From: Spitzer, Andras ([redacted])
Sent: Thursday, July 31, 2008 12:42 PM
To: [redacted] ([redacted])
Cc: [redacted] ([redacted]); [redacted] ([redacted]); [redacted]; [redacted] ([redacted]); [redacted] ([redacted]); [redacted] ([redacted])
Subject: RE: Willow application startup problem solution & RCA

Yes,

As I wrote you have to do this on both '008 and on your 2 non-prod if you want them to start up propery after a reboot.

I know the RCA is a bit long, so here is the short guide how to replay the changes on '008 and the rest of the servers (I assume the paths are identical on the servers, if not, you have to replace the paths with the correct one in the script oracle_task) :

- cleanup /etc/rc3.d, /etc/rc2.d dirs by removing the non-working scripts related to the app server startup (I guess you have the same files which doesn't work what you've had on '009)
- copy the file (scp, sftp, ftp) from '009:/etc/init.d/oracle_task to the local /etc/init.d, please make sure the permissions remain the same (ftp doesn't copy x flags)
- create a symlink for startup under /etc/rc3.d with the command 'ln -s /etc/init.d/oracle_task /etc/rc3.d/S99servers_start'
- create a symlink for proper shutdown under /etc/rc0.d with the command 'ln -s /etc/init.d/oracle_task /etc/rc0.d/K06servers_stop'
- verify that the symlinks are there, and the main script has the correct permissions (look for the executable flag) :

```
cmfloukp009% ls -al /etc/rc0.d/K06servers_stop
lrwxrwxrwx   1 root     superusr      24 Jul 30 18:58 /etc/rc0.d/K06servers_stop
-> /etc/init.d/oracle_tasks
cmfloukp009% ls -al /etc/rc3.d/S99servers_start
lrwxrwxrwx   1 root     superusr      24 Jul 30 18:35 /etc/rc3.d/
S99servers_start -> /etc/init.d/oracle_tasks
cmfloukp009% ls -al /etc/init.d/oracle_tasks
-rwxr-xr-x   1 root     superusr    2164 Jul 30 18:22 /etc/init.d/oracle_tasks
```

- remove/comment out the entries (if there is any) in the cron of oracle user which starts the app servers on sunday 20:00

Done,
Regards,
sendai

From: [redacted] ([redacted])
Sent: Thursday, July 31, 2008 12:23 PM
To: Spitzer, Andras ([redacted])
Cc: [redacted] ([redacted]); [redacted] ([redacted]); [redacted] ([redacted]); [redacted] ([redacted]); [redacted] ([redacted])
Subject: RE: Willow application startup problem solution & RCA

Do we need to do the same with 08?

From: Spitzer, Andras ([redacted])
Sent: 30 July 2008 21:20
To: [redacted] ([redacted])
Cc: [redacted] ([redacted]); [redacted] ([redacted]); [redacted] ([redacted]); [redacted] ([redacted]); [redacted] ([redacted])
Subject: Willow application startup problem solution & RCA

Hi,

cmfloukp009 is fixed, now if you reboot the server the application starts automatically (please be aware that when you can log in, it doesn't mean the startup has finished, after you can log in it still takes about 4-5 minutes for the full startup to complete).

I rebooted the machine three times in a row, to test it, and here is the outcome :

```
-bash-3.00$ date
Wed Jul 30 20:17:29 BST 2008
-bash-3.00$ uptime
  8:17pm  up 9 min(s),  9 users,  load average: 0.55, 0.59, 0.32
-bash-3.00$ ./forms_status.sh
Get Status of Forms Servers ....

Processes in Instance: FRHome.cmfloukp009
------------------+--------------------+---------+----------+------------
+----------+-----------+------
ias-component      | process-type       |     pid | status   |        uid |
memused |    uptime | ports
------------------+--------------------+---------+----------+------------
+----------+-----------+------
DSA                | DSA                |     N/A | Down     |        N/A |
      N/A |       N/A | N/A
LogLoader          | logloaderd         |     N/A | Down     |        N/A |
      N/A |       N/A | N/A
dcm-daemon         | dcm-daemon         |    4323 | Alive    | 1020658074 |
    38680 |  00:08:06 | N/A
HTTP_Server        | HTTP_Server        |    4333 | Alive    | 1020658075 |
   171168 |  00:07:55 | http1:7778,http2:7200
WebCache           | WebCache           |    4362 | Alive    | 1020658076 |
    39672 |  00:07:54 | http:7777,invalidation:9401,statistics:9402
WebCache           | WebCacheAdmin      |    4361 | Alive    | 1020658077 |
    10912 |  00:07:54 | administration:9400
OC4J               | home               |    4372 | Alive    | 1020658078 |
    35336 |  00:07:53 | ajp:12501,rmi:12401,jms:12601
OC4J               | OC4J_BI_Forms      |    5527 | Alive    | 1020658079 |
    49304 |  00:01:02 | ajp:12504,rmi:12404,jms:12604
RepProdDE          | ReportsServer      |    4458 | Alive    | 1020658080 |
      960 |  00:06:45 | N/A
RepProdES          | ReportsServer      |    4493 | Alive    | 1020658081 |
      960 |  00:06:35 | N/A
RepProdFR          | ReportsServer      |    4540 | Alive    | 1020658082 |
      960 |  00:06:26 | N/A
RepProdIT          | ReportsServer      |    4568 | Alive    | 1020658083 |
      960 |  00:06:17 | N/A
RepProdPO          | ReportsServer      |    4602 | Alive    | 1020658084 |
      960 |  00:06:09 | N/A
RepProdSE          | ReportsServer      |    4625 | Alive    | 1020658085 |
      960 |  00:06:02 | N/A
RepProdUK          | ReportsServer      |    4661 | Alive    | 1020658086 |
      960 |  00:05:53 | N/A
```

Here is the full diagnosis (**RCA**) before I even touched it :

Solaris use the system startup files under /etc/rcX.d to decide which scripts to run at which runlevel. I found the following scripts under these directories which were related to the app server :

- `/etc/rc2.d/K99servers_stop`
  This script **suppose to stop the applications**, because it starts with a K letter. This script had two major issues, one is that it's **located in the wrong directory** (it should be under /etc/rc0.d), two is that it simply **missing the stop commands** (actually during the stop process this script would do nothing if it would be in the right directory). This means you had problems not just with the startup of the apps, but there were no apps shutdown performed during the machine shutdown.
- `/etc/rc3.d/servers_start.sh`
  This script **will simply never run**, because it doesn't start with a S or a K. (S scripts run during the startup, K scripts are run during the shutdown)
- `/etc/rc3.d/S99servers_start`
  This script **suppose to start the Oracle Application Server** & forms, etc. **The problem with this that it's the identical copy of the original startup script used by the user oracle, but these scripts under /etc/rcX.d are all called by user root**, during the startup.

We also **thought that cmfloukp008 is working** while the rest of the servers not, but my opinion is that **this is not true**. I found that the server rebooted at Sunday Jul 27 19:08, and the application server logs showed me that the apps were started only one hour later, which meant to me that the apps were started somehow different, but because the timing was exactly 20:00, I felt that it was most likely run by cron, and I was right :

```
cmfloukp008# pwd
/var/spool/cron/crontabs
cmfloukp008# more oracle
# Start all of the Forms/Reports services and OC4J Servers
0 20 * * 0 /export/home/oracle/servers_start.sh
# Re-issue the start to Report services as they don't alway start the first
time
30 20 * * 0 /export/home/oracle/ReportServers start all >/tmp/
ReportServers.log
0 20 * * 1 /export/home/oracle/forms_status.sh >$HOME/form.log
```

You can see the line in bold, it means that **on every sunday, at 20:00, it would run the script /export/home/oracle/servers_start.sh as user oracle**. This what made cmfloukp008 look like it's working, but actually it's not. If you would reboot it now, the apps would fail to come up. I was checking '009 if there I can find the cron entries also, but as a proof of my theory, I found them commented out :

```
cmfloukp009# pwd
/var/spool/cron/crontabs
cmfloukp009# more oracle
# Start all of the Forms/Reports services and OC4J Servers
#0 20 * * 0 /export/home/oracle/servers_start.sh
# Re-issue the start to Report services as they don't alway start the first
time
#30 20 * * 0 /export/home/oracle/ReportServers start all >/tmp/
ReportServers.log
#0 20 * * 1 /export/home/oracle/forms_status.sh >$HOME/form.log
```

So, this told me that **all of the server startup scripts are wrong, no exception**. After this, I found in the following in the app servers' log file :

```
/u01/app/oracle/FRHome/opmn/logs/HTTP_Server~1:

08/07/29 18:49:04 Start process
--------
apachectl is not owned by this user

--------
08/07/29 18:49:05 Start process
--------
apachectl is not owned by this user
```

Also the system had a problem starting up the IAS console :

```
Starting Form & Report IAS Console....
Cannot execute /u01/app/oracle/FRHome/bin/emctl.pl since its userid does not match
yours.
```

This is a feature in the oracle app server, that **the user who runs the startup scripts and the owner of the startup script has to be identical**, otherwise the process won't start. I was checking the owner of the file, and I realized that it's oracle:dba :

```
cmfloukp009# pwd
/u01/app/oracle/FRHome/Apache/Apache/bin
cmfloukp009# ls -la
total 43270
drwxr-x---   2 oracle   dba         1024 Apr 30 18:03 .
drwxr-x---  15 oracle   dba          512 Apr 30 18:03 ..
-rwxr-x---   1 oracle   dba       419860 Apr 30 18:03 .apachectl
-rwxr-x---   1 oracle   dba        69344 Apr 30 18:03 ab
-rwxr-x---   1 oracle   dba        12417 Apr 30 18:03 apachectl
...
```

Normally you want to run Oracle Application Servers as root only if you want to use ports from the well-known range (below 1024, so-called privileged ports), but it was clear to me that this is not the case here. The URL also tells me we are using port above 1024 (for example: http://3.151.208.141:7777/forms/frmservlet?config=produk), also I was checking the http config files to confirm.

So this fact led me to the first theory, is that **the problem is that we have to call the startup scripts as user oracle, even during the system startup**, also I have to **clean up and correct the startup scripts** under the /etc/rcX.d directories.

Solution, what I did :

- **moved the file /etc/rc3.d/servers_start.sh** to /var/tmp/sendai, this file doesn't belong there (I believe this is a copy of the original startup file from the oracle home directory)
- **created a file under /etc/init.d, called oracle_task**, based on the original startup script in the oracle home directory, but added the function of running the commands as user oracle, sample :

```
cmfloukp009% more /etc/init.d/oracle_tasks
#!/bin/ksh
#Start Forms and Report Servers
case "$1" in
'start')
echo "Starting Form & Report Servers...."
su - oracle -c '/u01/app/oracle/FRHome/opmn/bin/opmnctl start'
su - oracle -c '/u01/app/oracle/FRHome/opmn/bin/opmnctl startproc ias-
component=dcm-daemon'
su - oracle -c '/u01/app/oracle/FRHome/opmn/bin/opmnctl startproc ias-
component=HTTP_Server'
su - oracle -c '/u01/app/oracle/FRHome/opmn/bin/opmnctl startproc ias-
component=WebCache'
etc.
```

you can see the "su - oracle -c 'command'" is responsible for that.

- **added the stop functionality to /etc/init.d/oracle_task**
- **linked /etc/init.d/oracle_task to /etc/rc3.d/S99servers_start (run during the startup), and as /etc/rc0.d/K06servers_stop (run during the shutdown),** this will guarantee the proper startup and the clean shutdown for the apps :

```
cmfloukp009% ls -al /etc/rc0.d/K06servers_stop
lrwxrwxrwx   1 root     superusr      24 Jul 30 18:58 /etc/rc0.d/
K06servers_stop -> /etc/init.d/oracle_tasks
cmfloukp009% ls -al /etc/rc3.d/S99servers_start
lrwxrwxrwx   1 root     superusr      24 Jul 30 18:35 /etc/rc3.d/
S99servers_start -> /etc/init.d/oracle_tasks
```

- **renamed (disabled) /etc/rc3.d/S99vcs to /etc/rc3.d/no-S99vcs**, as I see this machine is not in cluster (I experienced a short network interrupt during the startup, and it was around the time when gabconfig (ran by this script) realized there is no gab configured, so I disabled this script, it won't harm)

It would be nice if you could check the reboot, and if you are satisfied with the result, you can perform these steps on the rest of the servers also, so they'll be working also. Additionally please don't forget to check the crontabs of oracle when you fix the rest of the machines (as I wrote on '008 it's there, can be there on the rest of the servers), because I guess starting the apps on sunday 20:00 makes no sense if it's already started properly by the system startup scripts earlier.

Regards,
sendai