

## Comprehensive VMware vCloud director Installation Guide V1.0

This white paper is the version-1 of vCloud Director Installation and configuration Guide. What ever the changes that happen in future will be updated to this.

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### Components Used for vCloud director setup.

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- Windows Server 2003 Enterprise x64
- Red Hat Enterprise Linux 5 x86\_64
- VMware Workstation 6.5
- Oracle 10.2.0.1
- VMware vCloud Director
- vShield Manager
- VMware Virtual Center
- Openfiler
- ESX 4.1

### Reference documents

~~~~~

vcd\_10\_install\_guide  
vcd\_10\_admin\_guide

## Installing Oracle 10g Enterprise Edition Release 2 (10.2.0.1.0) software on Windows 2003 Enterprise x64.

I:\Ora10g\51031678\NT\AMD64\database\setup.exe (Use this)

I:\Ora10g\51031678\NT\I386\database\setup.exe (32 Bit Version)

**Oracle Database 10g Installation - Installation Method**

### Select Installation Method

**Basic Installation**  
Perform full Oracle Database 10g installation with standard configuration options requiring minimal input. This option uses file system for storage, and a single password for all database accounts.

Oracle Home Location:

Installation Type:

Create Starter Database (additional 720MB)

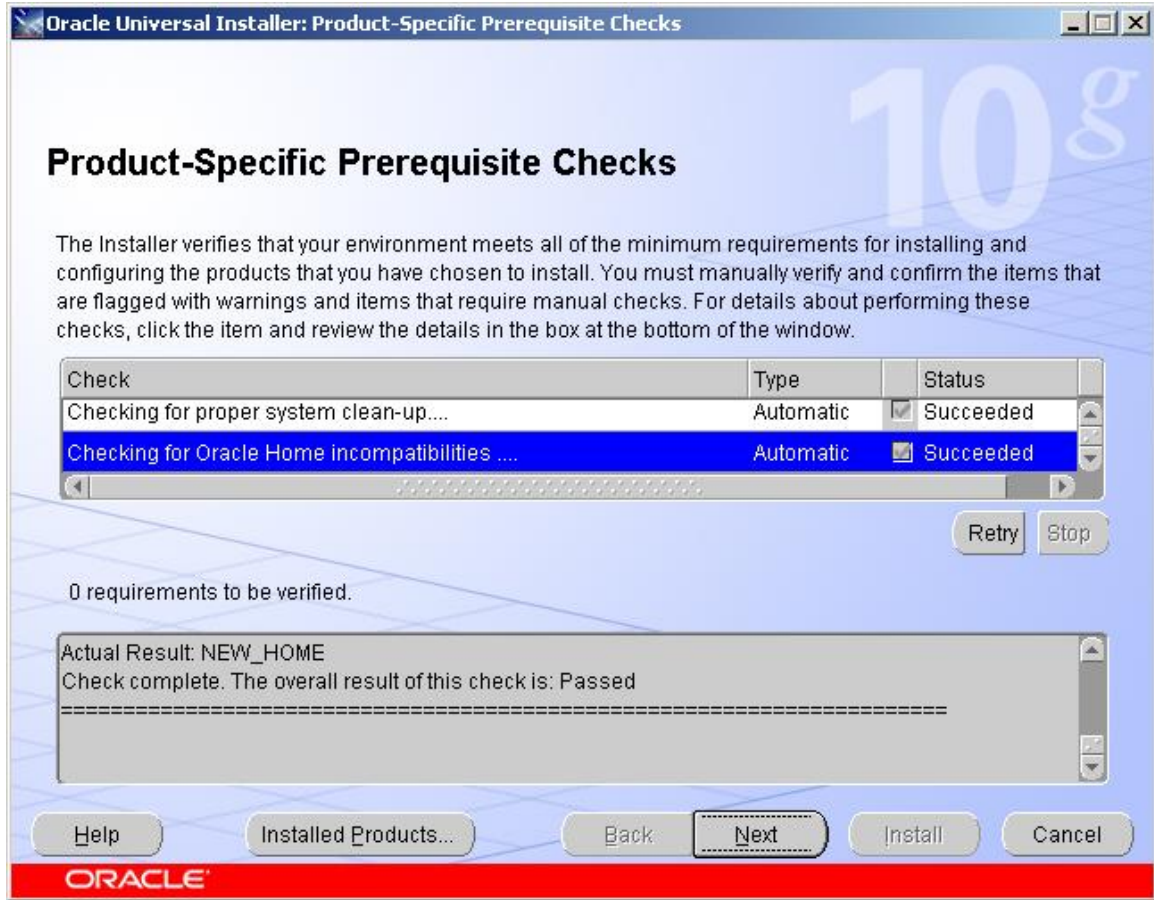
Global Database Name:

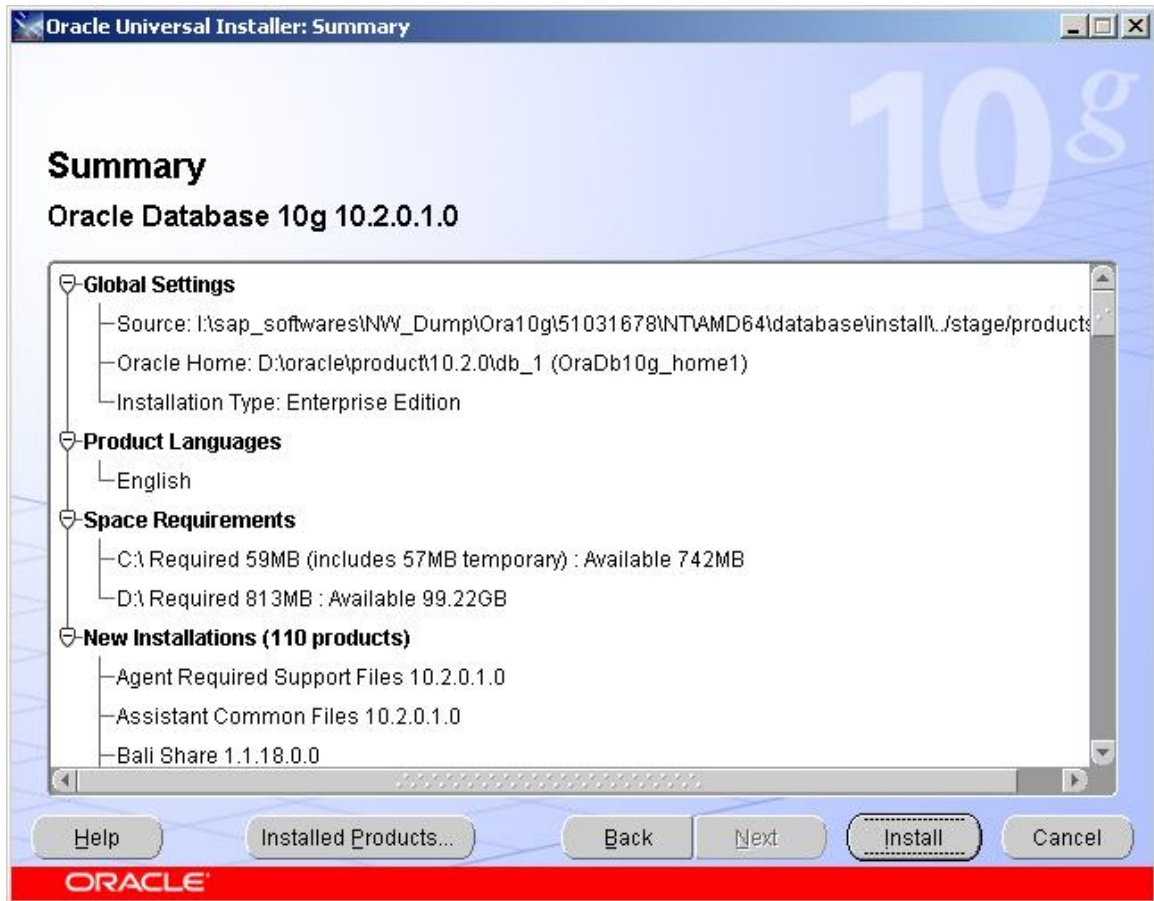
Database Password:  Confirm Password:

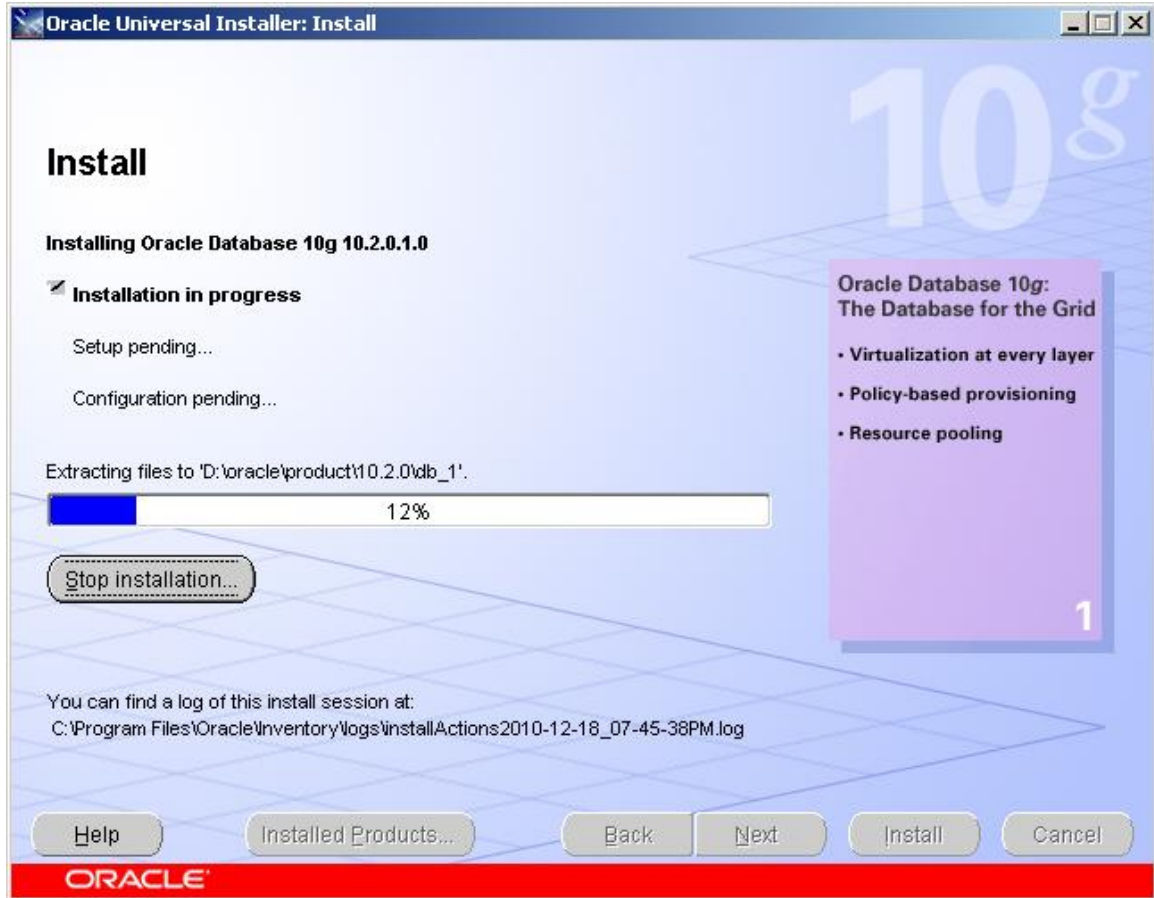
This password is used for the SYS, SYSTEM, SYSMAN, and DBSNMP accounts.

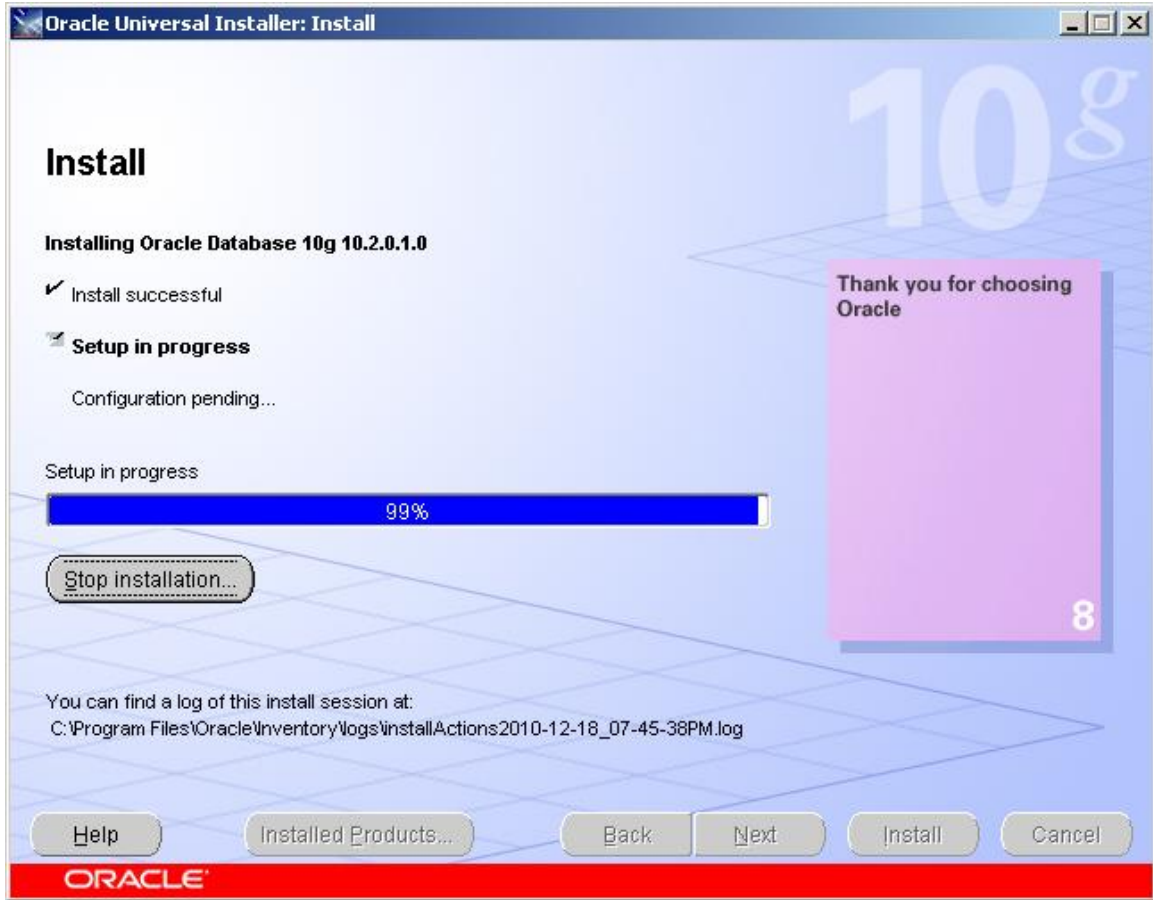
**Advanced Installation**  
Allows advanced selections such as different passwords for the SYS, SYSTEM, SYSMAN, and DBSNMP accounts, database character set, product languages, automated backups, custom installation, and alternative storage options such as Automatic Storage Management.

**ORACLE**



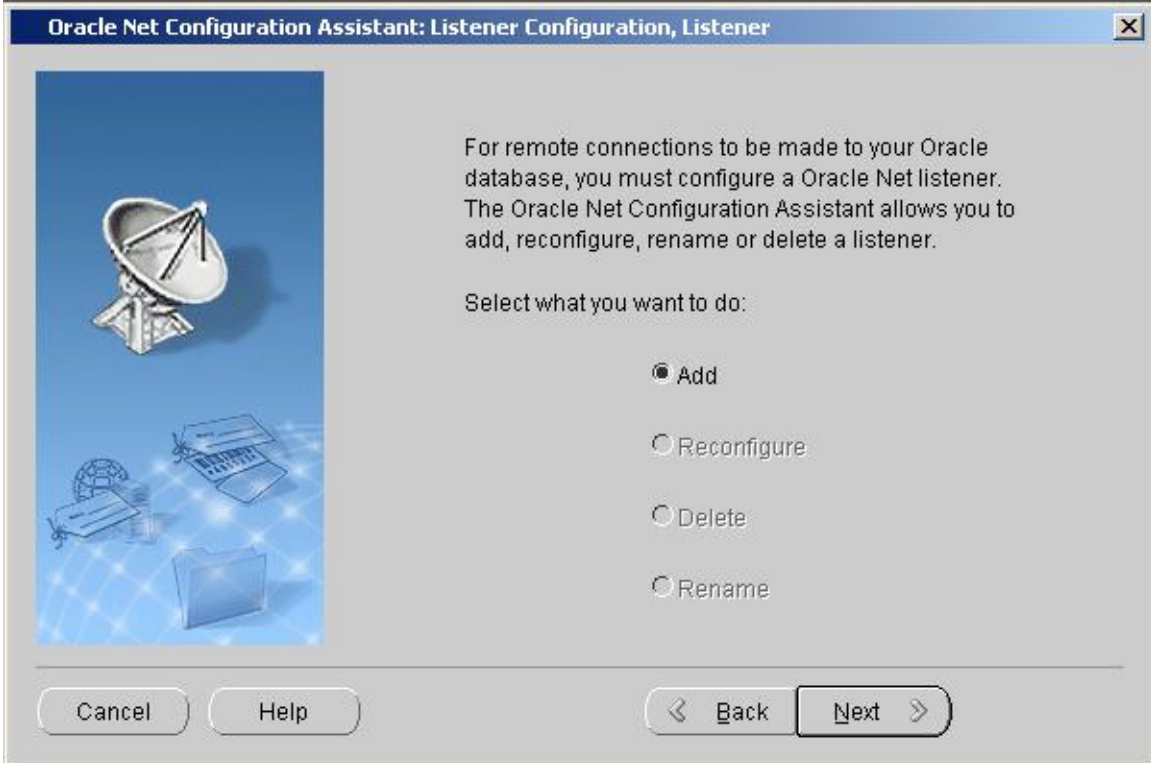
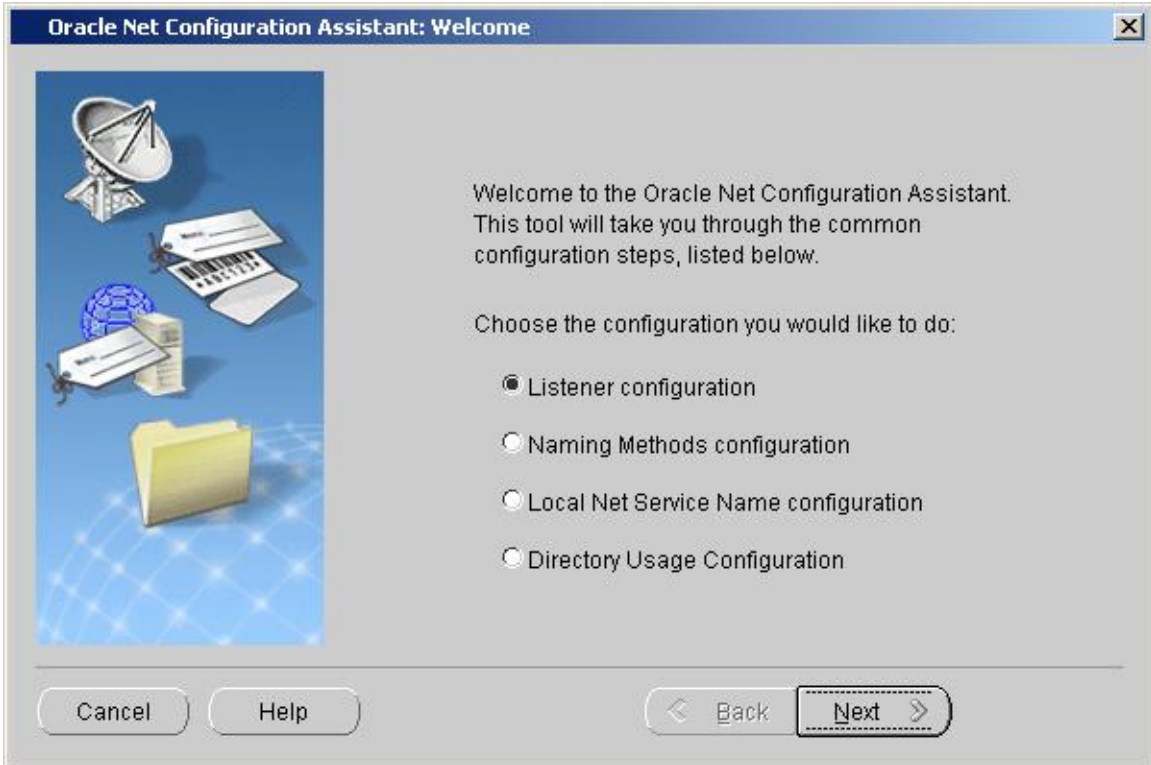








- Create Oracle Listener Service as shown below:  
Goto START->Programs->Oracle-OraDb10g\_home1->Configuration and Migration Tools-> Net Configuration Assistant





**Oracle Net Configuration Assistant: Listener Configuration, Listener Name** [X]




For remote connections to be made to your Oracle database you must have at least one Oracle Net listener. Enter the name of the listener you want to create:

Listener name:

Cancel Help < Back Next >

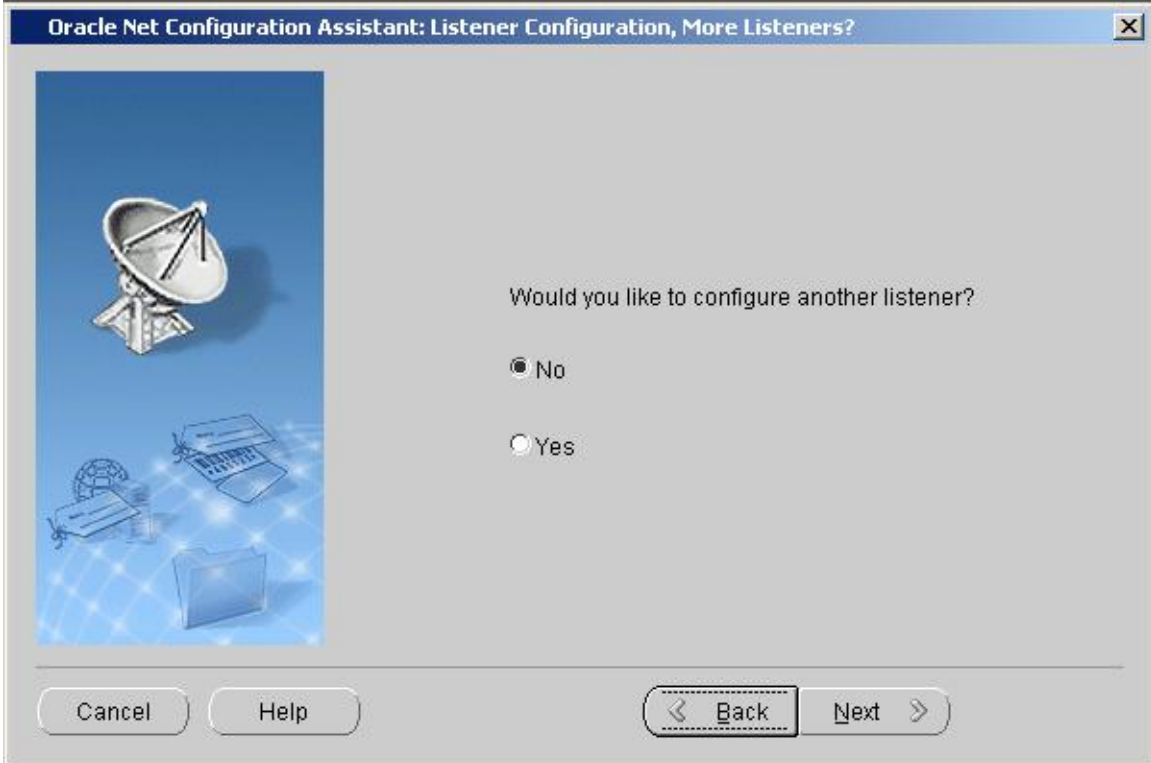
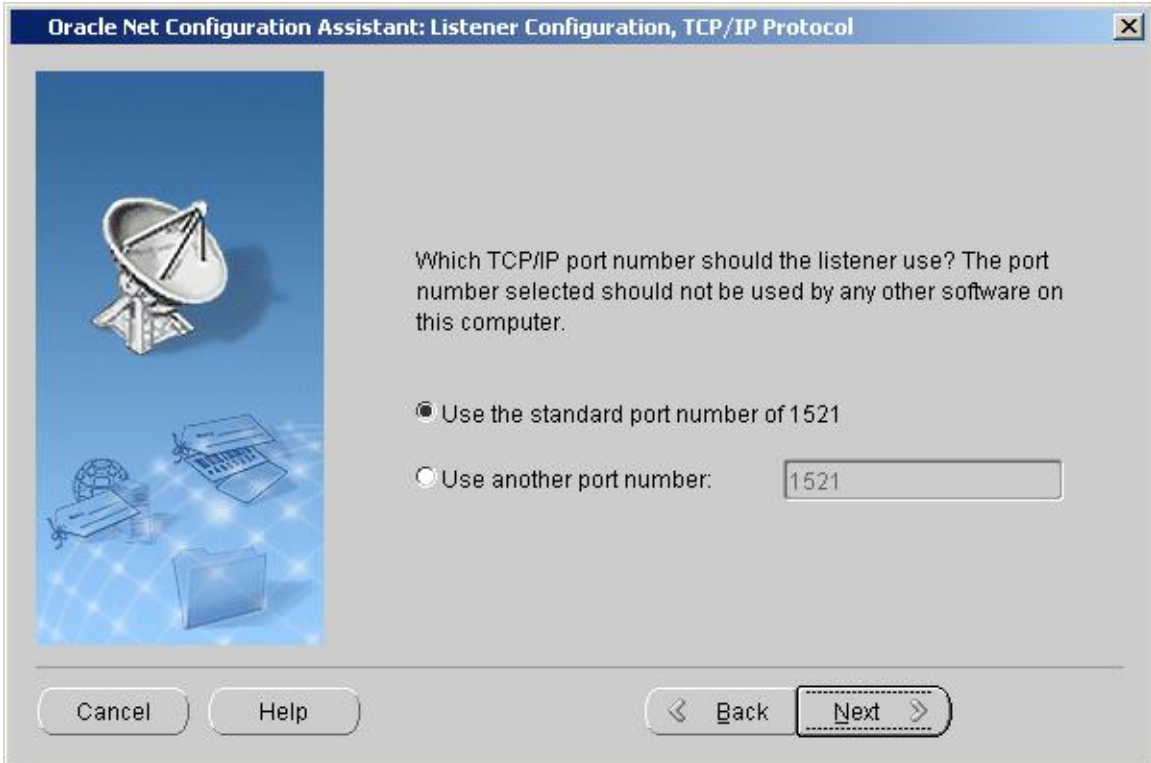
**Oracle Net Configuration Assistant: Listener Configuration, Select Protocols** [X]



You can configure the listener to accept connections over one or more protocols. Select which protocols you want to configure for this listener. Keep your configuration as simple as possible by configuring only the protocols you need.

Available Protocols		Selected Protocols	
TCPS	>	TCP	+
IPC			
NMP	<		-

Cancel Help < Back Next >





- Create Oracle Service as shown below:

```
C:\Documents and Settings\Administrator>oradim.exe -NEW -SID CLOUD
Instance created.
C:\Documents and Settings\Administrator>
```

Now a new service got created. Make the startup type to automatic.

OracleServiceCLOUD	Started	Manual	Local System
OracleOraHome92T...	Disabled		Local System

Now the system will have the following functioning oracle services.

OracleServiceCLOUD	Started	Automatic	Local System	
OracleOraDb10g_home1TNSListener	Started	Automatic	Local System	
OracleOraDb10g_home1iSQL*Plus	iSQL*Plus ...	Started	Automatic	Local System

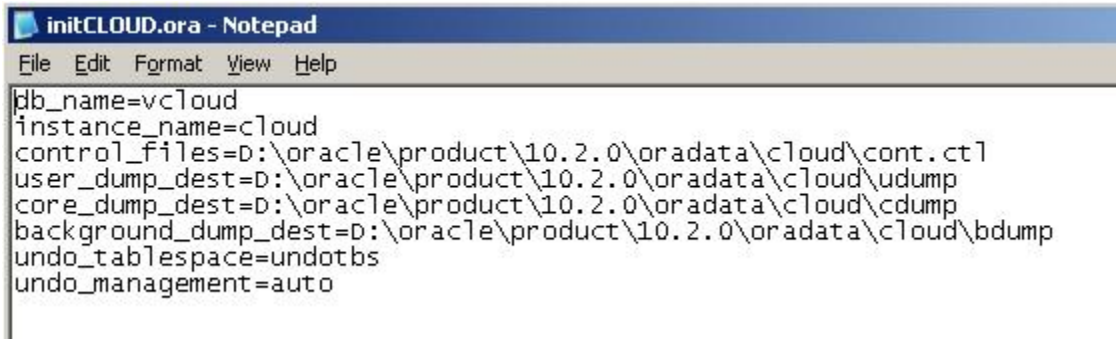
Add the two Environmental variables.

User variables for Administrator

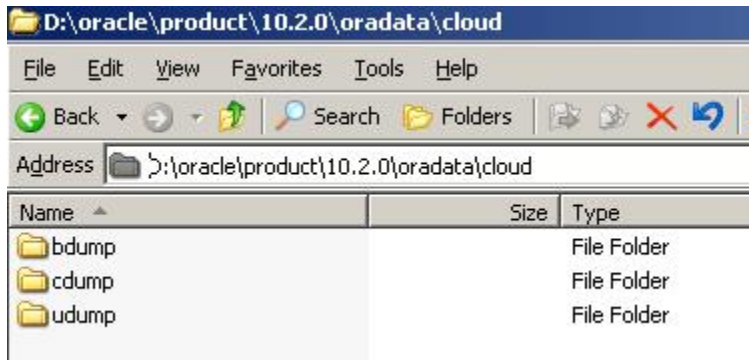
Variable	Value
ORACLE_HOME	D:\oracle\product\10.2.0\db_1
ORACLE_SID	CLOUD

Create a new file initCLOUD.ora at D:\oracle\product\10.2.0\db\_1\database\ and add the following content to it.

```
db_name=vcloud
instance_name=cloud
control_files=D:\oracle\product\10.2.0\oradata\cloud\cont.ctl
user_dump_dest=D:\oracle\product\10.2.0\oradata\cloud\udump
core_dump_dest=D:\oracle\product\10.2.0\oradata\cloud\cdump
background_dump_dest=D:\oracle\product\10.2.0\oradata\cloud\bdump
undo_tablespace=undotbs
undo_management=auto
```



- Create folder oradata at D:\oracle\product\10.2.0
- Create folder cloud at D:\oracle\product\10.2.0\oradata
- Create folders udump,cdump,bdump at D:\oracle\product\10.2.0\oradata\cloud\



**Over write the existing contents of  
D:\oracle\product\10.2.0\db\_1\NETWORK\ADMIN\listener.ora  
with the following.**

```
ADMIN_RESTRICTIONS_LISTENER = on
LISTENER =
  (ADDRESS_LIST =
    (ADDRESS =
      (PROTOCOL = IPC)
      (KEY = CLOUD.WORLD)
    )
    (ADDRESS=
      (PROTOCOL = IPC)
      (KEY = <SID>)
    )
    (ADDRESS =
      (COMMUNITY = SAP.WORLD)
      (PROTOCOL = TCP)
      (HOST = 192.168.1.1 )
      (PORT = 1521)
    )
  )
STARTUP_WAIT_TIME_LISTENER = 0
CONNECT_TIMEOUT_LISTENER = 10
TRACE_LEVEL_LISTENER = OFF
SID_LIST_LISTENER =
  (SID_LIST =
    (SID_DESC =
      (SID_NAME = CLOUD)
      (ORACLE_HOME = D:\oracle\product\10.2.0\db_1)
    )
  )
)
```

**Over write the existing contents of  
D:\oracle\product\10.2.0\db\_1\NETWORK\ADMIN\tnsnames.ora  
with the following.**

```
CLOUD.WORLD=
(DESCRIPTION =
  (ADDRESS_LIST =
    (ADDRESS =
      (COMMUNITY = SAP.WORLD)
      (PROTOCOL = TCP)
      (HOST = 192.168.1.1 )
      (PORT = 1521)
    )
  )
(CONNECT_DATA =
  (SID = CLOUD)
  (GLOBAL_NAME = CLOUD.WORLD)
)
)
```

**Restart Oracle Listener Service.**

## **Creating Data base.**

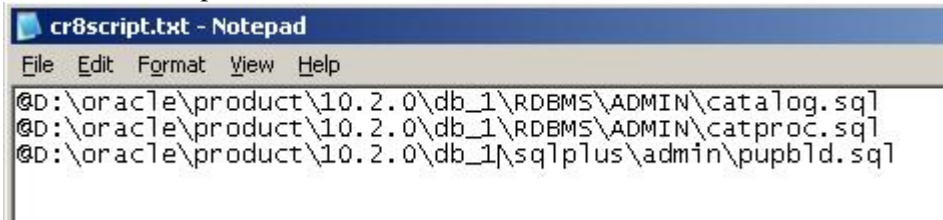
1. Place cr8db.txt file at D:\
2. D:\>sqlplus "/as sysdba"
3. SQL> startup nomount
4. SQL> @cr8db.txt  
The above statement should return " Database created."
5. Do not exit the SQL prompt.

```
cr8db.txt - Notepad
File Edit Format View Help
CREATE DATABASE vc1oud
NATIONAL CHARACTER SET AL16UTF16
datafile 'D:\oracle\product\10.2.0\oradata\cloud\system.dbf' size 170m autoextend on
sysaux datafile 'D:\oracle\product\10.2.0\oradata\cloud\sysaux.dbf' size 100m autoextend on
default temporary tablespace temp tempfile 'D:\oracle\product\10.2.0\oradata\cloud\temp.dbf' size 20m
default tablespace userdata datafile 'D:\oracle\product\10.2.0\oradata\cloud\userdata.dbf' size 20m
undo tablespace undotbs datafile 'D:\oracle\product\10.2.0\oradata\cloud\undotbs.dbf' size 20m
logfile group 1 ('D:\oracle\product\10.2.0\oradata\cloud\redo1og1a.log') size 4m,
group 2 ('D:\oracle\product\10.2.0\oradata\cloud\redo1og2a.log') size 4m
/
```

```
CREATE DATABASE vcloud
NATIONAL CHARACTER SET AL16UTF16
datafile 'D:\oracle\product\10.2.0\oradata\cloud\system.dbf' size 170m autoextend on
sysaux datafile 'D:\oracle\product\10.2.0\oradata\cloud\sysaux.dbf' size 100m autoextend on
default temporary tablespace temp tempfile
'D:\oracle\product\10.2.0\oradata\cloud\temp.dbf' size 20m
default tablespace userdata datafile 'D:\oracle\product\10.2.0\oradata\cloud\userdata.dbf' size
20m
undo tablespace undotbs datafile 'D:\oracle\product\10.2.0\oradata\cloud\undotbs.dbf' size
20m
logfile group 1 ('D:\oracle\product\10.2.0\oradata\cloud\redolog1a.log') size 4m,
group 2 ('D:\oracle\product\10.2.0\oradata\cloud\redolog2a.log') size 4m
/
```

### Post database creation scripts

1. Place cr8script.txt at D:\
2. SQL> @cr8script.txt
3. This script will take some time to run.



```
@D:\oracle\product\10.2.0\db_1\RDBMS\ADMIN\catalog.sql
@d:\oracle\product\10.2.0\db_1\RDBMS\ADMIN\catproc.sql
@d:\oracle\product\10.2.0\db_1\sqlplus\admin\pupbld.sql
```

### Creating table spaces and user for cloud director.

- Create Tablespace CLOUD\_DATA datafile  
'D:\oracle\product\10.2.0\oradata\cloud\cloud\_data01.dbf' size 1000M autoextend on;
- Create Tablespace CLOUD\_INDX datafile  
'D:\oracle\product\10.2.0\oradata\cloud\cloud\_indx01.dbf' size 500M autoextend on;
- Create user vcloud identified by admin123 default tablespace CLOUD\_DATA;
- grant CONNECT,RESOURCE,CREATE TRIGGER,CREATE TYPE,CREATE VIEW,CREATE MATERIALIZED VIEW,CREATE PROCEDURE,CREATE SEQUENCE,EXECUTE ANY PROCEDURE to vcloud;

Cloud director fails to connect to the user vcloud ,if the following command does not work.

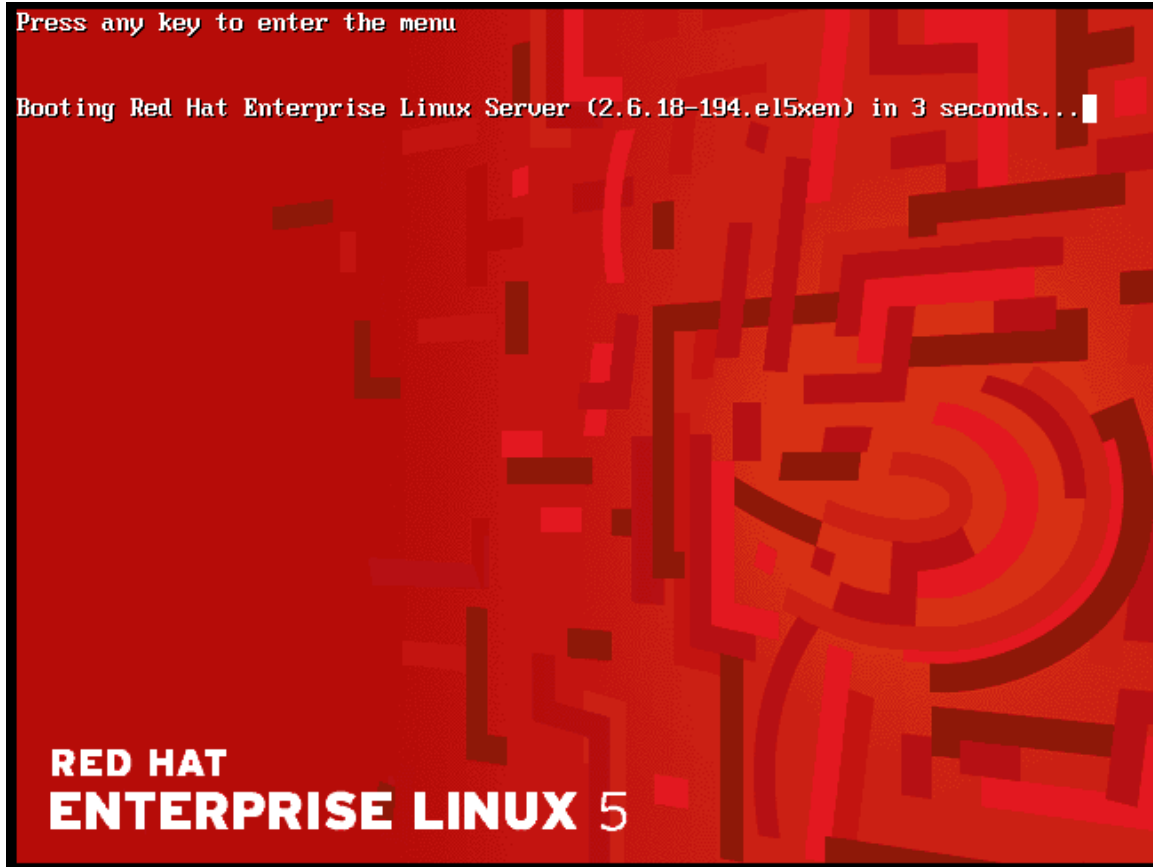
Make sure the following command works before starting the cloud director installation.

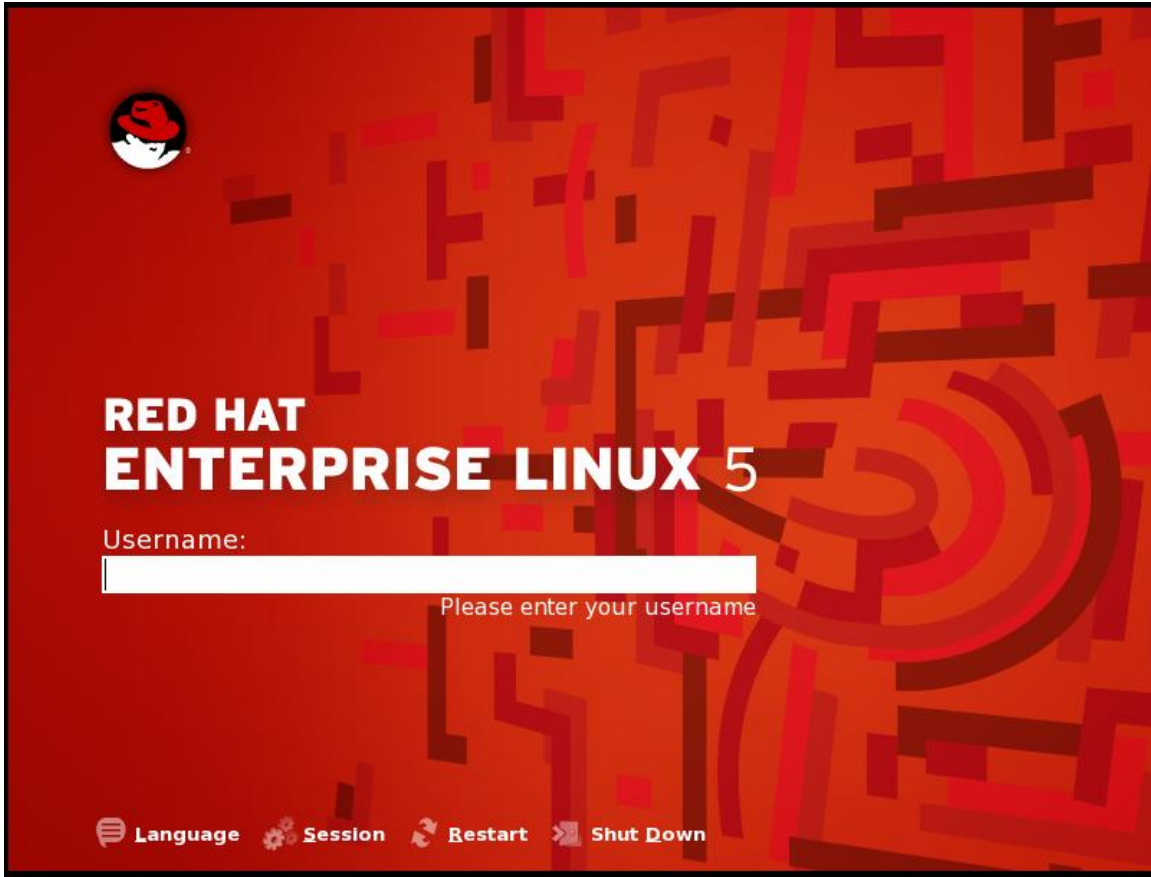
- conn vcloud/admin123@cloud.world

```
SQL> conn vcloud/admin123@cloud.world
Error accessing PRODUCT_USER_PROFILE
Warning: Product user profile information not loaded!
You may need to run PUPBLD.SQL as SYSTEM
Connected.
SQL> show user
USER is 'U CLOUD'
SQL>
```



## Install RHEL 5.5 x86\_64





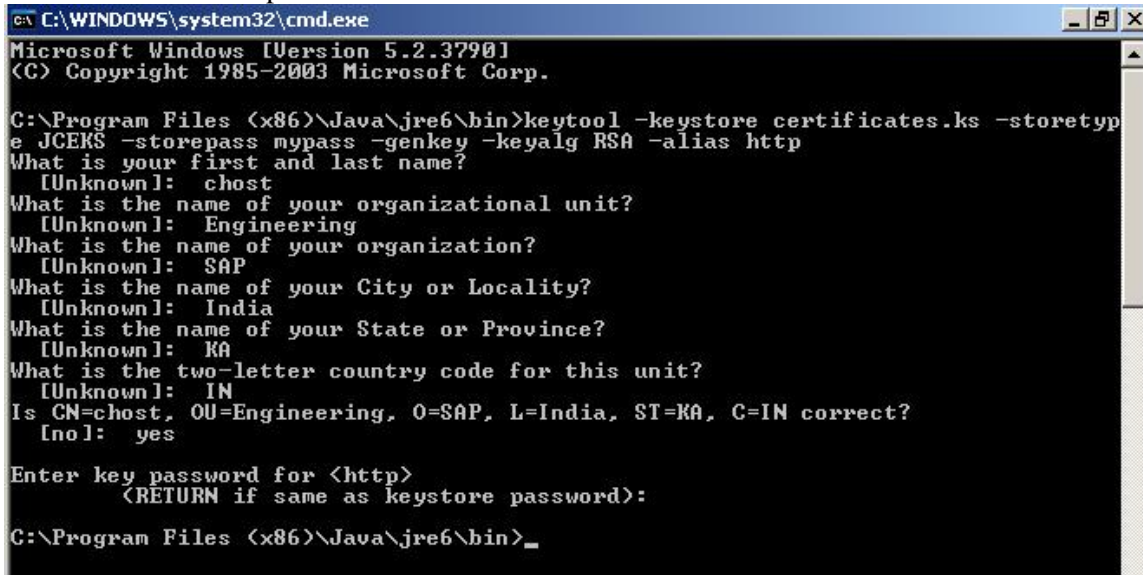
- Make sure the linux host has two NIC's with ip's assigned to them.

```
root@chost:~  
File Edit View Terminal Tabs Help  
[root@chost ~]# ifconfig  
eth0      Link encap:Ethernet  HWaddr 00:0C:29:BB:F0:4C  
          inet addr:192.168.1.123  Bcast:192.168.1.255  Mask:255.255.255.0  
          inet6 addr: fe80::20c:29ff:febb:f04c/64 Scope:Link  
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1  
          RX packets:390 errors:0 dropped:0 overruns:0 frame:0  
          TX packets:65 errors:0 dropped:0 overruns:0 carrier:0  
          collisions:0 txqueuelen:0  
          RX bytes:63325 (61.8 KiB)  TX bytes:9087 (8.8 KiB)  
  
eth1      Link encap:Ethernet  HWaddr 00:0C:29:BB:F0:56  
          inet addr:192.168.1.124  Bcast:192.168.1.255  Mask:255.255.255.0  
          inet6 addr: fe80::20c:29ff:febb:f056/64 Scope:Link  
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1  
          RX packets:208 errors:0 dropped:0 overruns:0 frame:0  
          TX packets:271 errors:0 dropped:0 overruns:0 carrier:0  
          collisions:0 txqueuelen:1000  
          RX bytes:30989 (30.2 KiB)  TX bytes:28466 (27.7 KiB)
```

### Create a Self-Signed SSL Certificate

You must have access to a computer that has a Java 6 runtime environment, so that you can use the keytool command to create the certificate. The Cloud Director installer places a copy of keytool in /opt/vmware/cloud-director/jre/bin/keytool, but you can perform this procedure on any computer that has a Java runtime environment installed.

- We will create the SSL Certificates on the local machine. Download and install JRE 6 from java website.
- keytool -keystore certificates.ks -storetype JCEKS -storepass mypass -genkey -keyalg RSA -alias http



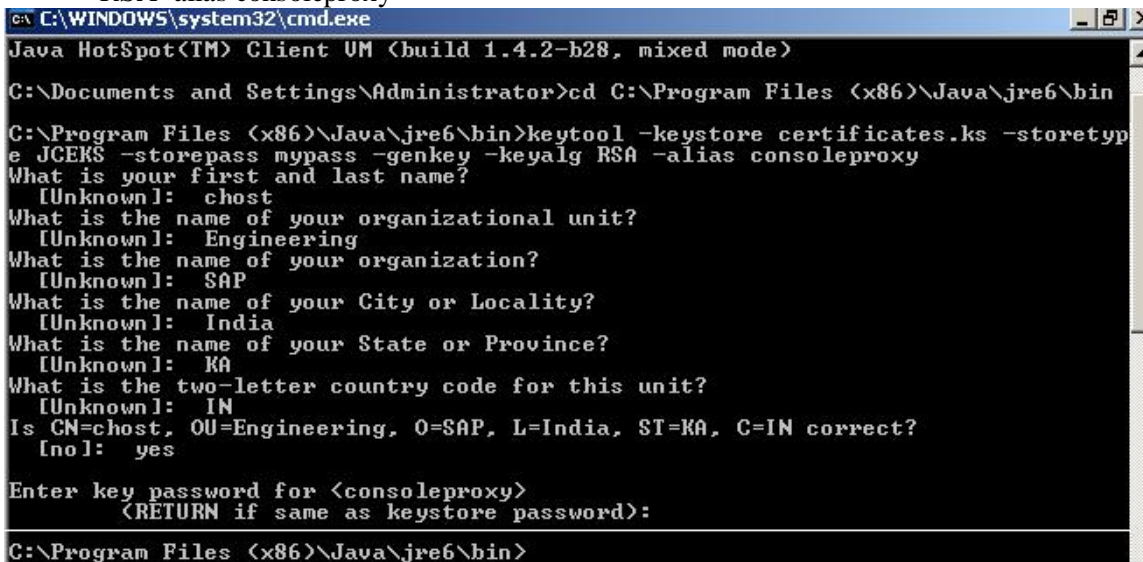
```
C:\WINDOWS\system32\cmd.exe
Microsoft Windows [Version 5.2.3790]
(C) Copyright 1985-2003 Microsoft Corp.

C:\Program Files (x86)\Java\jre6\bin>keytool -keystore certificates.ks -storetype
JCEKS -storepass mypass -genkey -keyalg RSA -alias http
What is your first and last name?
  [Unknown]: chost
What is the name of your organizational unit?
  [Unknown]: Engineering
What is the name of your organization?
  [Unknown]: SAP
What is the name of your City or Locality?
  [Unknown]: India
What is the name of your State or Province?
  [Unknown]: KA
What is the two-letter country code for this unit?
  [Unknown]: IN
Is CN=chost, OU=Engineering, O=SAP, L=India, ST=KA, C=IN correct?
  [no]: yes

Enter key password for <http>
  (RETURN if same as keystore password):

C:\Program Files (x86)\Java\jre6\bin>
```

- keytool -keystore certificates.ks -storetype JCEKS -storepass mypass -genkey -keyalg RSA -alias consoleproxy



```
C:\WINDOWS\system32\cmd.exe
Java HotSpot(TM) Client VM (build 1.4.2-b28, mixed mode)

C:\Documents and Settings\Administrator>cd C:\Program Files (x86)\Java\jre6\bin

C:\Program Files (x86)\Java\jre6\bin>keytool -keystore certificates.ks -storetype
JCEKS -storepass mypass -genkey -keyalg RSA -alias consoleproxy
What is your first and last name?
  [Unknown]: chost
What is the name of your organizational unit?
  [Unknown]: Engineering
What is the name of your organization?
  [Unknown]: SAP
What is the name of your City or Locality?
  [Unknown]: India
What is the name of your State or Province?
  [Unknown]: KA
What is the two-letter country code for this unit?
  [Unknown]: IN
Is CN=chost, OU=Engineering, O=SAP, L=India, ST=KA, C=IN correct?
  [no]: yes

Enter key password for <consoleproxy>
  (RETURN if same as keystore password):

C:\Program Files (x86)\Java\jre6\bin>
```

- To verify that all the certificates have been imported, list the contents of the keystore file.  
keytool -storetype JCEKS -storepass mypass -keystore certificates.ks -list

```
C:\WINDOWS\system32\cmd.exe

Enter key password for <consoleproxy>
(RETURN if same as keystore password):

C:\Program Files (x86)\Java\jre6\bin>keytool -storetype JCEKS -storepass mypass
-keystore certificates.ks -list

Keystore type: JCEKS
Keystore provider: SunJCE

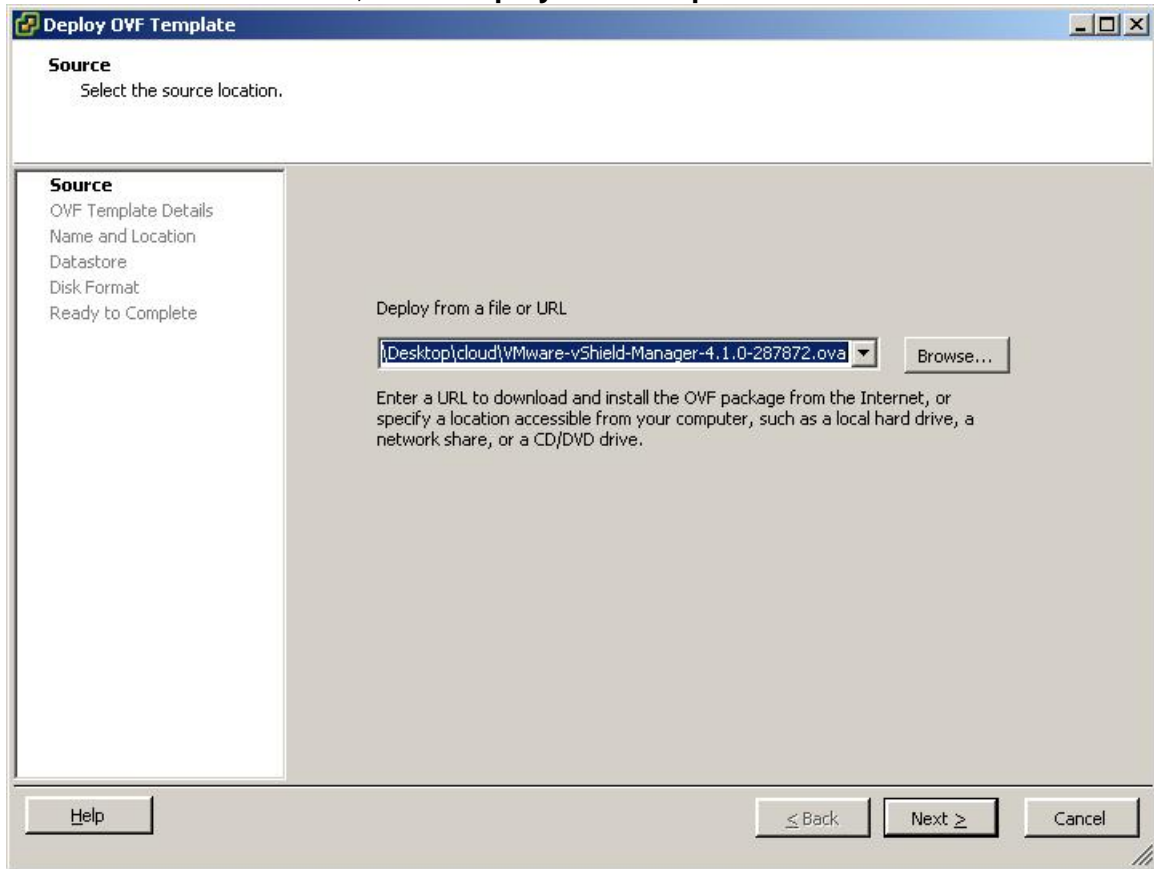
Your keystore contains 2 entries

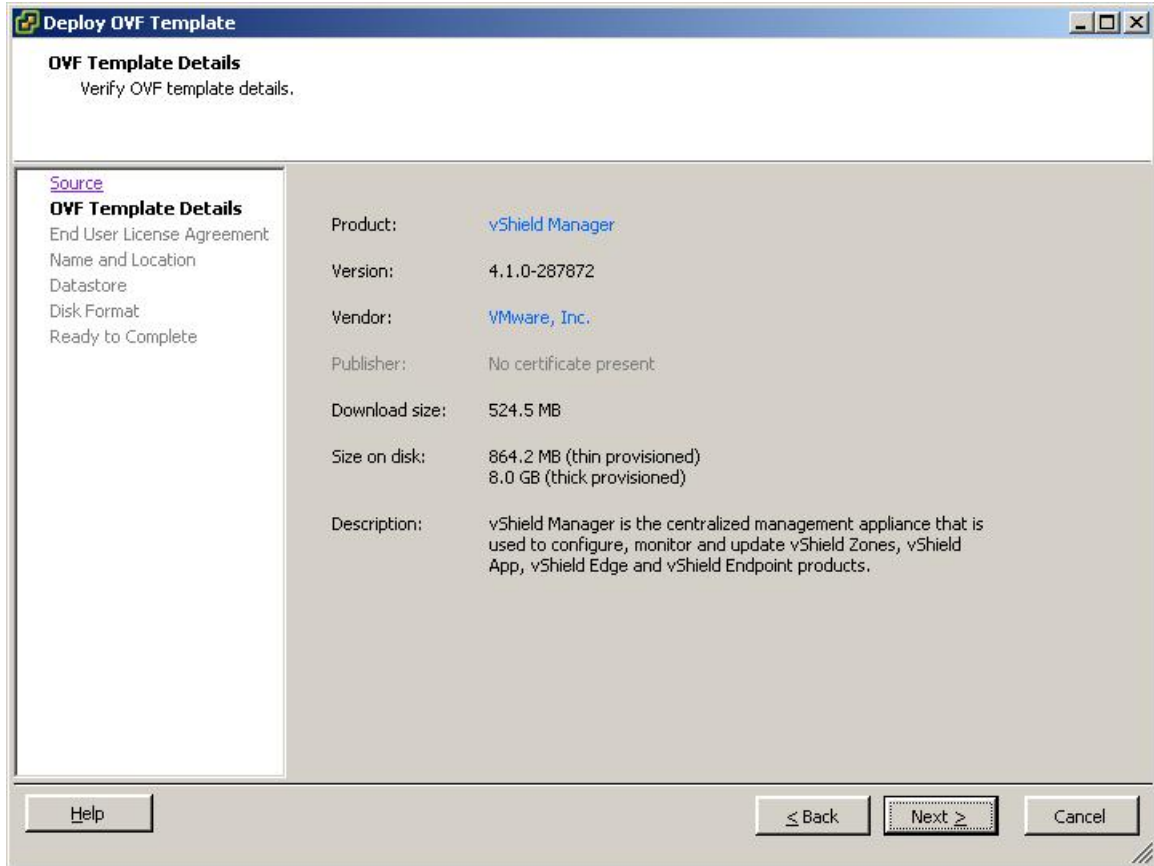
consoleproxy, Dec 19, 2010, PrivateKeyEntry,
Certificate fingerprint (MD5): 75:0B:27:BA:76:8B:25:1E:D4:CA:96:AC:9B:D2:F5:6C
http, Dec 19, 2010, PrivateKeyEntry,
Certificate fingerprint (MD5): 5A:23:FD:37:3A:02:CC:BF:A8:8F:74:43:3B:A6:AD:61
```

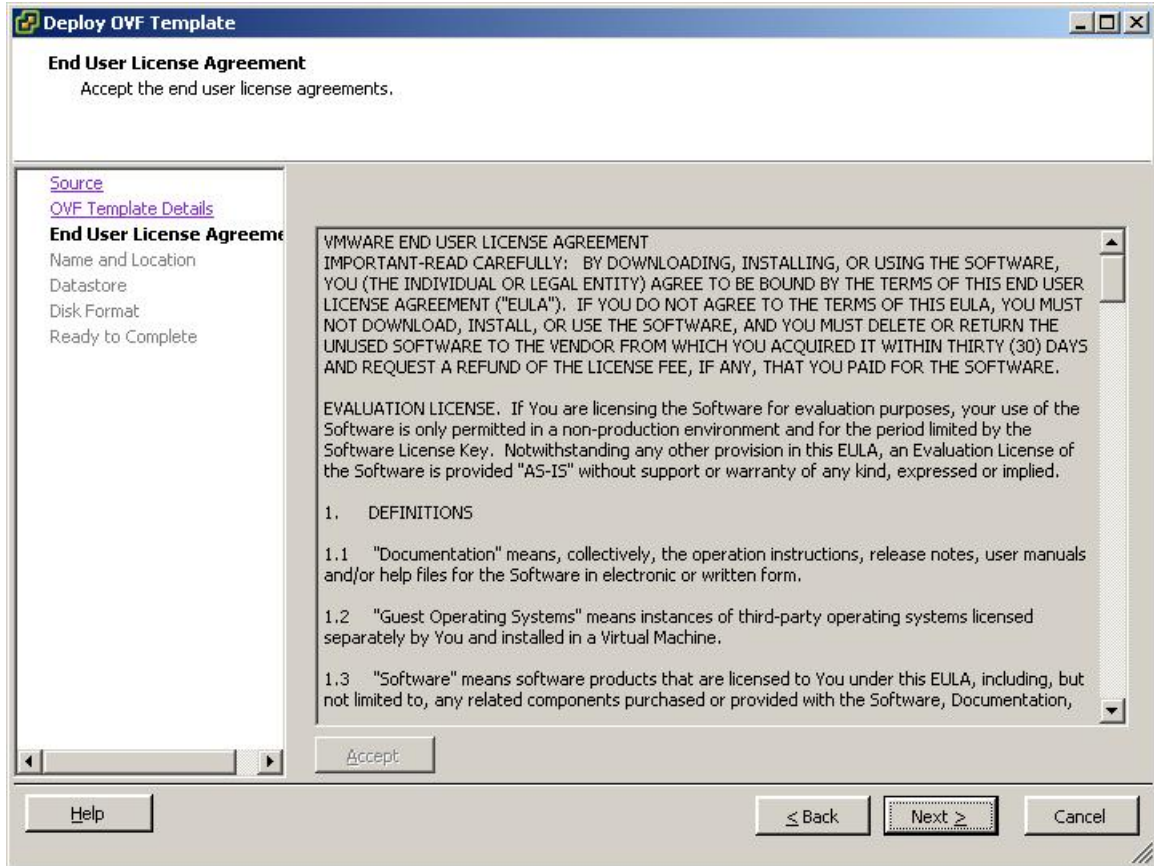
- Move certificates.ks file to cloud director linux server.
- Password for this certificate is mypass

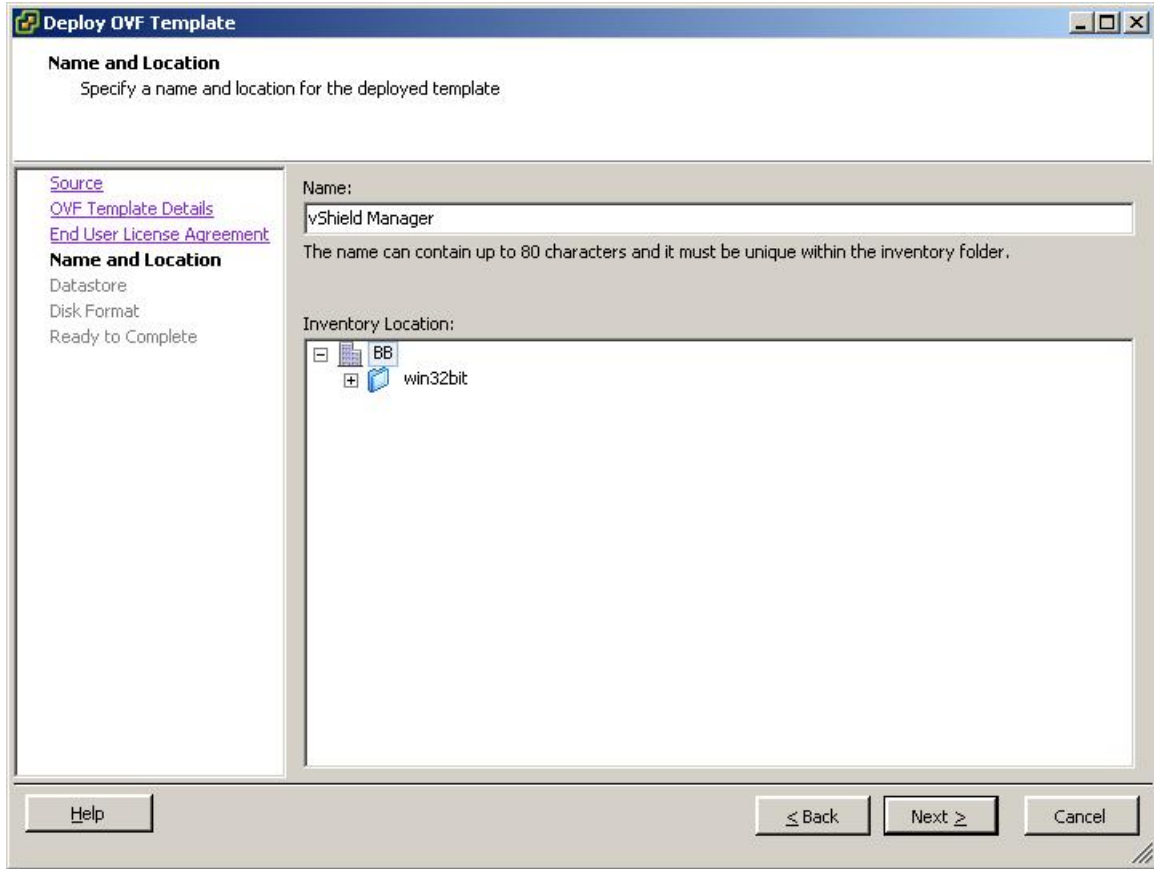
### Installing and Configuring vShield Manager

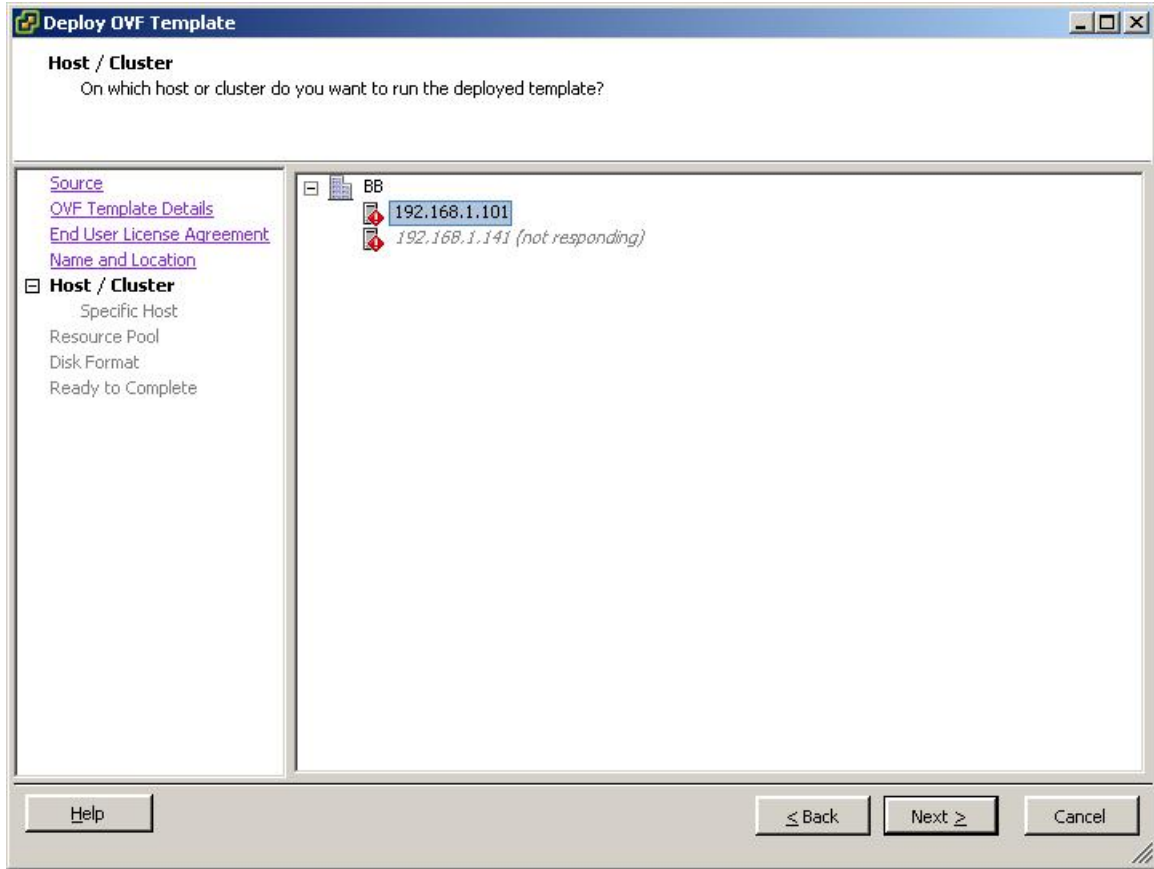
- Use the vSphere Client to log in to your vCenter Server.
- From the **File** menu, select **Deploy OVF Template**.



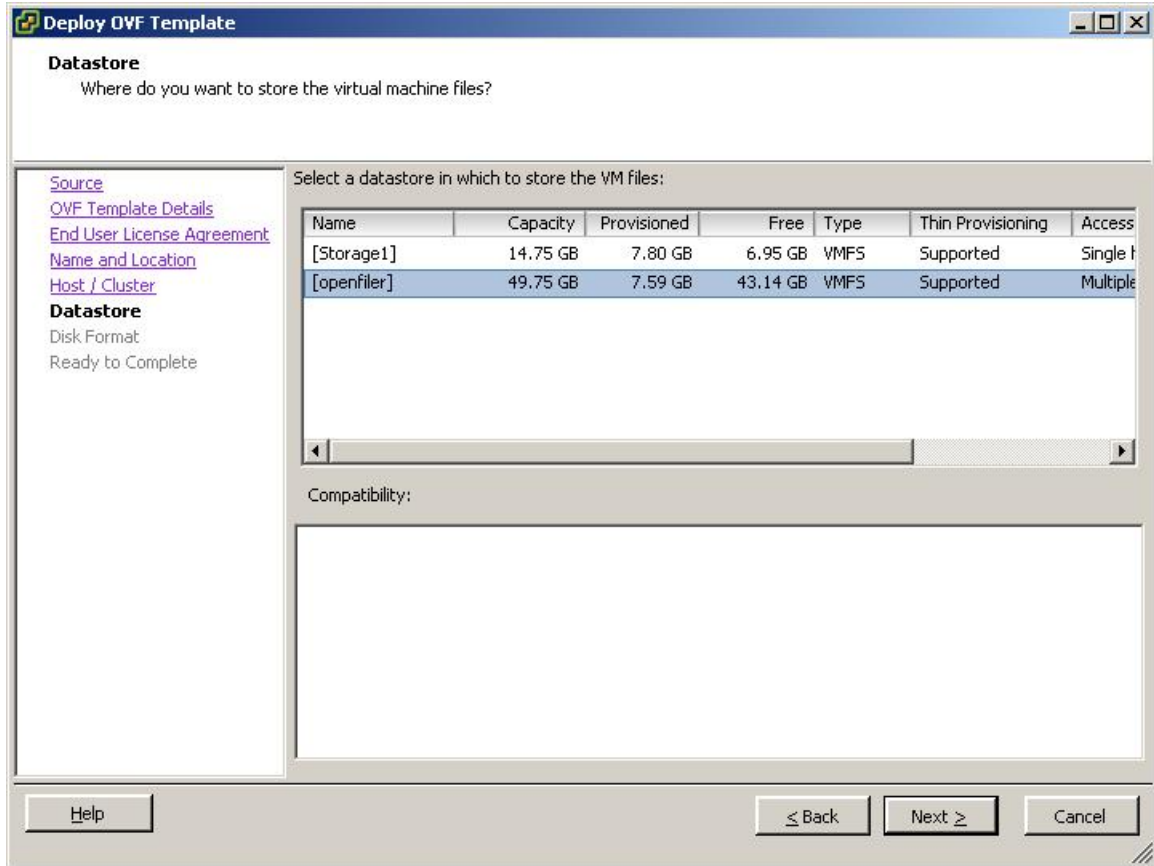


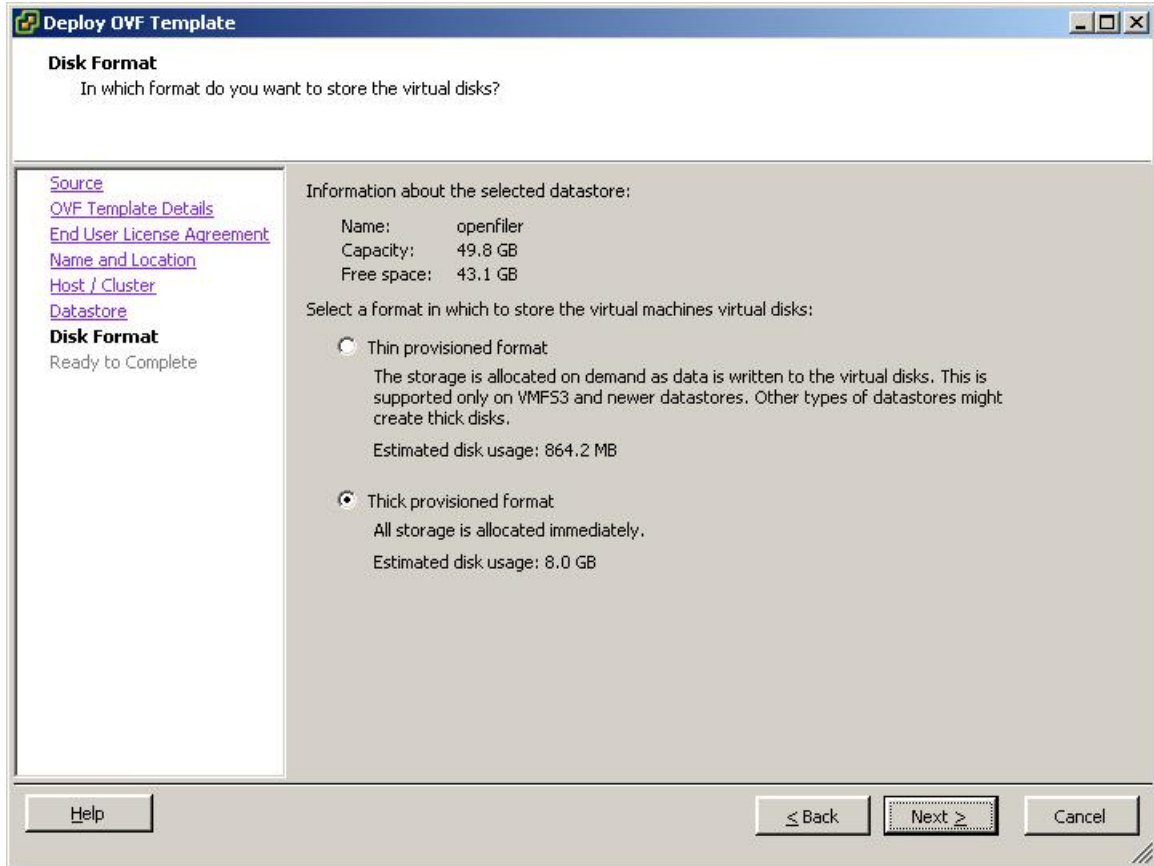


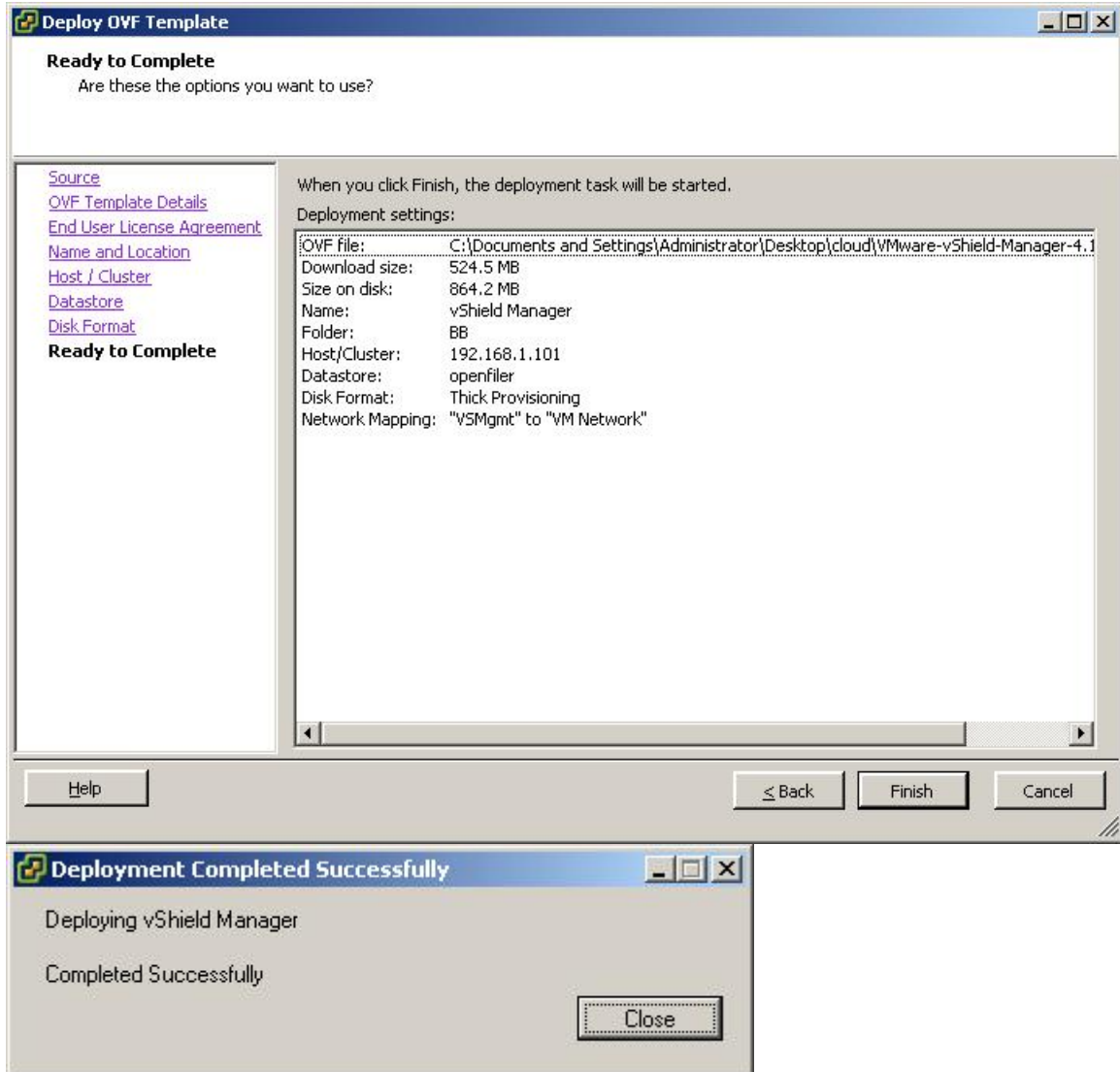












- Log in to the console with the user name **admin** and password **default**.
- At the manager> prompt, type **enable**.
- At the Password: prompt, type **default** to enable setup mode. When setup mode is enabled, the promote string changes to manager#.
- At the manager# prompt, type **setup** to begin the setup procedure.
- Enter the IP address, subnet mask, and default gateway for the vShield Manager virtual machine.
- You will need this information later when you attach a vCenter Server to Cloud Director.

```
localhost login: admin
Password:
manager> enable
Password:
manager# setup

IP Address (A.B.C.D): 192.168.1.130
Subnet Mask (A.B.C.D): 255.255.255.0
Default gateway (A.B.C.D): 192.168.1.1
Primary DNS IP (A.B.C.D): 192.168.1.5
Secondary DNS IP (A.B.C.D):
Warning: Secondary DNS not set.
DNS domain search list (space separated):
Warning: Search list not set. Only fully qualified hostnames will be resolved.
Old configuration will be lost
Do you want to save new configuration (y/[n]): y
Please logout and login back again.
manager#
```

## Start vCloud Director Installation

- Cloud Director requires an rpm for the installation to proceed. Download compat-libcom\_err-1.0-7.x86\_64.rpm from RED HAT and deploy it.  
rpm -ivh compat-libcom\_err-1.0-7.x86\_64.rpm

```
[root@chost ~]# ./vmware-cloud-director-1.0.0-285979.bin
Checking architecture...done
Checking for a supported Linux distribution...done
Checking for necessary RPM prerequisites...done

NOTE: This system has less memory installed than the recommended amount

Detected: 1703 MB; Required: 1 GB; Recommended: 2 GB

VMware recommends at least 2 GB of memory be available for Cloud Director
to operate. You may notice degraded performance with only 1703 MB. It is
recommended that you increase the available memory prior to starting the
vmware-vcd service.

Checking free disk space...done
Extracting vmware-cloud-director-1.0.0-285979.x86_64.rpm...done
Installing the VMware Cloud Director RPM...
Preparing... ##### [100%]
 1:vmware-cloud-director ##### ( 90%)
```

```
Checking for necessary RPM prerequisites...done
NOTE: This system has less memory installed than the recommended amount
Detected: 1703 MB; Required: 1 GB; Recommended: 2 GB
VMware recommends at least 2 GB of memory be available for Cloud Director
to operate. You may notice degraded performance with only 1703 MB. It is
recommended that you increase the available memory prior to starting the
vmware-vcd service.
Checking free disk space...done
Extracting vmware-cloud-director-1.0.0-285979.x86_64.rpm...done
Installing the VMware Cloud Director RPM...
Preparing... ##### [100%]
 1:vmware-cloud-director ##### [100%]
You should now run the configuration script
(/opt/vmware/cloud-director/bin/configure) to perform other required
post-installation configuration.
If you will be deploying a Cloud Director cluster you must mount the shared
transfer server storage prior to running the configuration script. If this
is a single server deployment no shared storage is necessary.
If you are not ready to do this right now, you may run the script later
prior to starting the vmware-vcd service.
Would you like to run the script now? (y/n)? y [new file 1 (~/Desktop) - gedit]
```

```
Please enter your choice for the HTTP service IP address:
 1. 192.168.1.123
 2. 192.168.1.124
 3. 192.168.122.1
Choice [default=1]: 1 root@chost:~
```

```
Please enter your choice for the remote console proxy IP address:
 1. 192.168.1.124
 2. 192.168.122.1
Choice [default=1]: 1
```

```
Please enter the path to the Java keystore containing your SSL certificates and
private keys: /opt/keystore/certificates/certificates.ks
```

Enter. Leave this empty.

If you would like to enable remote audit logging to a syslog host please enter the hostname or IP address of the syslog server. Audit logs are stored by Cloud Director for 90 days. Exporting logs via syslog will enable you to preserve them for as long as necessary.

Syslog host name or IP address [press Enter to skip]:

vcloud/admin123

Enter the host (or IP address) for the database: 192.168.1.1

Enter the database port [default=1521]:

Using default value "1521" for port.

Enter the database service name [default=orcl]: CLOUD

Enter the database username: vcloud

Enter the database password:

.....  
...[800]

.....  
...[900]

.....  
...[1000]

.....[1054]

loading /opt/vmware/cloud-director/db/oracle/NewInstall\_Cache.sql

[40 statements]

.....[40]

loading /opt/vmware/cloud-director/db/oracle/NewInstall\_Stats.sql

[1 statements]

.[1]

Database configuration complete.

Cloud Director configuration is now complete.

Once the Cloud Director server has been started you will be able to access the first-time setup wizard at this URL:

https://chost

Would you like to start the Cloud Director service now? If you choose not to start it now, you can manually start it at any time using this command:  
service vmware-vcd start

Start it now? [y/n] y

```
Would you like to start the Cloud Director service now? If you choose not
to start it now, you can manually start it at any time using this command:
service vmware-vcd start

Start it now? [y/n] y

Starting vmware-vcd-watchdog: [ OK ]
Starting vmware-vcd-cell [ OK ]

The VCD service will be started automatically on boot. To disable this,
use the following command: chkconfig --del vmware-vcd

[root@chost ~]#
```

- Now the installation got completed.

Uninstalling VMware vCloud Director **[Perform this if you want to remove cloud director]**



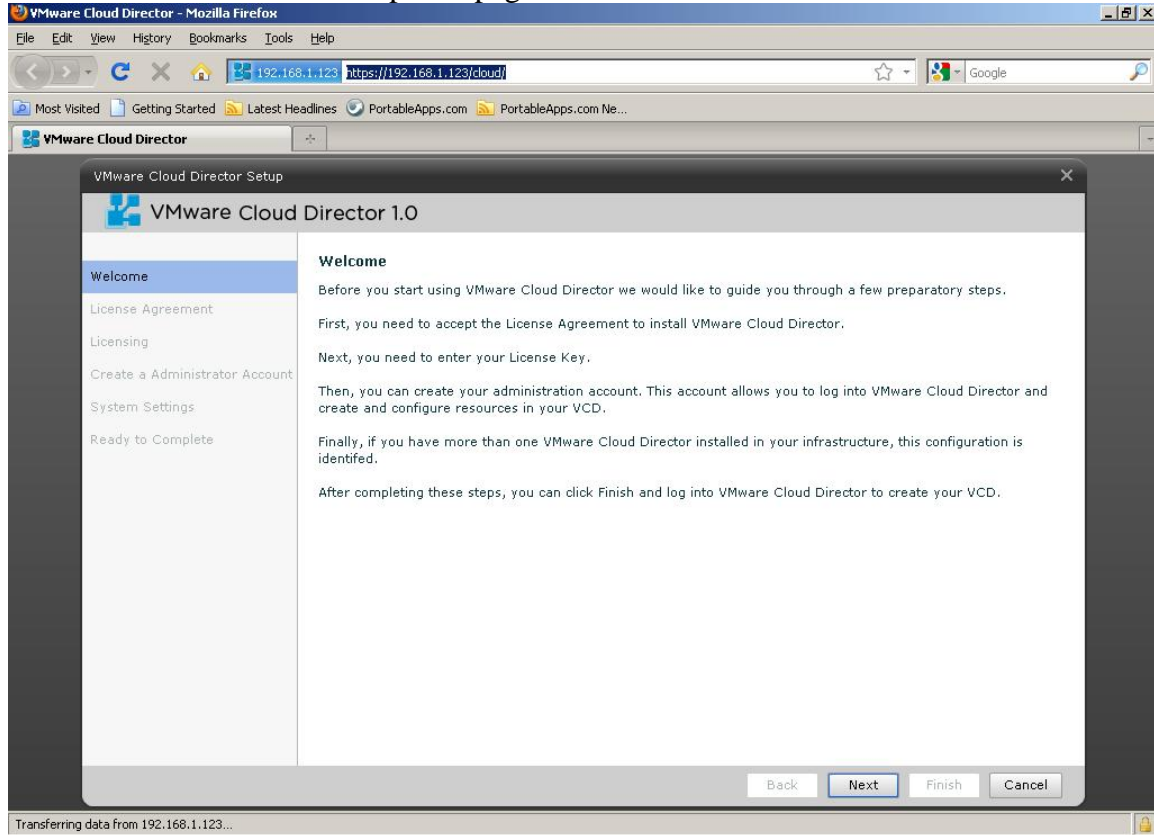
```
root@chost:~
File Edit View Terminal Tabs Help
[root@chost ~]# rpm -e vmware-cloud-director
Stopping vmware-vcd-watchdog: [ OK ]
Stopping vmware-vcd-cell: [ OK ]
warning: /opt/vmware/cloud-director/etc/global.properties saved as /opt/vmware/c
loud-director/etc/global.properties.rpmsave
[root@chost ~]#
```

## Cloud Director Initial Setup

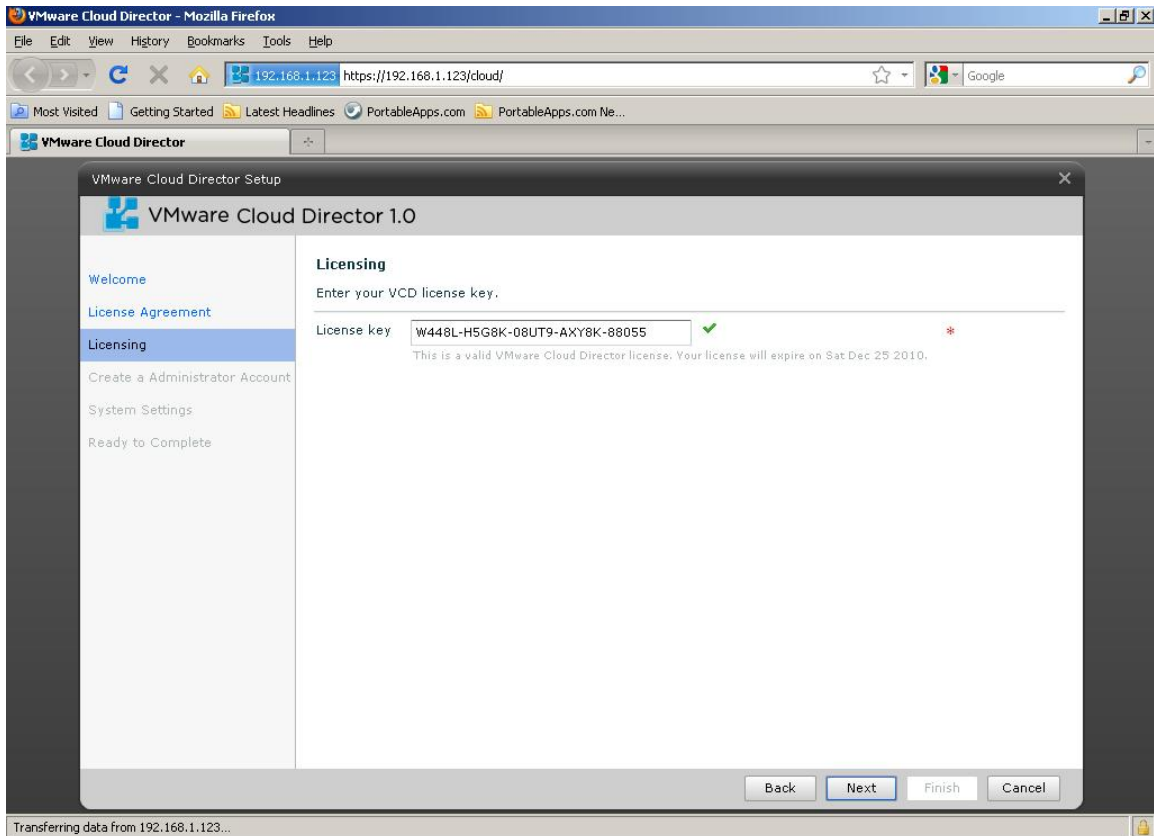
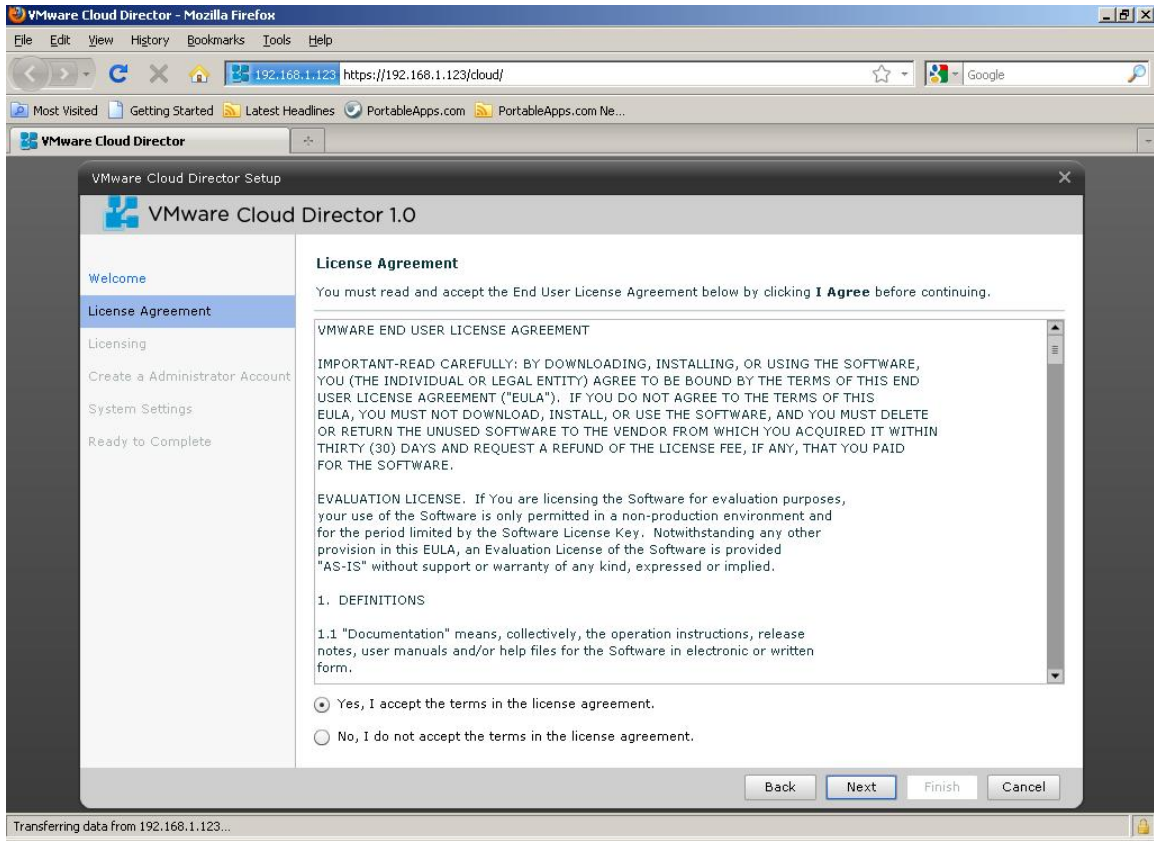
- Open the following cloud director IP in a web browser.

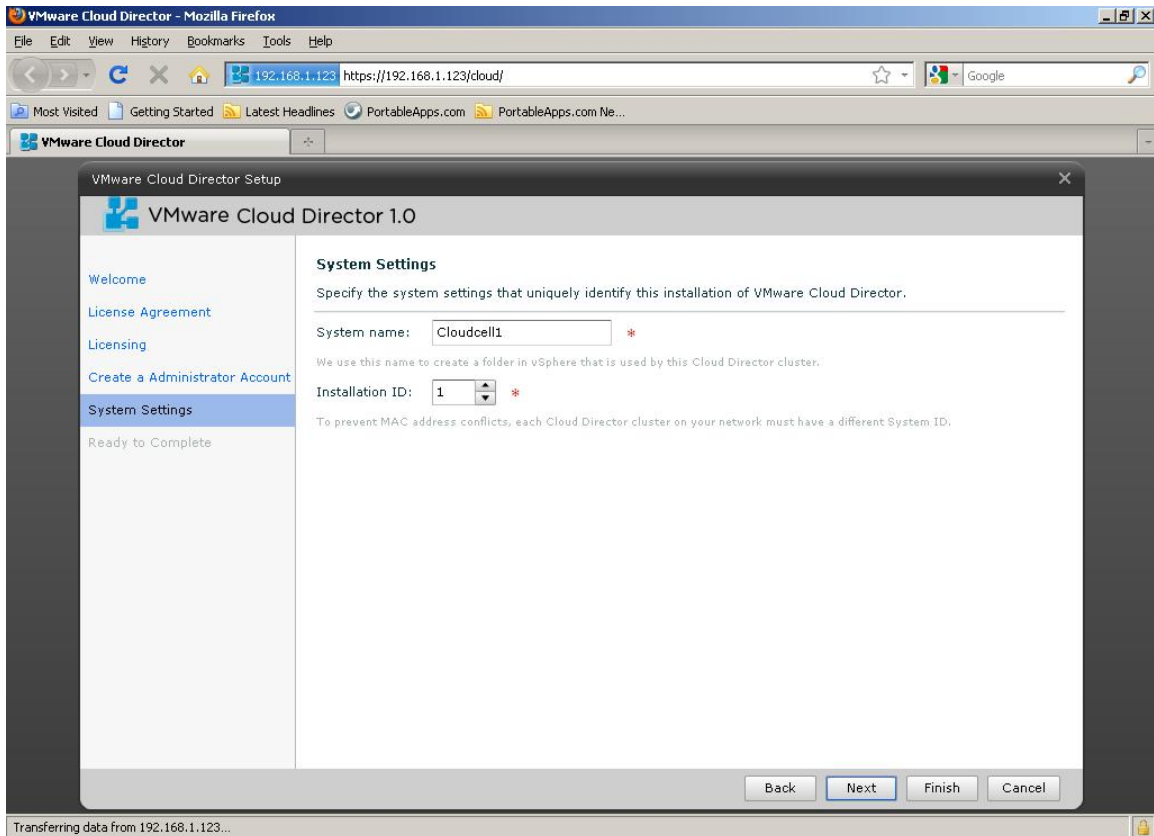
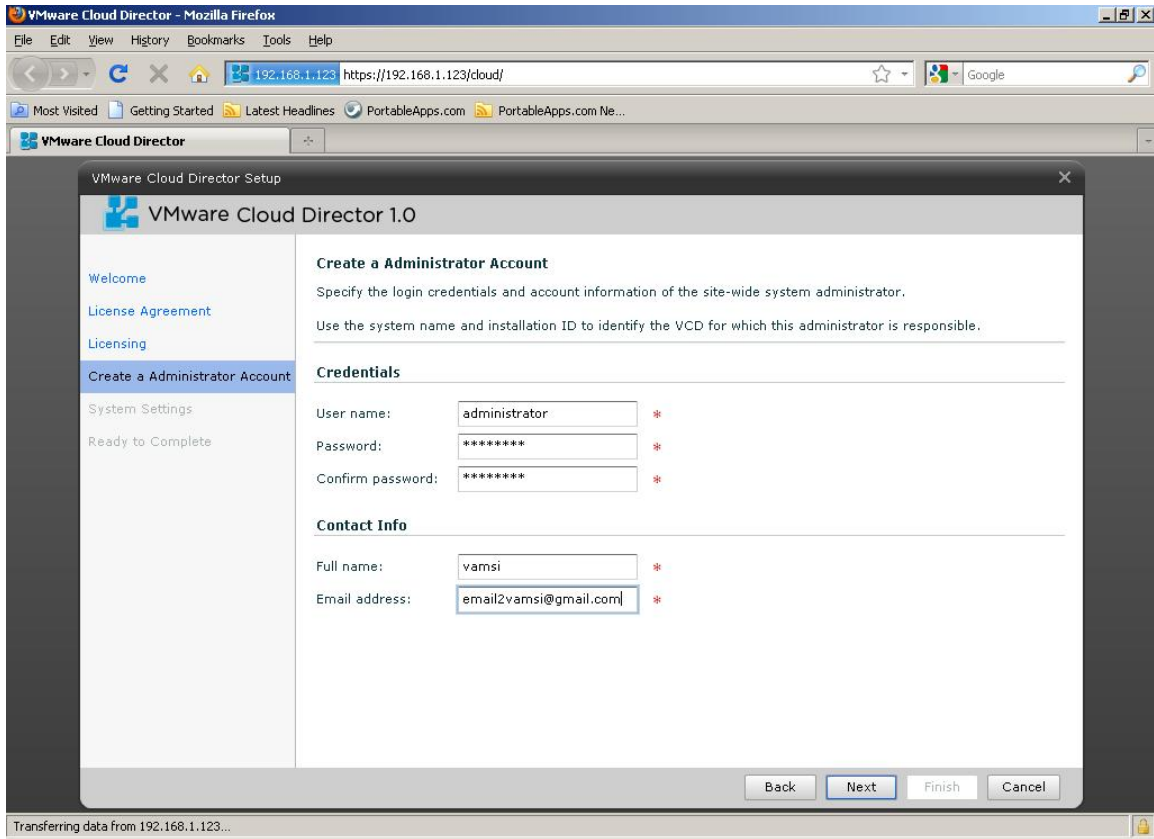
<https://192.168.1.123>

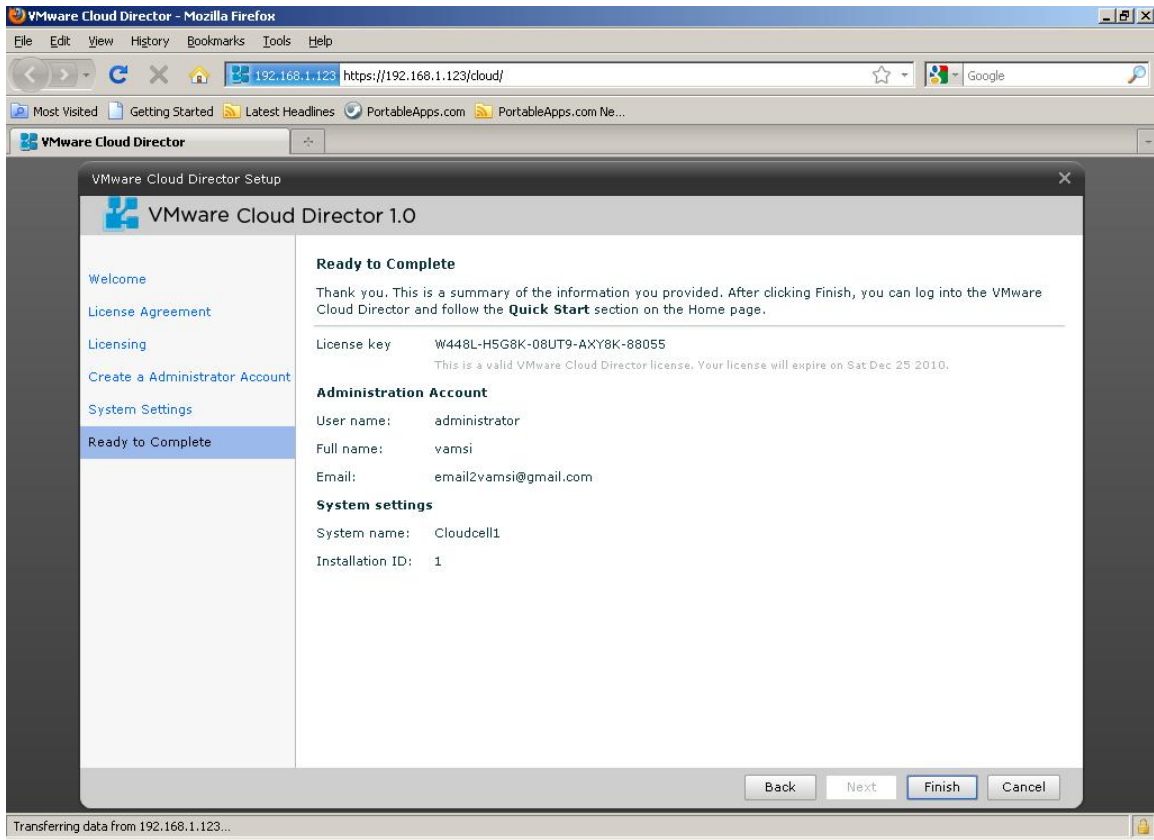
- It directs to Initial setup web page.



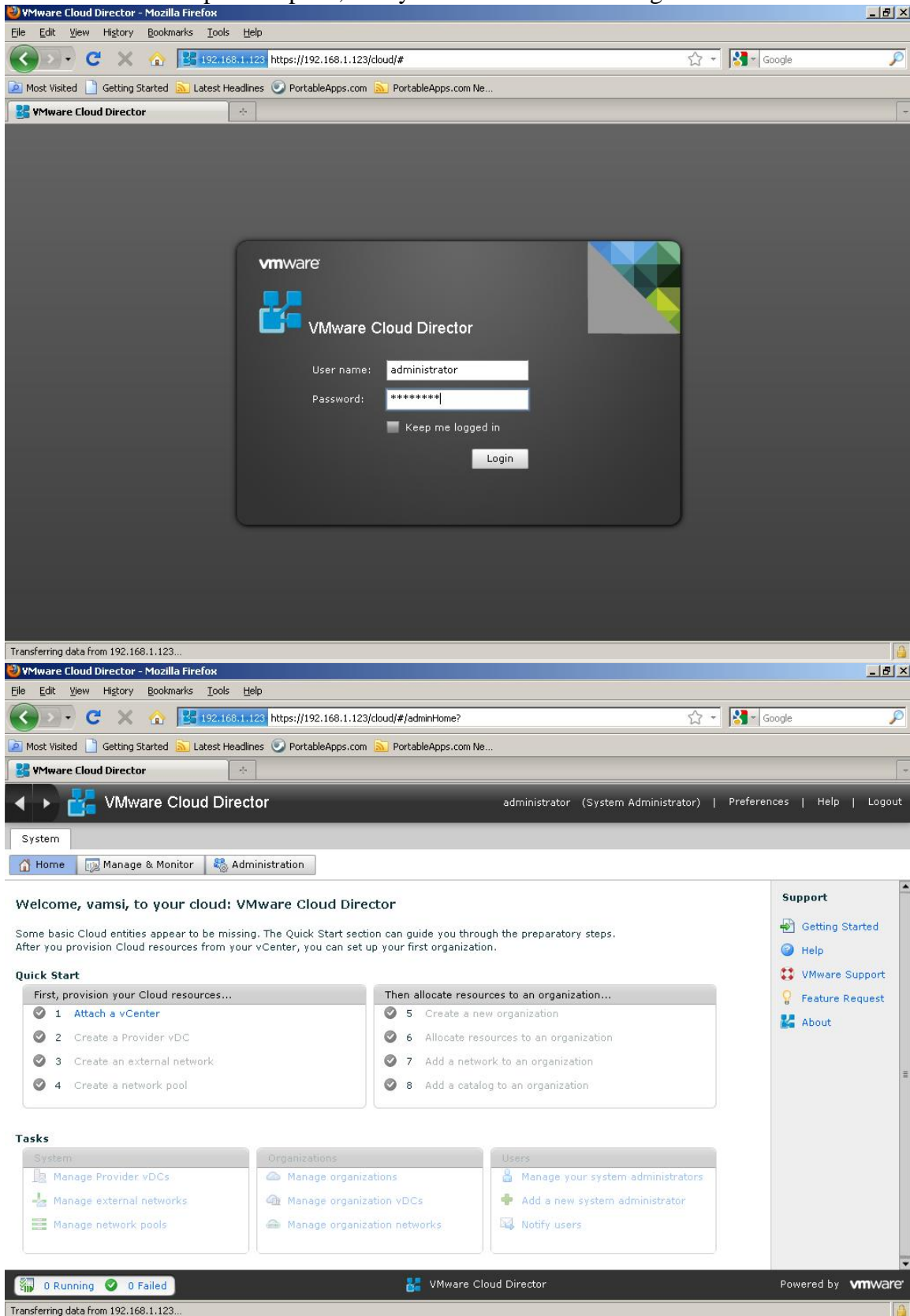








Once the initial setup is complete, the systems redirects to the logon screen.



## Attaching a vCenter to Cloud Director.



### Welcome, vamsi, to your cloud: VMware Cloud

Some basic Cloud entities appear to be missing. The Quick Start After you provision Cloud resources from your vCenter, you can

#### Quick Start

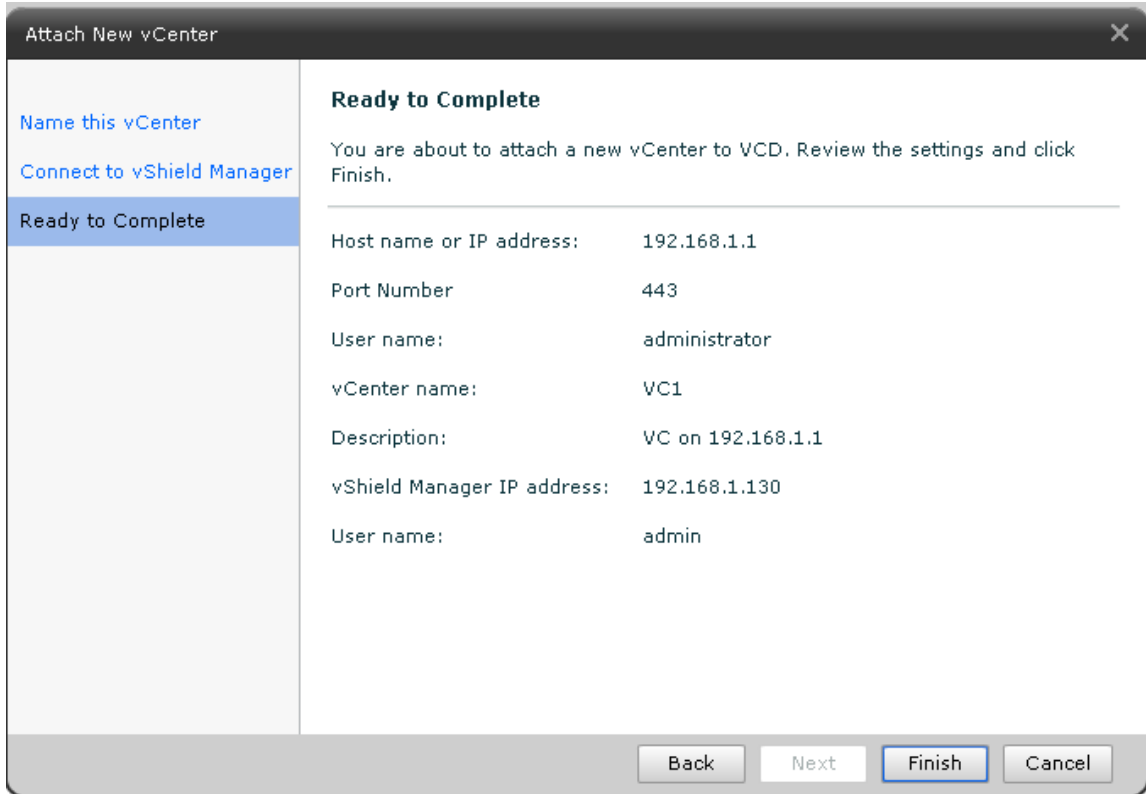
The screenshot shows a dialog box titled 'Attach New vCenter'. On the left is a sidebar with three options: 'Name this vCenter' (selected), 'Connect to vShield Manager', and 'Ready to Complete'. The main area is titled 'Name this vCenter' and contains the instruction: 'Enter the connection information, name, and description for the new vCenter as you want it to appear in VCD.' Below this are several input fields, each with a red asterisk indicating it is required:

- Host name or IP address: 192.168.1.1
- Port Number: 443
- User name: administrator
- Password: \*\*\*\*\*
- vCenter name: VC1
- Description: VC on 192.168.1.1

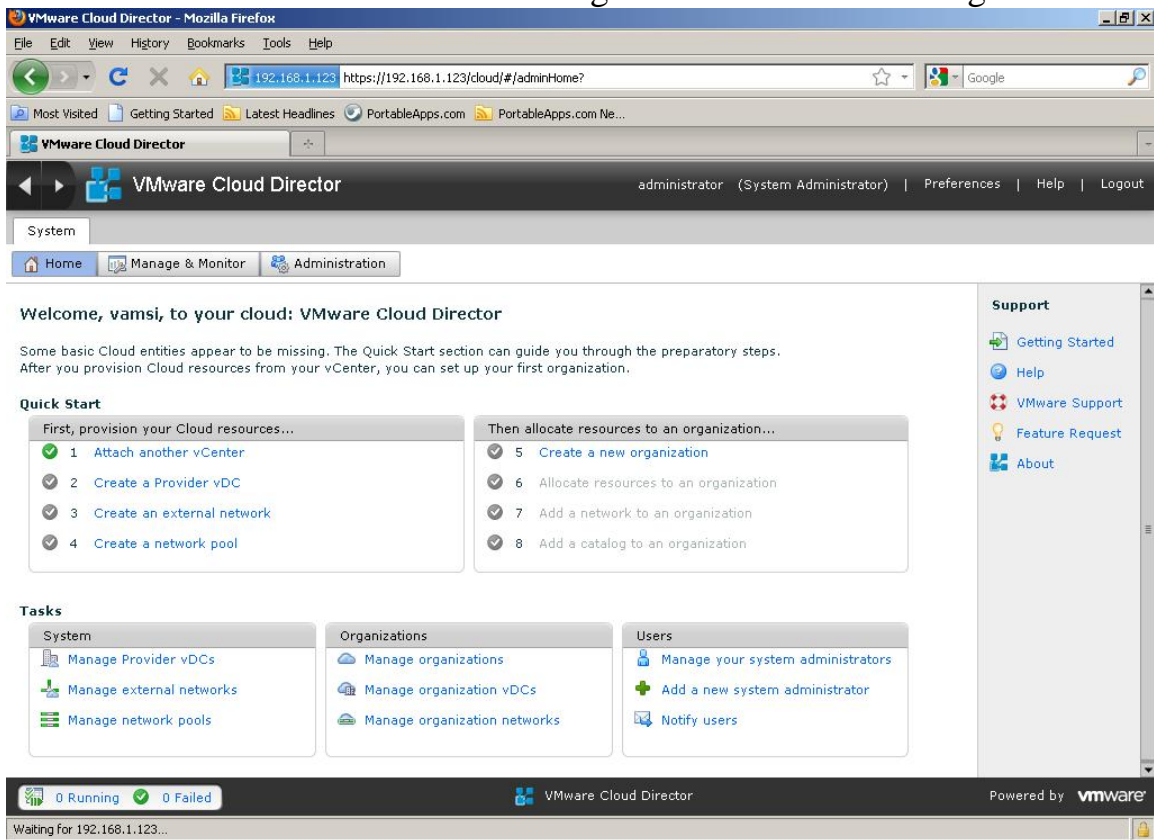
At the bottom of the dialog are four buttons: 'Back', 'Next' (highlighted in blue), 'Finish', and 'Cancel'.

admin/default

The screenshot shows a wizard window titled "Attach New vCenter" with a close button in the top right corner. On the left side, there is a vertical navigation pane with three items: "Name this vCenter" (in blue), "Connect to vShield Manager" (highlighted in blue), and "Ready to Complete". The main area of the wizard is titled "Connect to vShield Manager" and contains the following text: "vShield Manager is required for network services in VCD. Enter the connection information for the vShield Manager that is associated with this vCenter." Below this text are three input fields, each followed by a red asterisk indicating a required field: "Host name or IP address:" with the value "192.168.1.130", "User name:" with the value "admin", and "Password:" with the value "\*\*\*\*\*". At the bottom of the wizard, there are four buttons: "Back", "Next" (highlighted with a blue border), "Finish", and "Cancel".



You can see the rest of the links which got enabled after attaching vCenter.



The rest of the VMware vCloud director configuration could be followed from `vcd_10_admin_guide`.