MVO Procedures No. 25

MVO backup seismic servers

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1 Background

Following the major changes to the MVO seismic acquisition and processing servers in July/August 2015, this document provides updated instructions on how to switch to the backup servers in case of any problems with the main servers. **Please ensure that only one instance of Scream or earthworm is running at any one time**.

With the creation of two new virtual machines to serve as the main acquisition and processing servers, there are now a total of **six** servers: one primary and two backups for both Scream (acquisition) and Earthworm (processing). These are:

1.1 Scream

- **mvoscream3** (172.20.0.39) Main/primary Scream server. Hosted at MVO. Windows Server 2012 R2 64-bit.
- **mvoscream1** (172.20.0.31) 1st choice Scream backup. Hosted at MVO. Windows Server 2008 64-bit.
- **mvoscream02** (172.20.0.32) 2nd choice Scream backup. Hosted offsite. Windows Server 2008 64-bit.

1.2 Earthworm

- **earthworm3** (172.20.0.38) Main/primary earthworm server. Hosted at MVO. Windows Server 2012 R2 64-bit.
- **earthworm01** (172.20.0.14) Main Winston Waverserver & 1st choice earthworm backup. Hosted at MVO. Windows Server 2008 64-bit.
- **earthworm02** (172.20.0.33) Backup Winston Waverserver & 2nd choice earthworm backup. Hosted offsite. Windows Server 2008 64-bit.

2 Scream backup servers

2.1 Switching to a backup server

2.1.1 Order of preference

This section describes the necessary steps to switch to either of the backup scream servers in case of problems. Please note that these instructions are not guaranteed to be comprehensive and there may be issues that have been neglected or overlooked! The order of preference of the servers is straightforward and is as follows:

Primary: **mvoscream3**. If problem, $\longrightarrow$ 1st choice backup **mvoscream1**. If problem, $\longrightarrow$ 2nd choice backup **mvoscream02**.

2.1.2 Synchronisation scripts

In order to simplify and automate the process as much as possible, a script has been written to keep the two backup servers up to date and synchronised with the primary server.

This batch script is called *scream_sync.bat*, found in *c:\scream*, and is set up as a scheduled task in windows on **mvoscream1** and **mvoscream02**, running every 15 minutes. It has two functions:

1. To copy over the latest versions of the scream .ini configuration files, *scream_mvo_new.ini* & *scream_mbwh.ini*, from the daily backups on the SF1 share on **volcano01**

2. To copy over and synchronise the last 10 days of data from the scream gcf files (It only does this if Scream is NOT currently running on the backup machine)

This should ensure a smooth transition of acquisition to either of the backup servers, with only minimal interruption in data acquisition. There should be no need to change or adjust any IP addresses as the Scream configuration files are already set up to export automatically to any of the (three) possible earthworm servers. As this is done via UDP rather than TCP/IP, the earthworm module *scream2ew* will automatically accept data broadcast from any server/IP address on port 1570.

2.1.3 Starting Scream

Therefore, to switch to acquisition on either of the backup servers, simply log in via a remote desktop session (seisan username/password) and double-click on the *start_scream* shortcut icon on the desktop. This should start both instances of Scream (main & MBWH only)

That's it!

The final (optional) steps can also be implemented, depending on how long the backup is likely to be running:

1. Uncomment the relevant lines in */etc/fstab* then run "mount -a" to remount the *C:\scream\data* share on **piton** and **seisan**. The server name/IP address will also need changing on any other machines accessing this share.

2. Enable the following scheduled tasks in the Windows task scheduler on the backup server :

- *backup_scream_daily*
- *check_scream*
- *scream_MVO_start*
- *scream_MBWH_start*
- *start_scream*

2.2 Returning to the primary server

If after a short period of time (hours to a few days) the problem with the primary server **mvoscream3** is resolved, acquisition can be switched back to this machine. To facilitate a smooth transition, a simple batch file (*c:\scream\scream_resync.bat*) has been written to resynchronize any recorded data and/or changes to the configuration files. Simply run the script from the desktop shortcut or a command window and follow the instructions. Then **shut down the backup Scream** before restarting Scream on the main server.

3 Earthworm backup servers

This section describes the steps necessary to switch processing from the main earthworm server to either of the backups.

3.1 Earthworm and Winston setup

3.1.1 Order of preference

For continuity, robustness and disk space reasons, the current setup has earthworm running on the primary server **earthworm3** but maintains the Winston Waveserver running separately on **earthworm01**. Therefore the process and order of preference is slightly more complicated than for the Scream servers due to the de-coupling of Earthworm and Winston. However, purely considering earthworm it is straightforward:

Primary: **earthworm3**. If problem, $\longrightarrow$ 1st choice backup **earthworm01**. If problem, $\longrightarrow$ 2nd choice backup **earthworm02**.

The situation where a problem arises with the primary Winston on **earthworm01** but not with earthworm (on either **earthworm3** or **earthworm01**) is already covered, since the backup Winston on **earthworm02** should already be running and receiving data. The earthworm archiving modules for the continuous and event triggered data (*archman* and *trig2disk*) are set up to retrieve from both servers (in order) so no configuration change is necessary.

The data exchange between earthworm and Winston is managed by a combination of *export_generic* earthworm modules and *ImportEW* Winston processes. The current setup, allowing for this redundancy is summarised in the diagram in Figure 1.

3.1.2 Earthworm export

Each earthworm server has two *export_generic* modules corresponding to the two receiving Winston servers. (The exception is for **earthworm02**, as the assumption is that this will only be used if **earthworm01** is inaccessible, and therefore no data is required be exported to the primary Winston on that machine.)

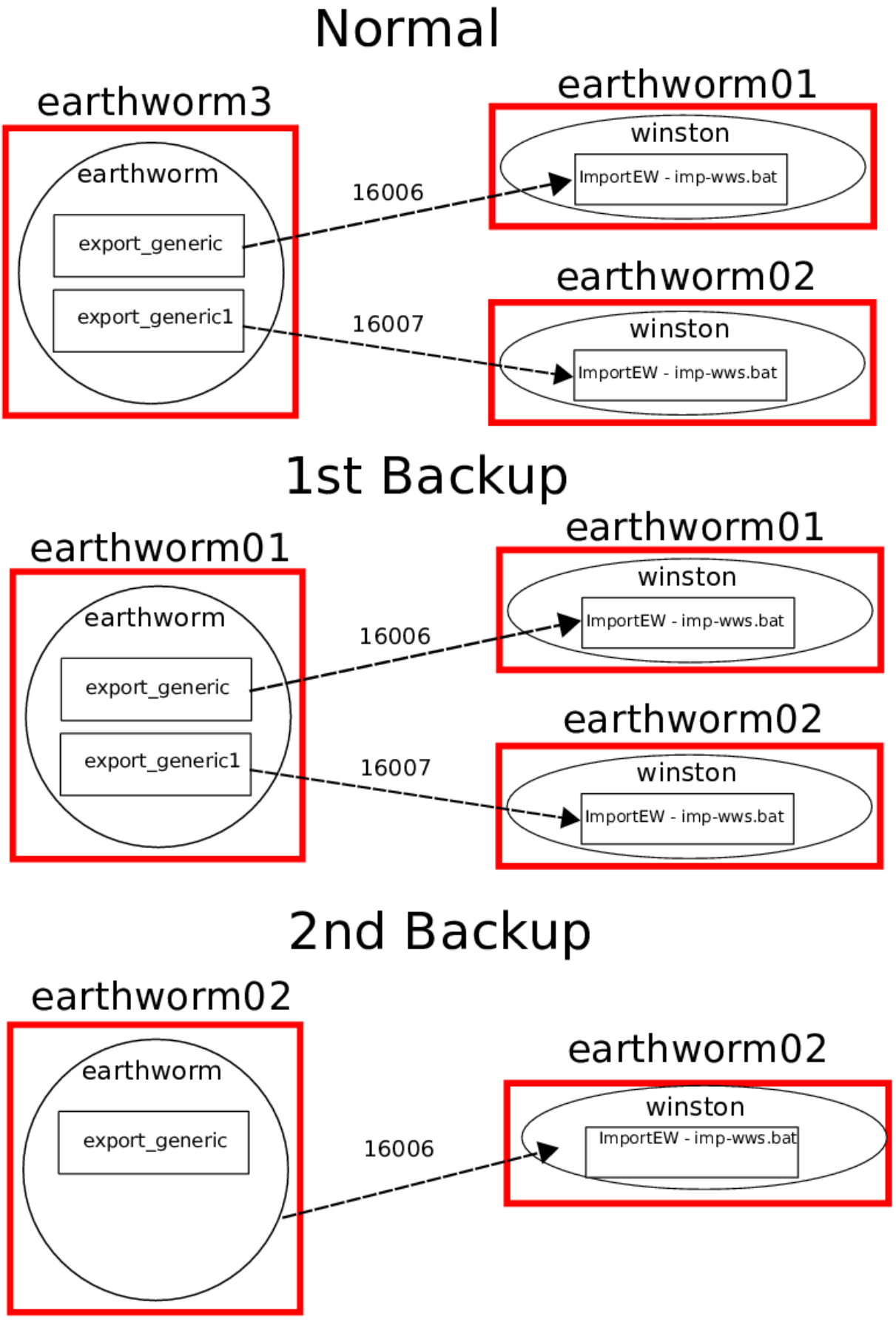

Figure 1: Overview of Export/Import between earthworm and Winston for each backup scenario

3.1.3 Winston Import

Correspondingly, each of the two Winston waveservers has multiple ImportEW instances to receive data from any of the possible earthworm servers in use. For the primary Winston on **earthworm01**, these are: *imp-wws* receiving from **earthworm3** and *imp-wws01* receiving from **earthworm01**. For the backup Winston on **earthworm02**, there are three: *imp-wws* receiving from **earthworm3**, *imp-wws01* receiving from **earthworm01** and *imp-wws02* receiving from **earthworm02**. Note that each importEW routine should automatically connect to the appropriate export module as/if the earthworm server is changed - but only one will be active at any one time.

3.2 Switching to the backup servers

3.2.1 Synchronisation scripts

In a similar way to the Scream servers, in order to simplify and automate the process of transferring earthworm processing as much as possible, two scripts have been written to keep the two backup servers up to date and synchronised with the primary server. (Two scripts are needed as each server has slightly different requirements.)

These batch scripts are called *sync_ew.bat* (**earthworm01**) and *sync_ew2.bat* (**earthworm02**), found in *c:\earthworm\run_mvo\params*, and are set up as scheduled tasks in windows on **earthworm01** and **earthworm02**, running every 15 minutes.

They have three main functions:

1. To copy over the latest versions of the earthworm configuration (.d) files, from the daily backups on the SF1 share on **volcano01**
2. To automatically make any necessary adjustments to these configuration files, mainly changing the exporting IP address for certain modules (*export_generic* and *coaxtoring*).
3. To copy over and synchronise various data (counts, event files, continuous data, helicorders/spectrograms and RSAM) from the active earthworm server. Note that to avoid overwriting or losing data, the script will only perform the synchronisation if earthworm is NOT currently running on the backup machine.

In addition, since it also a backup of the Winston Waveserver the version on **earthworm02** (*sync_ew2.bat*) copies over the latest versions of the Winston configuration files and automatically makes IP address adjustments as necessary. It also comments out the second redundant *export_generic1* module from *startstop_nt.d*.

3.2.2 Check Winston is running

The Winston Waveserver should already be running on both **earthworm01** and **earthworm02**, with command windows open running *WWS.bat* and either two (**earthworm01**) or three **earthworm02**) instances of *ImportEW*. However, if Winston needs restarting or is not running it can be restarted simply by double-clicking on the *start_winston* shortcut on the Desktop to bring up new commands windows.

3.2.3 Starting earthworm

To switch to earthworm processing on either of the backup servers, simply log in via a remote desktop session (seisan username/password) and double-click on the *start_ew* shortcut icon on the desktop. This should start earthworm and print the status in a new command window.

That's it!

3.3 Additional follow up steps

- In order for the live helicorders to be displayed on **webobs**, the *C:\monitoring_data* share on the active earthworm server must be mounted. As root uncomment and change the relevant lines in */etc/fstab* to add the new server (also change the *log* and *RSAM* shares), then run "mount -a" to remount.
- On **piton** and **seisan**, as root uncomment and change the relevant lines in */etc/fstab* to add the new server, then run "mount -a" to remount the *C:\monitoring_data* share. This is required for retrieving event files for processing.
- If the Winston waveserver has changed, any instances of swarm connecting to this will need to be pointed at the new server (**earthworm02**) as the datasource.
- Optionally, depending on how long the backup is likely to be running, the following scheduled tasks can be enabled on the backup server:
  1. *start_ew* - this one is important as it ensures earthworm will automatically start on reboot of the server.
  2. *backup_heli*
  3. *backup_rsam*

3.4 Returning to primary server

As with Scream, if after a short period of time (hours to a few days) the problem with the primary server **earthworm3** is resolved, acquisition can be switched back to this machine. To facilitate a smooth transition, a simple batch file (*c:\earthworm\run_mvo\params\resync_ew.bat*) has been written to resynchronize any recorded data and/or changes to the configuration files. Simply run the script from the desktop shortcut or a command window and follow the instructions. Then **shut down the backup earthworm** before restarting earthworm on the main server.