**qwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmrtyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmrtyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmrtyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmrtyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmrtyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmrtyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmrtyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnmqwertyuiopasdfghjklzxcvbnm**

|  |
| --- |
| 3/14/2017 |

## Infrastructure & Pre-Requisites

The VMs used in our specific installation are as below:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Hostname | Device Role  *E.g. Application Server / Database Server* | IP | OS | RAM | HDD | CPU |
| XXXX | Application Server | XXXX | RHEL 7.2 | 16G | 400G | 4 cores |
| XXXX | License Manager | XXXX | RHEL 7.2 | 4G | Standard XXXXXX | 2 cores |
| XXXX | Ration License Key Server | XXXXX | Windows XP SP 2 |  |  |  |

This document assumes that the Linux and Windows VMs requried are installed and in place.The following pre-requisites have to be met before the volume configuration.

1. Quadcore Intel processor system with 16GB min RAM and 500 GB HDD

2. Two Linux machines

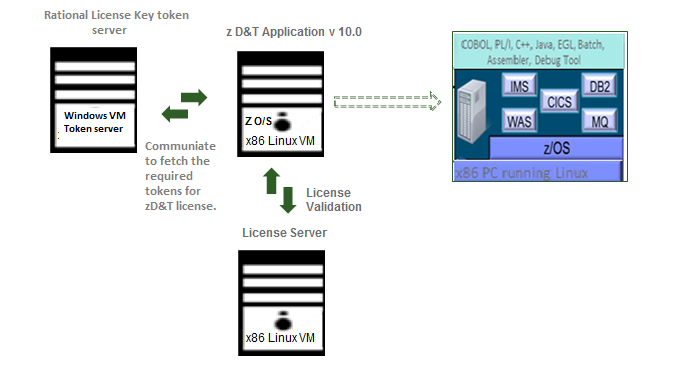
3. One Linux machine will act as License server.  
4. Other Linux machine will be used to install the actual zD&T  
5. Both Linux machine should be made Graphical user interface enabled for the user to access zD&T

## 1.a Pre-requisite for zD&T install

1. RHEL 6 or 7 installed on a PC/ cloud. Kindly make sure that the Linux is not hardened.

2. An additional user "ibmsys1" to be.  
3. X3270 installed on RHEL. A 3270 emulator on the client system to check the access etc.

4. FTP on Linux server.

5. 32 bit DLL on both the RHEL VMs.

## Install of IBM Installation Manager and zD&T

Download the zD&T installable files from the IBM Passprt site and upload them to the required linux machine. Ensure that the linux VM has 400GB space in the specified filesystem.

Create a new directory and mount the iso provided. It will be a variation of “ZDTE\_v10.0\_INSTALL\_EMG.iso”

Installl the IBM installation manager (version 1.8.5 and above) first. This is a pre-requisite for zD&T installation.

IBM installation manager can be installed either using the console mode or GUI mode. We have selected the GUI method via the VNC sessions of the Linux VM.

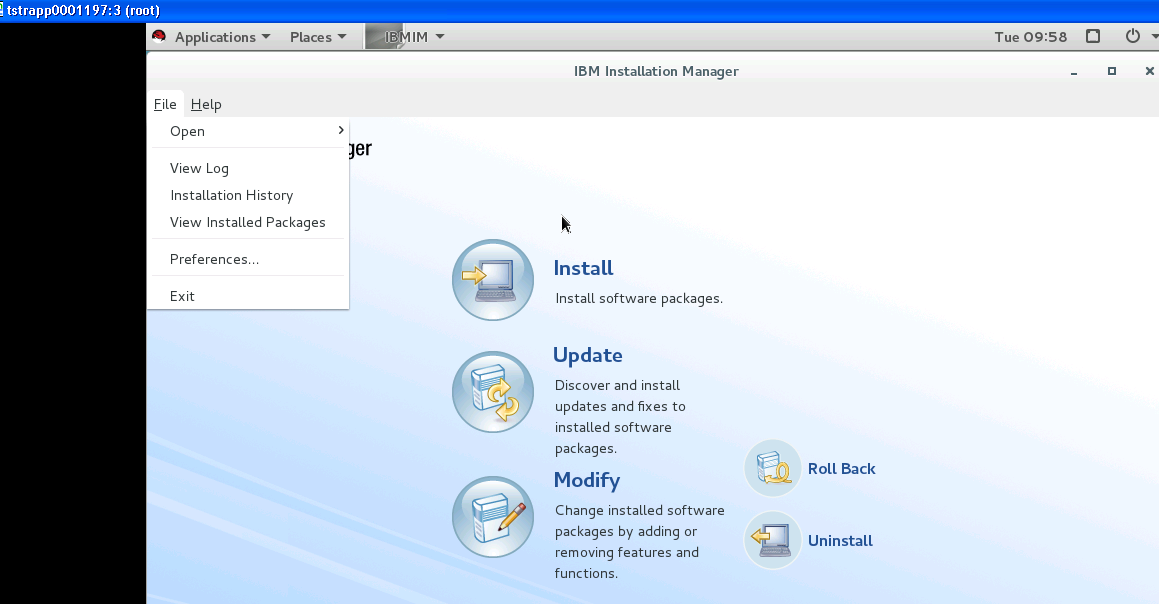
Go to the directory you have created and on command line run the following command as root:

# ./install.sh

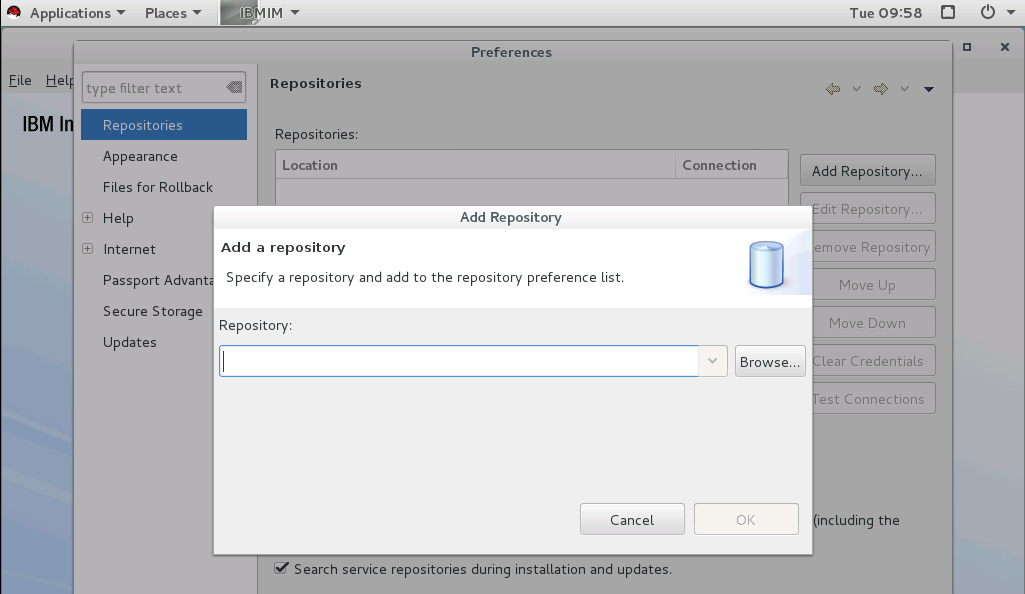
1. Installation Manager is selected on the Install Packages page. Click **Next**.
2. On the Licenses page, read the license agreements for the selected packages. After you accept the license agreement, click **Next** to continue.
3. On the Location page if needed, edit the Installation Manager directory to change the default directory. Click **Next**.
4. On the Summary page, review your choices before you install Installation Manager.
5. Click **Install**. When the installation process completes, you receive a confirmation message.

Note : Please refer to IBM knowledge centre for the latest installation instructions.

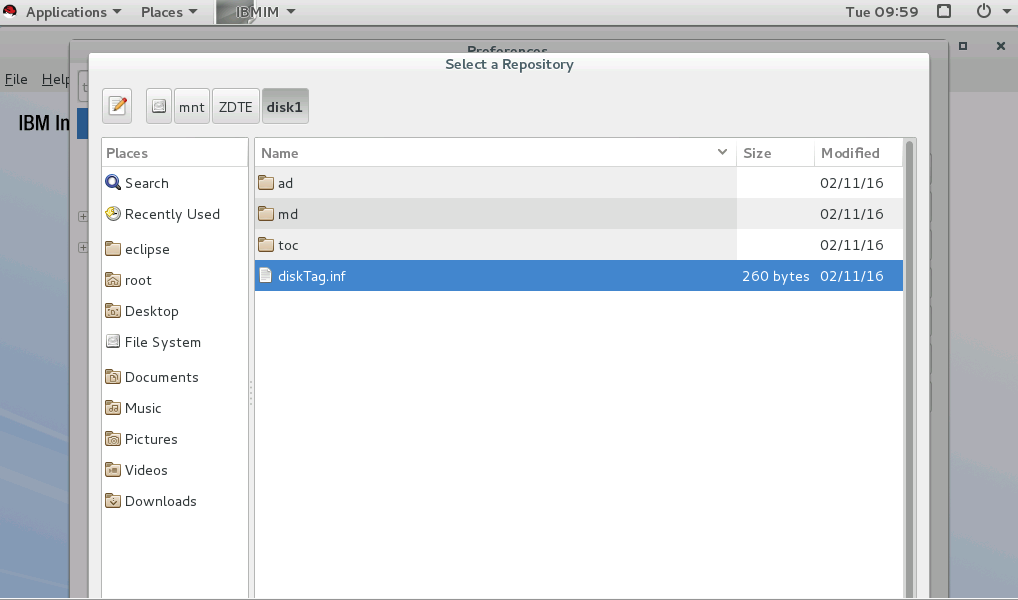
Launch the Installation Manager. Go to Files🡪 Preferences.



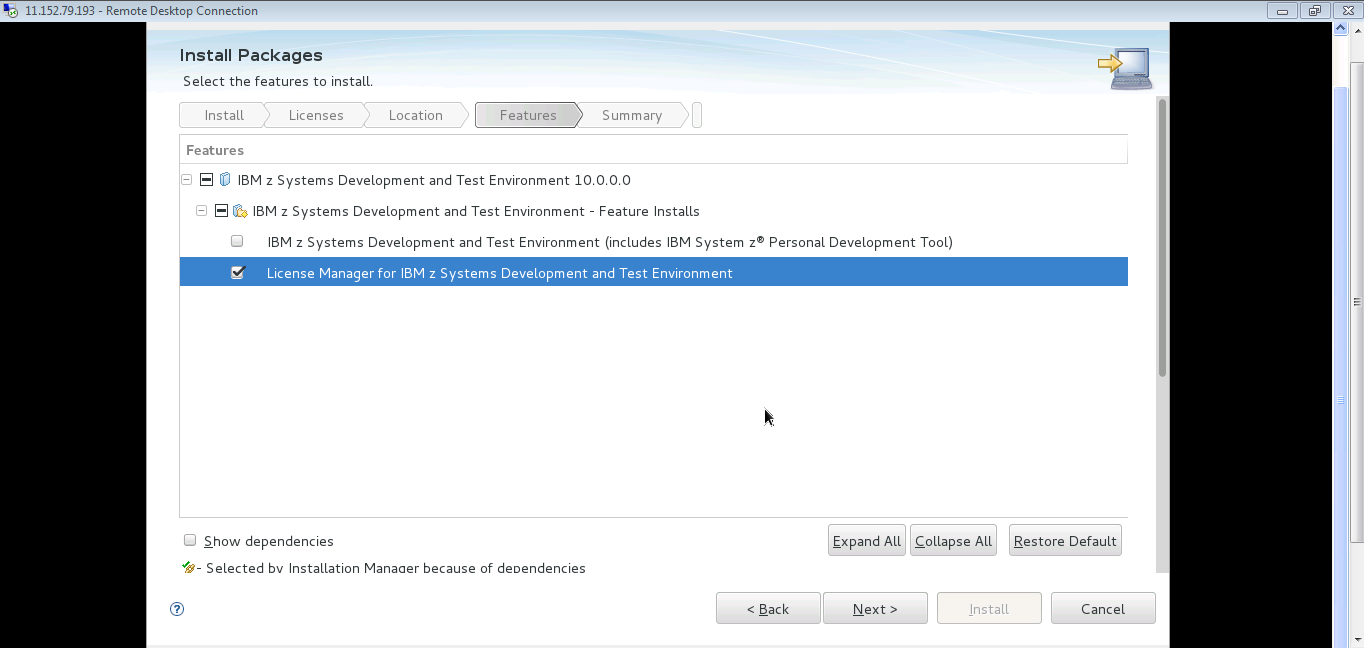
In theFiles 🡪 preferences tab, click on Add Repository to get the below screen.



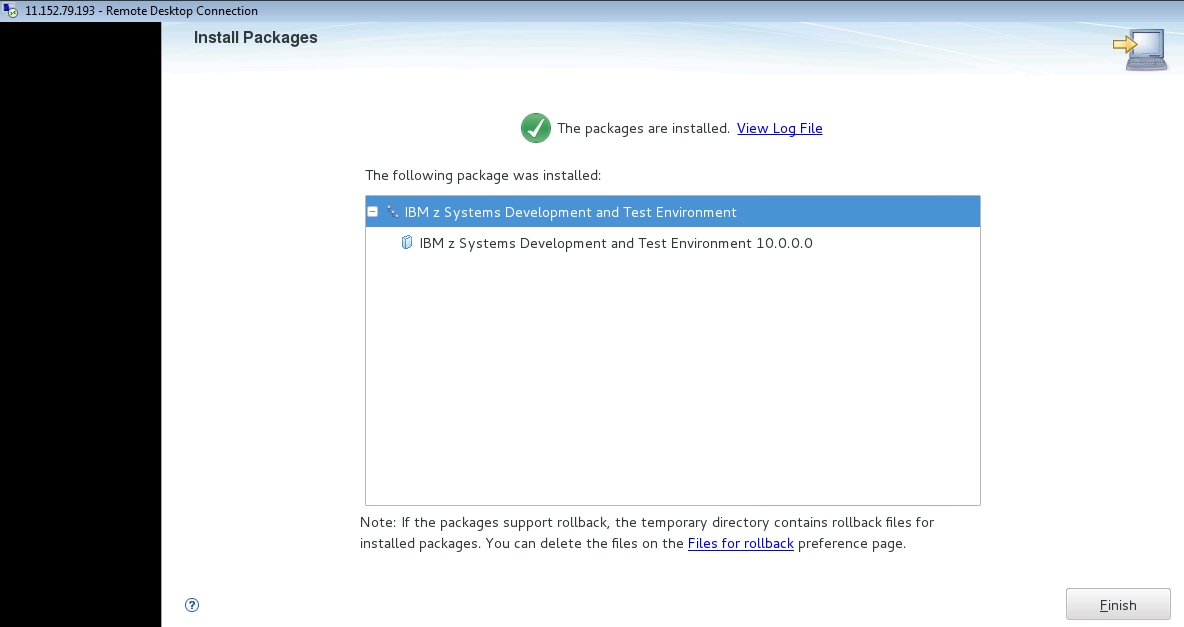
Click on browse and go to the directory where ISO is mounted.--> disk1 -->selct the diskTag.inf file



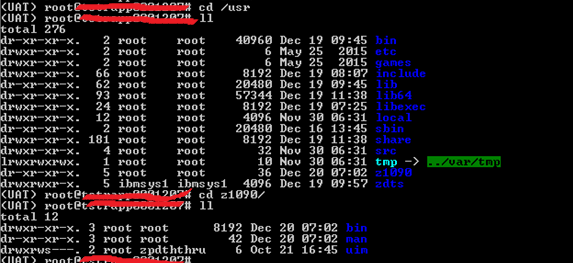
Click on Install packages in IBM IM homepage , and click next and select the IBM z System Development and Test Environment package (includes IBM system z PDT ) . Click Next and Install .



You will get the below screen confirming that zD&T 10.0 is installed:



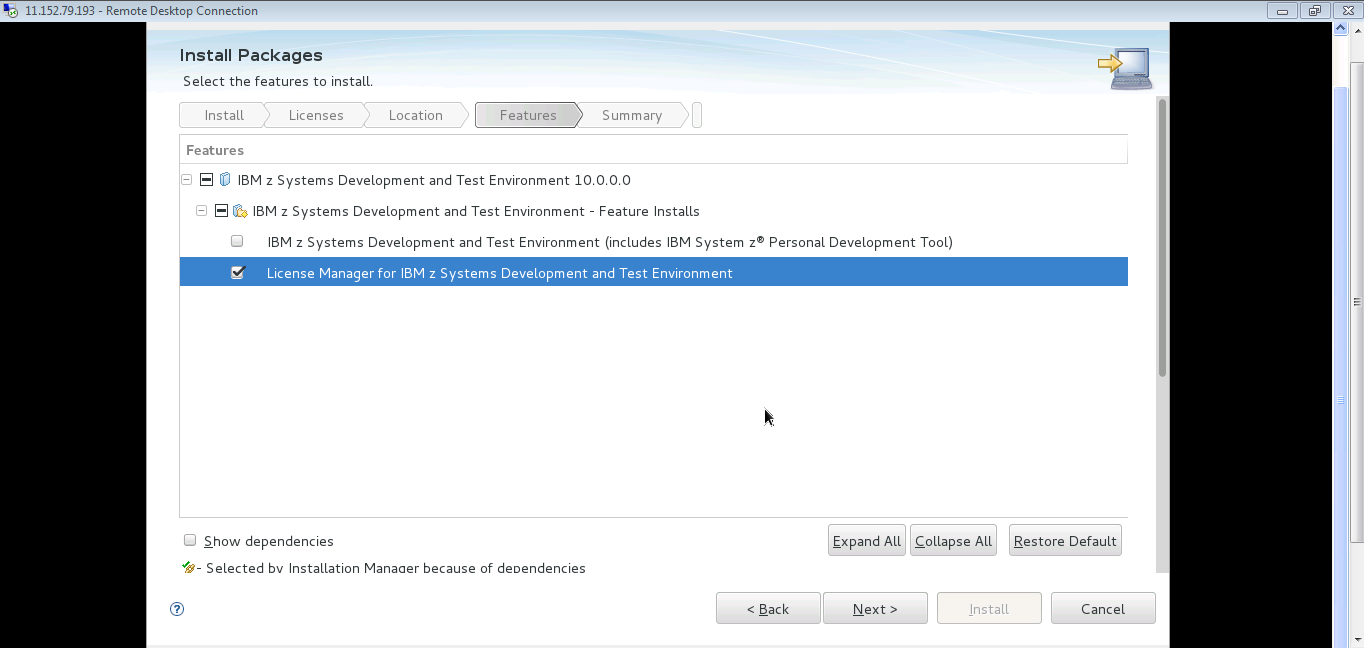
The directory /usr/z1090 is created after the zD&T install is done.



Following similar steps, install the installation Manager in the License manager as well.

After installing the IBM installation Manager, install the zD&T License Manager package.

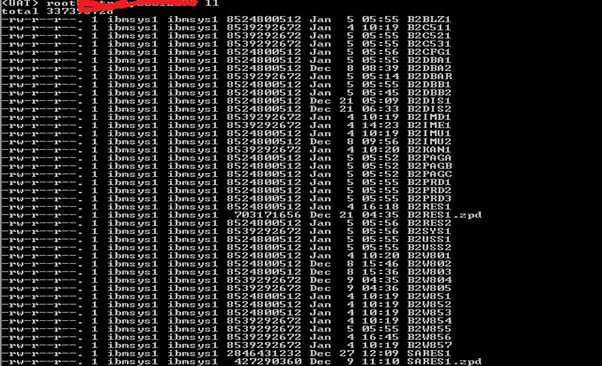
The process is similar with the only change being to select the License Manager for IBM z System Development and Test Environment in the “Install Packages” menu. This will install the License Manager software.



## Files Extraction:

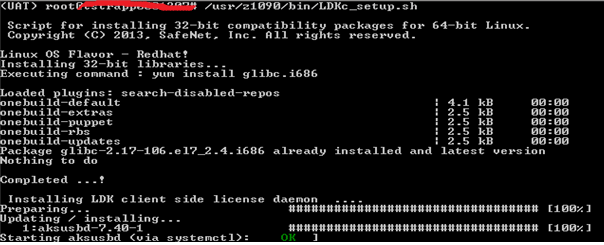
On the zD&T application server, go to the directory where all the installable files are placed and unzip all the files. The extraction of these files will take around 1.5 hours.

#unzip \*.gz



Setup LDK Client and aksusbd service:

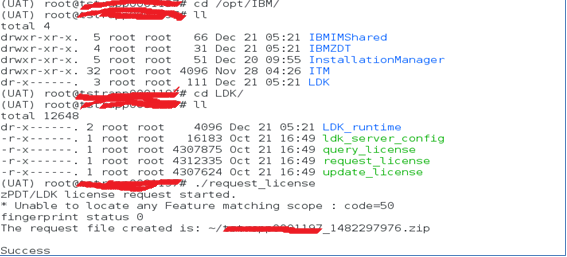
Run the LDKc\_setup.sh to install the LDK client.



## License Generation and Configuration:

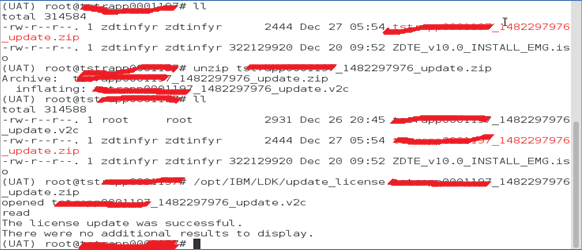
On the license manager (XXXX), go to /opt/IBM/LDK directory and run the “request\_license” command.

The output file: hostname\_XXXX.zip file needs to be given in the Rational Key Centre server to generate the license update files.



* Transmit the license manager update file (generated by the Rational Key Centre) to the license manager.
* From the root user ID on the license manager, run this command: /opt/IBM/LDK/update\_license Hostname\_xxxxxxxxxx\_update.zip.

In this command, you must specify the absolute path to the Hostname\_xxxx\_update.zip file. This command installs the license key file on the server.



Restart the license server daemon to make the license key file active by using one of these methods: For newer Linux distributions, enter systemctl restart aksusbd.service.

For older Linux distributions, enter service aksusbd restart

## zD&T Client Configuration

On the application server, as **root** update the client config on the application server GUI/VNC with the ip address of the license manager server (UIM): This helps in setting up the application server as UIM client.

#/usr/z1090/bin/clientconfig

Using client config, we are actually changing the settings in “/usr/z1090/bin/sntlconfig.xml”

Start the uimserver on the license manager:

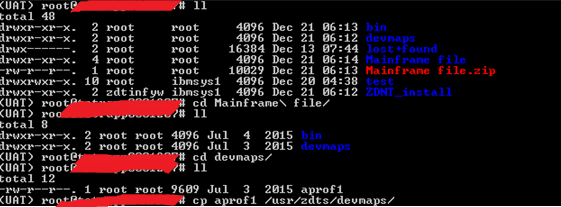
/usr/z1090/bin/uimserverstart

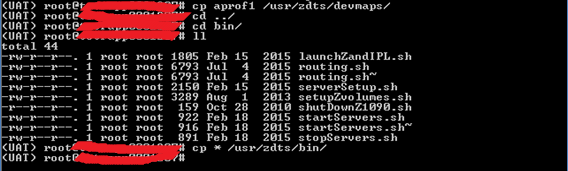
## 5. a Devmap configuration and Unzip of installable:

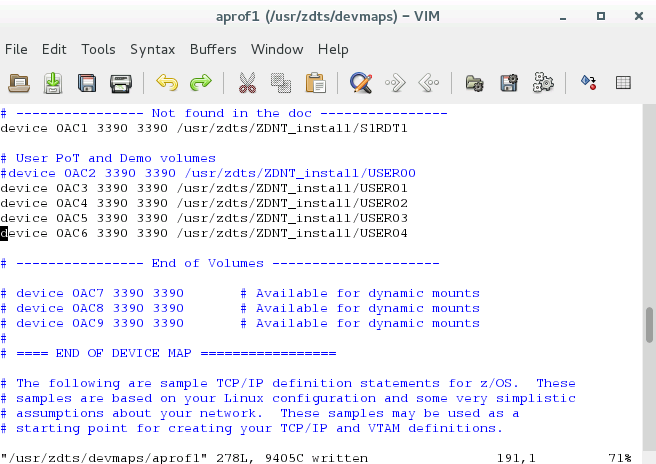
Transfer the Mainframe.zip file provided by IBM (Jose) to the zD&T server. This file contains the devmap files and scripts which will help us in the configuration and launch of the zD&T.

Create the devmaps and bin directory in your chosen path , in this example it is (/usr/zdts). Copy the contents of Mainframe devmaps and bin file to these two.

#unzip Mainframe.zip

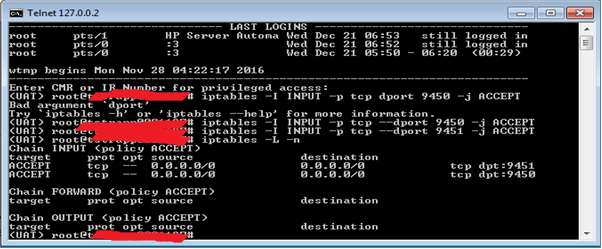




In the devmap (aprof1) file , Replace the /Appliance/../aprof1 with the actual voulme path (/usr/zdts/ZDNT\_Install)

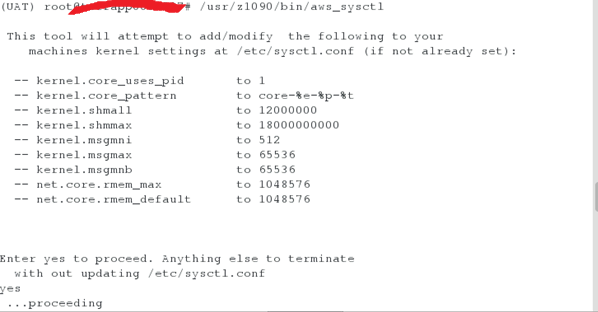
On the License Manager server, open the ports 9450 & 9451 for communication with ZDnT server.

# iptables –L –n (will display the existing active ports)  
You can enable the ports by executing the following commands if they are not active.  
# iptables -I INPUT -p tcp –dport 9450 -j ACCEPT (Two hyphens before dport)  
# iptables -I INPUT -p tcp –dport 9451 -j ACCEPT

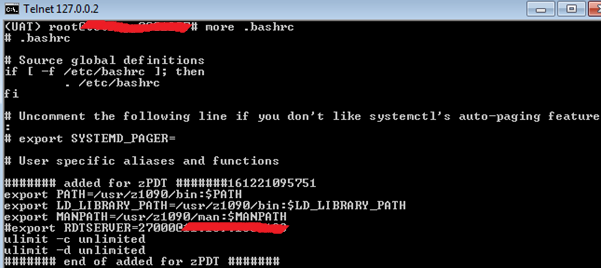


5.b Updating /etc/sysctl.conf using the /usr/z1090/bin/aws\_sysctl command

Run thefile /usr/z1090/bin/aws\_sysctl to update the /etc/sysctl.conf. This will update the kernel settings to as required by zD&T:



Update the .bashrc of ibmsys1 as below to ensure that the parameters path, library path get updated with the locations of zos commands.

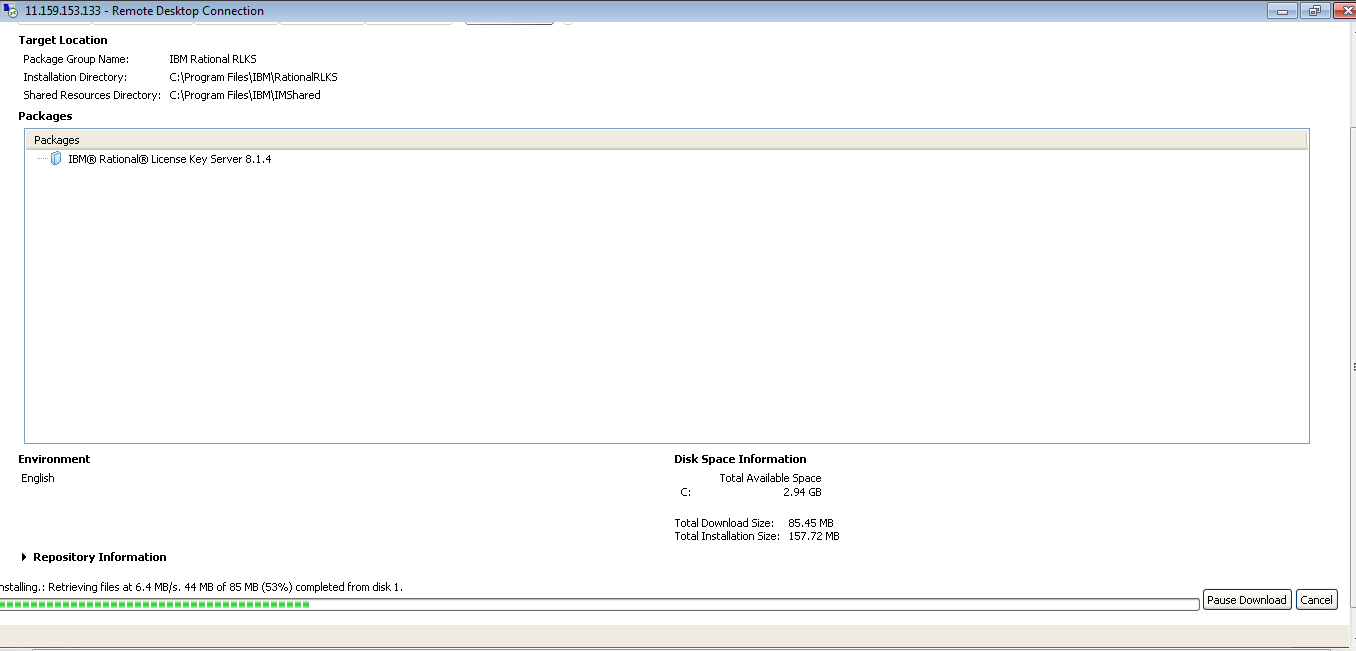


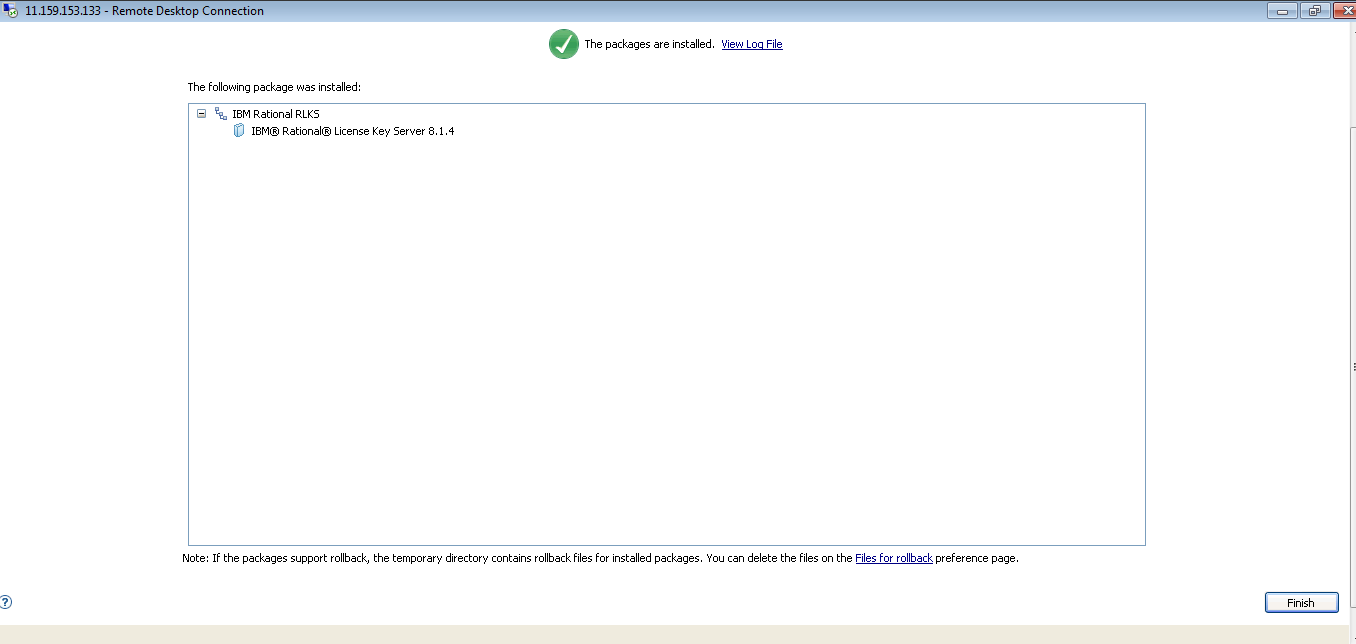
## Rational License Key Server Setup

IBM installation Manager is needed for this also. Install the IBM installation manager for windows.

Download and copy the license key server files to the windows VM (xXXXXXXXX)

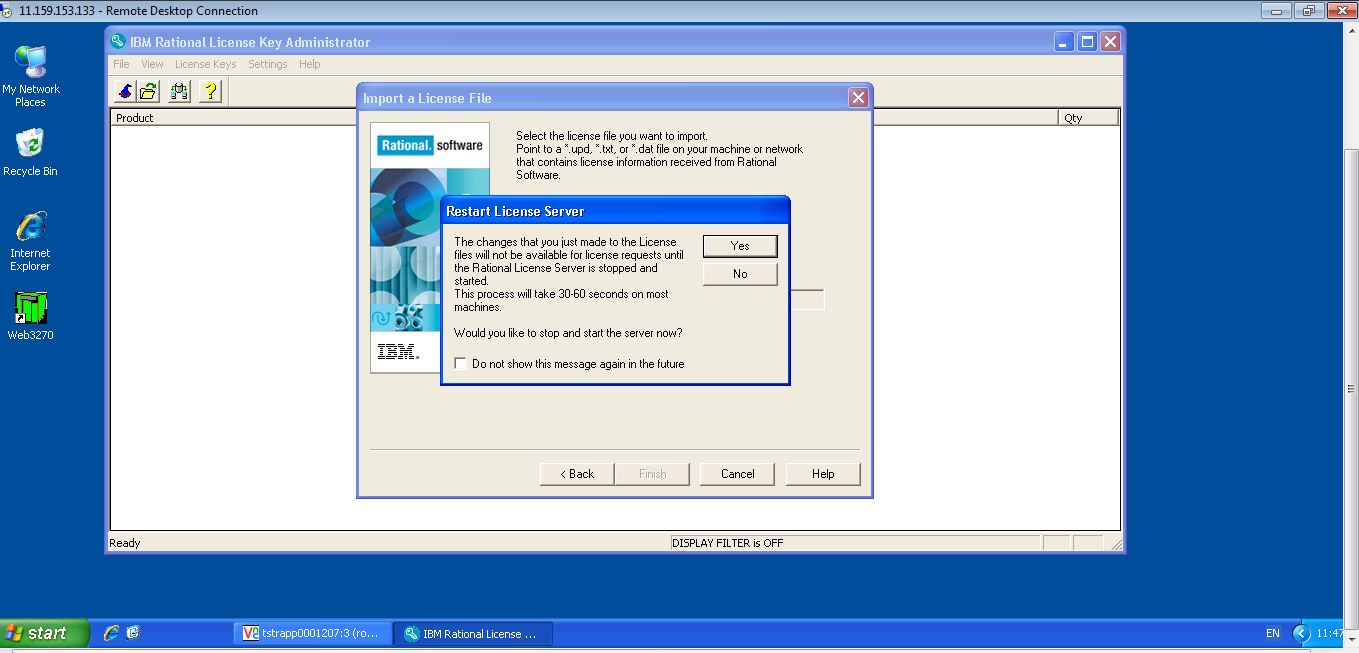
In the Installation Manager 🡪 Files 🡪 Preferences 🡪 Add Repository and browse to the path where diskTag file is present and add it.

Click on Install Packages and go to the next pages and select the option for IBM Rational License Key Server

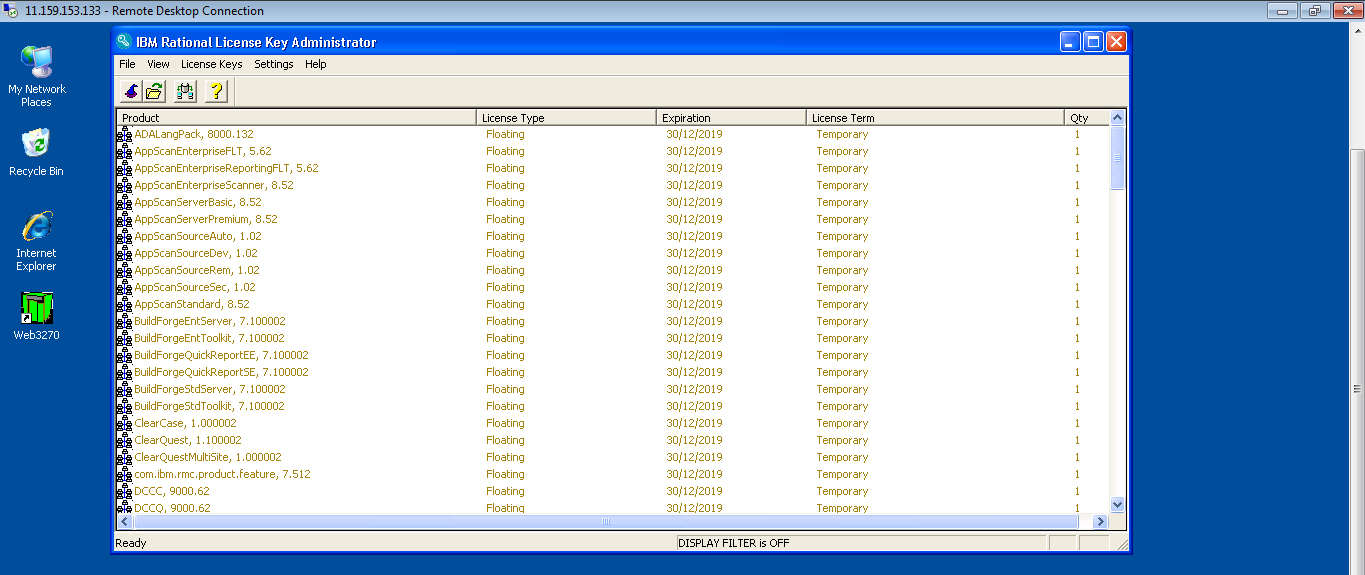


Open **IBM Rational**-> Click on **License Key Administrator** and select the option button as **Import a Rational License File->**Click on **Browse** and go to path where we got the **License UPD** file from the **Rational License Key Center** (**which manages the global licenses of tokens)**.

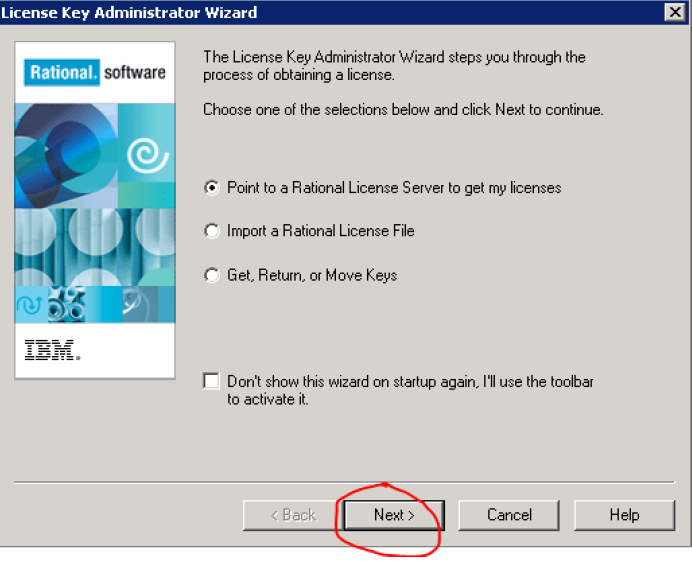
Select the path and then click on **IMPORT** then you can see the number of License for the required Application will be displayed over a message (Would you like to import these Floating Licenses) and again Click on **IMPORT** and a message will display as IBM Rational Key Administrator **File Imported Successfully** and the it prompt for **Restart License Manager**->Click on **YES,** it will take 30 seconds to restart.



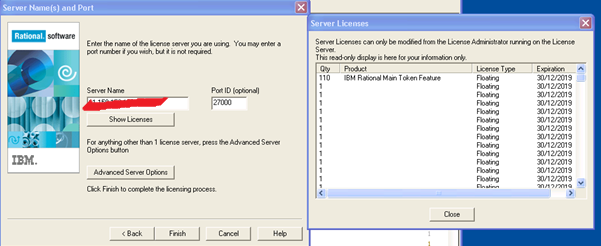
Here you can view all the tools which you have imported:



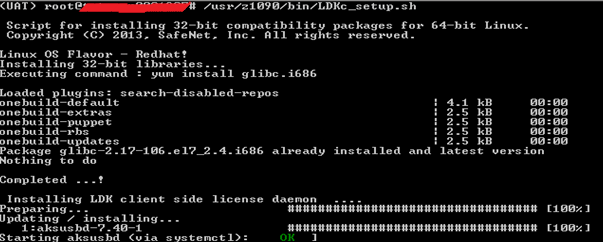
Once this is done, please open the IBM Rational-> License Key Administrator (in run as administrator mode). Choose “Point to a Rational License Server to get my license”



Place the license server name (where the license server set-up has been done, then click on the Show licenses. You will get the the below page:



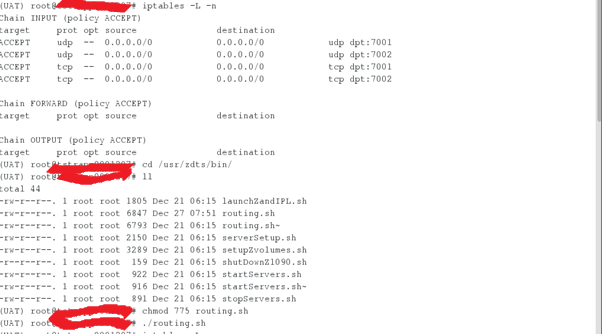
On the application server, certain changes need to be done so that the application server is able to act as the LDK client. Run the LDKc\_setup.sh to install the LDK client.

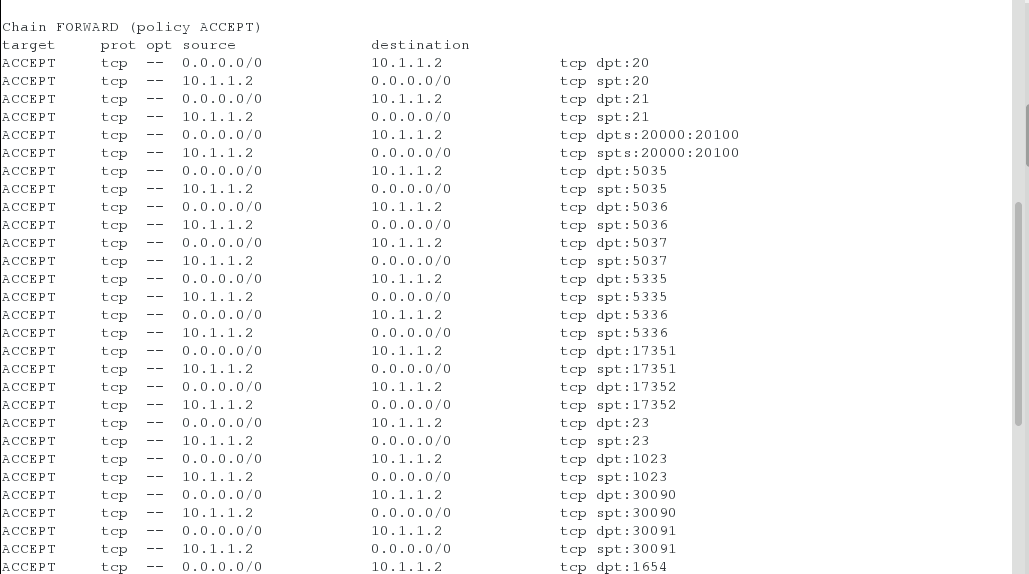


The devmap file “aprof1” has to be modified to uncomment the RDNTTOKEN line.

Add the rational token server IP address there.

Run the Routing.sh script provided in /usr/zdts/bin/. This script will open all the ports required for zD&T. **Please note that this script has to be run each time the Linux VM is restarted.**

****



## **Z O/S Install and** **zD&T Instance Launch**

The process of installing the z/OS volume images is to use the Z1091\_ADCD\_install command to install ZPD volume images, and use the gunzip command to decompress any other z/OS volumes needed. When installed or decompressed, most volumes are in emulated 3390-9 format, which are approximately 8.5 GB. Run all commands as the user that runs z Systems Development and Test Environment, in this example ibmsys1.

Perform the following two commands to install the ZPD volume images into the /home/ibmsys1/z1090/disks directory:

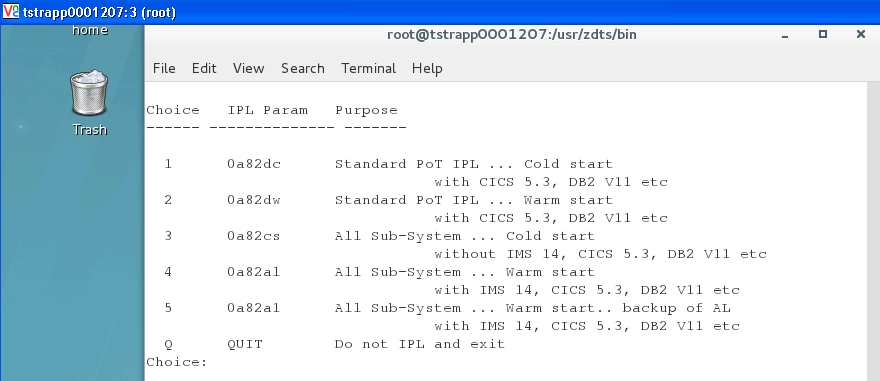
$ Z1091\_ADCD\_install /usr/zdts/ZDNT\_install/B2RES1.ZPD /usr/zdts/ZDNT\_install /B2RES1  
$ Z1091\_ADCD\_install /usr/zdts/ZDNT\_install/SARES1.ZPD /usr/zdts/ZDNT\_install/SARES1

The launch file is present in /usr/zdts/bin.

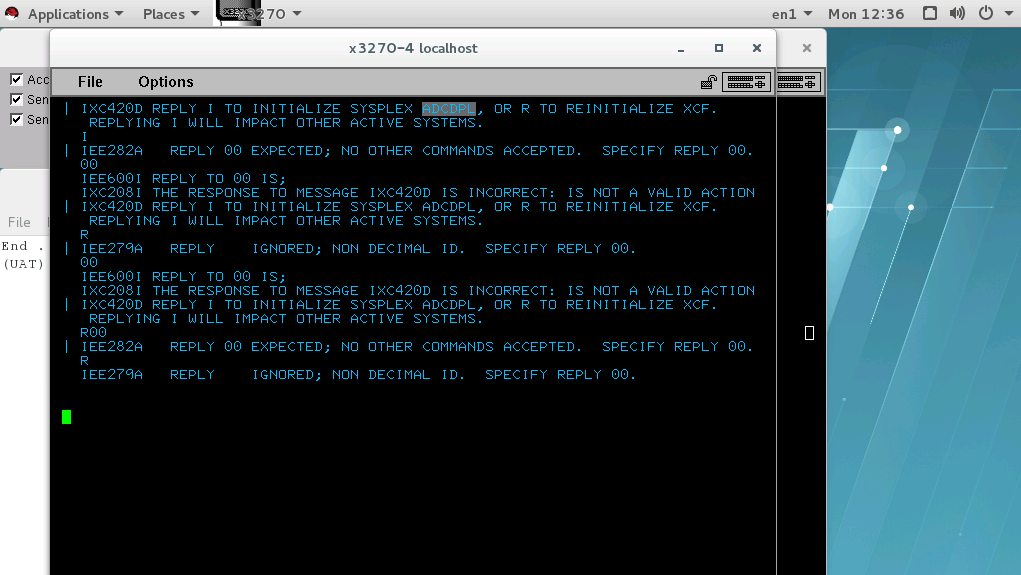
Change LaunchZandIPL.sh the pathnames would be /appliance/devmap .. change to your absolute path /usr/zdts/devmaps. Log in as IBMSYS1 and try to do an inst check.

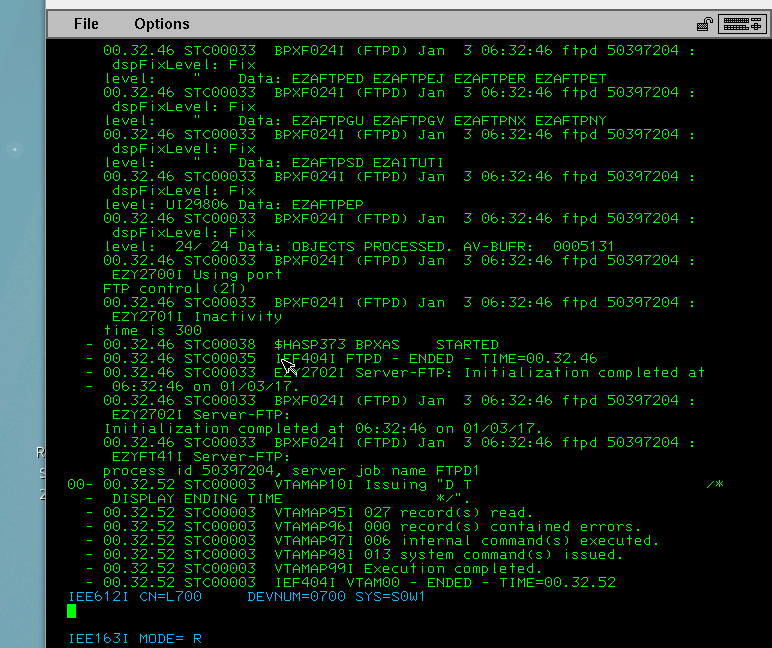
#awsstart /usr/zdts/devmaps/aprof1

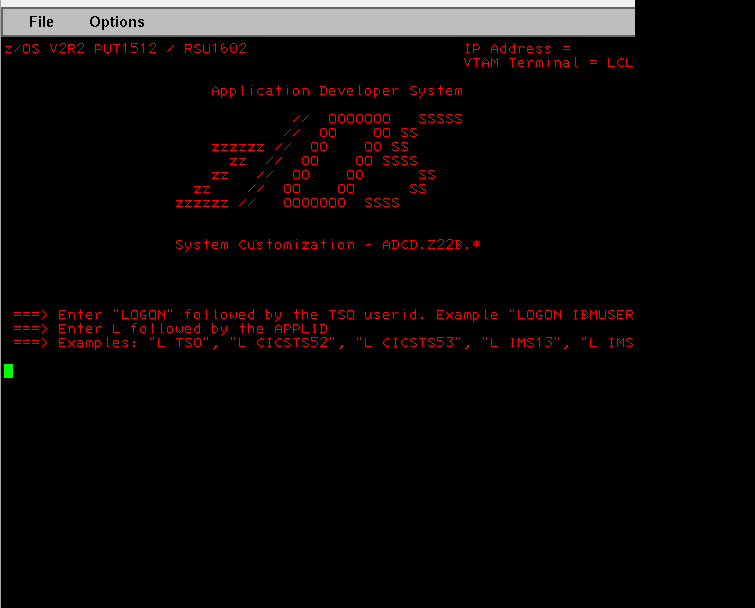
This is after executing the launch file:

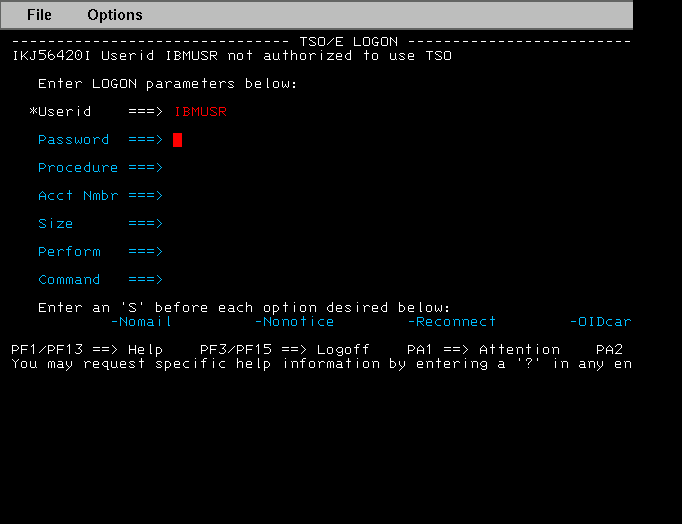


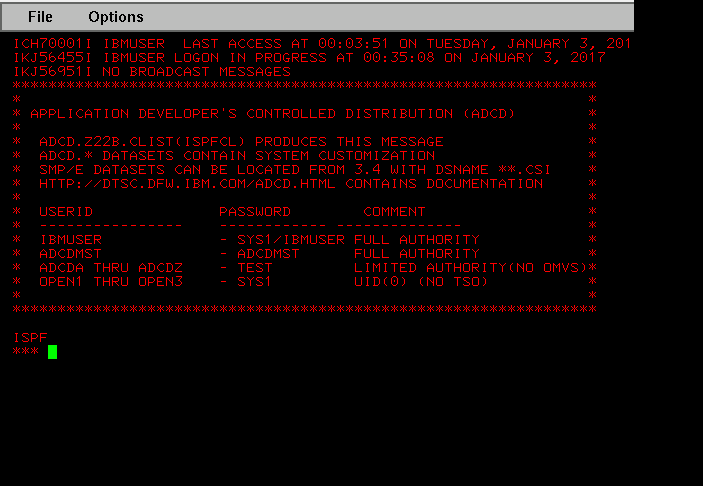
Getting the zD&T, Z/os instance up after selecting the required choice:



Give “R 00, I” as the command in the main console above. Please note that this is just a one time process.







## 7. a USER Volumes Creation:

To create z volumes: As ibmsys1, create the z volumes using the below commands:

$ alcckd /usr/zdts/mfvol/zdnt01 -d3390-9  
$ alcckd /usr/zdts/mfvol/zdnt02 -d3390-9

After creation of these volumes, give the below parameters on the devmap file “aprof1”:

Please note that the port number “0AA9 , 0AB0” will be as per the available ports on the system.

Each user volume has to be defined in the devmap .The system has to be IPLed for the new volumes to be visible in zD&T.

[manager]

name awsckd 0001

device 0AA9 3390 3390 /usr/zdts/mfvol/zdnt01

device 0AB0 3390 3390 /usr/zdts/mfvol/zdnt02

## Clone System

The approach for the provision of the clone was to copy the volumes of the existing zD&T instance.

Install the zD&T and license manager software on the respective servers. Make sure that all the pre-requisites are in place like x3270, ftp, open ports etc.

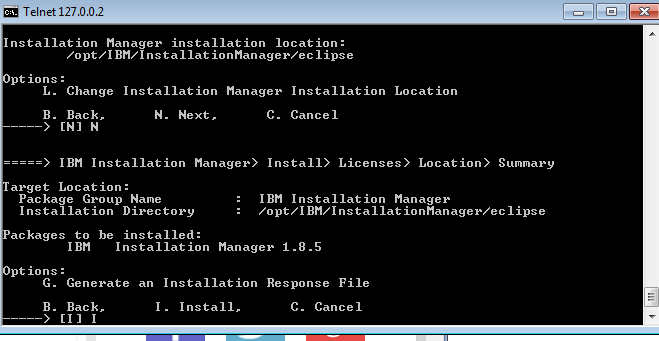
After that, the copy of both the system volumes as well as user volumes is taken on the main instance. These are zipped and transferred via ftp to the clone instance, where they are unzipped.

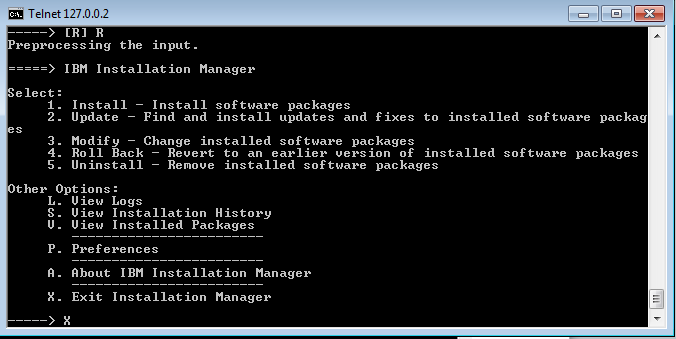
The VMs used in our specific installation are as below:

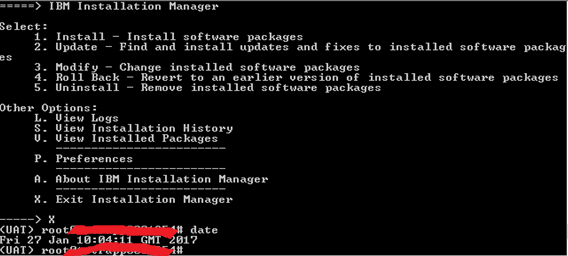
|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Hostname | Device Role  *E.g. Application Server / Database Server* | IP | OS | RAM | HDD | CPU |
| XXX | Application Server | XX | RHEL 7.2 | 16G | 400G | 4 cores |
| XXXX | License Manager | XXXXXX | RHEL 7.2 | 4G | Standard XXXXXX | 2 cores |
| XXX | Windows VM for VNC access | XXXXX | Windows XP SP 2 |  |  |  |

## 8. a Install of IBM Installation Manager

This install of IBM installation manager was done using the command line method. PFB the screenshots below:

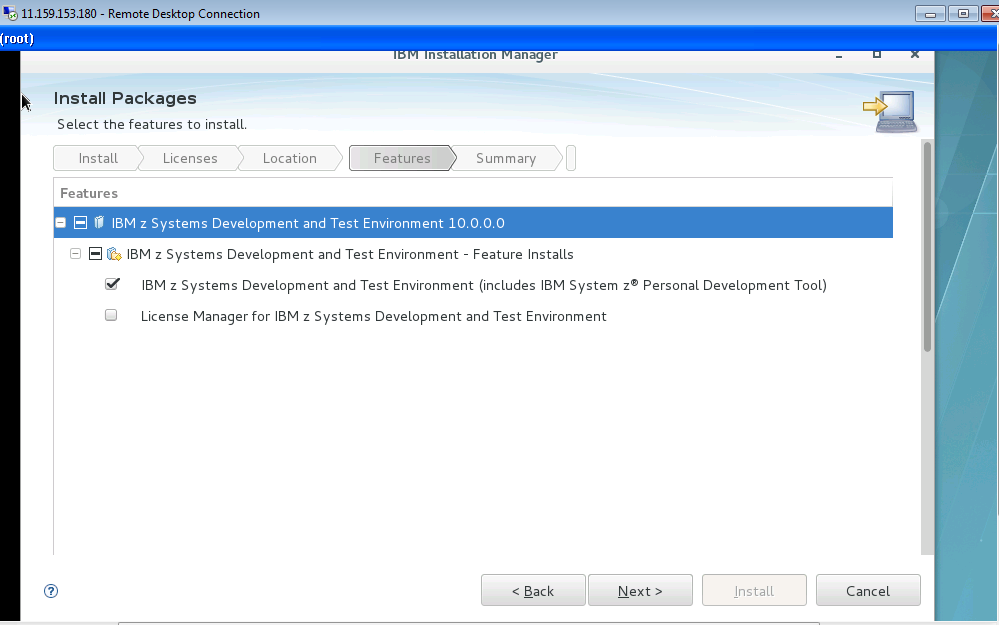






## 8. b UIMServer Setup

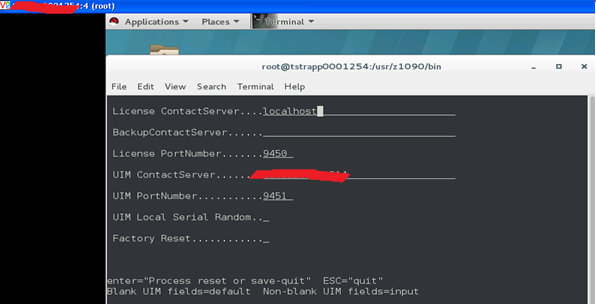
Install VNC and enable it for both root and ibmsys1. Then access VNC as root and start installing the zD&T as mentioned in section 2.



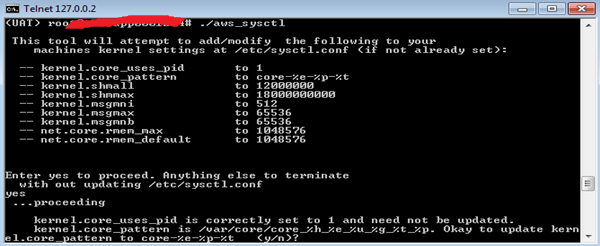
Do a similar installation on the license manager server. Just select license manager in the above screenshot.

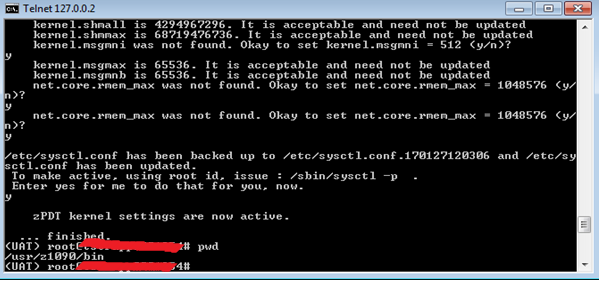
On the application server, as **root** update the clientconfig with the IP address of the license manager server (UIM): This helps in setting up the application server as UIM client.

Using clientconfig command, the settings in “/usr/z1090/bin/sntlconfig.xml” get changed.

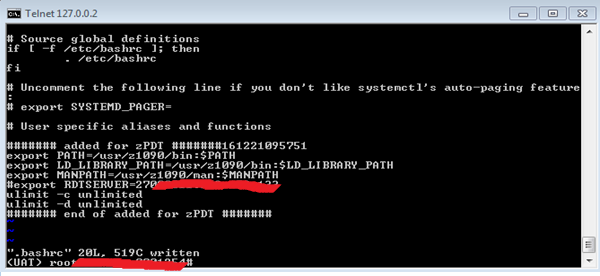


Run the aws\_sysctl command to update the kernel parameters:





Update the file “.bashrc” of ibmsys1 as below to ensure that the parameters path, library path get updated with the locations of zos commands.



Also start the uimserver on the license manager:

$ /usr/z1090/bin/uimserverstart

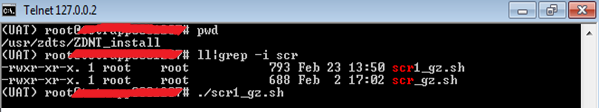
On the license manager, run /opt/IBM/LDK/request\_license to generate the request file.

Follow the steps in section 4 for the license generation and update.

## 8.c GZIP and FTP

Bring down the main instance (xxxxxx) using awsstop.

ZIP all the system and user volumes of the main instance using gzip command



After the GZIP completes (generally around 70 minutes for 220+GB) , ftp all the files to the clone instance.

Move the files to the required path. System volumes to /usr/zdts/ZDNT\_installl, user volumes to /usr/zdts/mfvol

GUNZIP all the volumes by using the command

#gunzip \*.gz

Bring up the clone instance using the launch script. Give R 00,I to initialize the instance.