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Oracle Server Enterprise Edition - Version: 10.2.0.1 to 11.1.0.6  Oracle Clusterware  **Goal**  This document is intented to provide the steps to be taken to remove a node from the Oracle cluster. The node itself is unavailable due to some OS issue or hardware issue which prevents the node from starting up. This document will provide the steps to remove such a node so that it can be added back after the node is fixed.  The steps to remove a node from a Cluster is already documented in the Oracle documentation at   |  |  | | --- | --- | | **Version** | **Documentation Link** | | 10gR2 | <http://download.oracle.com/docs/cd/B19306_01/rac.102/b14197/adddelunix.htm#BEIFDCAF> | | 11gR1 | <http://download.oracle.com/docs/cd/B28359_01/rac.111/b28255/adddelclusterware.htm#BEIFDCAF> |   This note is different because the documentation covers the scenario where the node is accessible and the removal is a planned procedure. This note covers the scenario where the Node is unable to boot up and therefore it is not possible to run the clusterware commands from this node.  For 11gR2, refer to [note 1262925.1](https://support.oracle.com/epmos/faces/DocumentDisplay?parent=DOCUMENT&sourceId=466975.1&id=1262925.1)    **Solution**  **Summary**  Basically all the steps documented in the Oracle Clusterware Administration and Deployment Guide must be followed. The difference here is that we skip the steps that are to be executed on the node which is not available and we run some extra commands on the other node which is going to remain in the cluster to remove the resources from the node that is to be removed.  **Example Configuration**   All steps outlined in this document were executed on a cluster with the following configuration:   |  |  | | --- | --- | | **Item** | **Value** | | Node Names | lc2n1, lc2n2, lc2n3 | | Operating System | Oracle Enterprise Linux 5 Update 4 | | Oracle Clusterware Release | 10.2.0.5.0 | | ASM & Database Release | 10.2.0.5.0 | | Clusterware Home | /u01/app/oracle/product/10.2.0/crs ($CRS\_HOME) | | ASM Home | /u01/app/oracle/product/10.2.0/asm | | Database Home | /u01/app/oracle/product/10.2.0/db\_1 | | Cluster Name | lc2 |      Assume that node **lc2n3** is down due to a hardware failure and cannot even boot up. The plan is to remove it from the clusterware, fix the issue and then add it again to the Clusterware. In this document, we will cover the steps to remove the node from the clusterware  Please note that for better readability instead of 'crs\_stat -t' the sample script '**crsstat**' from    Doc ID 259301.1 [CRS and 10g/11.1 Real Application Clusters](https://support.oracle.com/epmos/faces/DocumentDisplay?parent=DOCUMENT&sourceId=466975.1&id=259301.1)  was used to query the state of the CRS resources. This script is **not** part of a standard CRS installation.    **Initial Stage**  At this stage, the Oracle Clusterware is up and running on nodes lc2n1 & lc2n2 (good nodes) . Node lc2n3 is down and cannot be accessed. Note that the Virtual IP of lc2n3 is running on Node 1. The rest of the lc2n3 resources are OFFLINE:  [oracle@lc2n1 ~]$ [crsstat](https://support.oracle.com/epmos/faces/DocumentDisplay?parent=DOCUMENT&sourceId=466975.1&id=259301.1)  Name                                     Target     State      Host        -------------------------------------------------------------------------------  ora.LC2DB1.LC2DB11.inst                  ONLINE     ONLINE     lc2n1       ora.LC2DB1.LC2DB12.inst                  ONLINE     ONLINE     lc2n2       ora.LC2DB1.LC2DB13.inst                  ONLINE     OFFLINE                ora.LC2DB1.LC2DB1\_SRV1.LC2DB11.srv       ONLINE     ONLINE     lc2n1       ora.LC2DB1.LC2DB1\_SRV1.LC2DB12.srv       ONLINE     ONLINE     lc2n2       ora.LC2DB1.LC2DB1\_SRV1.LC2DB13.srv       ONLINE     OFFLINE                ora.LC2DB1.LC2DB1\_SRV1.cs                ONLINE     ONLINE     lc2n1       ora.LC2DB1.db                            ONLINE     ONLINE     lc2n2       ora.lc2n1.ASM1.asm                       ONLINE     ONLINE     lc2n1       ora.lc2n1.LISTENER\_LC2N1.lsnr            ONLINE     ONLINE     lc2n1       ora.lc2n1.gsd                            ONLINE     ONLINE     lc2n1       ora.lc2n1.ons                            ONLINE     ONLINE     lc2n1       ora.lc2n1.vip                            ONLINE     ONLINE     lc2n1       ora.lc2n2.ASM2.asm                       ONLINE     ONLINE     lc2n2       ora.lc2n2.LISTENER\_LC2N2.lsnr            ONLINE     ONLINE     lc2n2       ora.lc2n2.gsd                            ONLINE     ONLINE     lc2n2       ora.lc2n2.ons                            ONLINE     ONLINE     lc2n2       ora.lc2n2.vip                            ONLINE     ONLINE     lc2n2       ora.lc2n3.ASM3.asm                       ONLINE     OFFLINE                ora.lc2n3.LISTENER\_LC2N3.lsnr            ONLINE     OFFLINE                ora.lc2n3.gsd                            ONLINE     OFFLINE                ora.lc2n3.ons                            ONLINE     OFFLINE               ora.lc2n3.vip                            ONLINE     ONLINE     lc2n1       [oracle@lc2n1 ~]$    **Step 1 Remove oifcfg information for the failed node**  Generally most installations use the global flag of the oifcfg command and therefore they can skip this step. They can confirm this using:  [oracle@lc2n1 bin]$ **$CRS\_HOME/bin/oifcfg getif  eth0  192.168.56.0  global  public  eth1  192.168.57.0  global  cluster\_interconnect**  If the output of the command returns global as shown above then you can skip the following step (executing the command below on a global defination will return an error as shown below.  If the output of the oifcfg getif command does not return global then use the following command  [oracle@lc2n1 bin]$ **$CRS\_HOME/bin/oifcfg delif -node lc2n3  PROC-4: The cluster registry key to be operated on does not exist.  PRIF-11: cluster registry error**    **Step 2 Remove ONS information**  Execute the following command to find out the remote port number to be used  [oracle@lc2n1 bin]$ **cat $CRS\_HOME/opmn/conf/ons.config  localport=6113 remoteport=6200  loglevel=3  useocr=on**  and remove the information pertaining to the node to be deleted using:  [oracle@lc2n1 bin]$ **$CRS\_HOME/bin/racgons remove\_config lc2n3:6200**    **Step 3 Remove resources**  In this step, the resources that were defined on this node have to be removed. These resources include Database Instances, ASm, Listener and Nodeapps resources. A list of these can be acquired by running crsstat (crs\_stat -t) command from any node  [oracle@lc2n1 ~]$ crsstat |grep OFFLINE  ora.LC2DB1.LC2DB13.inst                  ONLINE     OFFLINE                ora.LC2DB1.LC2DB1\_SRV1.LC2DB13.srv       ONLINE     OFFLINE                ora.lc2n3.ASM3.asm                       ONLINE     OFFLINE                ora.lc2n3.LISTENER\_LC2N3.lsnr            ONLINE     OFFLINE                ora.lc2n3.gsd                            ONLINE     OFFLINE                ora.lc2n3.ons                            ONLINE     OFFLINE   Before removing any resource it is recommended to take a backup of the OCR:  [root@lc2n1 ~]# cd $CRS\_HOME/cdata/lc2  [root@lc2n1 lc2]# **$CRS\_HOME/bin/ocrconfig -export ocr\_before\_node\_removal.exp  [root@lc2n1 lc2]# ls -l ocr\_before\_node\_removal.exp  -rw-r--r-- 1 root root 151946 Nov 15 15:24 ocr\_before\_node\_removal.exp**   Use 'srvctl' from the database home to delete the database instance on node 3:  [oracle@lc2n1 ~]$ . oraenv  ORACLE\_SID = [oracle] ? LC2DB1  [oracle@lc2n1 ~]$ **$ORACLE\_HOME/bin/srvctl remove instance -d LC2DB1 -i LC2DB13  Remove instance LC2DB13 from the database LC2DB1? (y/[n]) y**   Use 'srvctl' from the ASM home to delete the ASM instance on node 3:  [oracle@lc2n1 ~]$ . oraenv  ORACLE\_SID = [oracle] ? +ASM1  [oracle@lc2n1 ~]$ **$ORACLE\_HOME/bin/srvctl remove asm -n lc2n3**  Next remove the listener resource.  Please note that there is no 'srvctl remove listener' subcommand prior to 11.1 so this command will not work in 10.2. Using 'netca' to delete the listener from a down node also is not an option as netca needs to remove the listener configuration from the listener.ora.  **10.2 only**:  The only way to remove the listener resources is to use the command 'crs\_unregister', please use this command **only** in this particular scenario:  [oracle@lc2n1 lc2]$ **$CRS\_HOME/bin/crs\_unregister ora.lc2n3.LISTENER\_LC2N3.lsnr**  **11.1 only**:   Set the environment to the home from which the listener runs (ASM or database):  [oracle@lc2n1 ~]$ . oraenv  ORACLE\_SID = [oracle] ? +ASM1  [oracle@lc2n1 lc2]$ **$ORACLE\_HOME/bin/srvctl remove listener -n lc2n3**    As user root stop the nodeapps resources:  [root@lc2n1 oracle]# **$CRS\_HOME/bin/srvctl stop nodeapps -n lc2n3  [root@lc2n1 oracle]# crsstat |grep OFFLINE  ora.lc2n3.LISTENER\_LC2N3.lsnr            OFFLINE    OFFLINE                ora.lc2n3.gsd                            OFFLINE    OFFLINE                ora.lc2n3.ons                            OFFLINE    OFFLINE                ora.lc2n3.vip                            OFFLINE    OFFLINE**   Now remove them:  [root@lc2n1 oracle]#  **$CRS\_HOME/bin/srvctl remove nodeapps -n lc2n3  Please confirm that you intend to remove the node-level applications on node lc2n3 (y/[n]) y**   At this point all resources from the bad node should be gone:  [oracle@lc2n1 ~]$ crsstat  Name                                     Target     State      Host        -------------------------------------------------------------------------------  ora.LC2DB1.LC2DB11.inst                  ONLINE     ONLINE     lc2n1       ora.LC2DB1.LC2DB12.inst                  ONLINE     ONLINE     lc2n2       ora.LC2DB1.LC2DB1\_SRV1.LC2DB11.srv       ONLINE     ONLINE     lc2n1       ora.LC2DB1.LC2DB1\_SRV1.LC2DB12.srv       ONLINE     ONLINE     lc2n2       ora.LC2DB1.LC2DB1\_SRV1.cs                ONLINE     ONLINE     lc2n1       ora.LC2DB1.db                            ONLINE     ONLINE     lc2n2       ora.lc2n1.ASM1.asm                       ONLINE     ONLINE     lc2n1       ora.lc2n1.LISTENER\_LC2N1.lsnr            ONLINE     ONLINE     lc2n1       ora.lc2n1.gsd                            ONLINE     ONLINE     lc2n1       ora.lc2n1.ons                            ONLINE     ONLINE     lc2n1       ora.lc2n1.vip                            ONLINE     ONLINE     lc2n1       ora.lc2n2.ASM2.asm                       ONLINE     ONLINE     lc2n2       ora.lc2n2.LISTENER\_LC2N2.lsnr            ONLINE     ONLINE     lc2n2       ora.lc2n2.gsd                            ONLINE     ONLINE     lc2n2       ora.lc2n2.ons                            ONLINE     ONLINE     lc2n2       ora.lc2n2.vip                            ONLINE     ONLINE     lc2n2    **Step 4 Execute rootdeletenode.sh**  From the node that you are not deleting execute as root the following command which will help find out the node number of the node that you want to delete  [oracle@lc2n1 ~]$ **$CRS\_HOME//bin/olsnodes -n  lc2n1   1  lc2n2   2  lc2n3   3**  this number can be passed to the rootdeletenode.sh command which is to be executed as root from any node which is going to remain in the cluster.  [root@lc2n1 ~]# cd $CRS\_HOME/install  [root@lc2n1 install]# .**/rootdeletenode.sh lc2n3,3  CRS-0210: Could not find resource 'ora.lc2n3.ons'.  CRS-0210: Could not find resource 'ora.lc2n3.vip'.  CRS-0210: Could not find resource 'ora.lc2n3.gsd'.  CRS-0210: Could not find resource ora.lc2n3.vip.  CRS nodeapps are deleted successfully  clscfg: EXISTING configuration version 3 detected.  clscfg: version 3 is 10G Release 2.  Successfully deleted 14 values from OCR.  Key SYSTEM.css.interfaces.nodelc2n3 marked for deletion is not there. Ignoring.  Successfully deleted 5 keys from OCR.  Node deletion operation successful.  'lc2n3,3' deleted successfully  [root@lc2n1 install]# $CRS\_HOME/bin/olsnodes -n  lc2n1   1  lc2n2   2**    **Step 5 Update the Inventory**  From one of the remaining cluster nodes run the following command as owner of the CRS\_HOME. The argument to be passed to the CLUSTER\_NODES is a comma seperated list of node names of the cluster which are going to remain in the cluster. This step needs to be performed once per home (Clusterware, ASM and RDBMS homes).  [oracle@lc2n1 install]$ **$CRS\_HOME/oui/bin/runInstaller -updateNodeList ORACLE\_HOME=/u01/app/oracle/product/10.2.0/crs "CLUSTER\_NODES={lc2n1,lc2n2}" CRS=TRUE   Starting Oracle Universal Installer...   No pre-requisite checks found in oraparam.ini, no system pre-requisite checks will be executed.  The inventory pointer is located at /etc/oraInst.loc  The inventory is located at /u01/app/oracle/oraInventory  'UpdateNodeList' was successful.   [oracle@lc2n1 install]$ $CRS\_HOME/oui/bin/runInstaller -updateNodeList ORACLE\_HOME=/u01/app/oracle/product/10.2.0/asm "CLUSTER\_NODES={lc2n1,lc2n2}"  Starting Oracle Universal Installer...   No pre-requisite checks found in oraparam.ini, no system pre-requisite checks will be executed.  The inventory pointer is located at /etc/oraInst.loc  The inventory is located at /u01/app/oracle/oraInventory  'UpdateNodeList' was successful.  [oracle@lc2n1 install]$ $CRS\_HOME/oui/bin/runInstaller -updateNodeList ORACLE\_HOME=/u01/app/oracle/product/10.2.0/db\_1 "CLUSTER\_NODES={lc2n1,lc2n2}"  Starting Oracle Universal Installer...   No pre-requisite checks found in oraparam.ini, no system pre-requisite checks will be executed.  The inventory pointer is located at /etc/oraInst.loc  The inventory is located at /u01/app/oracle/oraInventory  'UpdateNodeList' was successful.** | | |

How to remove/delete a node from Grid Infrastructure Clusterware when the node has failed [ID 1262925.1]