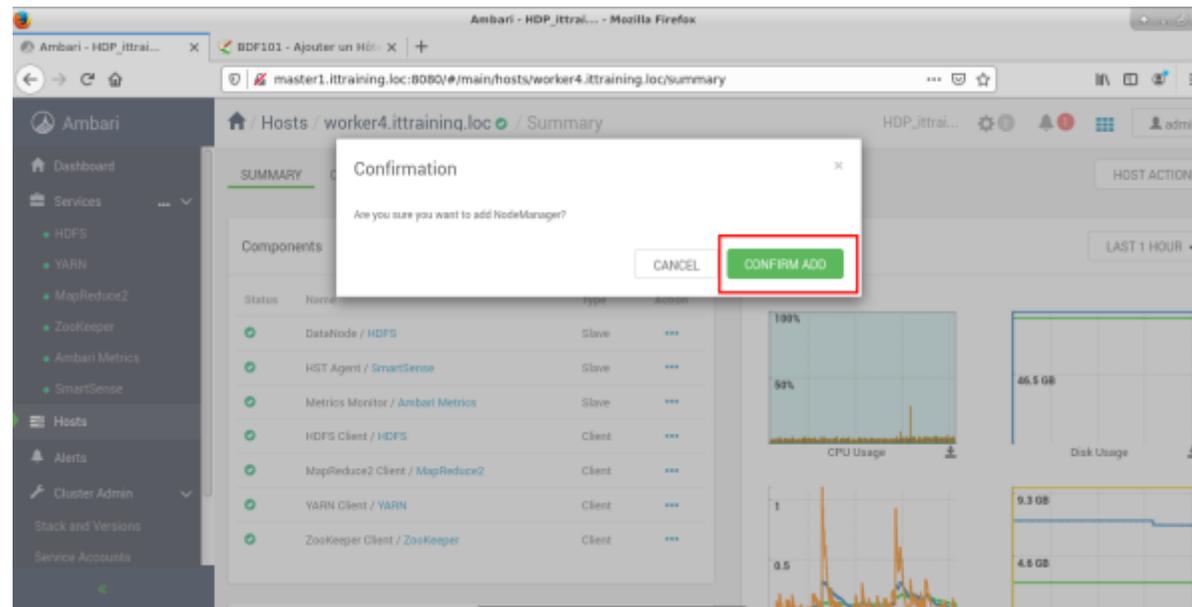
Cliquez sur le bouton **ADD** et choisissez **NodeManager** dans la liste proposée :



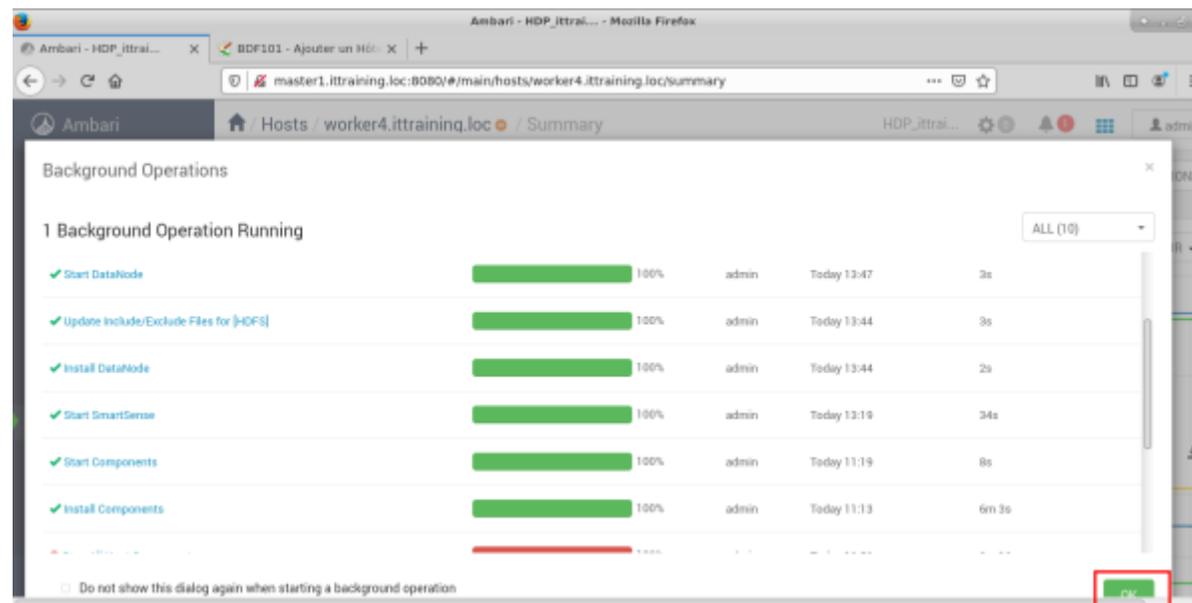
The screenshot displays the Ambari web interface for a host named 'worker4.ittraining.loc'. The 'Components' table lists various services and their status. The '+ ADD' button is highlighted with a red box, and a dropdown menu is open, showing 'NodeManager' selected and highlighted with a red box. The 'Host Metrics' section shows CPU Usage and Disk Usage graphs.

Status	Name	Client
✓	DataNode / HDFS	Client
✓	HST Agent / SmartSense	
✓	Metrics Monitor / Ambari Metrics	
✓	HDFS Client / HDFS	Client
✓	MapReduce2 Client / MapReduce2	Client
✓	YARN Client / YARN	Client
✓	ZooKeeper Client / ZooKeeper	Client

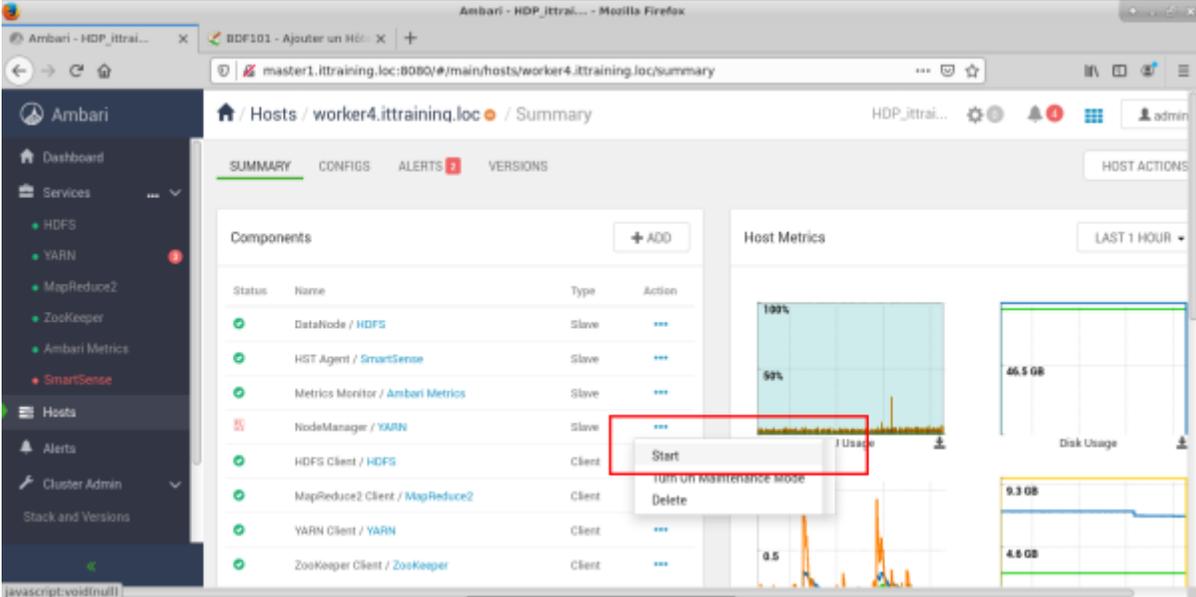
Dans la boîte de dialogue qui apparaît, cliquez sur le bouton **CONFIRM ADD** :



Attendez que le service ait été ajouté et cliquez sur le bouton **OK** :



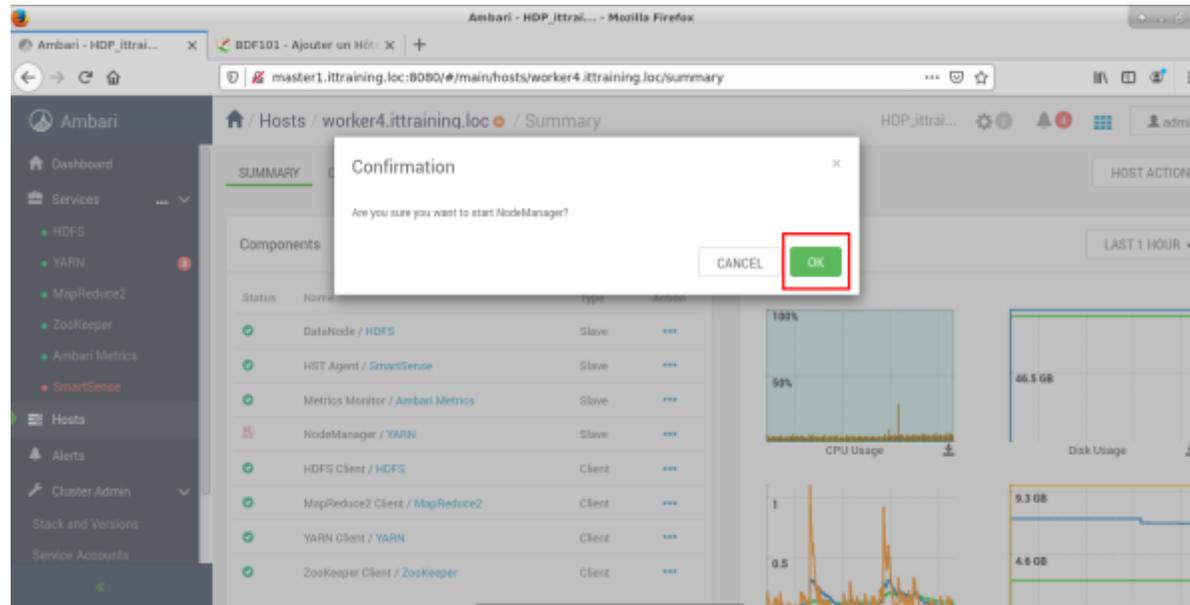
Pour démarrer le service, cliquez sur les trois points horizontaux puis sur **Start** de la ligne du service **NodeManager** :



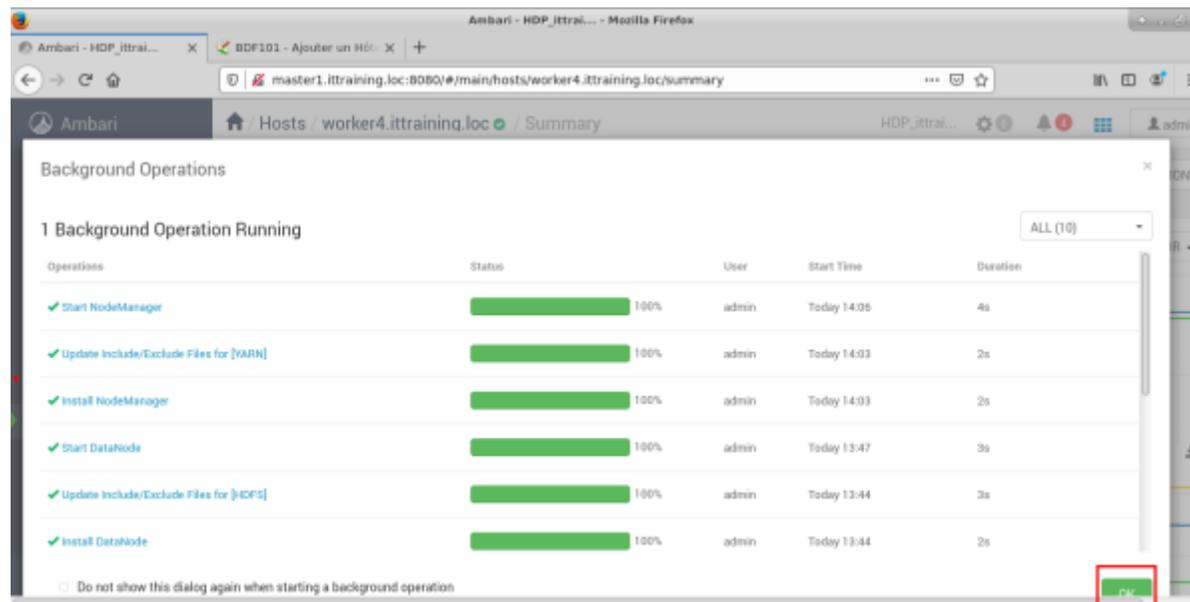
The screenshot shows the Ambari web interface for a host named worker4.ittraining.loc. The 'Components' table lists several services, with 'NodeManager / YARN' highlighted in red. A context menu is open over the 'NodeManager / YARN' row, showing the 'Start' button. The 'Host Metrics' section displays various charts, including CPU usage (100%), Disk Usage (46.5 GB), and Memory Usage (9.3 GB).

Status	Name	Type	Action
✓	DataNode / HDFS	Slave	...
✓	HST Agent / SmartSense	Slave	...
✓	Metrics Monitor / Ambari Metrics	Slave	...
✗	NodeManager / YARN	Slave	... Start
✓	HDFS Client / HDFS	Client	...
✓	MapReduce2 Client / MapReduce2	Client	...
✓	YARN Client / YARN	Client	...
✓	ZooKeeper Client / ZooKeeper	Client	...

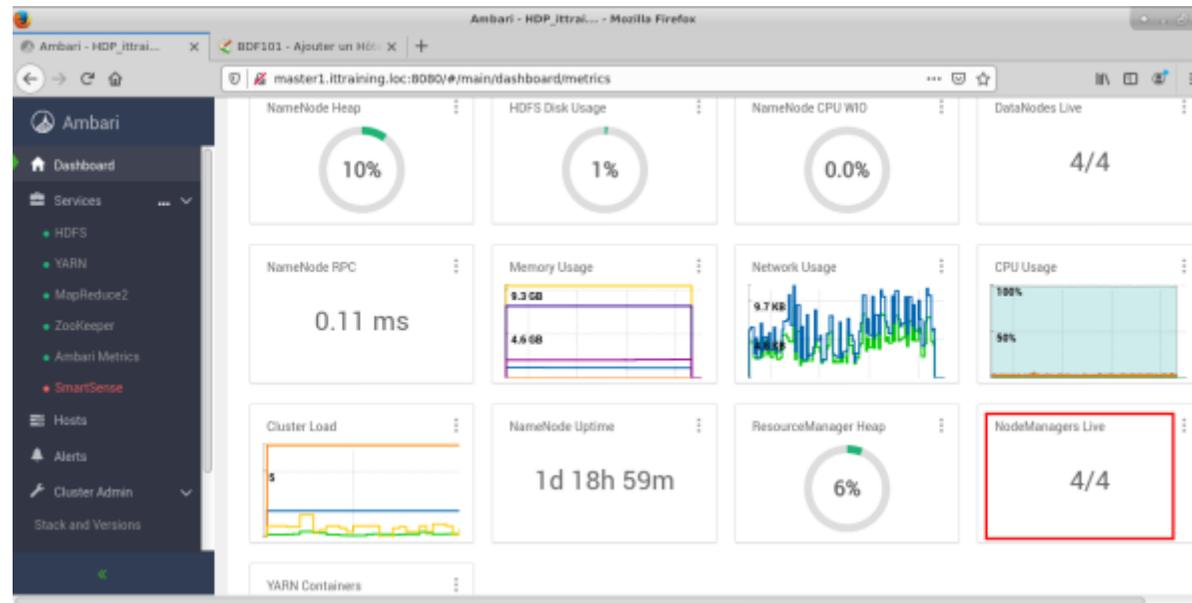
Cliquez sur le bouton **OK** dans la boîte de dialogue de confirmation :



Attendez que le service ait été démarré puis cliquez sur le bouton **OK** :



Retournez au **Dashboard** et notez que le nombre de **NodeManagers Live** est passé à **4** :



<html>

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</html>