zhmc-log-forwarder

A log forwarder for the IBM Z HMC

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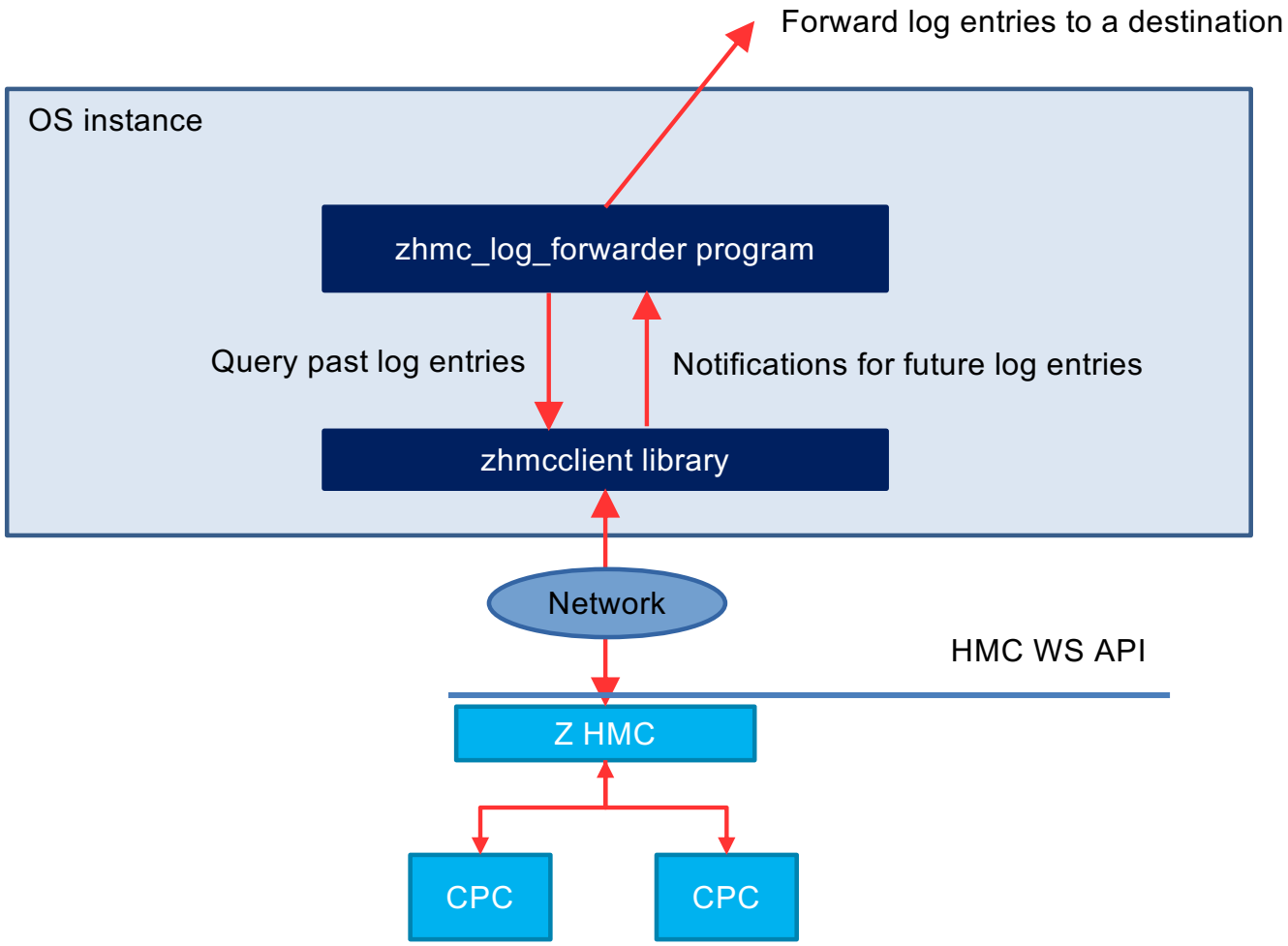
Problem Statement

- The Z HMC maintains an audit log and a security log
- Accessible in HMC GUI and HMC Web Services API
- However: The HMC does not support forwarding these logs to SIEM(1) services such as QRadar

→ zhmc-log-forwarder can be used for that purpose

(1) SIEM = Security Information and Event Management

Architecture



zhmc_log_forwarder program

- Pure Python program, running on any OS and on Python 2.7 and 3.4 or higher
- Future: Available as ‘zhmc-log-forwarder’ package on Pypi:

```
$ pip install zhmc-log-forwarder
```

- Supports selecting audit log, security log, or both
- Supports selecting a time since when log entries are collected
  - keywords ‘now’, ‘all’, or a specified date & time string
- Supports selecting whether to wait for future log entries
- Supports selecting a destination: stdout, syslog (local and remote)
  - Note: The remote syslog destination is used for Qradar
- Supports custom formatting the output for log entries

zhmc_log_forwarder help

```
Usage:

  zhmc_log_forwarder [options]

General options:

  -h, --help            Show this help message and exit.
  --help-config         Show a help message about the config parameters
                        (including optionality and defaults) and exit.
  --help-config-file    Show a help message about the config file format and
                        exit.
  --help-output-format  Show a help message about the output formatting and
                        exit.
  --version             Show the version number of this program and exit.
  --verbose             Show additional information.

Config options:

  -c CONFIGFILE, --config-file CONFIGFILE
                        File path of the config file to use. Default: No
                        config file.

  . . . More options for overriding config parms in config file
```

Config file

YAML format:

```
---
# Which Z HMC to collect the log entries from:

hmc_host: 10.11.12.13.      # IP address or hostname of the HMC
hmc_user: myuser            # HMC userid
hmc_password: mypassword    # HMC password
label: region1-zone2-hmc1   # Label for use in log output to identify the source

# Which log entries to collect:

logs: [security, audit]     # List of log types to include
since: now                  # Include past log entries since when: all, now, date&time string
future: true                # Wait for future log entries

# Where to forward the log entries to:

dest: syslog                # Destination for the log entries: stdout, syslog
syslog_host: 10.11.12.14    # IP address or hostname of remote syslog server
syslog_port: 514            # Port number of remote syslog server
syslog_porttype: udp        # Port type of remote syslog server
syslog_facility: user       # Syslog facility name
```

Config file (2)

```
# Format of log entries in output:

format: '{time:32} {label} {type:8} {name:12} {id:>4} {user:20} {msg}'
time_format: '%Y-%m-%d %H:%M:%S.%f%z‘    # Format for 'time' output field

# Self-logging (log messages produced by the program itself):

selflog_dest: stdout                              # Destination (stdout, stderr)
selflog_format: '%(levelname)s: %(message)s'    # Message format (Python logging placeholders)
selflog_time_format: '%Y-%m-%d %H:%M:%S.%f%z'  # Format for 'asctime' field
```

Output fields

Example (config file syntax):

```
format: '{time:32} {label} {type:8} {name:12} {id:>4} {user:20} {msg}'
```

Supported fields:

`time`: Time stamp of the log entry. Format can be customized.
`label`: Label identifying the HMC the logs came from.
`type`: Log type: Security, Audit.
`name`: Name of the log entry.
`id`: ID of the log entry.
`user`: HMC userid associated with the log entry.

`msg`: Fully formatted log message, in English.
`msg_vars`: Substitution variables used in the log message

`detail_msgs`: List of fully formatted detail log messages, in English.
`detail_msgs_vars`: Substitution variables used in the detail log messages.

Example output

```
$ zhmc_log_forwarder -c dal13-01.config.yml
2019-08-13 09:28:37 zhmc_log_forwarder INFO zhmc_log_forwarder starting
2019-08-13 09:28:37 zhmc_log_forwarder INFO zhmc_log_forwarder version: 0.5.1.dev7
2019-08-13 09:28:37 zhmc_log_forwarder INFO HMC: 172.18.0.15, Userid: zbcInstall, Label: dal13-01-hmc1
2019-08-13 09:28:37 zhmc_log_forwarder INFO Logs: security, audit, Since: now (2019-08-13 …), Future: True
2019-08-13 09:28:37 zhmc_log_forwarder INFO Destination: syslog (server 10.74.145.195, port 514/tcp, facility user)
2019-08-13 09:28:39 zhmc_log_forwarder INFO Starting to wait for future log entries
^C
2019-08-13 09:29:11 zhmc_log_forwarder INFO Keyboard interrupt - stopping to wait for future log entries
2019-08-13 09:29:11 zhmc_log_forwarder INFO Closing notification receiver
2019-08-13 09:29:11 zhmc_log_forwarder INFO Logging off from HMC
2019-08-13 09:29:11 zhmc_log_forwarder INFO zhmc_log_forwarder stopped
```

Log entries in destination (e.g. RFC5424 syslog format):

```
Aug 13 09:28:37 dal13-01-hmc1 [id="1941" type="Security" user="zbcInstall"] User zbcInstall has logged on to W…
Aug 13 09:28:46 dal13-01-hmc1 [id="6055" type="Audit" user=""] A web services client on 10.74.103.97 attempted…
Aug 13 09:28:54 dal13-01-hmc1 [id="1691" type="Security" user=""] User zbcInstall has attempted to log on from…
Aug 13 09:28:56 dal13-01-hmc1 [id="6055" type="Audit" user=""] A web services client on 10.74.103.97 attempted…
Aug 13 09:29:04 dal13-01-hmc1 [id="1941" type="Security" user="zbcInstall"] User zbcInstall has logged on to W…
```