

Oracle 18c PoC

Domain Services Cluster (DSC)
Database Member Cluster (MC)
Rapid Home Provisioning (RHP)

Server/Client Konzept
Installation/Upgrades
Verwaltung/Administration

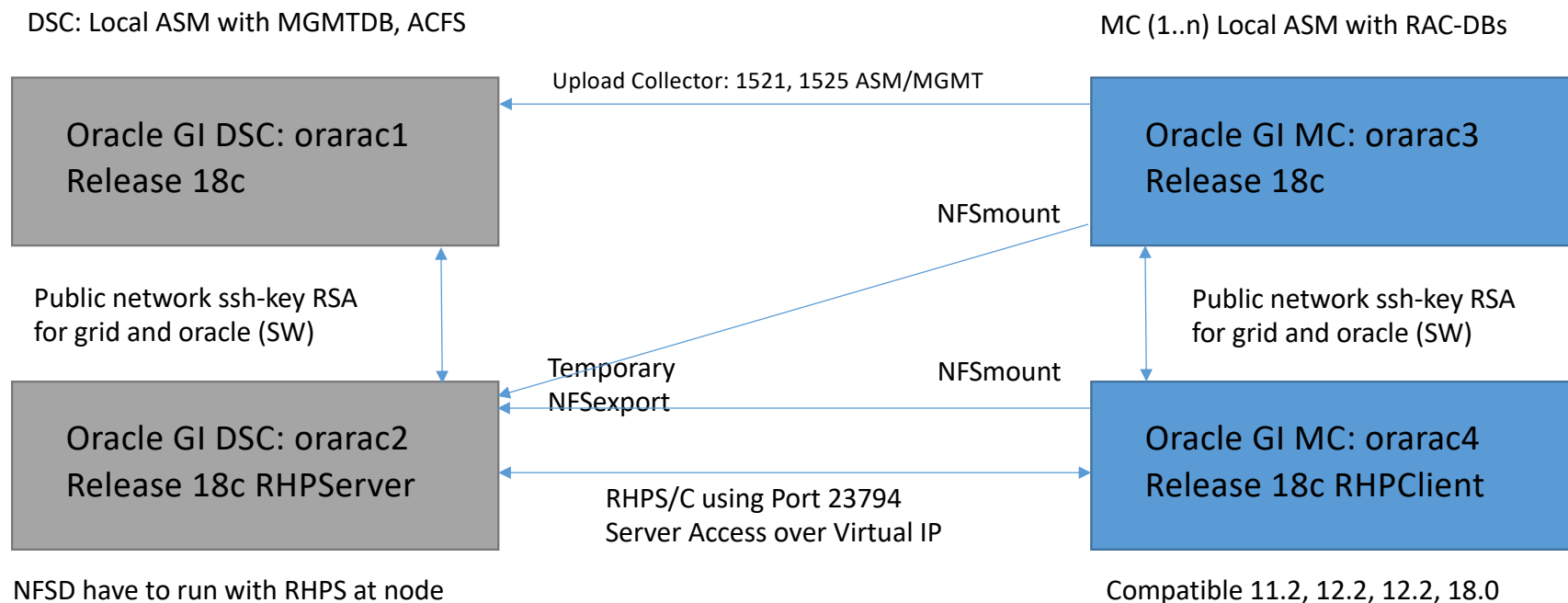
BDO Ingenieur Büro Frank Stöcker, 27.05.2019

DSC / MC / RHP Konzept:

- **Anlass: umfangreiche Individuelle Installations-Skripte !**
Schwierig zu verwalten, Wissenstransfer, Fremdvergabe des Tagesgeschäfts, etc...
- **DSC and MC (erste lokale Installation und Konfiguration):**
GIMR collect information (each MC): QoSM, CHA, CALOG, CHM, TFA, RHP, EMCC
ASM: share Diskgroup to use by Domain Member Cluster (MC), Sub-netzwerk
GNS: name service: oracle virtual network services, eigene virtuelle IP-Adresse und Name
- **RHP server and client (nicht fürWindows, unabhängig vom DSC):**
speichert ORACLE_HOME (software) in golden images (acfs) unkomprimiert wie tar,bz2,...
DSC grid service: ora.rhpserver, MC grid service: ora.rhpclient (ein service, läuft unter root)
NFS deamon für nfsexport der images, alternativ SCP Übertragung als root benötigt ssh-key
Tool: rhpctl, einfache Kommandos für Software-Installation und -Verwaltung
Audit: aller ausgeführten Aktionen,
Notification: Medlung jeder ausgeführten Aktion (email)

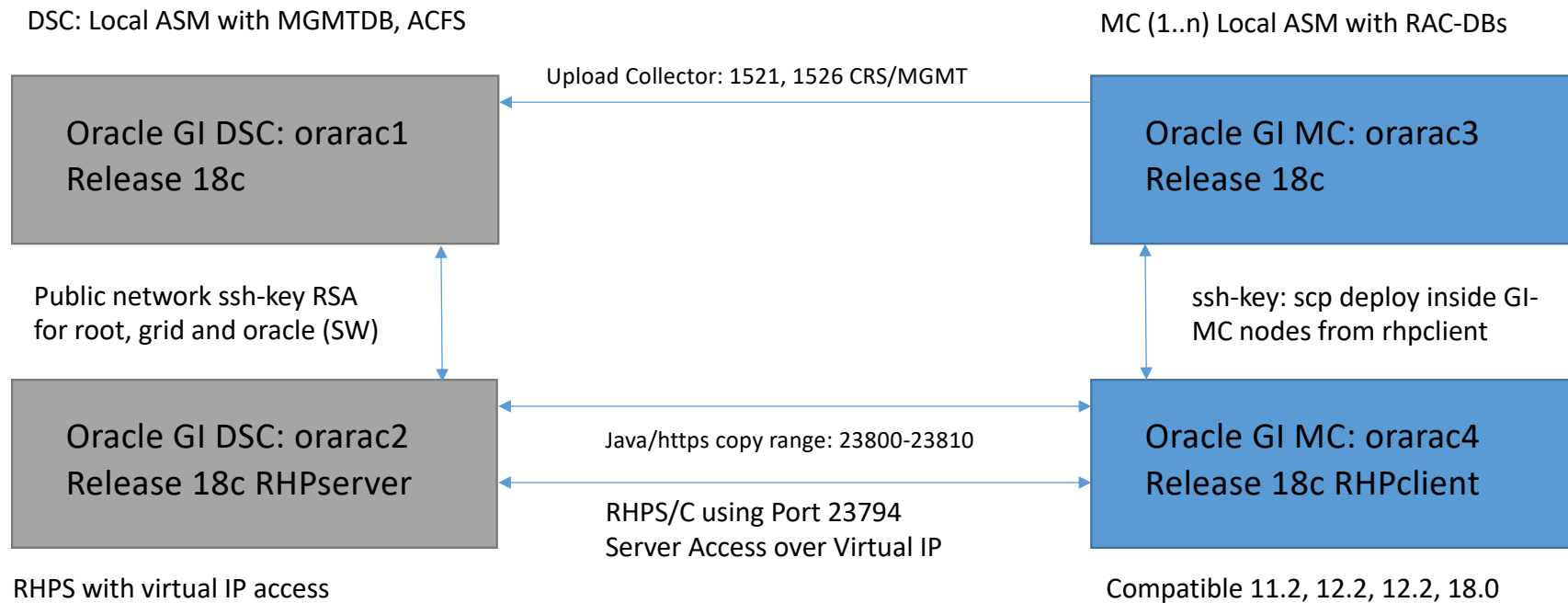
DSC / MC / RHP Struktur (1)

RHP unter Verwendung von NFS export



DSC / MC / RHP Struktur (2)

RHP unter Verwendung von SCP, ssh-key konfiguriert für root



DSC / MC / RHP Ressourcen:

- DSC:

Memory: 8G (für DB Instance, : ASM 1G , APX 1G, MGMTDB 4G)

Diskspace (Software): GI/OCW: 50G , DBS: 60G

ASM-Space: OCR/Voting 20G,

ASMDG for MGMT: 500G (member management, allg.: 166G, zus. je PDB: 5G, im RHPserver)

- MC for databases:

Memory: 8G (für DB Instancen: ASM 1G, Anwender DB instancen > 2G)

Diskspace (Software): GI/OCW: 50G , DBS: 60G (local install, noshare)

ASM-Space: OCR/Voting 20G, Data >= 50G + Reco >= 150G (Applikationen)

- RHP service:

MGMTDB: zus. 400M je MC (entsprechende PDB's im DSC)

ACFS: 14-21G for mount points of golden image (anteilig im ASM-DG: MGMT)

DSC / MC / RHP „tcp port“ Firewall rules:

- **Kommunikation zwischen RHPserver und RHPclient**
 - Port: 22 (ssh/scp, nicht davon ausgehen, das dieser freigegeben ist)
 - Port: 53 / 5353 (server/DSC: oracle GI DNS/GNS service at DSC/RHPS)
 - Port: 2049 (server/DSC: NFSD used by RHP für nfs export)
 - Port: 8888 / 8894 (bidirectional: oracle Grid Infrastructure CRS agents, für RHP)
 - Port: 23794 (bidirectional: RHP service agent communication port, default)
 - Port: 23800-23810 (bidirectional: scp parallel copy range area, ssh-key anstelle nfs)
- **Kommunikation zwischen DSC und MC (falls verwendet)**
 - Port: 1521 / 1525 (server/DSC: tnslistener: asm/apx, mgmt db, 1526: asm-flex)
 - Port: 6200 (server/DSC: ONS daemon remote port)
- **Oracle Enterprise Manager und Agent (falls verwendet)**
 - Port: 3872 (client/MC: Agent https port)
 - Port: 1159 (OEM server upload port)

DSC / MC / RHP - DNS Definitions:

- DSC/MC

node names, DSC: orarac1/orarac2, MC: orarac3,orarac4, ...

vip names, f.e. orarac-clus-vip1/ orarac-clus-vip2, oramem-clus-vip1 / oramem-clus-vip2, ...

gns name, f.e oragns (probably new subdomain for DNS)

asm subnet names: diskshares von DSC an MC (im Projekt nicht vorgesehen)

- RHP

havip: orahav

Konfiguration/Registrierung des RHPserver, installiert mit IP-Address !

Grid Infrastruktur (OCW) Installation

```
ORACLE_BASE=/u01/app/grid/base,  
ORACLE_HOME=/u01/app/grid/product/ocw.18.0.0/grid
```

```
unzip <software-source> -d $ORACLE_HOME  
$ORACLE_HOME/clone/bin/clone.pl ...  
$ORACLE_HOME/crs/config/config.sh ... -silent -responseFile $HOME/dsc_install.rsp  
=> ASM sys and monitor password set  
=> GNS is mandatory for DSC and RHP  
=> disable RHP and configure as post step later
```

```
sudo /u01/app/grid/product/ocw.18.0.0/grid /root.sh
```

```
./gridSetup.sh -executeConfigTools -silent -responseFile /home/grid/dsc-install.rsp -silent
```

```
falls nicht abgewählt: srvctl stop rhpserver > srvctl remove rhpserver -force -verbose
```

```
crsctl stat res -t , crsctl query crs releasepatch, crsctl stat res ora.rhpserver -f
```


RHPserver: Installation in GI/OCW

```
asmcmd volcreate -G MGMT -s 10G VOL1
```

```
asmcmd volinfo -G MGMT -a --> VOL1: /dev/asm/vol1-435
```

```
mkfs -t acfs /dev/asm/vol1-435
```

--> run as root:

```
mkdir -p /u01/app/grid/rhp_images/nfsexp
```

```
chown -r grid:oinstall /u01/app/grid/rhp_images
```

```
chmod -R 775 /u01/app/grid/rhp_images
```

```
srvctl add rhpserver -storage /u01/app/grid/rhp_images -diskgroup MGMT
```

```
srvctl add filesystem -device /dev/asm/vol1-435 -path /u01/app/grid/rhp_images/nfsexp
```

```
srvctl start filesystem -device /dev/asm/vol1-435
```

```
srvctl add havip -id rhphavip -address 192.168.200.29
```

```
srvctl add exportfs -id rhphavip -path /u01/app/grid/rhp_images/nfsexp -name rhphanfs -options "rw,no_root_squash"
```

```
srvctl start havip -id rhphavip
```

```
srvctl modify rhpserver -port_range 23800-23810
```

```
srvctl start rhpserver
```

```
srvctl config rhpserver
```

MC / RHPclient: Installation

```
ORACLE_BASE=/u01/app/grid/base,  
ORACLE_HOME=/u01/app/grid/product/ocw.18.3.0.180717/grid
```

```
crsctl get cluster configuration
```

```
crsctl create member_cluster_configuration oramem_clus -file ./ manifest.xml -member_type  
database -domain_services asm_storage local rhp  
=> register new member cluster as client at DCS  
=> create new manifest xml file
```

```
crsctl query member_cluster_configuration oramem_clus  
=> copy manifest.xml file into first node of new member cluster
```

```
Silent-Install: clone.pl > config.sh > root.sh > gridSetup.sh -executeConfigTools  
=> same install steps like DSC  
=> response file contain information about manifest.xml  
=> rhpclient configuration and registration at RHPserver automatically
```

OCW und DBS: Release Update (1)

don't try to upgrade from 18.x.0 to 18.x.1 and back to 18.x+n.0)

	Jan 18	Apr	Jul	Oct	Jan 19	Apr	Jul	Oct
RU	18.1.0	18.2.0	18.3.0	18.4.0	18.5.0	18.6.0	18.7.0	18.8.0
RUR1			18.2.1	18.3.1	18.4.1	18.5.1	18.6.1	18.7.1
RUR2				18.2.2	18.3.2	18.4.2	18.5.2	18.6.2
RU					19.1.0	19.2.0	19.3.0	19.4.0
RUR1							19.2.1	19.3.1
RUR2								19.2.2

OCW und DBS: Release Update (2)

- **GI / OCW** (up and running):
Opatch utility (start as root): opatchauto

Opatch (12.2.0.1.16)
OCW (ACFS, Database, TOMCAT,...)
OJVM
Client JDK

DBS (stopped and down):
Opatch utility (start as oracle): opatch

Opatch (12.2.0.1.16)
DBS
OCW
OJVM
Client JDK

opatch version
opatch lsinventory
opatch lspatches

MC / RHPclient deinstall cleanup

- **RHP: deinstall deregister components:**

```
rhpcctl delete database -dbname dbs180
```

```
rhpcctl delete workingcopy -workingcopy oramem_clus.db.18.3.0.180717
```

```
...
```

- **MC: deinstall**

```
ORACLE_HOME/crs/install/rootcrs.sh -deconfig -force
```

```
ORACLE_HOME/crs/install/rootcrs.sh -deconfig -force -lastnode
```

```
ORACLE_HOME/ deinstall/deinstall
```

=> cleanup system from oracle files

- **DSC: MC deregister**

```
crsctl delete member_cluster_configuration oramem_clus
```

```
crsctl get cluster configuration
```

```
rhpcctl query client
```

RHP Tool: rhpctl (1)

- **Access / Privileges:**

```
rhpctl register user -user oracle -client orarac_clus -email user@<domain>  
rhpctl grant role -role GH_SA -user oracle -client orarac_clus  
rhpctl query user -user oracle -client orarac_clus
```

- **Golden Images:**

```
rhpctl import image -image gi1850.190115 -path /u01/app/grid/product/ocw.18.0.0/grid -imagetype  
ORACLEGISOFTWARE  
rhpctl add workingcopy -workingcopy oramem_clus_gi1850_190115 -image gi1850.190115 \  
-path /u01/app/grid/product/ocw.18.5.0.190115/grid ... -user grid -client oramem_clus  
rhpctl query image / query workingcopy ...  
rhpctl delete workingcopy >> rhpctl delete image ...
```

- **Audit / Log:**

```
rhpctl query audit -config  
rhpctl modify audit -maxrecord 1000 (default: 5000)  
rhpctl query audit -user oracle -client orarac_clus  
rhpctl query audit -record <id>
```

RHP Tool : rhpctl (2)

- **Create Image and Database Software Home:**

```
rhpctl query client -client oramem-clus
```

```
rhpctl import image -image db1850.190115 -path /u01/app/oracle/product/dbs.18.0.0/db \  
-imagetype ORACLEDBSOFTWARE
```

```
rhpctl query image -image db1850.190115
```

```
rhpctl add workingcopy -workingcopy oramem_clus_db1850_190115 -image db1850.190115 \  
-oraclebase /u01/app/oracle/base -path /u01/app/oracle/product/dbs.18.5.0.190115/db \  
-user oracle -client oramem_clus
```

```
rhpctl query workingcopy -workingcopy oramem_clus_db1850_190115  
cat /u01/app/oralInventory/ContentsXML/inventory.xml
```

- **Create new Database (noneCDB)**

```
rhpctl add database -workingcopy oramem_clus_db1850_190115 -dbtype RAC -node orarac3,orarac4 \  
-dbname dbs180 -datafileDestination DATA -dbtemplate /u01/app/oracle/base/cdb180.dbt
```

RHP Tool : rhpctl (3)

- **Grid Infrastructure Release Update**

```
rhpctl query workingcopy --workingcopy oramem_clus_gi1850_190115
```

```
rhpctl move gihome --sourcehome ... -destwc oramem_clus_gi1850_190115 --sudouser grid [-eval]
```

→ SourceHome: because first/initial installation was made „local“ not registred in RHP !

- **Databases Release Update:**

```
rhpctl query workingcopy --workingcopy oramem_clus_db1850_190115
```

```
rhpctl move database -dbname dbs180 \  
-sourcewc oramem_clus_db1830_180717 -destwc oramem_clus_db1850_190115 ...
```

```
rhpctl upgrade database --dbname dbs121 --sourcehome ... -destwc ...
```

```
rhpctl query database --dbname dbs180
```


DSC / RHP Backup

- **DSC:**

Voting:

```
ocrconfig -showbackuploc
```

```
ocrconfig -showbackup auto
```

ASM:

```
asmcmd md_backup /tmp/asm_md_backup
```

```
asmcmd pwcop --asm +OCR/orapwASM /tmp/orapwASM_backup
```

```
sql> create pfile='/tmp/asm_pfile_backup.ora' from spfile;
```

MGMTDB: falls neu zu erstellen, mit allen PDBs (DSC) und Image Registrierungen (RHP):

```
dbca -silent -createDatabase -sid MGMTDB -createAsContainerDatabase true ...
```

- **RHP:**

```
rhpcctl export client -client oramem-clus -clientdata /tmp/rhpc_oramem_clus.xml
```

```
rhpcctl export server -serverdata /tmp/rhps_orarac_clus
```

Share RHPserver:

```
rhpcctl register server -server server_cluster_name -serverdata /tmp/rhps_oramem_clus
```

```
rhpcctl query peerserver
```