Rarely used features and modules

Dr. Bernd Weber & Jan Becker

gempa GmbH, Potsdam, Germany

September 20, 2011

Outline

gempa

Untypical data acquisition sources

gempa

Load data from local SDS archive

```
scolv -I sdsarchive:///home/weber/seiscomp3/acquisition/archive
```

sdsarchive is much faster than ArcLink

Load data from a SAC file

```
scrttv --record-type sac <file>
```

SlinkMax option

```
scolv -I combined://localhost:18000;localhost:18001??slinkMax=7200
```

Command:

151_ewexport_pasv

Description:

exexport_pasv is a EW-plugin which listens to a configurable port. It supports tracebuf2 format.

Commandline Parameters/Configuration:

Command:

scautopick

Description:

scautopick is sending picks based on a detection or a picker algorithm.

Commandline Parameters/Configuration:

A post picker (AIC,GFZ) can be activated in scautopick.cfg.

```
picker=AIC
```

The picker is applied to the raw data, the normal detection filter is ignored

Command:

scautopick, scamp & scolv

Description:

The amplitude calculation can be customized for scautopick, scamp and & scolv.

Commandline Parameters/Configuration:

Example next page

Customize amplitude calculation

gempa

global.cfg

```
# module.trunk.<network>.<station>.<type>.parameter <network>, <station>, <type> are optional
module.trunk.global.amplitudes.enable = true
module.trunk.AC.amplitudes.Mwp.enable = false
module.trunk.global.amplitudes.Mwp.noiseBegin = -240
module.trunk.global.amplitudes.Mwp.noiseEnd = -5
module.trunk.global.amplitudes.Mwp.signalBegin = -5
module.trunk.global.amplitudes.Mwp.signalEnd = 95
module.trunk.global.amplitudes.Mwp.snrMin = 3
module.trunk.global.amplitudes.Mwp.resp.taper = 60
module.trunk.global.amplitudes.Mwp.resp.minFreq = 0
module.trunk.global.amplitudes.Mwp.resp.maxFreq = 120
```

Command:

scmag & scolv

Description:

scmag & scolv calculate station magnitudes. Station magnitudes can be corrected by applying a multiplier and an offset to the station magnitude value.

Commandline Parameters/Configuration:

Add the following lines to scmag.cfg or scolv.cfg

```
module.trunk.IN.DURA.mag.MLv.multiplier=1
module.trunk.IN.DURA.mag.MLv.offset=-0.5
```

Because the configuration is not case-sensitive no difference between mb and mB is made.

Command:

scevent

Description:

scevent is creating events using different criteria, e.g. number of phase, region, depth or agency.

Commandline Parameters/Configuration:

Example see next page

scevent.cfg

```
eventAssociation.minimumDefiningPhases = 10
eventAssociation.region.rect = 0,40,60,105
eventAssociation.depths.minimum = 0
eventAssociation.depths.maximum = 100
```

Command:

scevent

Description:

The event creation can be delayed by filtering agency, author or evaluationMode.

Commandline Parameters/Configuration:

Example see next page

scevent.cfg

```
# Configures a timespan in seconds to delay origin association
eventAssociation.delayTimeSpan = 300
# AgencyID filter used to delay origin association if eventAssociation.delayTimeSpan > 0
#eventAssociation.delayFilter.agencyID = agency
# Author filter used to delay origin association if eventAssociation.delayTimeSpan > 0
eventAssociation.delayFilter.author = AL_backup
# evaluationMode filter used to delay origin association if eventAssociation.delayTimeSpan > 0.
# Allowed values are "manual" or "automatic".
#eventAssociation.delayFilter.evaluationMode = automatic
```

The delay functionality provides in combination with scimport an easy way to implement a redundant system

Command:

scevent

Description:

The preferred origin selection can be configured by

- AGENCY - check based on agency priorities
- AUTHOR - check based on author priorities
- STATUS - manual origins rule out automatic
- METHOD - check based on the method priorities
- PHASES - higher phase count = higher priority
- PHASES_AUTOMATIC - as PHASES but only for automatic origins
- RMS - lower rms = higher priority
- RMS_AUTMATIC - as RMS only for automatic origins
- TIME - more recent origins (creationTime) have higher priorities
- TIME_AUTOMATIC - as TIME but only for automatic origins

Commandline Parameters/Configuration:

Default configuration of scevent.cfg

```
eventAssociation.priorities = AGENCY, STATUS, PHASES_AUTOMATIC, TIME_AUTOMATIC
```

Command:

scevent

Description:

When the origin priority parameter AUTHOR is set, the preferred origin selection is based on the author. A list of authors have to be defined.

Commandline Parameters/Configuration:

Example of author priority list

```
eventAssociation.authors = scautoloc_primary, scautoloc_secondary
```

This setting is useful in case a redundant system with a primary and secondary SeisComP3 system is used.

Command:

scevent

Description:

scevent creates a new event once an origin can not be associated to a existing event. The event ID looks normally like <agency><year><letter coded time>.

Commandline Parameters/Configuration:

Example next page

scevent.cfg

```
# The eventID prefix
# The eventID format is [prefix][year][code], e.g. gfz2008fdvg
eventIDPrefix = "gfz"

# Defines the pattern to generate an event ID.
# %p : prefix
# %Y : year
# %[w]c: alpha character
# %[w]C: upper case alpha character
# %[w]d: decimal
# %[w]x: hexadecimal
# %[w]X: upper case hexadecimal
eventIDPattern = "%p%Y%04c"
```

This configuration can be used to avoid unwished letter combination.

Load inventory and config from a file

gempa

Command:

all

Description:

Instead of using a database the inventory and config (for example picker settings) can be loaded from a file. The files can be derived by using scxmldump -If/-Cf (see scxmldump help).

Commandline Parameters/Configuration:

To give scautopick the inventory and config via file

```
scautopick --inventory-db inventory.xml --config-db config.xml
```

This allows offline_playbacks without using the database at all.

gempa

offline_playbck_with_inventory-db.sh

```
  #!/bin/bash
  if [ "$#" -lt 4 ]; then
echo "Usage: $0 [mseed-volume] [inventory] [config] [output-xml]"
exit 0
  fi
  DBFLAG="--inventory-db $2 --config-db $3"
  STORAGE=$DBFLAG
  CONFIGFLAGS="--verbosity=4"
  FLAGS="$CONFIGFLAGS $STORAGE"
  echo "Starting autoloc..."
  scautoloc $FLAGS --playback --start-stop-msg=1 --auto-shutdown=1 \
  --shutdown-master-module=scautopick &
  echo "Starting magtool..."
  scmag $FLAGS --start-stop-msg=1 --auto-shutdown=1 --shutdown-master-module=scautoloc &
  echo "Starting eventtool..."
  scevent $FLAGS --start-stop-msg=1 --auto-shutdown=1 --shutdown-master-module=scmag \
  --db-disable &
  echo "Starting sceplog..."
  sceplog $CONFIGFLAGS --auto-shutdown=1 --shutdown-master-module=scevent > $4 &
  pid=$!
  echo "Starting autopick..."
  scautopick -I $1 $FLAGS --start-stop-msg=1 --db-disable
  echo "Finished waveform processing"
```

Command:

scdispatch

Description:

scdispatch is a module to send objects given in SeisComP3ML via a Notifier-Message with the operation add, update, remove.

Commandline Parameters/Configuration:

Send picks and amplitudes to the messaging

```
scdispatch -H localhost -i 201107120715_picks_only.xml -o add
```

Allows pick and amplitude playbacks

pick_playback.sh

```
#!/bin/bash
if [ "$#" -lt 4 ]; then
echo "Usage: $0 [input-xml] [inventory] [config] [output-xml]"
exit 0
fi
DBFLAG="--inventory-db $2 --config-db $3"
STORAGE=$DBFLAG
CONFIGFLAGS="--verbosity=4"
FLAGS="$CONFIGFLAGS $STORAGE"
echo "Starting autoloc..."
scautoloc $FLAGS --playback --start-stop-msg=1 --auto-shutdown=1 \
--shutdown-master-module=scdispatch &
echo "Starting magtool..."
scmag $FLAGS --start-stop-msg=1 --auto-shutdown=1 --shutdown-master-module=scautoloc &
echo "Starting eventtool..."
scevent $FLAGS --start-stop-msg=1 --auto-shutdown=1 --shutdown-master-module=scmag \
--db-disable &
echo "Starting sceplog..."
sceplog $CONFIGFLAGS --auto-shutdown=1 --shutdown-master-module=scevent > $4 &
pid=$!
echo "Starting scdispatch..."
scdispatch -i $1  -o add $CONFIGFLAGS --start-stop-msg=1
echo "Finished waveform processing"
```

Command:

scolv

Description:

scolv can be used in offline mode to read SeisComP3ML.

Commandline Parameters/Configuration:

To start scolv offline without using the database execute

```
scolv --offline --inventory-db inventory.xml --I <mseedfile>
```

Command:

scquery

Description:

scquery is a tool to run predefined MySQL queries. These queries have to be defined in / .seiscomp/queries.cfg

Commandline Parameters/Configuration:

It is executed for example to get the latest 20 events

```
scquery lastevents_mysql 20
```

queries.cfg

```
queries = lastevents_mysql
query.lastevents_mysql.description = "Returns the n last events"
query.lastevents_mysql =
  "select PEvent.publicID, Origin.time_value, Origin.evaluationMode, \
  Origin.quality_usedPhaseCount, ROUND(Magnitude.magnitude_value,1), \
  Magnitude.type, Magnitude.stationCount, \
  IF(Origin.latitude_value < 0, CONCAT(ABS(ROUND(Origin.latitude_value,2)), ' S'), \
  CONCAT(ABS(ROUND(Origin.latitude_value,2)), ' N')), \
  IF(Origin.longitude_value < 0, CONCAT(ABS(ROUND(Origin.longitude_value,2)), ' W'),\
  CONCAT(ABS(ROUND(Origin.longitude_value,2)), ' E')), \
  CONCAT(ROUND(Origin.depth_value), ' km'), \
  EventDescription.text from Event, PublicObject as PEvent, EventDescription, Origin, \
  PublicObject as POrigin, Magnitude, PublicObject as PMagnitude where Event._oid=PEvent._oid \
  and Origin._oid=POrigin._oid and Magnitude._oid=PMagnitude._oid and \
  Event.preferredOriginID=POrigin.publicID and Event.preferredMagnitudeID=PMagnitude.publicID \
  and Event._oid=EventDescription._parent_oid and EventDescription.type='region name' order \
  by Origin.time_value desc limit 0,##numberOfEvents##"
```

The parameters for the commandline are given in ##parameter##.

Here ##numberOfEvents##.

Command:

scm

Description:

scm is a system monitoring tool similar to top. It supports several plugins (ncurses, email, text).

Commandline Parameters/Configuration:

On the following pages

The email plugin sends an email when a module from the requiredClient list is down or is started again. It also sends an email, when a certain treshold of the performance parameters (for example CPU usage) is exceeded.

scm.cfg

```
connection.server = "myserver"
connection.user = "scmEMail"
plugins = ${plugins}, memailplugin
memailplugin.recipients = "<myemail.de>"
# Minutes before report missing clients
memailplugin.reportRequiredClients = 1
# Interval to calculate mean of the message values for (in minutes)
memailplugin.filterMeanInterval = 1
memailplugin.requiredClients = "scautopick, scautoloc, scamp, scmag, scevent"
#main options are cpuusage, totalmemory, clientmemoryusage, memoryusage,
#                 sentmessages, receivedmessages, messagequeuesize, uptime,
#                 responsetime
memailplugin.filter= "cpuusage>100"
#silentClients are clients which don`t send status messages
memailplugin.reportSilentClients = false
```

The text plugins creates one file for each module to @LOGDIR@/scm. For example
/home/sysop/.seiscomp3/log/scm/scmag.txt.

scm.cfg

```
connection.server = "myserver"
connection.user = "scmText"
plugins = ${plugins}, mtextplugin
```

Allows an easy integration of SeisComP3 into NAGIOS

Command:

scheli

Description:

scheli is a module to plot the waveform data of a station and a given time span (by default 24h) on the screen or to a picture.

Commandline Parameters/Configuration:

Plot to screen

```
scheli -d mysql://sysop:sysop@geofon-proc/seiscomp3 -I
arclink://geofon-acqui:18001 --stream GE.IBBN..BHZ --end-time "2011-09-08
23:59:59"
```

Plot to picture

```
scheli capture -d mysql://sysop:sysop@geofon-proc/seiscomp3 -I
arclink://geofon-acqui:18001 --stream GE.IBBN..BHZ --end-time "2011-09-08
23:59:59" -o test.png
```

Command:

scesv

Description:

svesv can show the distance and direction to the next city

Commandline Parameters/Configuration:

Add the following to scesv.cfg

```
# Maximum distance to a POI to print message
poi.maxDist = 20
# Minimum population of a POI to print message
poi.minPopulation = 50000
# The message itself
poi.message = "@dist@ km @dir@ from @poi@"
```

Command:

scmapcut

Description:

scmapcut cuts a region from the maps and prints hypocenter and layers

Commandline Parameters/Configuration:

Execute the following to give the event information directly

```
scmapcut --lat 4 --lon 100 --depth 30 --mag 8.4 -d 1024x768 -m 5 --layers -o
test.png
```

To load event information from a xml file and retrieve event information from the file

```
scmapcut --ep event.xml -E gfz2011qvju -d 1024x768 -m 5 --layers -o test.png
```