Zeek 3.0.0 — and beyond

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Just released: Zeek 3.0.0

s/Bro/Zeek/g

```
    bro           -> zeek
    broctl        -> zeekctl
    bro-cut       -> zeek-cut
    bro-pkg       -> zkg

/usr/local/bro  -> /usr/local/zeek
*.bro           -> *.zeek
bro_{init,done} -> zeek_{init_done}
```

We got some new functionality, too

New analyzers for MQTT and NTP

Extended analyzers for DNS, RDP, SMB, and TLS

Support for decapsulating VXLAN tunnels

Support for logging in UTF-8

Language extensions:

- Iteration over tables through `for(key,value in t)…`
- Vector slicing through `v[2:4]`
- Case-insensitive regular expressions: `/foo/i`
- Anonymous functions now capture their closures
- Efficient matching of a string against a large list of globs (paraglob)

New Release Schedule: Stability vs Features

3.0.0 is our first long-term stable release

Support with critical fixes for one year (3.0.x)

Feature releases will be 3.x.0

About every 4 months, plus bugfixes (3.x.y)

Next stable long-term stable release will be 4.0.0

About one year after 3.0.0

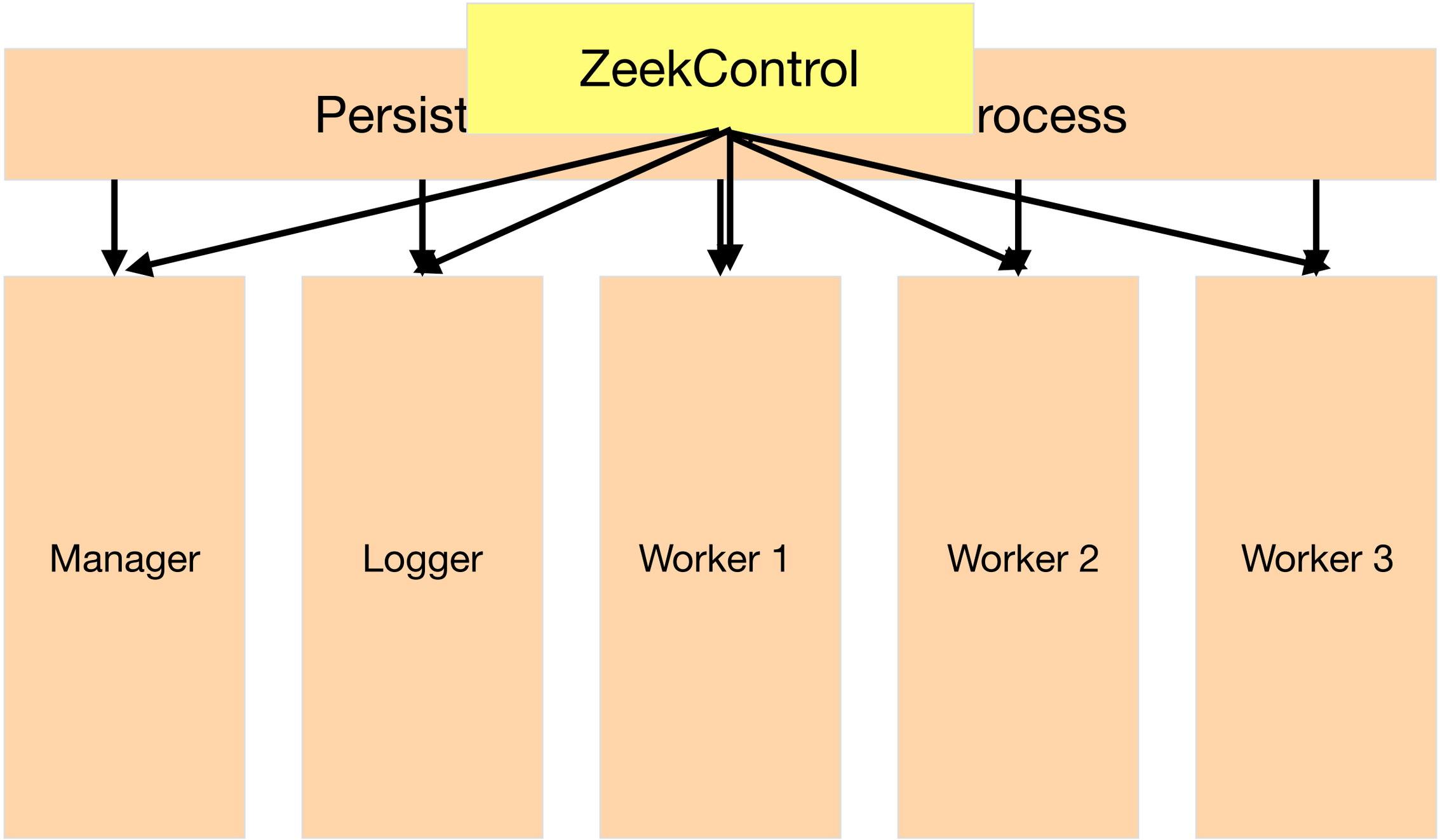
We aim to provide backwards compatibility between subsequent stable release

Typically, we will deprecate old functionality for one stable cycle

Will discuss on mailing list in cases that’s not possible

Alright, what’s on the radar for 3.1.0?

Process Supervision



Cluster State Sharing

We used to have **`&synchronize`** to shares tables across cluster nodes:

```
global my_state[addr] of string &synchronized;
```

We now have Broker data stores, but their API remains cumbersome.

Goal: Get the best of both worlds (+ persistence) by mapping tables to a data store:

```
global my_state[addr] of string
                              &backend=Broker::SQLITE;
```

I/O Loop Modernization

```
# zeek -i lo
listening on lo

^Creceived termination signal
0 packets received on interface lo, 0 dropped
```

```
  PID USER      PR  NI    VIRT    RES    SHR S  %CPU  %MEM     TIME+ COMMAND
23163 root      20   0  904m  336m  262m R  17.0   1.1   0:12.80 zeek
 3557 robin     20   0 50952   30m 2624 S   0.7   0.1   5:29.82 tmux
```

Performance Baselining

- Corelight-hosted testbed with traffic generator
- Cluster communication benchmark

```
logger
├── topics:
│   ├── bro/cluster/logger
│   ├── bro/cluster/node/4C19F5B2925FCB3268E6DDBCFA922FE8549F3F00#3430
│   ├── bro/cluster/node/logger
│   ├── bro/cluster/pool/logger
│   ├── bro/control/4C19F5B2925FCB3268E6DDBCFA922FE8549F3F00#3430
│   ├── bro/logs
│   ├── zeek/cluster/logger
│   ├── zeek/cluster/node/4C19F5B2925FCB3268E6DDBCFA922FE8549F3F00#3430
│   ├── zeek/cluster/node/logger
│   ├── zeek/cluster/pool/logger
│   ├── zeek/control/4C19F5B2925FCB3268E6DDBCFA922FE8549F3F00#3430
│   ├── zeek/known/certs/<$>/data/clone
│   ├── zeek/known/hosts/<$>/data/clone
│   ├── zeek/known/services/<$>/data/clone
│   └── zeek/logs
└── peers:
    ├── manager
```

Code Modernization

Move to standard containers

Switch to C++17

Apply clang-tidy (and perhaps clang-format)

Introduce automatic reference counting, maybe?

Osquery integration

```
event bro_init() {
  local query = [
        $ev=host_process_events,
        $query="SELECT pid,path,cmdline,cwd,uid,gid,time,parent
                FROM process_events"
  ];

   osquery::subscribe(query);
}

event host_process_events(resultInfo: osquery::ResultInfo,
    pid: int, path: string, cmdline: string, cwd: string,
    uid: int, gid: int, start_time: int, parent: int) {

  print fmt("UID %d executed %s", uid, path);
}
```

https://github.com/zeek/osquery-{extension,framework}

How to become involved

GitHub

Follow activity in `https://github.com/zeek/zeek`

File issues & PRs

Look for starter tickets

Propose ideas, and ask questions, on the development mailing list [1]

Watch out for emerging developer's manual

First piece: Style guide on coding conventions [2]

[1] https://mailman.icsi.berkeley.edu/mailman/listinfo/zeek-dev

[2] https://docs.zeek.org/en/latest/devel/style_guide.html

Thanks!

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