docoll rsync sysadmin guide

Table of Contents

1   Introduction

This is the docoll rsync systems administrator's guide.

docoll rsync synchronises files from client computers to the server.

1.1   Related documentation

In descending order of likely usefulness to a new reader:

- "docoll system introduction"
- "docoll directories and files"
- "docoll server sysadmin guide"
- "docoll upgrade guide"
- RELEASE

2   Server

The docoll server must be a GNU/Linux system. The software was developed and tested on Debian Squeeze but should work (possibly with minor adjustments) on any GNU/Linux system with rsync, logrotate nd optionally samba installed. Early development and testing was done on Slackware 13.1 and CentOS 5.5.

2.1   Prerequisites

Software: rsync. Version 3.0.7 is known to work with docoll.

Access: root

2.2   Configuration

2.2.1 /etc/rsyncd.conf

Owner: root

Permissions: 644

Initial content (the modules are added later, one per client):

```
# Configuration file for rsync in daemon mode, /etc/rsyncd.conf

# Usage described in the rsyncd.conf man page

# Global parameters
# ~~~~~~~~~~~~~~~~~
pid file = /var/run/rsyncd.pid
log file = /var/log/rsyncd.log
timeout = 600

# Module parameters
# ~~~~~~~~~~~~~~~~~
```

2.2.2 /etc/rsyncd.secrets

Owner: root

Permissions: 600

Initial content (the secrets are added later, one per client):

```
# rsync username:password file
```

2.2.3 Directories creation

For each docoll instance, changing <instance name> as required, for example to default:

```
dir=/srv/rsync/docoll/<instance name>; mkdir -p $dir && chown root:root $dir
```

2.2.4 Boot script

The boot script's name, directory and any symlinks are distro-dependent. Most distros come with an rsync daemon boot script which may need to be enabled. In case no boot script is supplied, the boot script in 7 Appendix – rsync server boot script may be used.

2.2.5 Log rotation

File: /etc/logrotate.d/rsyncd

Ownerships: root:root

Permissions: 644

```
# logrotate configuration for rsync daemon

# Path must be harmonised with "log file" value in /etc/rsyncd.conf

/var/log/rsyncd.log {
    maxage 183
    missingok
    monthly
    rotate 6
}
```

Notes: "rotate 6" is chosen because errors may go unnoticed for more than 3 months (!) and the log is relatively small anyway. In view of the size and for convenience, compression is not used.

2.3 Adding a client

On the rsync server, as root …

2.3.1 /etc/rsyncd.conf

Add a module for the client, changing the values in red as required.

Note: any lower case letters in the the computer (client) name must be changed to upper case.

```
client=PC-5
instance=default
echo "
[$client]
auth users = $client
incoming chmod = Du=rwx,Dg=rx,Do=rx,Fu=rw,Fg=r,Fo=r
path = /srv/rsync/docoll/$instance/$client
read only = false
secrets file = /etc/rsyncd.secrets
transfer logging = true
use chroot = false

" >> /etc/rsyncd.conf
```

2.3.2 /etc/rsyncd.secrets

Add a line for the client, changing the values in red as required.

Note: any lower case letters in the the computer (client) name must be changed to upper case.

```
client=PC-5
password=password
echo "$client:$password" >> /etc/rsyncd.secrets
```

2.3.3 /srv/rsync/docoll/<instance name>/<client computer name>

If you are using only one instance of docoll on the server, use "default" for the <instance name>.

The group name to be used below varies between distros:

Distro	Group
CentOS	nobody
Debian	nogroup
Slackware	nobody or nogroup

Create a directory for the client computer, changing the values in red as required.

Note: any lower case letters in the the computer (client) name must be changed to upper case.

```
group=nogroup
instance=default
client=PC-5
dir=/srv/rsync/docoll/$instance/$client
mkdir -p $dir && chown root:$group $dir
```

2.3.4 Name resolution

If practicable, ensure that the server can resolve the client's IP address to a hostname, for example by creating an entry for the client in /etc/hosts.

If this cannot be done for any reason (perhaps the client computer uses DHCP and dynamic DNS is not implemented), the only impact on docoll rsync is to make the rsync server log messages list clients by IP address rather than hostname.

2.3.5 Samba

Optionally, if user-driven restores are wanted, samba can be configured to make the synchronised files available as SMB file systems.

Edit /etc/samba/smb.conf.source (may not exist), adding the client(s) as this sample.

Note: any lower case letters in the the computer (client) name must be changed to upper case.

```
[PC-5]
path = /srv/rsync/docoll/PC-5
public = yes
writable = no
```

Optionally test:

```
cd /etc/samba && testparm smb.conf.source
```

The following warnings are normal and can be ignored:

```
rlimit_max: rlimit_max (1024) below minimum Windows limit (16384)
WARNING: You have some share names that are longer than 12 characters.
These may not be accessible to some older clients.
(Eg. Windows9x, WindowsMe, and smbclient prior to Samba 3.0.)
```

Create an updated Samba configuration file (it is written when Enter is pressed):

```
cd /etc/samba && testparm smb.conf.source > smb.conf
```

The new Samba configuration should become effective after not more than one minute.

2.4 Testing

1. Restart the rsync daemon using the boot script. If it is not already running, this will start it.

   The boot script may be in the /etc/init.d/ directory and called either rsync or rsyncd – or it may be in the /etc/rc.d/ directory and called rc.rsync or rc.rsyncd. For example, on Debian:

   ```
   /etc/init.d/rsync restart
   ```

2. Check the rsync daemon status using the boot script, for example:

   ```
   /etc/init.d/rsync status
   ```

3. Check /var/log/rsyncd.log for the daemon startup message. It should look something like:

   ```
   rsync.log:2011/12/22 14:34:58 [1598] rsyncd version 3.0.7 starting, listening on port 873
   ```

4. Ensure the server lists its modules:

   ```
   rsync rsync://localhost
   ```

5. logrotate testing must wait for a month!

3 GNU/Linux clients

This section describes setting up a GNU/Linux system as an rsync client. It is intended for the docoll system but could be used generally.

The content has been tested on Debian Squeeze, Slackware64 13.1 and Ubuntu 10.04 Lucid.

3.1 What you need

- rsync. Version 3.0.7 is known to work.
- docoll_gnulinux_rsync_client-0.7.6.tgz.
- root logon.
- A password. It must match the password configured in the server's rsyncd.secrets file for the client.

3.2 Installation

3.2.1 Verifying the download

Optionally, to confirm a good download, download the corresponding .sig file then receive/import Charles' key and verify the file:

```
gpg --recv-key --keyserver wwwkeys.us.pgp.net/ 7E99EE15
gpg --verify docoll_gnulinux_rsync_client-0.7.6.tgz.sig \
    docoll_gnulinux_rsync_client-0.7.6.tgz
```

3.2.2 Extracting the tarball

As root …

Change directory to wherever docoll_gnulinux_client-0.7.6.tgz is and:

```
tar xvzf docoll_gnulinux_rsync_client-0.7.6.tgz --directory /
```

The expected output is:

```
usr/local/docoll/0.7.6/AUTHORS
usr/local/docoll/0.7.6/LICENCE
usr/local/docoll/0.7.6/RELEASE
usr/local/docoll/0.7.6/bin/rsync_client.sh
usr/local/docoll/0.7.6/samples/ISC.crontab
usr/local/docoll/0.7.6/samples/dcron.crontab
usr/local/docoll/0.7.6/samples/exclude_from
usr/local/docoll/0.7.6/samples/files_from
usr/local/docoll/0.7.6/samples/rsync_client.cfg
```

3.2.3 Creating directories

As root …

```
mkdir -p /etc/opt/docoll/rsync_client /var/log/docoll/rsync_client/
chown docoll:docoll /etc/opt/docoll/rsync_client
```

3.3   Configuration

As docoll …

Copy the sample config files:

```
cp /usr/local/docoll/0.7.6/samples/{exclude_from,files_from,rsync_client.cfg} \
    /etc/opt/docoll/rsync_client
```

3.3.1 Editing rsync_client.cfg

Change the password and server_ID. The password must match the password configured in the server's rsync.secrets file for the client.

If you want to exclude some sub-directories of directories listed in the files_from file from synchronisation, uncomment the exclude-from line.

3.3.2 Editing files_from

Edit the file to have a line for each directory you want to synchronise.

3.3.3 Editing exclude_from

Edit the file to have a line for each sub-directory of directories defined in the files_from file that you want to exclude from synchronisation.

3.3.4 Firewall configuration

rsync requires a TCP connection to port 873 on the server.

3.3.5 cron job

Determine whether the system uses Vixie a.k.a ISC cron or Dillon a.k.a. dcron cron. If man pages are installed, an easy way is to look at the bottom of the cron (or crond, depending on the distro) man page.

As root …

Copy the appropriate sample crontab (ISC.crontab or dcron.crontab) to /etc/cron.d and ensure it is owned by root and only writeable by root:

```
f=/etc/cron.d/docoll_rsync_client; \
cp -p /usr/local/docoll/0.7.6/samples/dcron.crontab $f \
    && chown root $f && chmod 644 $f
```

Edit /etc/cron.d/docoll_rsync_client, changing the sample synchronisation time. If you want to test now, set the time a few minutes in the future. Otherwise set the time(s) to suit local usage and to avoid many systems synchronising at the same time.

Warning: dcron checks /etc/cron.d/ for new files every hour. This can be worked around by restarting the cron daemon.

3.4 Testing

Allow the cron job to run. If you set it to run at boot, reboot.

Check the local /var/log/docoll/rsync_client/rsync_client.sh.<timestamp>.log. If that looks OK, on the rsync server, check:

- the /srv/rsync/docoll/<module name>/ tree.
- the /var/log/rsync.log file.

If you set the cron job time specifically for testing, change it as required.

4 Windows clients

This section describes setting up a Windows system as an rsync client. It is intended for the docoll system but could be used generally.

4.1 What you need

- Either docoll_windows_client-0.7.6.zip or docoll_windows_client_**all**-0.7.6.zip.

  docoll_windows_client_**all**-0.7.6.zip includes this document and cwRsync_4.0.5_Installer.zip, the last free version of cwRsync. cwRsync was FOSS until 21 November 2011 when ITeF!x made in non-free. At that time version 4.2.0 was the latest release, released on 28 September 2001.
- Windows XP only: .zip unpacker such as WinZIP or WinRAR.
- Logon as a member of the Administrator's group.
- A password. It must match the password configured in the server's rsyncd.secrets file for the client.

4.2 Installation

4.2.1 Verifying the download

Optionally, to confirm a good download (requires Gpg4win), download the corresponding .sig file then receive/import Charles' key and verify the file:

```
gpg --recv-key --keyserver wwwkeys.us.pgp.net/ 7E99EE15
gpg --verify docoll_windows_client-0.7.6.zip.sig docoll_windows_client-0.7.6.zip
```

or

```
gpg --verify docoll_windows_client_all-0.7.6.zip.sig docoll_windows_client_all-0.7.6.zip
```

4.2.2 Unzipping the download

Download unIf using docoll_windows_client_**all**-0.7.6.zip, extract docoll_windows_client-0.7.6.zip and cwRsync_4.0.5_Installer.zip.

4.2.3 Installing cwRsync

1. Ideally as Administrator (easiest) but otherwise as a member of the Administrators group ...
2. Disable any security software that checks file execution and creation.
3. Open cwRsync_4.0.5_Installer.zip (or a later version of your choice) and run the .exe

    a) Deselect the secure channel wrapper.
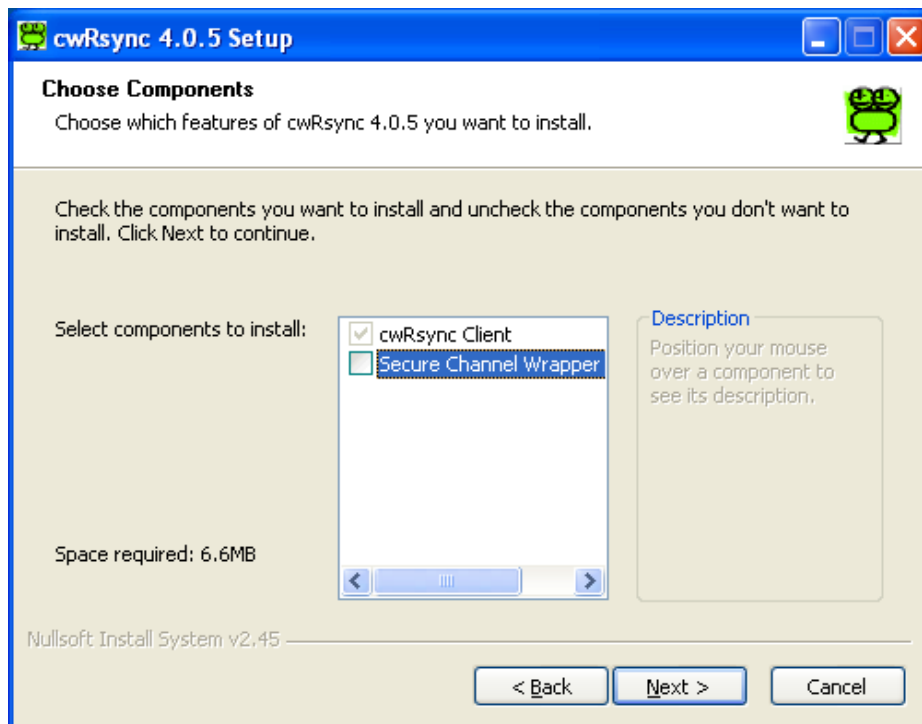
    b) Make a note of the destination directory and accept it.
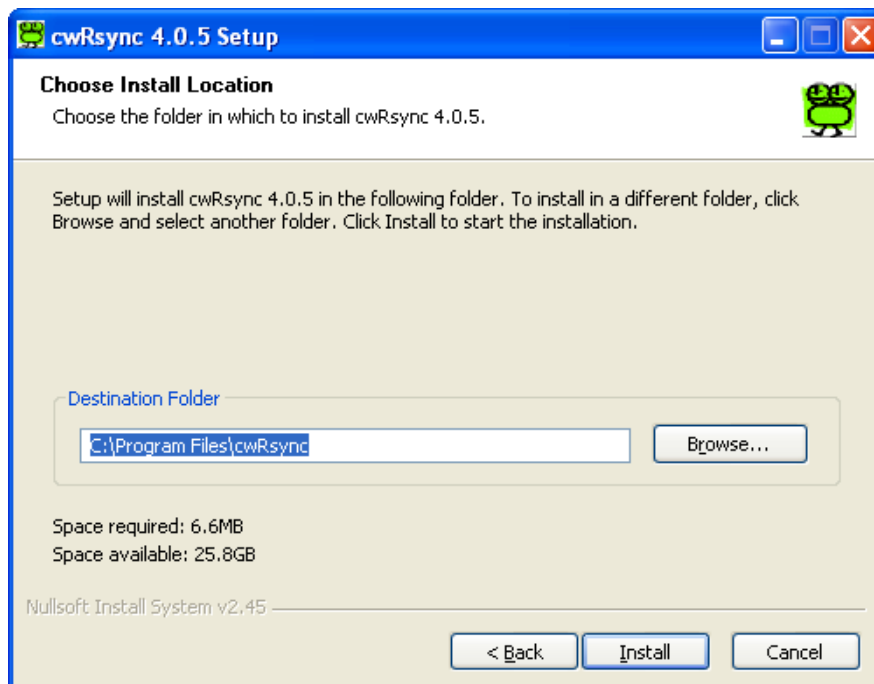
4. Enable any security software that was disabled in step 2.

4.2.4 Installing docoll rsync client

Extract the contents of docoll_windows_client-0.7.6.zip into the same folder that cwRsync was installed into.

4.3 Configuration

The rsync server needs to be configured for each client as described in 2.3 Adding a client above.

Copy the sample configuration files from the cwRsync\docoll\samples folder to the cwRsync\docoll\conf folder.

4.3.1 Overview

The main configuration file is docoll_cwrsync.ini. It has a global section and a section for each drive to be synchronised.

Each drive (C:, D: etc.) to be synchronised requires a file listing which folders are to be synchronised and, optionally a file listing the sub-folders to be excluded.

For the C: drive these are normally:

File name	Purpose	Required/optional
C_files_from.txt	Lists folder(s) to be synchronised	Required
C_exclude_from.txt	Lists sub-folder(s) of the folder(s) listed in C_files_from.txt to be excluded from the synchronisation	Optional

Notes:

1. Similarly named files are required for any further drives. If synchronising files from the D drive, for example, D_files_from.txt would be required and optionally D_include_from.txt.

4.3.2 Editing docoll_cwrsync.ini

Notes:

1. Two configuration values must be changed: Server-ID and Password.

2. For each drive other than C that is to be synchronised, add a new [<drive letter>] section.

3. If no files are to be synchronised from the C drive, delete or comment out the sample C drive section.

4.3.3 Editing *_files_from.txt

Required.

Normally called C_files_from.txt, D_files_from.txt etc.

One line for each folder to be synchronised.

Warning "/" characters must be used as directory separators, not the "\" characters conventional in Windows.

The format of this file is described in the [rsync documentation](#) in the `--files-from` option section.

4.3.4 Editing *_exclude_from.txt

Optional.

Normally called C_exclude_from.txt, D_exclude_from.txt etc.

One line for each folder or file to be excluded from the synchronisation.

Warning "/" characters must be used as directory separators, not the "\" characters conventional in Windows.

Warning If a folder is to be excluded, the line must end in / as shown in the sample.

4.3.5 Configuration testing

The docoll_cwrsync.ini file may be tested at a command prompt using the /V (verify) switch:

```
C:\Program Files\cwRsync\docoll>docoll_cwrsync.vbs /V
```

4.4 Firewall configuration

Details are firewall-specific. The system requires a TCP "stream" to port 873 on the remote host.

4.5 Scheduled Task configuration

4.5.1 Windows XP

If Control Panel is in standard view: Control Panel → Performance & Maintenance → Scheduled Tasks → Add Scheduled Task.

If Control Panel is in classic view: Control Panel → Scheduled Tasks → Add Scheduled Task.

1. Browse to "C:\Program Files\cwRsync\docoll_cwrsync.vbs" and click Open.
2. Select "When my computer starts" or some other time, as required.
3. Next
4. User name: SYSTEM.
5. Next
6. Tick "Open advanced properties …"
7. Finish
8. Change the Run field to: CScript //NoLogo "C:\Program Files\cwRsync\docoll\docoll_cwrsync.vbs"
9. Apply
10. OK (in the "Set Account Information" window; do not enter a password).
11. OK

4.5.2 Windows Vista

TODO: populate this section.

4.5.3 Windows 7

1. Administrative Tools → Task Scheduler → Actions → Create Task.
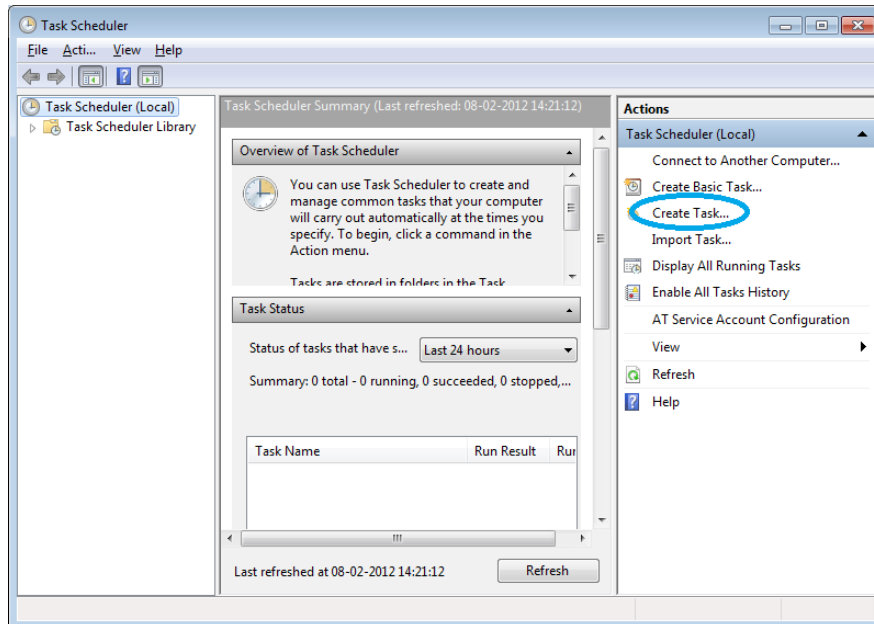
2.
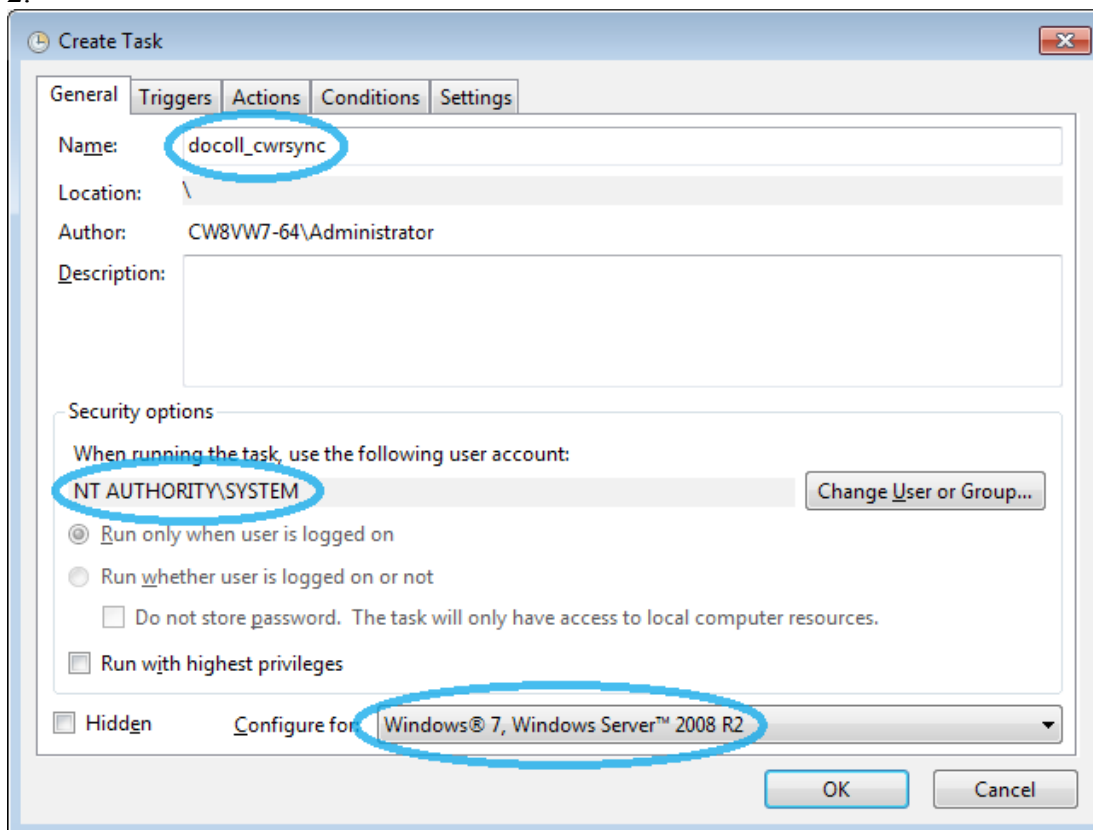
Name: docoll_cwrsync
Change User or Group → Advanced

"Find now" then select SYSTEM.
Configure for: Windows 7, Windows Server 2008 R2.

3.
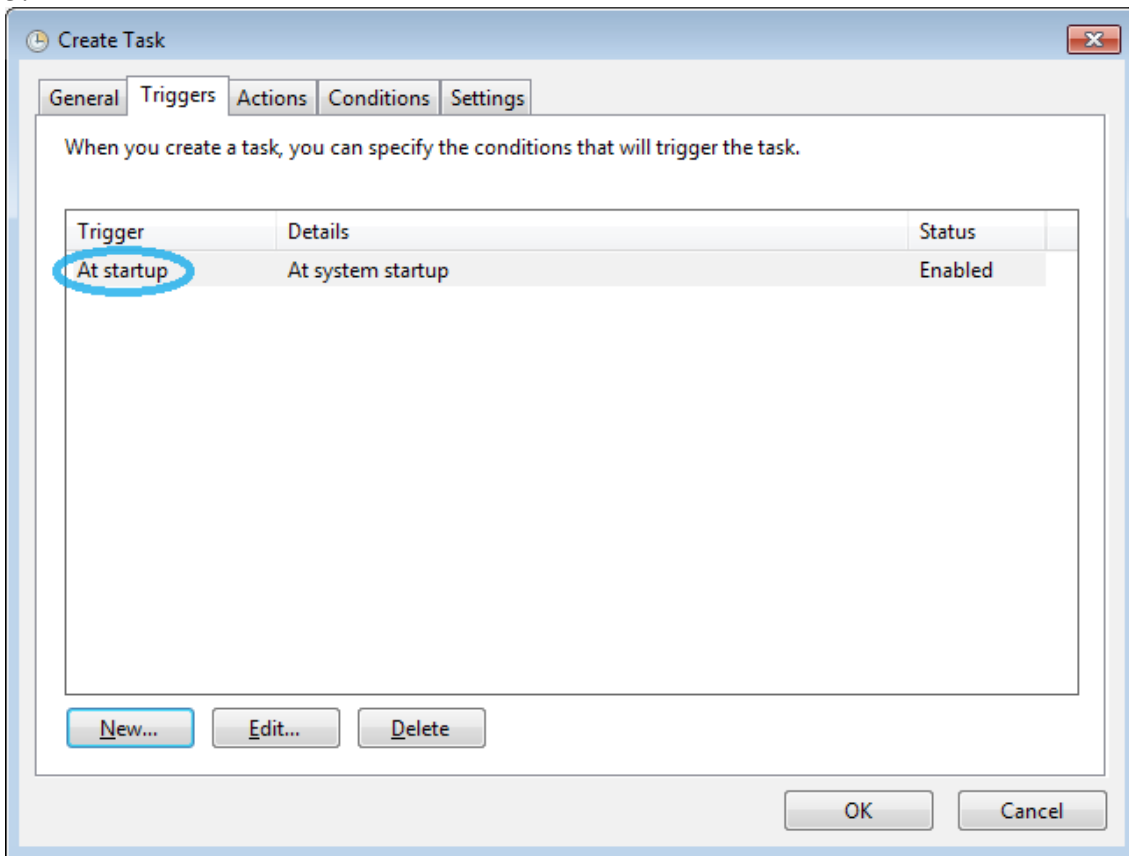
Triggers → New
Begin the task at: Startup (or when required to suit local conditions).
OK.

4.
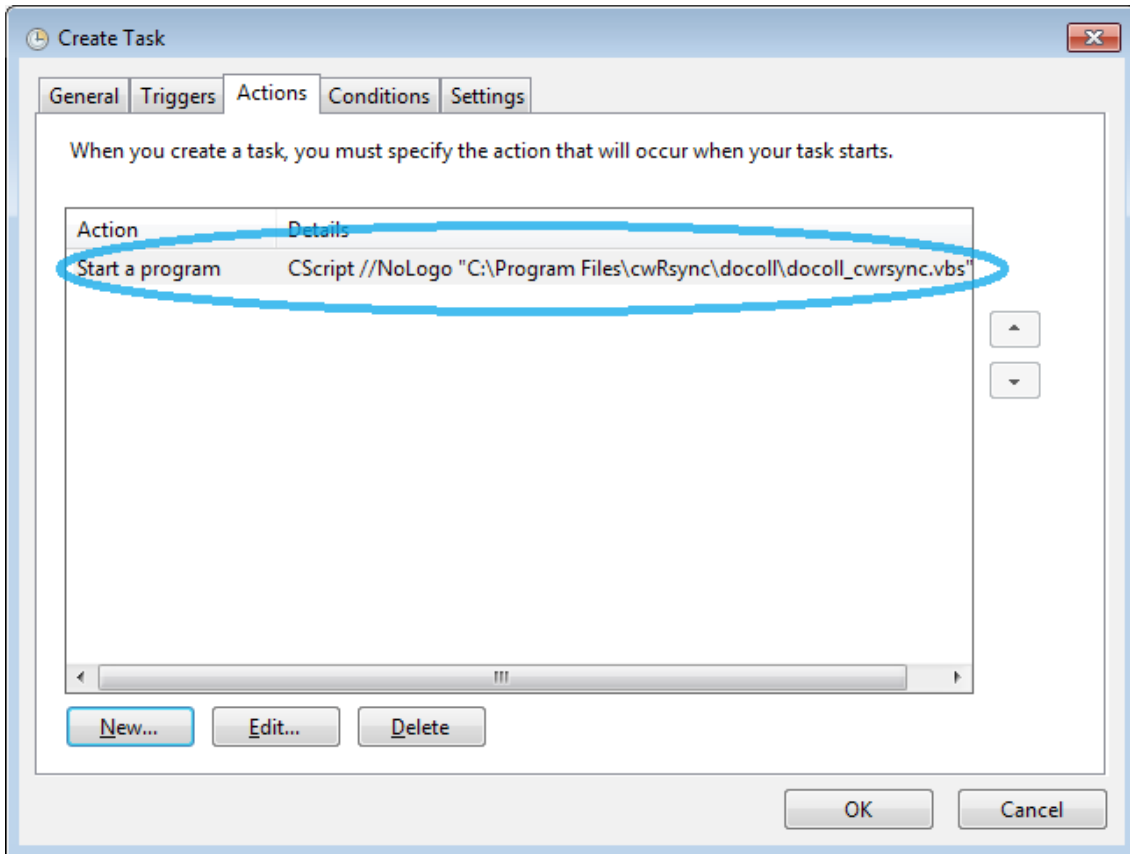
> Actions → New
> Action: Start a program
> Program/script: CScript
> Add arguments:
>   32-bit systems: //NoLogo "C:\Program Files\cwRsync\docoll\docoll_cwrsync.vbs"
>   64-bit systems: //NoLogo "C:\Program Files (x86)\cwRsync\docoll\docoll_cwrsync.vbs"
> OK

4.6 Testing

Run the scheduled task, for example by restarting Windows, and check the logs in the cwrsync/docoll/logs folder.

If rsync is still writing to the rsync.<timestamp>.log.rtf file, WordPad will not open it; it can be inspected by making a copy and opening the copy.

If those logs look OK, on the rsync server, check:

- The /srv/rsync/docoll/<instance name>/<client computer name>/ tree.

- The /var/log/rsyncd.log file.

5   Routine monitoring

On the server, check the rsync log file, /var/logs/rsync.log and the syslog files.

On Windows clients, check the logs in the cwrsync/docoll/logs folder.

On GNU/Linux clients, check the local /var/opt/rsync_script/log/rsync.sh.<timestamp>.log.

6   Troubleshooting

6.1   Error messages

"chdir failed". The /srv/rsync/docoll/<instance name>/<client name> directory does not exist, is spelled incorrectly or does not have the necessary permissions.

The page listed in 6.5 Online resources below lists common rsync error messages and their likely causes.

6.2   Server

Check the rsync log file, /var/logs/rsync.log and the syslog files.

6.3   Windows clients

The log files, docoll_cwrsync.<timestamp>.log and rsync.<timestamp>.log.rtf, may solve the problem.

If the logs do not solve the problem …

6.3.1 Running with debugging

Change the Scheduled Task "Run" field, adding the /D debug switch ...

>   CScript //NoLogo "C:\Program Files\cwRsync\docoll_cwrsync.vbs" **/D**

… and run the task, for example by restarting Windows.

If the debug information in docoll_cwrsync.<timestamp>.log did not solve the problem …

Create this debugging script, "C:\Program Files\cwRsync\docoll\docoll_cwrsync.**cmd**". On 64-bit systems, change "Program Files" to "Program Files (x86)". Beware of line breaks; there are only three lines.

```
@echo off
echo %date% %time% %username% >> C:\docoll_cwrsync.log
%ComSpec% /c CScript //NoLogo "C:\Program Files\cwRsync\docoll\docoll_cwrsync.vbs" /D >>
C:\docoll_cwrsync.log 2>&1
```

Then change the Scheduled Task to …

>   "C:\Program Files\cwRsync\docoll_cwrsync.cmd"

… and run the task, for example by restarting Windows.   docoll_cwrsync.vbs will hang but there may be some useful clues in C:\docoll_cwrsync.log.

If C:\docoll_cwrsync.log did not solve the problem …

6.3.2 Running at the command prompt

Run docoll_cwrsync.cmd from a command prompt:

```
C:\Program Files\cwRsync\docoll>docoll_cwrsync.cmd
```

If that doesn't solve the problem, a developer's help is required.

6.4 GNU/Linux clients

6.4.1 No /var/opt/rsync_script/log/rsync.sh.<timestamp>.log log

Check root's mail for error messages from cron.

Try running /opt/rsync_script/rsync.sh manually, details below.

6.4.2 Run /opt/rsync_script/rsync.sh manually

Must be done as root.

When running /opt/rsync_script/rsync.sh manually it may produce more output on the terminal than is convenient. In this case use `export SET_HAVE_TTY_FALSE=true` to redirect it to the log file. This can be cancelled by `unset SET_HAVE_TTY_FALSE`

6.4.3 Increasing rsync's verbosity

For more information about what rsync is doing, increase rsync's verbosity using the verbosity setting in /etc/opt/rsync_script/rsync.conf. This results in duplicated messages from rsync on screen or in the log, but you can't have too much of a good thing, eh?

6.5 Online resources

- rsync error messages: http://steven-linux.javaeye.com/blog/688243 and http://www.rollingr.net/wordpress/2007/05/01/installing-and-running-rsync/4/

- rsync mailing list archive: http://lists.samba.org/archive/rsync

- rsync man pages: http://rsync.samba.org/ftp/rsync/rsyncd.conf.html and http://rsync.samba.org/ftp/rsync/rsync.html

7 Appendix – rsync server boot script

This script does more status reporting than most.

Owner: root

Permissions: 544

```
#!/bin/bash

# Configure shell
# ~~~~~~~~~~~~~~~
export PATH=/usr/bin:/bin
set -o nounset
unalias -a
unset IFS   # Simple way to ensure bash works as if IFS is default

# Configuration variables
# ~~~~~~~~~~~~~~~~~~~~~~~~
PID_file=/var/run/rsyncd.pid
start_command='/usr/bin/rsync --daemon --config=/etc/rsyncd.conf'

# Functions
# ~~~~~~~~~
function get_pids {
    # An rsync server has a master/daemon process that spawns a worker process
    # for each connection.
```

```
    # The master's PID is normally in the PID file and, being a daemon, it has a PPID of 1.
    # The per-connection workers' PPIDs are the master's PID.
    # Subsequent workers' PPID(s) are earlier workers' PID(s).
    # If the master is killed the per-connection processes become daemons.

    local array pid ppid

    # Use the PID file
    master_pid=
    if [[ -f $PID_file ]]; then
        master_pid=$( < $PID_file )
        if [[ $master_pid =~ ^[0-9]+$ ]]; then
            if ! ps -p $master_pid >/dev/null 2>&1 ; then
                echo "Removing stale $PID_file"
                rm -f "$PID_file"
                master_pid=
            fi
        else
            echo -e "Invalid $PID_file contents:\n$pid\nRemoving $PID_file" >&2
            rm -f "$PID_file"
            master_pid=
        fi
    fi
    # Use ps output
    worker_pids=
    while read line
    do
        if [[ $line =~ $start_command$ ]]; then
            array=( $line ); pid=${array[0]};  ppid=${array[1]};
            if [[ $ppid = 1 ]]; then
                if [[ $master_pid = '' ]]; then
                    master_pid=$pid
                else
                    [[ $pid != $master_pid ]] && echo "Another rsync daemon found, PID $pid"
                fi
            else
                worker_pids+=" $pid"
            fi
        fi
    done <<< "$( PS_PERSONALITY=linux ps -C rsync --no-headers -o pid,ppid,args )"
}

function start {
    get_pids
    if [[ $master_pid != '' ]]; then
        echo 'rsync daemon is already running'
        return
    fi
    echo "Starting rsync daemon ..."
    $start_command
}

function status {
    get_pids
    [[ $master_pid = '' ]] && msg_part=' not' || msg_part=
    echo "rsync daemon is$msg_part running"
    [[ ${#worker_pids} -gt 0 ]] && echo "rsync worker process(es):$worker_pids"
}

function stop {
    get_pids
    if [[ $master_pid = '' ]]; then
        echo 'rsync daemon is not running'
        return
    fi
    echo "Stopping rsync daemon ..."
    kill $master_pid
```

```
    sleep 0.5
    get_pids
    [[ ${#worker_pids} -gt 0 ]] && echo "rsync worker process(es):$worker_pids"
}

# Main sequence
# ~~~~~~~~~~~~~
case "$1" in
  start)
    start
    ;;
  status)
    status
    ;;
  stop)
    stop
    ;;
  restart)
    stop
    sleep 1
    start
    ;;
  *)
    echo "Usage: $0 start|stop|restart"
esac
```

8   Appendix – GNU Free Documentation License

Version 1.3, 3 November 2008

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