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# Replication Procedures

## How Replication Works

**Part 1 -- source (sending) site processing:**

* The sending site invokes ~replication/**replicate-database.pl** via /etc/init.d/isante, which makes calls to ~support/cron.pl. (cron.pl has sections for backup, 10 minute job, and replication).
* replicate-database.pl puts unloaded data files into the local /var/backups/itech/replication/data directory, then sends the files with curl, then moves the files to ~data-sent, recording these steps in the replicationRead table in the database.

**Part 2 -- target (receiving) site processing (at the Arsenic consolidated site):**

* Arsenic receives replication files, via:

<https://isante-consolidated.cirg.washington.edu/receiver/receive-file.pl>

* receive-file.pl puts the files into:

/home/itech/replication/incoming/

or may put unauthorized files into:

/home/itech/replication/incoming-orphans/

* The program /home/itech/replication/consolidated/**move-incoming-files.pl** moves any files from ~incoming to ~data (for load to arsenic.itech) and uses scp to copy files to the national-id server (/home/itech/replication/data) in Port Au Prince for load there.

**Part 3 -- target site data loading:**

* The program /home/itech/replication/scripts/apply-received-files.pl runs whenever there are files located in incoming. It builds an updateTarget command line with the gz files in /home/itech/replication/data, runs the command, then moves the file to specific imported directories under that directory (ie. /home/itech/replication/data/imported-<target-name>dxxsxxxx and deletes the file from the data directory.

**Setting up a receiver site**

* Receiving need not be limited to arsenic. It is possible to direct specific network sites to their own specially set up consolidated server by adding the replicationTargets item to their config object. For example, as of iSanté 13.1, the identified site in PaP is considered the source for de-ided files and is configured (via its config object to send them to the incoming folder on the de-id site via curl. The process for setting up a receiver site (in this case the de-id server) is detailed in the file:

~replication/consolidated/receiver/receive-file.pl

## Restarting replication

We want to wipe out previous replication data and start fresh. This is typically necessary because there is a difference between what the replicationRead table thinks has been unloaded and what actually resides in the /isante-backups/replication/data directory. The message you will see when this error condition exists looks like this because files that need to be transferred are not found by curl:

sudo -u itech perl replicate-database.pl

% Total % Received % Xferd Average Speed Time Time Time Current

Dload Upload Total Spent Left Speed

0 0 0 0 0 0 0 0 --:--:-- 0:00:16 --:--:-- 0

curl: (26) failed creating formpost data

Curl had an error. Curl said

Return status 6656

1. Truncate the existing records for replication from the database

log in to mysql:

$ mysql -u admin -p itech

pass: <pass>

mysql> truncate table replicationRead;

mysql> quit;

2. Get rid of previously sent files

$ sudo rm -rf isante-backups/replication/data

$ sudo rm -rf isante-backups/replication/data-sent

3. Run replicate-database.pl (or you can wait for the cron job to do this):

$ cd /var/www/isante/replication

$ perl replicate-database.pl (if logged in as itech)

or

$ sudo -u itech perl replicate-database.pl (if logged in as a different user)

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## Handling non-incremental replication data

When a non-incremental replication data file is received an email will be sent to [shw2@uw.edu](mailto:shw2@uw.edu) and the processing of replication files will be stopped until the file is manually dealt with.

Non-incremental file are sometimes found in /home/itech/replication/incoming by searching for the pattern 19\*.csv.gz:

ls /home/itech/replication/incoming/19\*.csv.gz

Non-incremental replication files are received for two reasons. The first reason non-incremental data could be received is if an existing site has been rebuilt or replication has been re-initialized. The second reason is that a new site has been established or an existing site has moved in-country from the ASP server. In either case the authenticity of the data should be verified. Usually this is done by asking someone in Haiti if a new site has been setup. The **dbSite** and **siteCode** of the data file should also be verified.

In the case of an existing site, since we have already received data from the site, there are some extra steps that need to be performed.

1. Check to see if the site has any data located in “arsenic:/home/itech/replication/old”. If it does delete this data:

sudo rm -r /home/itech/replication/old/\*d120s51100\*

1. Move the site’s existing data from “arsenic:/home/itech/replication/data” to “arsenic:/home/itech/replication/old”.

sudo mv /home/itech/replication/data/\*d120s51100\* /home/itech/replication/old

1. On each of the two in-country servers (172.20.2.50, 172.20.2.51) delete the site's data:

sudo rm -r /home/itech/replication/data/imported-itechUWfailover-d120s51100

sudo rm -r /home/itech/replication/data/imported-itechUWNoID-d120s51100

At this point the file can be manually processed by running (on arsenic):

sudo -u itech perl /home/itech/replication/scripts/move-incoming-files.pl --force

Only the “force” step is required for new or transferring from ASP sites.

The “force” step might result in the following error message:

ssh: connect to host 172.20.2.51 port 22: Connection refused

This error occurs because the NoId server in PaP is not available [or not accessible through the VPN].

Shell script for arsenic portion of handling non-incremental data

sudo rm -r /home/itech/replication/old/\*$1\*

sudo mv /home/itech/replication/data/\*$1\* /home/itech/replication/old

setting up a receiver:

Add receiver location to apache config:

cd /etc/apache2/sites-available/

sudo vi isante

<Location /receiver>

AuthType basic

AuthName "iSante Consolidated Replication"

AuthBasicProvider file

AuthUserFile "/home/itech/consolidated-replication.htpasswd"

Require valid-user

AddHandler cgi-script .pl

Options +ExecCGI

</Location>

Place the password file as specified above (see example on arsenic)

Make ln to associate /home/itech/replication with replication-received

sudo ln -s /home/itech/replication replication-received

create incoming dir and set correct permissions

cd /home/itech/replication/

mkdir incoming

sudo mkdir incoming

sudo chown itech.www-data incoming

sudo chmod g+w incoming

reload apache:

sudo /etc/init.d/apache2 force-reload

Add the following entries to the server’s cron:

50 16 \* \* \* itech /home/itech/replication/scripts/move-incoming-files.pl

30 19 \* \* \* itech /home/itech/replication/scripts/apply-received-files.pl

check apache error log:

512 tail /var/log/apache2/error.log

change hostname:

513 sudo /etc/hostname

514 sudo vi /etc/hostname

how long has server been up?

515 uptime

516 cd /var/www/isante/replication/consolidated/receiver/

517 ls

518 sudo receive-file.pl

519 sudo vi receive-file.pl

520 tail /var/log/apache2/error.log

521 sudo vi receive-file.pl

522 sudo /etc/init.d/apache2 stop

523 sudo /etc/init.d/apache2 start

524 tail /var/log/apache2/error.log

527 ls /var/www/receiver/receive-file.pl

528 ls -l /var/www/receiver/receive-file.pl

529 vi /var/www/receiver/receive-file.pl

530 sudo /etc/init.d/apache2 force-reload

531 tail /var/log/apache2/error.log

532 cd /etc/apache2/

533 ls

534 vi httpd.conf

535 vi apache2.conf

536 cd /home/itech/replication/

537 ls -l

538 ls -la

539 cd /var/backups

540 ls -la

541 ls -la itech

542 cd itech

make ln between directories and set correct permissions

543 sudo ln -s /home/itech/replication replication-received

544 cd /home/itech/replication/

545 ls

546 mkdir incoming

547 sudo mkdir incoming

548 sudo chown itech.www-data incoming

549 sudo chmod g+w incoming

550 ls -l

551 ls

552 cd incoming/

553 ls

554 ls -l