Cluster startup process in 10g and 11g Rel 1

inittab ⟶ inittab.oug
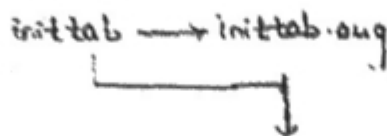
3 5 /etc/init.d/init.cssd

3 5 /etc/init.d/init.crsd

3 5 /etc/init.d/init.evmd

init

init.cssd   init.crsd   init.evmd

cssd   crsd   evmd

opwcd

cssd monitor

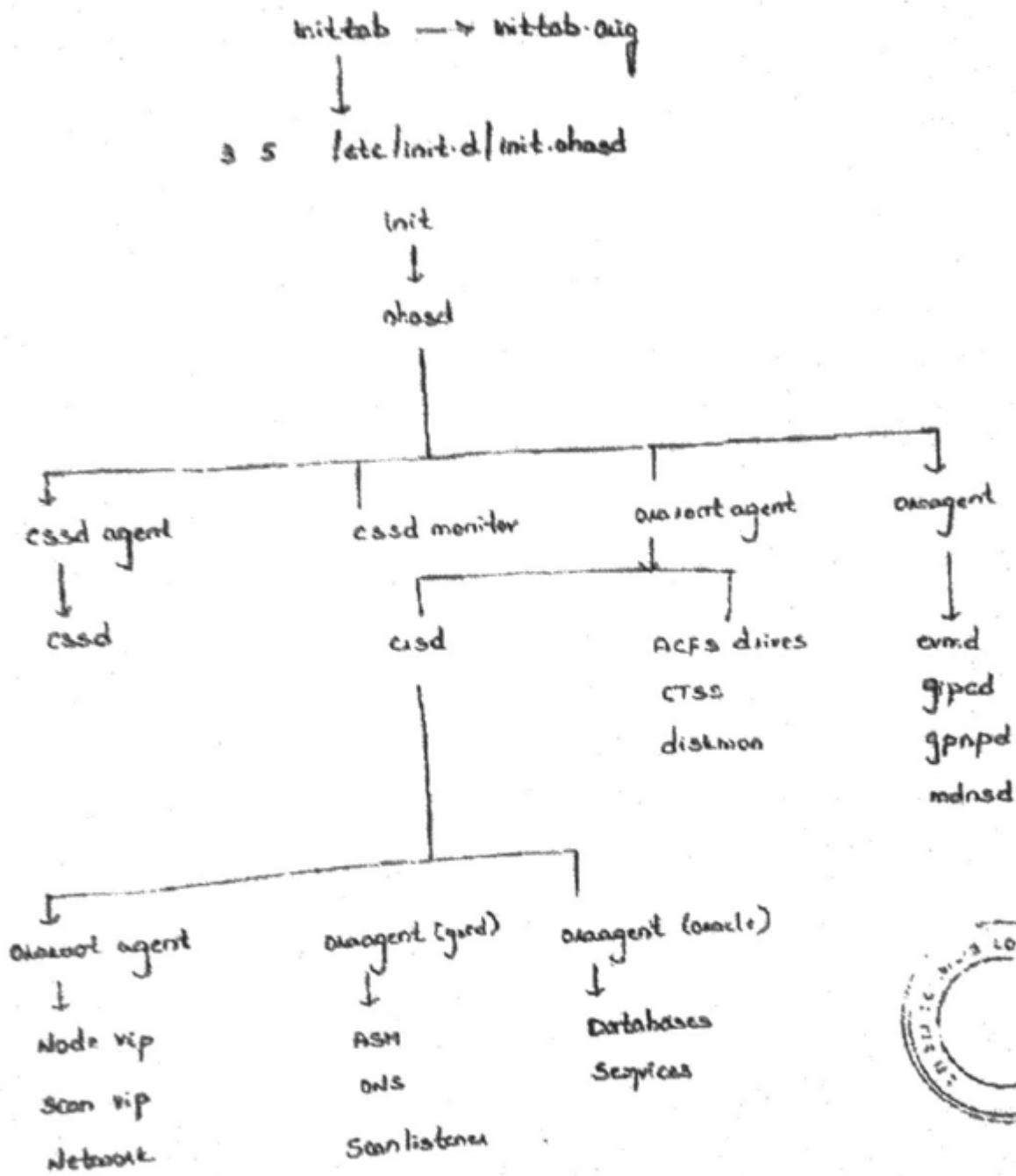 | Actions | evmdlogger.
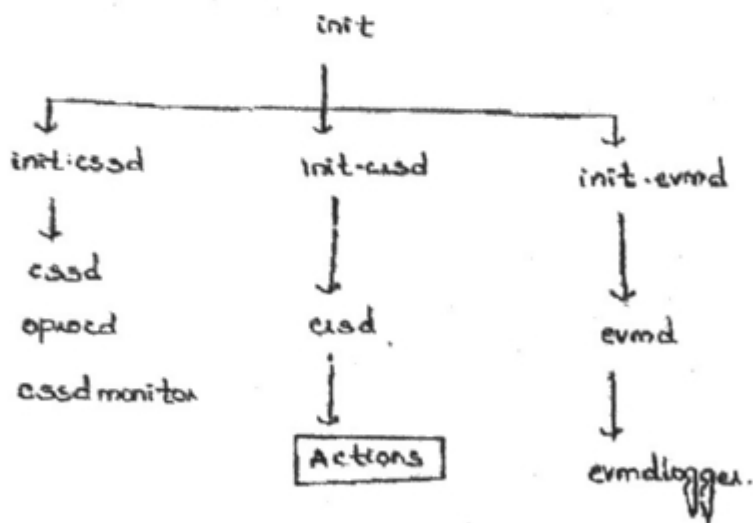
→ In 10g and 11g Rel1 all the 3 important daemons of cluster are
directly under the contrl of os init process

CRSD (Cluster Ready Service Deamon):-
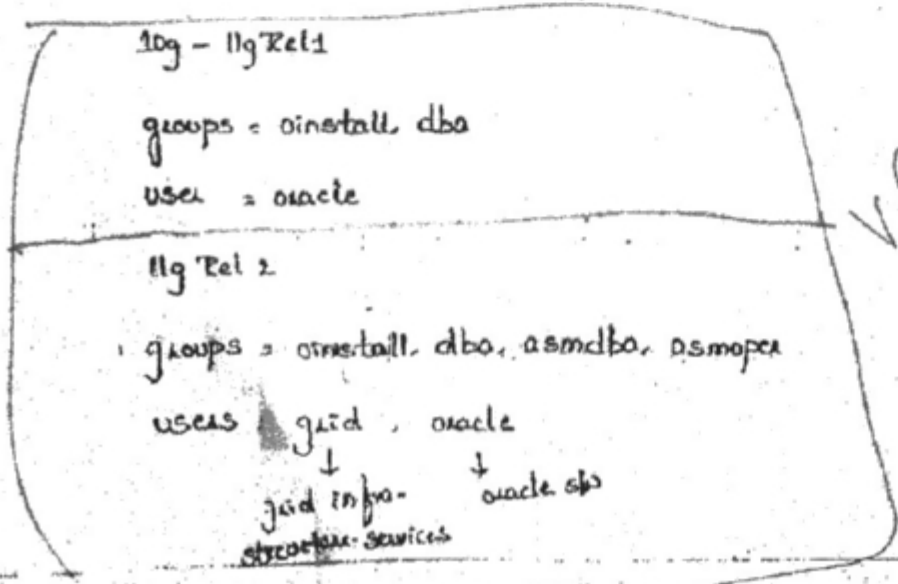This deamon acts as an engine for all high availability
operations

Cluster startup process in 10g & 11g Rel1 :-

```
                    inittab ——→ inittab.orig
                         │
                         ↓
       3  5      /etc/init.d/init.ohasd
                         │
                        init
                         │
                         ↓
                       ohasd
                         │
      ┌──────────────────┼──────────────┬──────────────┐
      ↓                  ↓               ↓              ↓
  cssd agent        cssd monitor    orarootagent    oraagent
      │                              │                  │
      ↓                  ┌───────────┴────────┐         ↓
    cssd               cssd            ACFS drives     evmd
                         │              CTSS           gipcd
                         │              diskmon        gpnpd
                         │                             mdnsd
      ┌──────────────────┼──────────────┐
      ↓                  ↓               ↓
 oraroot agent     oraagent (grid)   oraagent (oracle)
      │                  │               │
      ↓                  ↓               ↓
  Node vip            ASM            Databases
  Scan vip            DNS            Services
  Network          Scan listener
```

→ In 11g Rel2 the only daemon which is directly under the control
of OS init process called OHASD (oracle High Availability
Service Daemon)

→ ohasd manages and maintains the information in OLR (Oracle local Registry)

→ In 11g Rel 2 oracle has introduced the concept of agents and these agents are going to start the respective daemons of the cluster.

→ In 11g Rel2 oracle has rearchitectured GRID infrastructure services into

① Oracle High Availability Service stack

② cluster ready Service stack.

→ One set of oraroot agent and oraagent will be started by OHASD and another set of oraroot agent and oraagent will be started by CRSD.

→ With the introduction of OHASD we can perform cluster wide operations like starting the cluster, stopping the cluster, and stan checking the status of the cluster

10g - 11g Rel1

groups = oinstall, dba

user = oracle

11g Rel 2

groups = oinstall, dba, asmdba, asmoper

users   grid , oracle
              ↓   ↓
         grid infra-   oracle sw
         structure services

AcFS (ASM cluster File System) :-

→ In 11g oracle has introduced a generic filesystem based on ASM ie., ACFS. We can mount a chunk of diskgroup as a normal filesystem

CTSS (Cluster Time Synchronization Service) :-

→ Incase to synchronize the date and time, oracle has introduced ctss

DISKMON (Disk Monitor) :-

→ Introduced for hexadata systems and it performs Io fencing with hexadata.

GIPCD (Guid Inter Process Communication Daemon) :-

→ useful incase of interprocess communication. Supports UDP (User Datagram Protocol) TCP and IP protocols

GPNPD (Guid Plug and Play Daemon) :-

→ Maintains guid plug and play profile.

→ Guid plug and play file is an XML file which contains sufficient information to join the node to the cluster

MDNSD (Multi Caste Domain Name Service Daemon) :-

→ useful incase of main resolution

Node eviction issues in a RAC system :-

→ In a RAC system a node gets evicted mainly under the following circumstances

(1) If the node is unable to access the shared storage.

(2) If the cluster interconnect goes down.

(3) Sometimes node gets evicted because of resource starvation.

(memory which causes cpu utilisation is 100% leads node eviction)

In this case we dont find much information in the locks and traces since os doesn't find much time to flush the information. In this case even if you rise a service request with oracle, oracle will ask us to download and install OSwatcher from support.oracle.com.

→ oswatcher is a shell script or perl script which contains operating system monitoring commands like top. SAR (system Active Report), Netstat. io stat and vmstat etc. to monitor behaviour of OS

(4) Sometimes node also gets evicted because of the bug in the cluster. In this case we need to download and install the latest CRS# bundle patch using opatch utility

Note:- In order to avoid Single point of failure rac supports multiple no of voting disks at any point of time, node should be in position to vote more than half of voting disks (follows majority voting principle) other wise node get evicted from cluster.

* To avoid single point of failures recommended to maintain multiple NIC cards
→ sometimes node also gets evicted because of
* node with lowest number become master node.