Smartcard 2.0

Mysql replication for redundancy and fail over

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Version 1.2

Table of Contents

1 Install of database replication

1.1 Prerequisites

First node must be installed and running.

Configure node1 so it knows what server to send the config-backup to:

on node1 run:

root@smartcard20-node1:/usr/local/syscheck # **vi conf/921.conf**

REMOTE_HOST=192.168.31.142

(node2)

Run the backup of key config and keystore files

on node1 run:

root@smartcard20-node1:/usr/local/syscheck/related-enabled # **./921_copy_htmf_conf.sh -s**

Screenonly output:

Copying file: /usr/local/certificate-services/htmf/hardtokenmgmt.properties to:localhost dir:/tmp/backup_htmf_conf/ remotreuser:jboss sshkey: /home/jboss/.ssh/id_rsa

Screenonly output:

Copying file: /usr/local/certificate-services/htmf/autogenerated_hardtokenmgmt.properties to:localhost dir:/tmp/backup_htmf_conf/ remotreuser:jboss sshkey: /home/jboss/.ssh/id_rsa

Screenonly output:

Copying file: /usr/local/certificate-services/htmf/src/resources/globalsettings/global.properties to:localhost dir:/tmp/backup_htmf_conf/ remotreuser:jboss sshkey: /home/jboss/.ssh/id_rsa

Screenonly output:

Copying file: /usr/local/certificate-services/htmf/jarsigner.jks to:localhost dir:/tmp/backup_htmf_conf/ remotreuser:jboss sshkey: /home/jboss/.ssh/id_rsa

Screenonly output:

Copying file: /usr/local/certificate-services/ejbca/conf/ejbca.properties to:localhost dir:/tmp/backup_htmf_conf/ remotreuser:jboss sshkey: /home/jboss/.ssh/id_rsa

Screenonly output:

Copying file: /usr/local/certificate-services/ejbca/conf/database.properties to:localhost dir:/tmp/backup_htmf_conf/

remotreuser:jboss sshkey: /home/jboss/.ssh/id_rsa

Screenonly output:

Copying file: /usr/local/certificate-services/jboss/server/default/conf/keystore/keystore.jks to:localhost dir:/tmp/backup_htmf_conf/ remotreuser:jboss sshkey: /home/jboss/.ssh/id_rsa

Screenonly output:

Copying file: /usr/local/certificate-services/jboss/server/default/conf/keystore/truststore.jks to:localhost dir:/tmp/backup_htmf_conf/ remotreuser:jboss sshkey: /home/jboss/.ssh/id_rsa

Screenonly output:

Copying file: /usr/local/certificate-services/jboss/server/default/deploy/jboss-web.deployer/server.xml to:localhost dir:/tmp/backup_htmf_conf/ remotreuser:jboss sshkey: /home/jboss/.ssh/id_rsa

Install node2 and run <path/to>/smartcard20/upgrade

on node2 run:

sc20fmv-node2:/usr/local/certificate-services/smartcard20 # **./smartcard2.0-upgrade**

Welcome to ./smartcard2.0-upgrade, a tool to upgrade/install secondary nodes for Smart Card 2.0

you need to put properties in place yourself from node one to /tmp/htmf_conf_bak

Run <syscheck>/related-availabe/921_copy_htmf_conf.sh on node1

press enter to continiue

Will you use PrimeCard as CA Token?

y/n (default:n) > **(enter)**

Is this node a secondary node?

y/N (default:n) >

y

TODO screen output

1.2 Syscheck configuration

Copy old config

Run the whole chapter on node1:

root@smartcard20-node1:/usr/local/syscheck # **./lib/copy-config-from-old-version.sh ../syscheck-<last-version>/config ./config/**

Copy old common.conf (before 1.4.10 called resouces.sh) to new common.conf

If upgrading from a version prior to 1.5.10:
root@smartcard20-node1:/usr/local/syscheck # **diff -uw ../syscheck-<last-version>/resources.sh ./config/common.conf**

If upgrading from a version later than 1.5.10:
root@smartcard20-node1:/usr/local/syscheck # **diff -uw ../syscheck-<last-version>/config/common.conf ./config/common.conf**

Go though the differences and manually enter the changes you need to keep into the new common.conf

```
--- ../syscheck-1.5.4/resources.sh      2009-09-03 12:55:52.000000000 +0200

+++ config/common.conf  2010-06-04 11:19:01.000000000 +0200

@@ -16,11 +16,8 @@

 . $SYSCHECK_HOME/lib/printlogmess.sh



 # get definitions for EJBCA

-if [ -f /etc/ejbca/environment ] ; then

-       . /etc/ejbca/environment

-elif [ -f /usr/local/environment ] ; then

+if [ -f /usr/local/environment ] ; then

        . /usr/local/environment

-

 fi



 # cap message length to ...

@@ -33,16 +30,13 @@



 # Username used for no-passphrase ssh login

 SSH_USER=jboss

+SSH_KEY=/home/jboss/.ssh/id_rsa



 ## Language ##

 #select you lang (choose from files in lang/)
```

```
 SYSCHECK_LANG=english



-# save status to a file values: 1 or 0

-# will create a file in <syscheck>/var/last_status

-SAVELASTSTATUS=1

-

 # source the lang func

 . ${SYSCHECK_HOME}/lib/lang.sh



@@ -51,10 +45,10 @@



 ### EJBCA settings ###

 #Path to EJBCA

-EJBCA_HOME=/usr/local/ejbca

+EJBCA_HOME=${EJBCA_HOME:-"/usr/local/ejbca"}



 #Path to active jboss config

-JBOSS_HOME=/usr/local/jboss

+JBOSS_HOME=${JBOSS_HOME:-"/usr/local/jboss"}
```

Copy enabled scripts

```
root@smartcard20-node1:/usr/local/syscheck # cp -a ../syscheck-<last-version>/related-enabled/* ./ related-enabled/

root@smartcard20-node1:/usr/local/syscheck # cp -a ../syscheck-<last-version>/scritps-enabled/* ./ scritps-enabled/
```

Config database parameters, you can get the database-username/password information from ejbca it's in the file:

```
less /usr/local/ejbca/conf/database.properties

database.url=jdbc:mysql://127.0.0.1:3306/ejbca

database.username=ejbca
```

database.password=**sdfiuh3wrnj**

Enter those parameters into the syscheck config/common.sh

DB_NAME=**ejbca**

DB_USER=**ejbca**

DB_PASSWORD="**sdfiuh3wrnj**"

Enter the new information about the replication user into syscheck config/common.sh

smartcard20-node2:/usr/local/syscheck # **vi config/common.conf (was resources.sh**)

Database replication user and password

DBREP_USER=**ejbcarep**

DBREP_PASSWORD="**foo123**"

#Path to mysql binary

MYSQL_BIN=/usr/bin/mysql

path to mysqladmin

MYSQLADMIN_BIN=/usr/bin/mysqladmin

#Path to mysqldump binary

MYSQLDUMP_BIN=/usr/bin/mysqldump

If your installation has a weak(eg. foo123) mysql root password set a new with high security (eg. UiywfeW23)

mysqladmin password <new-pass> -u root --password=<old-password>

mysqladmin password **UiywfeW23** -u root --password=**foo123**

Enter the new mysql root password into syscheck/config/common.conf

#Password for Mysql root

MYSQLROOT_PASSWORD="**UiywfeW23**"

#Name of the mysql backup file.

```
MYSQLBACKUPFILE=/backup/mysql/ejbcabackup

MYSQLBACKUPFULLFILENAME="${MYSQLBACKUPFILE}-${DATE}.sql"
```

Set “node” to node1(master) and IP-addresses to node1 and node2

```
#IP address or hostname to primary and secondary cluster nodes.

THIS_NODE=NODE1

# master node

HOSTNAME_NODE1=192.168.31.140

# slave node

HOSTNAME_NODE2=192.168.31.142
```

Make new backup dirs:

```
username@smartcard20-node1:/usr/local> sudo mkdir /backup/mysql/default

if you're using the other new backup directories you need to create them aswell

username@smartcard20-node1:/usr/local> sudo mkdir /backup/mysql/daily

username@smartcard20-node1:/usr/local> sudo mkdir /backup/mysql/weekly

username@smartcard20-node1:/usr/local> sudo mkdir /backup/mysql/monthly

username@smartcard20-node1:/usr/local> sudo mkdir /backup/mysql/yearly
```

Make the new version the default

```
username@smartcard20-node1:/usr/local> sudo rm syscheck

username@smartcard20-node1:/usr/local> sudo ln -s syscheck-1.5.11 syscheck
```

1.3 Node2 Syscheck installation

Redo steps 1.2 and 1.3 on node2, but set “THIS_NODE=**NODE2”** in config/common.conf tough”

1.4 Firewall configuration

Open port 3306 tcp (mysql database communication)

on node1 AND node2 run:

Start “yast” -> “Security and Users” -> “Firewall” -> “Allowed Services” -> “Advanced”

Add “3306” make sure to use space as a separator between the ports

1.5 Create an empty db on node2

- If you got a db (from a previous install/testrun) do drop it then create a empty ejbca db!
- If yo dont got a db, ie this is a clean install, you can skip this step, and goto the creation of the empty db.
- If you are uncertain if there is a db, there is no harm in trying to do this step, it will tell you there was nothing to drop!

on node2 run:

username@smartcard20-node2:/usr/local/syscheck/database-replication> **./801-drop-existing-ejbca-db.sh**

root's password:

are you really sure you want to drop and replace the ejbca db on this host?

enter 'im-really-sure' (without the '-') to continue or ctrl-c to abort

im really sure

I-9041-PKI 20090309 14:44:11 smartcard20-node1: INFO - Backed up db ok (file:/backup/mysql/ejbcabackup-2009-03-09_14.44.10.sql.gz)

Dropping the database is potentially a very bad thing to do.

Any data stored in the database will be destroyed.

Do you really want to drop the 'ejbca' database [y/N] **y**

Database "ejbca" dropped

I-8011-PKI 20090309 14:44:13 smartcard20-node1: INFO - Dropped the db ok

And create an empty one:

on node2 run:

username@smartcard20-node2:/usr/local/syscheck/database-replication> **sudo ./800-create-mysql-ejbca-db.sh**

I-8001-PKI 20090309 14:44:18 smartcard20-node2: INFO - Created the db ok

1.7 Backup the db from node1 and transfer the dump to node2

The three following steps you should complete as fast as possible since you lock the database from writing.

Stop jboss on node1 and node2

on node1 run:

smartcard20-node1:/usr/local/certificate-services/syscheck/related-enabled# **/etc/init.d/jboss stop**

Stopping JBoss: …... done

smartcard20-node2:/usr/local/certificate-services/syscheck/related-enabled# **/etc/init.d/jboss stop**

Stopping JBoss: ….....done

First we need to lock the tables from writes

on node1 run:

smartcard20-node1:/usr/local/syscheck/database-replication # **./811-master-node-flush-tables-with-read-lock.sh**

I-8111-PKI 20090326 12:03:58 smartcard20-node1: INFO - Set mysql FLUSH TABLES WITH READ LOCK ok

Make a backup

on node1 run:

smartcard20-node1:/usr/local/syscheck-1.4.3b3-cluster/related-enabled # **./904_make_mysql_db_backup.sh -s**

I-9041-PKI 20090309 13:48:14 smartcard20-node1: INFO - Backed up db ok (file:**/backup/mysql/ejbcabackup-2009-03-09_13.48.13.sql.gz**)

Note the database backup in your protocol as the last db backup before this change. If anything would go wrong this is the backup to revert to !!!

Transfer it to node2:

on node1 run:

jboss@smartcard20-node1:~> **scp /backup/mysql/ejbcabackup-2009-03-09_13.44.55.sql.gz smartcard20-node2:**

ejbcabackup-2009-03-09_13.44.55.sql.gz 100% 1459KB 1.4MB/s 00:00

OR use ./906_ssh-copy-to-remote-machine.sh
on node1 run:

smartcard20:/usr/local/certificate-services/syscheck/related-enabled# **./906_ssh-copy-to-remote-machine.sh --help**

smartcard20:/usr/local/certificate-services/syscheck/related-enabled# **./906_ssh-copy-to-remote-machine.sh -s /backup/mysql//default/ejbcabackup-2010-06-15_16.03.18.sql.gz node2-hostname /tmp jboss /home/jboss/.ssh/id_rsa**

I-9061-PKI 20100615 16:05:30 smartcard20.demo: INFO - file transfered ok

1.8 Restore mysql database on node2

on node2 run:

root@smartcard20-node2:/usr/local/syscheck/related-enabled # **./920_restore_mysql_db_from_backup.sh -s /home/jboss/ejbcabackup-2009-03-09_13.44.55.sql.gz**

root's password:

now we'll backup the current database before we restore the one you specified

I-9041-PKI 20090309 14:51:51 smartcard20-node2: INFO - Backed up db ok (file:/backup/mysql/ejbcabackup-2009-03-09_14.51.50.sql.gz)

restoring the db from /home/jboss/ejbcabackup-2009-03-09_13.44.55.sql.gz

I-9202-PKI 20090309 14:51:55 smartcard20-node2: INFO - Restored the db from file (/home/jboss/ejbcabackup-2009-03-09_13.44.55.sql.gz)

1.9 Make node1 master

First step is to add the ejbca-db-user in a way it can access the db over the net, it will use information from resourses.sh file to make the statements.

Create mysql-user access rules on node1

on node1 run:

smartcard20-node1:/usr/local/syscheck/database-replication # **./802-create-mysql-ejbca-user-db-user.sh**

Will now insert these sql:

GRANT ALL ON ejbca.* to 'ejbca'@'10.1.1.10' IDENTIFIED BY 'foo123';

GRANT ALL ON ejbca.* to 'ejbca'@'10.1.1.11' IDENTIFIED BY 'foo123';

GRANT ALL ON ejbca.* to 'ejbca'@'10.1.1.12' IDENTIFIED BY 'foo123';

select * from user where user like '%ejbca%'

Host User Password Select_priv Insert_priv Update_priv Delete_priv Create_priv Drop_priv Reload_priv Shutdown_priv Process_priv File_priv Grant_priv References_priv Index_priv Alter_priv Show_db_priv Super_priv Create_tmp_table_priv Lock_tables_priv Execute_priv Repl_slave_priv Repl_client_priv Create_view_priv Show_view_priv Create_routine_priv Alter_routine_priv Create_user_priv ssl_type ssl_cipher x509_issuer x509_subject max_questions max_updates max_connections max_user_connections

10.1.1.10 ejbca *1618E643E43E4921AC458E23C5E7728892CCF1A6 N N N N N N N N

N N N N N N N N N N N N N N N

N N 0 0 0 0

10.1.1.11 ejbca *1618E643E43E4921AC458E23C5E7728892CCF1A6 N N N N N N N N

N N N N N N N N N N N N N N N

N N 0 0 0 0

localhost ejbca *77805DB3940553564EF23E5EB2231A1BEB02EFC3 N N N N N N N N

N N N N N N N N N N N N N N N

N N 0 0 0 0

10.1.1.12 ejbca *1618E643E43E4921AC458E23C5E7728892CCF1A6 N N N N N N N N

N N N N N N N N N N N N N N N

N N 0 0 0 0

I-8021-PKI 20090311 15:57:53 smartcard20-node1: INFO - access rules inserted into mysql db ok

Also create the replication user on node1

on node1 run:

smartcard20-node1:/usr/local/syscheck/database-replication # **./803-create-mysql-replication-user.sh**

Host User Password Select_priv Insert_priv Update_priv Delete_priv Create_priv Drop_priv Reload_priv Shutdown_priv Process_priv File_priv Grant_priv References_priv Index_priv Alter_priv Show_db_priv Super_priv Create_tmp_table_priv Lock_tables_priv Execute_priv Repl_slave_priv Repl_client_priv Create_view_priv Show_view_priv Create_routine_priv Alter_routine_priv Create_user_priv ssl_type ssl_cipher x509_issuer x509_subject max_questions max_updates max_connections max_user_connections

10.1.1.10 ejbcarep *1618E643E43E4921AC458E23C5E7728892CCF1A6 N N N N N N N

N N N N N N N N N N N N Y N N N

N N N 0 0 0 0

```
10.1.1.11 ejbcarep *1618E643E43E4921AC458E23C5E7728892CCF1A6 N N N N N N N

N N N N N N N N N N N N Y N N N

N N N 0 0 0 0

I-8031-PKI 20090311 15:57:58 smartcard20-node1: INFO - Replication access rules inserted into mysql db ok
```

Set the mysql config for replication on node1

In /etc/my.cnf set:

on node1 edit:

```
# Replication Master Server (default)

# binary logging is required for replication

log-bin=mysql-bin



# required unique id between 1 and 2^32 - 1

# defaults to 1 if master-host is not set

# but will not function as a master if omitted

server-id = 1
```

Restart mysql

on node1 run:

```
smartcard20-node1:/usr/local/syscheck/database-replication # /etc/init.d/mysql restart

Restarting service MySQL

Shutting down service MySQL done

Starting service MySQL done
```

Now make node1 take the role of mysql master!!

on node1 run:

smartcard20-node1:/usr/local/syscheck/database-replication # **./804-make-mysql-server-act-as-master.sh**

Are you sure you want to make this mysql server act as mysql master?

Press enter to continiue, ctrl-c to abort

I-8041-PKI 20090312 16:34:20 smartcard20-node1: INFO - Mysql server made to act as a master

Run the show master status command and note the log: “File” and “position”, you will need them in the next step.

on node1 run:

smartcard20-node1:/usr/local/syscheck/database-replication # **./810-show-mysql-master-status.sh**

File Position Binlog_Do_DB Binlog_Ignore_DB

mysql-bin.000001 98

I-8101-PKI 20090311 15:26:32 smartcard20-node1: INFO - Master status shown

*************************** 1. row ***************************

Id: 3

User: root

Host: localhost

db: mysql

Command: Query

Time: 0

State: NULL

```
Info: SHOW PROCESSLIST

I-8101-PKI 20090311 15:26:32 smartcard20-node1: INFO - Master status shown

I-8101-PKI 20090311 15:26:32 smartcard20-node1: INFO - Master status shown
```

1.10 Make node 2 slave

In /etc/my.cnf set:

on node2 edit:

```
# Replication Master Server (default)

# binary logging is required for replication

log-bin=mysql-bin
```

But do set server-id = 2

```
# required unique id between 1 and 2^32 - 1

# defaults to 1 if master-host is not set

# but will not function as a master if omitted

server-id = 2
```

Make sure to restart mysql

on node2 run:

```
smartcard20-node2:/usr/local/syscheck/database-replication # /etc/init.d/mysql restart

Restarting service MySQL

Shutting down service MySQL done

Starting service MySQL done
```

Now it's time to start the slave

on node2 run:

```
smartcard20-node2:/usr/local/syscheck/database-replication # ./805-make-mysql-server-act-as-slave.sh

Are you sure you want to make this mysql server act as mysql slave?

Press enter to continiue, ctrl-c to abort



now you need to run 810-show-mysql-master-status.sh on the master node

For a first time setup (master has never had a slave) default file='' and pos=4 is the values to use

then enter File and Position

Enter Log File default:[]>

mysql-bin.000001

Enter Log Pos default:[4]>

98

I-8051-PKI 20090312 16:48:09 smartcard20-node2: INFO - Mysql server made to act as a slave
```

Now unlock the tables from writes

on node1 run:

```
smartcard20-node1:/usr/local/syscheck/database-replication # ./812-master-node-unlock-tables.sh

I-8121-PKI 20090326 12:03:58 smartcard20-node1: INFO - Set mysql unlock TABLES ok
```

1.11 Verify replication

on node1 run:

```
smartcard20-node1:/usr/local/syscheck/database-replication # ./810-show-mysql-master-status.sh

File Position Binlog_Do_DB Binlog_Ignore_DB

mysql-bin.000001 4439

I-8101-PKI 20090311 16:02:33 smartcard20-node1: INFO - Master status shown
```

*************************** 1. row ***************************

Id: 73

User: ejbcarep

Host: 10.15.251.247:6265

db: NULL

Command: Binlog Dump

Time: 1015

State: Has sent all binlog to slave; waiting for binlog to be updated

Info: NULL

*************************** 2. row ***************************

Id: 88

User: ejbca

Host: localhost:24797

db: ejbca

Command: Sleep

Time: 306

State:

Info: NULL

*************************** 3. row ***************************

Id: 89

User: ejbca

Host: localhost:24798

db: ejbca

Command: Sleep

Time: 306

State:

Info: NULL

*************************** 4. row ***************************

Id: 90

User: ejbca

Host: localhost:24799

db: ejbca

Command: Sleep

Time: 306

State:

Info: NULL

*************************** 5. row ***************************

Id: 99

User: ejbca

Host: localhost:28104

db: ejbca

Command: Sleep

Time: 6

State:

Info: NULL

*************************** 6. row ***************************

Id: 100

User: ejbca

Host: localhost:28105

db: ejbca

Command: Sleep

Time: 6

State:

Info: NULL

*************************** 7. row ***************************

Id: 102

User: root

Host: localhost

db: mysql

Command: Query

Time: 0

State: NULL

Info: SHOW PROCESSLIST

I-8101-PKI 20090311 16:02:33 smartcard20-node1: INFO - Master status shown

I-8101-PKI 20090311 16:02:33 smartcard20-node1: INFO - Master status shown

Check the slave

on node2 run:

smartcard20-node2:/usr/local/syscheck/database-replication # **./809-show-mysql-slave-status.sh**

Slave_IO_State Master_Host Master_User Master_Port Connect_Retry **Master_Log_File Read_Master_Log_Pos** Relay_Log_File Relay_Log_Pos Relay_Master_Log_File Slave_IO_Running Slave_SQL_Running Replicate_Do_DB Replicate_Ignore_DB Replicate_Do_Table Replicate_Ignore_Table Replicate_Wild_Do_Table Replicate_Wild_Ignore_Table Last_Errno Last_Error Skip_Counter Exec_Master_Log_Pos Relay_Log_Space Until_Condition Until_Log_File Until_Log_Pos

Master_SSL_Allowed Master_SSL_CA_File Master_SSL_CA_Path Master_SSL_Cert Master_SSL_Cipher Master_SSL_Key Seconds_Behind_Master

Waiting for master to send event 10.15.251.246 *ejbcarep 3306 60* ***mysql-bin.000001 4439*** *smartcard20-node2-relay-bin.000003 2057 mysql-bin.000001 Yes Yes 0 0*

4439 2057 None 0 No 0

I-8091-PKI 20090311 16:02:25 smartcard20-node2: INFO - Slave status shown

2 Verification and Troubleshooting

2.1 Check the log file:

on node2 run:

smartcard20-node2:/usr/local/syscheck/database-replication # **less /var/log/mysqld.log**

090311 15:45:37 mysqld ended

090311 15:45:37 mysqld started

090311 15:45:38 InnoDB: Started; log sequence number 0 43665

090311 15:45:38 [Warning] Neither --relay-log nor --relay-log-index were used; so replication may break when this MySQL serve

r acts as a slave and has his hostname changed!! Please use '--relay-log=smartcard20-node2-relay-bin' to avoid this problem.

090311 15:45:38 [Note] /usr/sbin/mysqld: ready for connections.

Version: '5.0.26' socket: '/var/lib/mysql/mysql.sock' port: 3306 SUSE MySQL RPM

090311 15:45:38 [Note] Slave SQL thread initialized, starting replication in log 'mysql-bin.000001' at position 2617, relay l

og './smartcard20-node2-relay-bin.000001' position: 98

090311 15:45:38 [Note] Slave I/O thread: connected to master 'ejbcarep@10.15.251.246:3306', replication started in log 'mysq

l-bin.000001' at position 2617

2.2 Write to the test table and verify both servers answers the same number

on node1 run:

smartcard20-node1:/usr/local/syscheck/database-replication # **./807-test-table-create-table.sh**

creating the test table:

smartcard20-node1:/usr/local/syscheck/database-replication # **./808-test-table-update-and-check-master-and-slave.sh**

cleaning and inserting new val: **1236784263**

values from 10.15.251.246

value

1236784263

values from 10.15.251.247

value

1236784263

2.3 Change datasource config in jboss

Set jboss datasource on node1

on node1 run:

smartcard20-node1:/usr/local/certificate-services/syscheck/database-replication# **./806-change-active-mysql-server-in-jboss-datasource.sh node1**

ejbca-ds.xml in jboss switched host to 10.1.1.10

remember to restart jboss when you want the change to take effect

Set jboss datasource on node2

on node2 run:

smartcard20-node2:/usr/local/certificate-services/syscheck/database-replication# **./806-change-active-mysql-server-in-jboss-datasource.sh node1**

ejbca-ds.xml in jboss switched host to 10.1.1.10

remember to restart jboss when you want the change to take effect

Start jboss on node1

on node1 run:

smartcard20-node1:/usr/local/certificate-services/syscheck/related-enabled# **/etc/init.d/jboss start**

Starting JBoss using Java from /usr/local/certificate-services/java: Waiting for jboss server to start:.....done

Start jboss on node2

on node2 run:

smartcard20-node2:/usr/local/certificate-services/syscheck/related-enabled# **/etc/init.d/jboss start**

Starting JBoss using Java from /usr/local/certificate-services/java: Waiting for jboss server to start:.....done

Activate CA:s

Either activate CA:s in EJBCA / The Admin Console or with Syscheck

With syscheck you need to config PIN-codes into config/common.conf
on node1 run:

```
smartcard20-node1:/usr/local/certificate-services/syscheck/related-enabled#   ./909_activate_CAs.sh -s

Screenonly output:

Activating CA :  eIDCA (./bin/ejbca.sh ca activateca eIDCA 1111)

Using JBoss JNDI provider...

I-9091-PKI 20100615 17:27:04 smartcard20.demo: INFO - Activate CA:s run successfully

Screenonly output:

Activating CA :  eSignCA (./bin/ejbca.sh ca activateca eSignCA 1111)

Using JBoss JNDI provider...

I-9091-PKI 20100615 17:27:05 smartcard20.demo: INFO - Activate CA:s run successfully

Screenonly output:

Activating CA :  MSDomainLogonCA (./bin/ejbca.sh ca activateca MSDomainLogonCA 1111)

Using JBoss JNDI provider...

I-9091-PKI 20100615 17:27:07 smartcard20.demo: INFO - Activate CA:s run successfully

Screenonly output:

Activating CA :  ServerCA (./bin/ejbca.sh ca activateca ServerCA 1111)

Using JBoss JNDI provider...

I-9091-PKI 20100615 17:27:09 smartcard20.demo: INFO - Activate CA:s run successfully
```

2.4 Use the show master and show slave scripts

Run this script on the master!

on master-host run: (since this can change back an forth, you need to know which host is master)

```
smartcard20-node1:/usr/local/syscheck/database-replication # ./810-show-mysql-master-status.sh

File Position Binlog_Do_DB Binlog_Ignore_DB
```

mysql-bin.000001 6106

I-8101-PKI 20090311 16:22:44 smartcard20-node1: INFO - Master status shown

*************************** 1. row ***************************

Id: 73

User: ejbcarep

Host: 10.15.251.247:6265

db: NULL

Command: Binlog Dump

Time: 2226

State: Has sent all binlog to slave; waiting for binlog to be updated

Info: NULL

*************************** 2. row ***************************

Id: 141

User: ejbca

Host: localhost:27370

db: ejbca

Command: Sleep

Time: 317

State:

Info: NULL

*************************** 3. row ***************************

Id: 142

User: ejbca

Host: localhost:27371

db: ejbca

Command: Sleep

Time: 317

State:

Info: NULL

*************************** 4. row ***************************

Id: 143

User: ejbca

Host: localhost:27372

db: ejbca

Command: Sleep

Time: 167

State:

Info: NULL

*************************** 5. row ***************************

Id: 144

User: ejbca

Host: localhost:27373

db: ejbca

Command: Sleep

Time: 167

State:

Info: NULL

*************************** 6. row ***************************

Id: 145

User: ejbca

Host: localhost:27374

db: ejbca

Command: Sleep

Time: 167

```
State:

Info: NULL

*************************** 7. row ***************************

Id: 148

User: root

Host: localhost

db: mysql

Command: Query

Time: 0

State: NULL

Info: SHOW PROCESSLIST

I-8101-PKI 20090311 16:22:44 smartcard20-node1: INFO - Master status shown

I-8101-PKI 20090311 16:22:44 smartcard20-node1: INFO - Master status shown
```

It’s important the master show status says:

State: Has sent all binlog to slave; waiting for binlog to be updated

And then compare the logfilename and log_pos with slave show status

Run this script on the slave!

on slave-host run:

```
smartcard20-node2:/usr/local/syscheck/database-replication # ./809-show-mysql-slave-status.sh

Slave_IO_State Master_Host Master_User Master_Port Connect_Retry Master_Log_File Read_Master_Log_Pos
Relay_Log_File Relay_Log_Pos Relay_Master_Log_File Slave_IO_Running Slave_SQL_Running Replicate_Do_DB
Replicate_Ignore_DB Replicate_Do_Table Replicate_Ignore_Table Replicate_Wild_Do_Table Replicate_Wild_Ignore_Table
Last_Errno Last_Error Skip_Counter Exec_Master_Log_Pos Relay_Log_Space Until_Condition Until_Log_File Until_Log_Pos

Master_SSL_Allowed Master_SSL_CA_File Master_SSL_CA_Path Master_SSL_Cert Master_SSL_Cipher Master_SSL_Key
Seconds_Behind_Master
```

Waiting for master to send event 10.15.251.246 ejbcarep 3306 60 **mysql-bin.000001 6106** smartcard20-node2-relay-bin.000003 3724 mysql-bin.000001 *Yes* Yes 0 0

6106 3724 None 0 No 0

I-8091-PKI 20090311 16:23:24 smartcard20-node2: INFO - Slave status shown

Here it's important the slave states it waits for master to send updates, has the right ip to the master and the same Logfilename and log_pos is the same as master show status shows.

2.5 Verify the VIP configuration

Verify the VIP configuration in config/common.conf

Check the interface name of the host:s ipaddress

```
# ifconfig
eth0      Link encap:Ethernet  HWaddr 00:0c:29:c2:1d:f9
          inet addr:192.168.31.146  Bcast:192.168.31.255  Mask:255.255.255.0
          inet6 addr: fe80::20c:29ff:fec2:1df9/64 Scope:Link
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:39796 errors:0 dropped:0 overruns:0 frame:0
          TX packets:58761 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:2834743 (2.7 MiB)  TX bytes:41442017 (39.5 MiB)
          Interrupt:19 Base address:0x2000

eth0:0    Link encap:Ethernet  HWaddr 00:0c:29:c2:1d:f9
          inet addr:192.168.0.10  Bcast:192.168.0.255  Mask:255.255.255.0
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          Interrupt:19 Base address:0x2000
```

Verify the interface set in config/common.conf

```
IF_VIRTUAL="eth0:0"
```

test the activate / deactivate scripts

remove VIP from node1

```
smartcard20-node1:/usr/local/syscheck/related-enabled # ./912_deactivate_VIP.sh -s

I-9123-PKI 20100615 17:42:05 smartcard20-node1: INFO - While deactivating, the VIP was already NOT active on this host
```

Activate VIP on node1 again

```
smartcard20-node1:/usr/local/certificate-services/syscheck/related-enabled# ./911_activate_VIP.sh -s

I-9111-PKI 20100615 17:44:22 smartcard20-node1: INFO - Activate VIP run successfully
```

```
# ifconfig

eth0      Link encap:Ethernet  HWaddr 00:0c:29:c2:1d:f9

          inet addr:192.168.31.146  Bcast:192.168.31.255  Mask:255.255.255.0

          inet6 addr: fe80::20c:29ff:fec2:1df9/64 Scope:Link

          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1

          RX packets:39796 errors:0 dropped:0 overruns:0 frame:0

          TX packets:58761 errors:0 dropped:0 overruns:0 carrier:0

          collisions:0 txqueuelen:1000

          RX bytes:2834743 (2.7 MiB)  TX bytes:41442017 (39.5 MiB)

          Interrupt:19 Base address:0x2000


eth0:0    Link encap:Ethernet  HWaddr 00:0c:29:c2:1d:f9

          inet addr:192.168.0.10  Bcast:192.168.0.255  Mask:255.255.255.0

          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1

          Interrupt:19 Base address:0x2000
```

Check if the VIP is configured that the alias interface is showing up (eth0:0) and has the correct ip, if the VIP should NOT be activated, the interface shall not be shown in ifconfig.

3 Fail over and fail back

3.1 Fail over, make the slave master

Master has problems, thus we need to make the slave accept updates i.e. make it mysql master

To simulate master problems just shut it down

```
smartcard20-node1:/usr/local/syscheck/database-replication # /etc/init.d/mysql stop
```

Also shut down jboss on both nodes

```
smartcard20-node1:/usr/local/syscheck/database-replication # /etc/init.d/jboss stop

smartcard20-node2:/usr/local/syscheck/database-replication # /etc/init.d/jboss stop
```

Slave now shows it can't connect to master:

```
smartcard20-node2:/usr/local/syscheck/database-replication # ./809-show-mysql-slave-status.sh

Slave_IO_State Master_Host Master_User Master_Port Connect_Retry Master_Log_File Read_Master_Log_Pos Relay_Log_File
Relay_Log_Pos Relay_Master_Log_File Slave_IO_Running Slave_SQL_Running Replicate_Do_DB Replicate_Ignore_DB
Replicate_Do_Table Replicate_Ignore_Table Replicate_Wild_Do_Table Replicate_Wild_Ignore_Table Last_Errno Last_Error
Skip_Counter Exec_Master_Log_Pos Relay_Log_Space Until_Condition Until_Log_File Until_Log_Pos

Master_SSL_Allowed Master_SSL_CA_File Master_SSL_CA_Path Master_SSL_Cert Master_SSL_Cipher Master_SSL_Key
Seconds_Behind_Master

Reconnecting after a failed master event read 10.15.251.246 ejbcarep 3306 60 mysql-bin.000001 822 smartcard20-node2-relay-
bin.000002 235 mysql-bin.000001 No Yes 0

0 822 235 None 0 No NULL

I-8091-PKI 20090312 16:33:15 smartcard20-node2: INFO - Slave status shown
```

Now make this node take the role of mysql master

```
smartcard20-node2:/usr/local/syscheck/database-replication # ./804-make-mysql-server-act-as-master.sh

Are you sure you want to make this mysql server act as mysql master?

Press enter to continiue, ctrl-c to abort



I-8041-PKI 20090312 16:34:20 smartcard20-node2: INFO - Mysql server made to act as a master
```

Check the master status

```
smartcard20-node2:/usr/local/syscheck/database-replication # ./810-show-mysql-master-status.sh

File Position Binlog_Do_DB Binlog_Ignore_DB

mysql-bin.000001 98

I-8101-PKI 20090312 16:34:35 smartcard20-node2: INFO - Master status shown

*************************** 1. row ***************************

Id: 64

User: ejbca

Host: smartcard20-node2.a-intra.fmv.se:23152

db: ejbca

Command: Sleep

Time: 313

State:

Info: NULL

*************************** 2. row ***************************

Id: 65

User: ejbca

Host: smartcard20-node2.a-intra.fmv.se:23153

db: ejbca

Command: Sleep

Time: 313

State:

Info: NULL

*************************** 3. row ***************************

Id: 66
```

User: ejbca

Host: smartcard20-node2.a-intra.fmv.se:21656

db: ejbca

Command: Sleep

Time: 163

State:

Info: NULL

*************************** 4. row ***************************

Id: 67

User: ejbca

Host: smartcard20-node2.a-intra.fmv.se:21657

db: ejbca

Command: Sleep

Time: 163

State:

Info: NULL

*************************** 5. row ***************************

Id: 70

User: ejbca

Host: smartcard20-node2.a-intra.fmv.se:21660

db: ejbca

Command: Sleep

Time: 13

State:

Info: NULL

*************************** 6. row ***************************

Id: 73

```
User: root

Host: localhost

db: mysql

Command: Query

Time: 0

State: NULL

Info: SHOW PROCESSLIST

I-8101-PKI 20090312 16:34:35 smartcard20-node2: INFO - Master status shown

I-8101-PKI 20090312 16:34:35 smartcard20-node2: INFO - Master status shown
```

Since there is no slave we wont see that process in the list!

Failover VIP , remove VIP from node1

```
smartcard20-node1:/usr/local/syscheck/related-enabled # ./912_deactivate_VIP.sh -s

I-9123-PKI 20100615 17:42:05 smartcard20.demo: INFO - While deactivating, the VIP was already NOT active on this host
```

Activate VIP on node2

```
smartcard20:/usr/local/certificate-services/syscheck/related-enabled# ./911_activate_VIP.sh -s

I-9111-PKI 20100615 17:44:22 smartcard20.demo: INFO - Activate VIP run successfully
```

Failover jboss datasource configuration on node2

```
smartcard20-node2:/usr/local/syscheck/database-replication # ./806-change-active-mysql-server-in-jboss-datasource.sh node2

ejbca-ds.xml in jboss switched host to 10.1.1.11

remember to restart jboss when you want the change to take effect
```

todo: start jboss and verify funcionallity

3.2 Fail-back, make the old master master again

First we need to lock the tables from writes on node2

smartcard20-node2:/usr/local/syscheck/database-replication # **./811-master-node-flush-tables-with-read-lock.sh**

I-8111-PKI 20090326 12:03:58 smartcard20-node2: INFO - Set mysql FLUSH TABLES WITH READ LOCK ok

Shutdown jboss on node1

smartcard20-node1:/usr/local/syscheck/related-enabled # **/etc/init.d/jboss stop**

Shutdown jboss on node2

smartcard20-node2:/usr/local/syscheck/related-enabled # **/etc/init.d/jboss stop**

Make a backup of the data at node2

smartcard20-node2:/usr/local/syscheck/related-enabled # **./904_make_mysql_db_backup.sh -s**

I-9041-PKI 20090312 16:44:14 smartcard20-node2: INFO - Backed up db ok (file:/backup/mysql/ejbcabackup-2009-03-12_16.44.14.sql.gz)

transfer backup it to node1

smartcard20-node2:/usr/local/syscheck/related-enabled # **./906_ssh-copy-to-remote-machine.sh -s /backup/mysql/ejbcabackup-2009-03-12_16.44.14.sql.gz smartcard20-node1 /home/jboss jboss /home/jboss/.ssh/id_rsa**

I-9061-PKI 20090312 16:44:39 smartcard20-node2: INFO - file transfered ok

At node1 start the database server (if it was off during recovering the server)

username@smartcard20-node1:/usr/local/syscheck-1_5_0/related-enabled> **sudo /etc/init.d/mysql start**

At node1 restore the database

username@smartcard20-node1:/usr/local/syscheck-1_5_0/related-enabled> **sudo ./920_restore_mysql_db_from_backup.sh -s /home/jboss/ejbcabackup-2009-03-27_11.09.08.sql.gz**

enter 'im-really-sure' (without the '-') to continiue or ctrl-c to abort

im really sure

now we'll backup the current database before we restore the one you specified

I-9041-PKI 20090327 11:09:46 sles20sp2-2: INFO - Backed up db ok (file:/backup/mysql/ejbcabackup-2009-03-27_11.09.46.sql.gz)

restoring the db from /backup/mysql/ejbcabackup-2009-03-27_11.09.08.sql.gz

I-9202-PKI 20090327 11:09:47 sles20sp2-2: INFO - Restored the db from file (/backup/mysql/ejbcabackup-2009-03-27_11.09.08.sql.gz)

Now lets make the old master master again

smartcard20-node1:/usr/local/syscheck/database-replication # **./804-make-mysql-server-act-as-master.sh**

Are you sure you want to make this mysql server act as mysql master?

enter 'im-really-sure' (without the '-') to continiue or ctrl-c to abort

im really sure

I-8041-PKI 20090312 16:47:00 smartcard20-node1: INFO - Mysql server made to act as a master

Check mysql master status

smartcard20-node1:/usr/local/syscheck/database-replication # **./810-show-mysql-master-status.sh**

File Position Binlog_Do_DB Binlog_Ignore_DB

mysql-bin.000001 98

I-8101-PKI 20090312 16:47:08 smartcard20-node1: INFO - Master status shown

*************************** 1. row ***************************

Id: 5

User: root

Host: localhost

db: mysql

Command: Query

Time: 0

State: NULL

Info: SHOW PROCESSLIST

I-8101-PKI 20090312 16:47:08 smartcard20-node1: INFO - Master status shown

I-8101-PKI 20090312 16:47:08 smartcard20-node1: INFO - Master status shown

Make the old slave slave again, enter YOUR values from the last commnd!

smartcard20-node2:/usr/local/syscheck/database-replication # **./805-make-mysql-server-act-as-slave.sh**

Are you sure you want to make this mysql server act as mysql slave?

enter 'im-really-sure' (without the '-') to continiue or ctrl-c to abort

im really sure

now you need to run 810-show-mysql-master-status.sh on the master node

For a first time setup (master has never had a slave) default file='' and pos=4 is the values to use

then enter File and Position

Enter Log File default:[]>

mysql-bin.000001

Enter Log Pos default:[4]>

98

I-8051-PKI 20090312 16:48:09 smartcard20-node2: INFO - Mysql server made to act as a slave

Time to release lock on node2

smartcard20-node2:/usr/local/syscheck/database-replication # **./812-master-node-unlock-tables.sh**

I-8121-PKI 20090326 12:03:58 smartcard20-node2: INFO - Set mysql unlock TABLES ok

Failback VIP - deactivate on node2

sc20fmv-node2:/usr/local/certificate-services/syscheck/related-enabled # **./912_deactivate_VIP.sh -s**

I-9121-PKI 20100610 13:21:00 sc20fmv-node2: INFO - Deactivate VIP run successfully

Failback VIP - activate on node1

sc20fmv-node1:/usr/local/certificate-services/syscheck/related-enabled # **./911_activate_VIP.sh -s**

I-9111-PKI 20100610 13:21:06 sc20fmv-node1: INFO - Activate VIP run successfully

Failback jboss datasource configuration

Change to node1 to use as datasource

smartcard20-node1:/usr/local/syscheck/database-replication # **./806-change-active-mysql-server-in-jboss-datasource.sh node1**

ejbca-ds.xml in jboss switched host to 192.168.31.140

remember to restart jboss when you want the change to take effect

Change to node2 to use as datasource

smartcard20-node2:/usr/local/syscheck/database-replication # **./806-change-active-mysql-server-in-jboss-datasource.sh node1**

ejbca-ds.xml in jboss switched host to 192.168.31.140

remember to restart jboss when you want the change to take effect

Now unlock the tables from writes on node1

smartcard20-node1:/usr/local/syscheck/database-replication # **./812-master-node-unlock-tables.sh**

I-8121-PKI 20090326 12:03:58 smartcard20-node1: INFO - Set mysql unlock TABLES ok

Now unlock the tables from writes on node2

smartcard20-node2:/usr/local/syscheck/database-replication # **./812-master-node-unlock-tables.sh**

I-8121-PKI 20090326 12:03:58 smartcard20-node2: INFO - Set mysql unlock TABLES ok

Verify replication with the simple test tool
All three values MUST be the same

smartcard20-node2:/usr/local/syscheck/database-replication # **./808-test-table-update-and-check-master-and-slave.sh**

cleaning and inserting new val: **1276170492**

values from 192.168.31.140

value

1276170492

values from 192.168.31.142

value

1276170492

start jboss on node1

smartcard20-node1:/usr/local/syscheck/related-available # **/etc/init.d/jboss start**

Starting JBoss application server: Waiting for jboss server to start:

.....Jboss server is up and running.

start jboss on node2

smartcard20-node2:/usr/local/syscheck/related-available # **/etc/init.d/jboss start**

Starting JBoss application server: Waiting for jboss server to start:

.....Jboss server is up and running.

Verify replication status – The position shall be updated from the initial “98”

```
smartcard20-node1:/usr/local/syscheck/database-replication # ./810-show-mysql-master-status.sh
File    Position        Binlog_Do_DB    Binlog_Ignore_DB
mysql-bin.000001        19528
I-8101-PKI 20080504 18:09:18 sc20fmv-node1: INFO - Master status shown
*************************** 1. row ***************************
     Id: 12
   User: ejbcarep
   Host: 192.168.31.142:35185
     db: NULL
Command: Binlog Dump
   Time: 2018
  State: Has sent all binlog to slave; waiting for binlog to be updated
   Info: NULL
*************************** 2. row ***************************
<...>
I-8101-PKI 20090312 16:50:51 smartcard20-node1: INFO - Master status shown
I-8101-PKI 20090312 16:50:51 smartcard20-node1: INFO - Master status shown
```

show slave status, the slave must have the same file and position (or larger value on replica)

```
smartcard20-node2:/usr/local/syscheck/database-replication # ./809-show-mysql-slave-status.sh
*************************** 1. row ***************************
           Slave_IO_State: Waiting for master to send event
              Master_Host: 192.168.31.140
              Master_User: ejbcarep
              Master_Port: 3306
            Connect_Retry: 60
```

Master_Log_File: mysql-bin.000001

Read_Master_Log_Pos: 19528

Relay_Log_File: sc20fmv-node2-relay-bin.000002

Relay_Log_Pos: 19665

Relay_Master_Log_File: mysql-bin.000001

Slave_IO_Running: Yes

Slave_SQL_Running: Yes

Replicate_Do_DB:

Replicate_Ignore_DB:

Replicate_Do_Table:

Replicate_Ignore_Table:

Replicate_Wild_Do_Table:

Replicate_Wild_Ignore_Table:

Last_Errno: 0

Last_Error:

Skip_Counter: 0

Exec_Master_Log_Pos: 19528

Relay_Log_Space: 19665

Until_Condition: None

Until_Log_File:

Until_Log_Pos: 0

Master_SSL_Allowed: No

Master_SSL_CA_File:

Master_SSL_CA_Path:

Master_SSL_Cert:

Master_SSL_Cipher:

Master_SSL_Key:

Seconds_Behind_Master: 0

I-8091-PKI 20100610 13:50:09 sc20fmv-node2: INFO - Slave status shown