1 Refer to http://www.tecmint.com/setting-up-prerequisites-for-oracle-12c-installation/
2   http://www.tecmint.com/oracle-12c-installation-in-centos-6/
3 I. Pre-Installation
4   <Requirements>
5   -For large-scale installation we need to use multicore processors with High availability.
6   -Recommended minimum RAM needed for Oracle is 2GB or more.
7   -Swap must be enabled double the size of RAM.
8   -Disk space must be more than 8GB, its depends on edition which are we going to choose for
       installing.
9   -/tmp directory must have free space more than 1GB for error free installation.
10   -Supported Linux operating systems are RHEL, Centos, Oracle.
11   -Both x86_64 and i686 packages are required for installation.
12   -Screen resolution must be more than 1024×768 resolution.
13
14 Step 1: Setting Hostname and Upgrading System
15
16   1. If you've not set your system hostname, edit the system hosts file '/etc/hosts' and enter your
      hostname entry along with IP address as shown below.
17   127.0.0.1   localhost
18   ::1   localhost
19   your_ip   hostname(machine name)
20
21
22   2. Before, heading up for the installation process, first makes sure your / and /tmp partitions has
      enough available space to carry error free installation.
23   # df -h
24
25   3. Next, verify that your system has correct hostname, static IP address and distribution version,
      using following commands.
26   # hostname
27   # ifconfig | grep inet
28   # lsb_release -a
29
30   4. Now change the SELinux mode to permissive and restart the system to make Permanent changes
      for selinux.
31   # vi /etc/sysconfig/selinux
32   SELINUX=permissive
33
34   5. # reboot
35
36 Step 2: Installing Packages and changing Kernel Values
37
38   6. Once your system boots up properly, you can do a system upgrade and then install following
      required dependencies.
39   # yum clean metadata && yum upgrade
40   # yum install binutils.x86_64 compat-libcap1.x86_64 compat-libstdc++-33.x86_64
          compat-libstdc++-33.i686 \
41   compat-gcc-44 compat-gcc-44-c++ gcc.x86_64 gcc-c++.x86_64 glibc.i686 glibc.x86_64
          glibc-devel.i686 glibc-devel.x86_64 \
42   ksh.x86_64 libgcc.i686 libgcc.x86_64 libstdc++.i686 libstdc++.x86_64 libstdc++-devel.i686
          libstdc++-devel.x86_64 libaio.i686 \
43   libaio.x86_64 libaio-devel.i686 libaio-devel.x86_64 libXext.i686 libXext.x86_64 libXtst.i686
          libXtst.x86_64 libX11.x86_64 \
44   libX11.i686 libXau.x86_64 libXau.i686 libxcb.i686 libxcb.x86_64 libXi.i686 libXi.x86_64
          make.x86_64 unixODBC unixODBC-devel sysstat.x86_64
45
46   7. After installing all the above needed packages, now it's time to do some changes at kernel level
      parameters in '/etc/sysct.conf' file.
47   # vi /etc/sysctl.conf
48
49   Add or change the following values as suggested. Save and quit using wq!.
50
51   #----------------------------------
52   #   Oracle 12c Release 2 Entries
53   #----------------------------------
54   kernel.shmmax = 4294967295
55   kernel.shmall = 2097152

```
56      fs.aio-max-nr = 1048576
57      fs.file-max = 6815744
58      kernel.shmmni = 4096
59      kernel.sem = 250 32000 100 128
60      net.ipv4.ip_local_port_range = 9000 65500
61      net.core.rmem_default = 262144
62      net.core.rmem_max = 4194304
63      net.core.wmem_default = 262144
64      net.core.wmem_max = 1048576
65
```

66   8. Once you've added above values, now issue following command to take new changes into effect.
67   # sysctl -p

69   9. Now it's time to restart the machine and move further instructions on installing Oracle database.
70   # reboot

72 Step 3: Configuring System for Oracle Installation

74   10. Create the new groups Oracle inventory, OSDBA and OSOPER for Oracle installation.
75   # groupadd -g 54321 oracle
76   # groupadd -g 54322 dba
77   # groupadd -g 54323 oper

79   11. Create the new user oracle and add the user to already created groups.
80   # useradd -u 54321 -g oracle -G dba,oper oracle
81   # usermod -a -G wheel oracle
82   # passwd oracle

84   12. If your system is enabled with firewall, you need to disable or configure it according to your
      needs. To disable it, run the following commands.
85   # iptables -F
86   # service iptables save
87   # chkconfig iptables on

89   13. Create the following directory for installing Oracle and change the ownership and grand
      permission to the newly created directory using recursive.
90   # mkdir -p /u01/app/oracle/product/12.2.0/db_1
91   # chown -R oracle:oracle /u01
92   # chmod -R 775 /u01
93   # ls -l /u01

95   14. Next, we need to add the environmental variable for oracle user. Open and edit the profile file of
      oracle user and append the oracle environment entries.
96   # vi /home/oracle/.bash_profile
97   # vi /etc/profile

99   Append the below Environment Entry. Save and exit the vi editor using wq!.

```
101        #---------------------------
102        ## Oracle Env Settings
103        #---------------------------
104        export TMP=/tmp
105        export TMPDIR=$TMP
106        export ORACLE_HOSTNAME=CentOS-00
107        export ORACLE_UNQNAME=orcl
108        export ORACLE_BASE=/u01/app/oracle
109        export ORACLE_HOME=$ORACLE_BASE/product/12.2.0/db_1
110        export ORACLE_SID=orcl
111        export PATH=/usr/sbin:$PATH
112        export PATH=$ORACLE_HOME/bin:$PATH
113        export LD_LIBRARY_PATH=$ORACLE_HOME/lib:/lib:/usr/lib
114        export CLASSPATH=$ORACLE_HOME/jlib:$ORACLE_HOME/rdbms/jlib
```

117   Now exit from root user and switch to oracle user. Again, this step is not required, if you are
        already using root account, just switch to oracle user for further instructions.
118

```
119     # exit
120     # su - oracle
121
122  15. Here we need to check for the resource limits for oracle installing user. Here our Oracle installer
     user is oracle. So we must be logged in as oracle user, while doing resource check. Check for the
     soft and hard limits for file descriptor settings before installation.
123     $ ulimit -Sn
124     1024
125     $ ulimit -Hn
126     4096
127     $ ulimit -Su
128     1024
129     $ ulimit -Hu
130     31532
131     $ ulimit -Ss
132     10240
133     $ ulimit -Hs
134     unlimited
135
136     You may get different values in the above command. So, you need to manually assign the values
        for limits in configuration file as shown below.
137
138     $ su
139     # vi /etc/security/limits.conf
140
141     ...
142     #ftp          hard   nproc         0
143     #@student     -      maxlogins     4
144
145     oracle   soft   nofile1024
146     oracle   hard   nofile65536
147     oracle   soft   nproc    2047
148     oracle   hard   nproc    16384
149     oracle   soft   stack 10240
150     oracle   hard   stack 32768
151
152     # End of file
153
154
155     Next, edit the below file to set the limit for all users.
156     # vi /etc/security/limits.d/90-nproc.conf
157
158     By default it was set to
159     * soft nproc 1024
160
161     We need to change it to.
162     * - nproc 16384
163
164     finally
165     *        -     nproc     16384
166     root    soft  nproc       unlimited
167
168  Step 4: Downloading Oracle Packages
169
170   16. Turn on the display
171     - runInstaller를 실행하기 전에 xdisplay를 일치시켜줘야 한다. root 계정이나 oracle 에서 xdisplay를 사용하려고
        하면 실행되지 않는 부분을 해결하기 위해서는 아래의 명령어를 본인의 사용계정에서 설정해줘야 한다. 꼭!! 안그러면 실행 중
        오류가 뜬다.
172     # xhost +
173     # su - oracle
174     $ DISPLAY=:0.0; export DISPLAY
175
176  II. Installation
177    1. Then its time to pull down the oracle zip package from official site. To download Oracle package,
       you must be registered user or else sing-up and download the package using the below link.
178
       http://www.oracle.com/technetwork/database/enterprise-edition/downloads/index.html?ssSource
```

SiteId=ocomen

179
180   2. Copy the installation files to oracle's home directory
181       $ exit
182   # mv /home/Instructor/Downloads/linux*.zip ~oracle
183   # chown oracle:oracle ~oracle/linux*.zip
184
185   3. Change user to oracle
186   # su - oracle
187       $ whoami
188
189   4. Unzip
190       $ unzip linux*.zip
191
192   5. Install Oracle
193   - Now you simply cd into the database directory and run the runInstaller program:
194       $ chmod 777 -R database
195       $ cd database
196       $ ./runInstaller -ignoreSysPrereqs
197
198   Wait few seconds. It will launch Oracle 12c installation wizard.
199
200   Starting Oracle Universal Installer…
201
202   Checking Temp space: must be greater than 500 MB.   Actual 31113 MB   Passed
203   Checking swap space: must be greater than 150 MB.   Actual 4095 MB   Passed
204   Checking monitor: must be configured to display at least 256 colors.   Actual 16777216   Passed
205   Preparing to launch Oracle Universal Installer from /tmp/OraInstall2017-03-16_11-58-11PM.
       Please wait …

206
207
208   <Configure Security Updates>
209   6. I'm going to skip this step as I don't want security updates. Un-check the check box and mark
       the checkbox that says "I Wish to receive security updates via My Oracle Support".
210
211   Click on Next, you will get a error saying that you've not provided and email address click Yes to
       continue.
212
213   <Installation Option>
214   7. Next, choose the type of installation, I'm choosing the first option to [Create and configure a
       database].
215   Click on Next.
216
217   <System Class>
218   8. I'm going to choose [Server class] here. If we need to install in any Desktop machines we can
       choose the above Option as Desktop Class.
219   Click on Next.
220
221   <Database Installation Options>
222   9. We are going to setup only [Single instance database installation] here. So, select the first option.
223   Click on Next.
224
225   <Install Type>
226   10. Choose the Advance install option to get more option while going through Installation steps.
227   Click on Next.
228
229   <Database Edition>
230   11. Time to choose which edition of database installation we looking for. For large scale
       Productions we can use Enterprise or if we need standard edition or we can choose the options as
       mentioned there. We need more than 7.5 GB space for Enterprise installation because database
       Population will grow soon/increase. Select [Enterprise Edition (7.5GB)
231   Click on Next.
232
233   <Installation Location>
234   12. Enter the Oracle base installation location, here all installed configurations files will be stored.
       Here you need to define the location of oracle installation path, as we created the location in step
       #12 in the first part of this article.

235	Click on Next.
236	
237	<Creating Inventory>
238	13. For the first time installation, every Inventory files will be created under '/u01/app/oraInventory` directory. We have created the group oracle for installation. So now the oracle group has permission to access Inventory Directory. Let us choose the Oracle as the Group for Operating system group.
239	Click on Next.
240	
241	<Configuration Type>
242	14. Select the type of database, you want to create. Since, we are using for [General purpose], so choosing general from the below options and click Next.
243	
244	<Database identifiers>
245	15. Specify the Global Database name for uniquely identified and un-check the Create as Container database, as here we are not going to create multiple databases.
246	Click on Next.
247	
248	<Configuration Options>
249	16. In my installation, I have assigned 4GB of Memory to my virtual machine, but this is not enough for Oracle. Here we need to Enable allocate memory automatically for the use of system global Area.
250	
251	Check the box that says Enable Automatic Memory Management and keep the default allocate memory. If we need some sample schema's we can check and continue for installation.
252	
253	[Character sets] tab
254	Verify [Use Unicode (AL32UTF8)
255	
256	[Sample schemas] tab
257	Check [Install sample schemas in the database]
258	
259	Click on Next.
260	
261	<Database Storage>
262	17. We need to choose the location to store the database storage. Here I'm going to assign '/u01/app/oracle/oradata` location to save the databases and Click Next to continue to installer steps.
263	
264	<Management Options>
265	18. I don't have a Cloud control manager credentials from oracle, so I have to skip this step.
266	
267	<Recovery Options>
268	19. If we have to Enable recovery options, then we have to check the Enable Recovery. In real environment these options are Compulsory to setup. Here to enable this option we need to add separate group and we need to define one of the file system location rather than default location where our database save.
269	
270	<Schema Passwords>
271	20. We need to define the password for starter database which is all pre-loaded while the installations. Password must contain alphanumeric, upper_case and lower_case. For example, my password is Redhat123. This password we will use in web interface login too.
272	
273	<Operating system Groups>
274	21. We need to provide system privileges to create database for that we need to choose the oracle group. Choose oracle for every options.
275	
276	<Prerequisite Checks>
277	22. Check [Ignore All]
278	Click on Next.
279	
280	<Summary>
281	23. At last we can review every settings before database population. If we need any changes we can edit the settings.
282	Click on Install.
283	
284	24. During setup process, it will ask to run two scripts as a root user.

285	Login into your Oracle Server as root user and switch to '/' partition and execute below scripts as shown.
286	
287	# cd /
288	# ./u01/app/oraInventory/orainstRoot.sh
289	# ./u01/app/oracle/product/12.2.0/db_1/root.sh
290	
291	25. After successfully execution of above two scripts, we need to move forward by clicking on OK.
292	
293	26. After finishing all the above tasks successfully, we will receive the Database Configuration Assistant window with the all the details and it will show you the EM Database Express URL. Click OK to move forward.
294	
295	https://CentOS-00:5500/em
296	
297	If you wish to change the database accounts password, you can use the password management.
298	That's it! We've successfully completed Database Configuration, now click Next to continue installation process.
299	
300	Finally Oracle Database installation was successfully completed. Click on Close to quit the Oracle Installer.
301	
302	
303	III. Post-Installation Oracle
304	1. After completing the Database installation, now move ahead to do some Post installation configuration. Open file 'oratab' using vi editor.
305	
306	# vim /etc/oratab
307	
308	After opening file, search for the the following line.
309	
310	orcl:/u01/app/oracle/product/12.2.0/db_1:N
311	And change the parameter N to Y as shown.
312	
313	orcl:/u01/app/oracle/product/12.2.0/db_1:Y
314	
315	Restart the machine to take new changes.
316	# reboot
317	
318	2. After restarting machine, verify that the listener is up and running using 'lsnrctl status' command.
319	If it does not start automatically, you will need to start it manually using 'lsnrctl start' command.
320	
321	$ su - oracle
322	$ lsnrctl status
323	$ lsnrctl start
324	
325	Note: If the lsnrctl does not start, read the troubleshooting step (mentioned at the end of the article) to get fix the errors if any and try to start the listener.
326	
327	3. Next login into Oracle database as a Operating system user using sysdba and start-up the database.
328	
329	$ sqlplus /nolog
330	SQL> conn sys as sysdba
331	Enter password:
332	Connected to an idle instance.
333	SQL> startup
334	ORACLE instance started.
335	
336	Total System Global Area 1610612736 bytes
337	Fixed Size 8621232 bytes
338	Variable Size 1056965456 bytes
339	Database Buffers 536870912 bytes
340	Redo Buffers 8155136 bytes
341	Database mounted.
342	Database opened.
343	SQL> exit

```
344    $ lsnrctl status
345
346    ...
347    ...
348    Services Summary...
349    Service "orcl" has 1 instance(s).
350       Instance "orcl", status READY, has 1 handler(s) for this service...
351    ...
352    ...
353    The command completed successfully.
354
355    4. Now it's time to access Oracle Web interface at the following addresses.
356
357    https://CentOS-00:5500/em
358    OR
359    https://192.168.56.3:5500/em
360
361    When EM Express prompts you for your username and password, Use to log in as a user with DBA
       privilege such as SYS or SYSTEM and use the password which we used for Schema password.
362
363    Login User = SYSTEM
364    Password = javaoracle
365
366    5. After login into the Oracle panel, you can see the main interface as Database Home and few
       screen shot.
367
368  Step: Troubleshooting Oracle
369
370    1. If listener does not start, you need to replace the domain name with local IP address 127.0.0.1
       in below file.
371
372    /u01/app/oracle/product/12.2.0/db_1/network/admin/listener.ora
373
374    2. https://CentOS-00:5500/em Unable to Connect
375     emctl start dbconsole
376     emctl status dbconsole
377
378    3. "ORA-12505, TNS:listener does not currently know of SID "
379     $ORACLE_HOME/network/admin/listener.ora, tnslistener.ora
380      두 파일 모두 (HOST = IP)(PORT = 1521) 호스트 이름을 넣지 말고 IP를 넣을 것
381       $ ping hostname 을 넣었을 때 연결된 ip 가 나와야 함.
382      #> lsnrctl stop | start | status | service
383
384    4. ORA-01950 : no privileges on tablespace 'USERS'[closed]
385       ORA-01950 : 테이블 스페이스 'USERS'에 대한 권한이 없습니다"
386
387       Solution>ALTER USER <user> quota unlimited on <tablespace name>;
388      ALTER USER scott DEFAULT TABLESPACE USERS QUOTA UNLIMITED ON USERS;
```