# 2600hz
CLOUD TELECOM

Kamailio and Kazoo

Presented by Karl Anderson

Karl Anderson

Senior Bit Herder

What is Kazoo

No. 700,986.
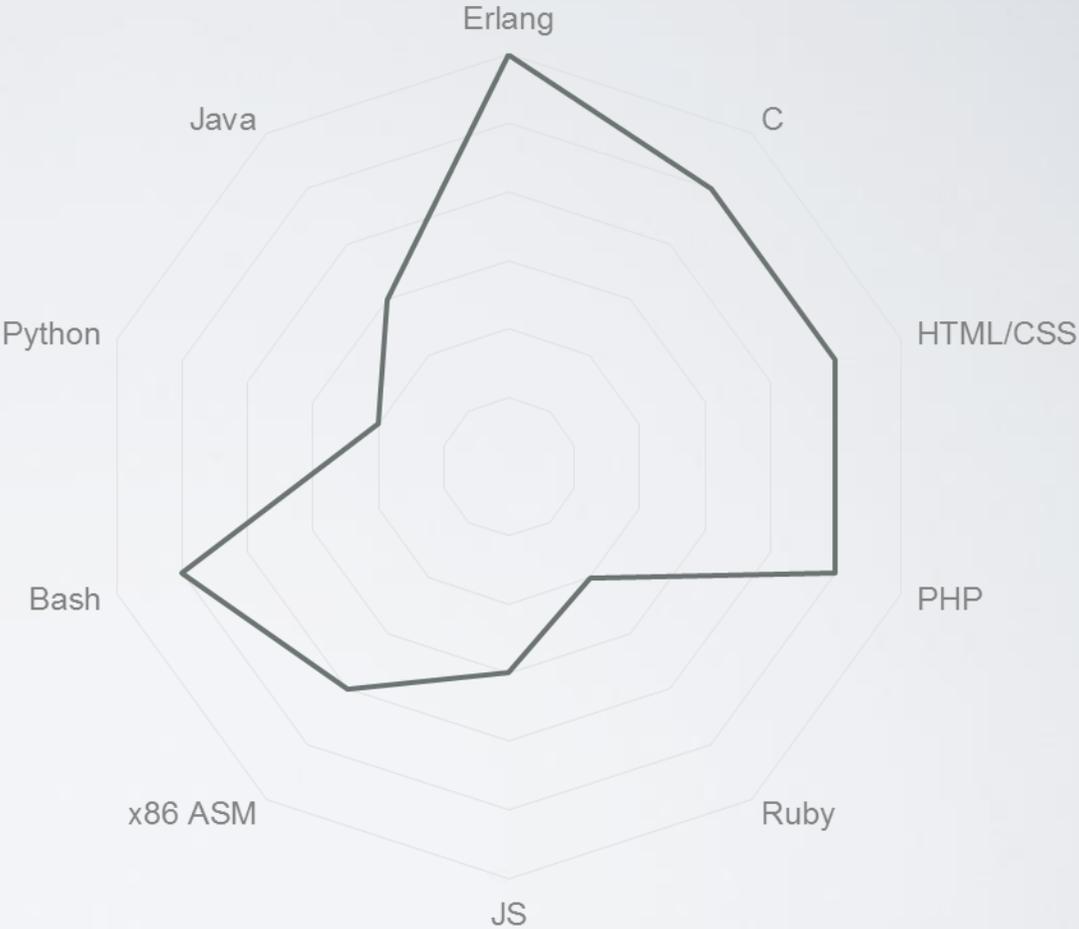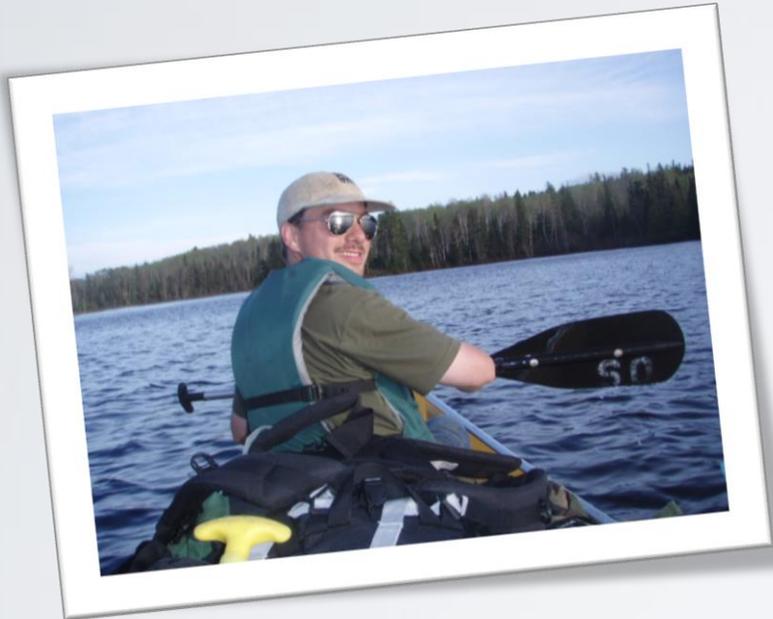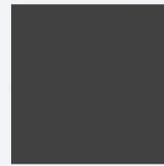
G. D. SMITH.

MUSICAL TOY.

(Application filed May 15, 1901.)

Patented May 27, 1902.

(No Model.)

Fig. 1.

Fig. 2.

Fig. 3.

Fig. 4.

Fig. 5.

Fig. 6.

Fig. 7.
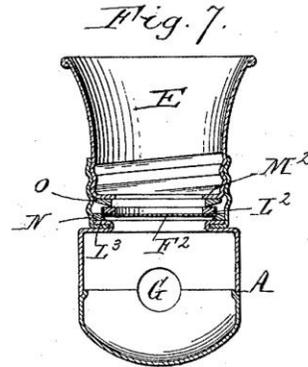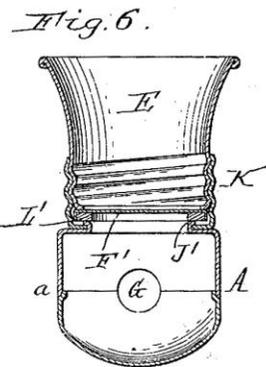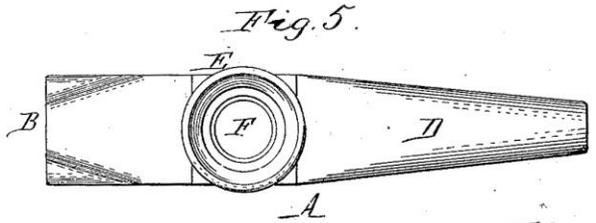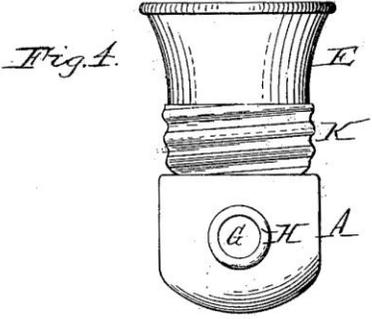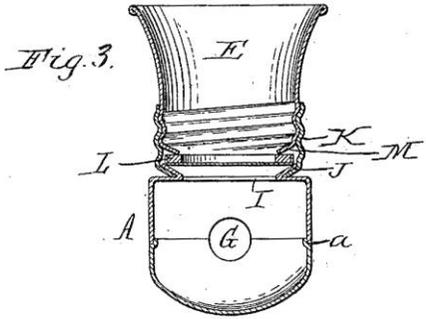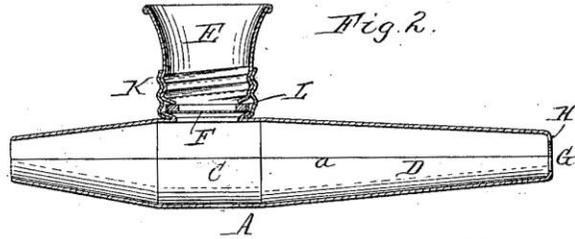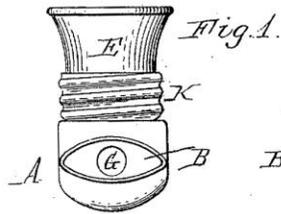
Witnesses:
Henry L. Deck.
F. F. Schuzinger.

George D. Smith   Inventor.
By Wilhelm Bonner
Attorneys.
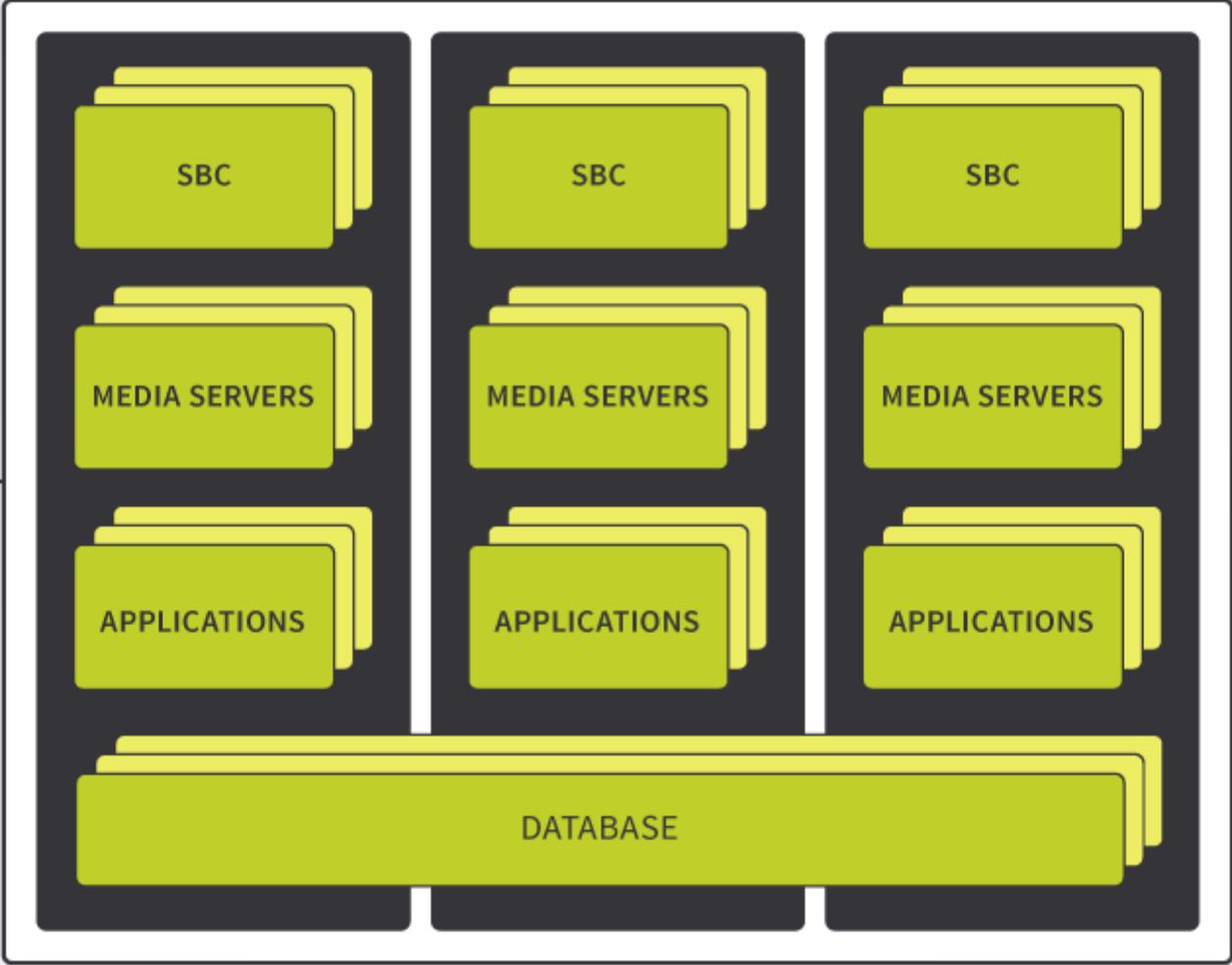
What is AMQP
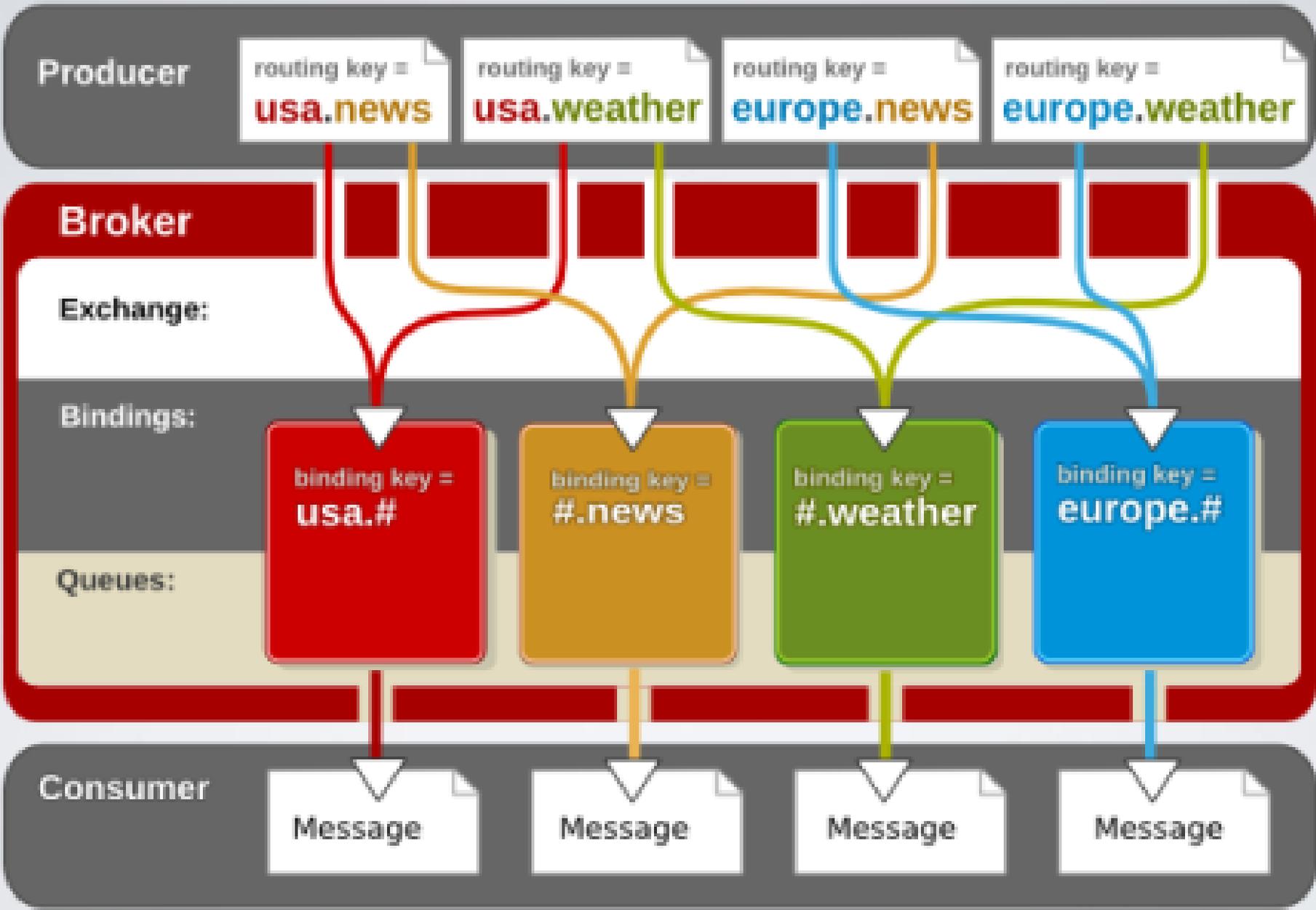
What is db_kazoo

Anca Vamanu

How do we use it

```
modparam("auth_db|usrloc", "db_url", "kazoo://guest:guest@127.0.0.1:5672/callmgr")

modparam("presence", "db_url", "kazoo://guest:guest@127.0.0.1:5672/dialoginfo")
```

```
####### Authentication module ##########
loadmodule "auth.so"
loadmodule "auth_db.so"
modparam("auth_db", "version_table", 0)
modparam("auth_db", "password_column", "password")
modparam("auth_db", "load_credentials", "$avp(password)=password")

####### User Location module ##########
loadmodule "usrloc.so"
modparam("usrloc", "db_mode", 1)
modparam("usrloc", "db_update_as_insert", 1)

route[HANDLE_REGISTER]
{
    if (is_method("REGISTER")) {
        if (auth_check("$fd", "subscriber", "1")) {
            consume_credentials();
            save("location");
        } else {
            auth_challenge("$fd", "0");
        }
        exit;
    }
}
```

```
######## Generic Hash Table in shared memory ########
modparam("htable", "htable", "dbkp=>size=16;autoexpire=7200")

######## Presence User Agent ########
loadmodule "pua_dialoginfo.so"
modparam("pua_dialoginfo", "library_mode", 1)

######## Presence Server ########
loadmodule "presence.so"
loadmodule "presence_dialoginfo.so"
modparam("presence", "subs_db_mode", 1)

####### Presence Logic ########
route[HANDLE_SUBSCRIBE]
{
    if (is_method("SUBSCRIBE")) {
        if (!t_newtran()) {
            sl_reply_error();
            exit;
        }
        handle_subscribe();
        t_release();
        exit;
    }
}
```

Alice Bob

Kamailio

FreeSWITCH
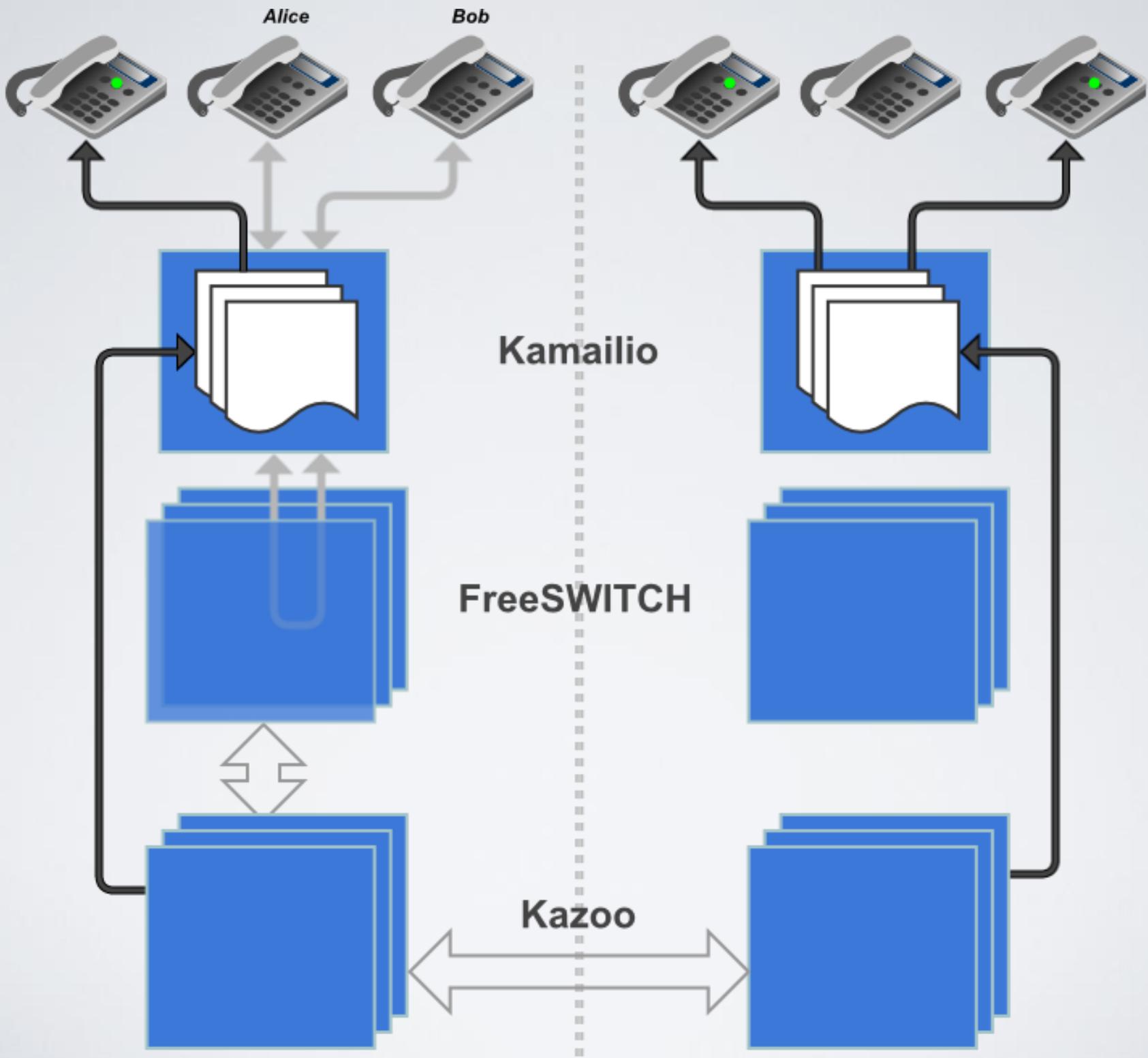
Kazoo

How does it work

```c
int db_kazoo_bind_api(db_func_t *dbb)
{
    dbb->init              = db_kazoo_init;
    dbb->use_table         = db_kazoo_use_table;
    dbb->close             = db_kazoo_close;
    dbb->query             = db_kazoo_query;
    dbb->free_result       = db_kazoo_free_result;
    dbb->insert            = db_kazoo_insert;
    dbb->replace           = db_kazoo_replace;
    dbb->insert_update     = db_kazoo_insert_update;
    dbb->delete            = db_kazoo_delete;
    dbb->update            = db_kazoo_update;
    dbb->raw_query         = db_kazoo_raw_query;
    dbb->cap               = DB_CAP_ALL;

    return 0;
}
```

```
                                           ┌──────────────────────────────┐
                                           │                              │
                                           │      dbk_credentials_query   │◄──── AMQP Request/Response ────►
                              subscriber    │                              │
┌──────────────────────┐       ┌──────────►└──────────────────────────────┘
│                      │       │
│    db_kazoo_query    │◄──────┤
│                      │       │
└──────────────────────┘       │ presentity  ┌──────────────────────────────┐
                               └──────────►  │                              │
                                           │      dbk_presence_query       │◄──── AMQP Request/Response ────►
                                           │                              │
                                           └──────────────────────────────┘

                               ┌──────────►  ┌──────────────────────────────┐
                               │             │                              │
                               │             │      amqp_register_notice     │──── AMQP Broadcast ────►
                               │             │                              │
                      location │             └──────────────────────────────┘
┌──────────────────────┐       │
│  db_kazoo_insert /    │       │
│  db_kazoo_update /    │──active_watchers──►┌──────────────────────────────┐
│ db_kazoo_insert_update│       │             │ dbk_presence_subscribe_new / │
│                      │       │             │ dbk_presence_subscribe_update│──── AMQP Broadcast ────►
└──────────────────────┘       │             └──────────────────────────────┘
                               │
                               │ dialoginfo  ┌──────────────────────────────┐
                               └──────────►  │                              │
                                           │      dbk_dialoginfo_update    │──── AMQP Broadcast ────►
                                           │                              │
                                           └──────────────────────────────┘

┌──────────────────────────┐               ┌──────────────────────────────┐
│                          │               │                              │
│ rmqp_pres_update_handle  │◄──────────────│      rmqp_consumer_loop       │◄──── AMQP Direct Message ────
│                          │               │                              │
└──────────────────────────┘               └──────────────────────────────┘
```

```c
int dbk_credentials_query(const db1_con_t* _h, ..., db1_res_t** _r) {

    amqp_mb.len = sprintf(messagebody, "{\"Method\":\"REGISTER\","
                          "\"Auth-Realm\":\"%.*s\","
                          "\"Auth-User\":\"%.*s\","
                          "\"From\":\"%.*s@%.*s\","
                          "\"To\":\"%.*s@%.*s\","
                          "\"Server-ID\":\"%s\","
                          "\"Node\":\"kamailio@%.*s\","
                          "\"Msg-ID\":\"%.*s\","
                          "\"App-Version\":\"%s\","
                          "\"App-Name\":\"%s\","
                          "\"Event-Name\":\"authn_req\","
                          "\"Event-Category\":\"directory\"}",
                          _v[1].val.str_val.len, _v[1].val.str_val.s,
                          _v[0].val.str_val.len, _v[0].val.str_val.s,
                          _v[0].val.str_val.len, _v[0].val.str_val.s,
                          _v[1].val.str_val.len, _v[1].val.str_val.s,
                          _v[0].val.str_val.len, _v[0].val.str_val.s,
                          _v[1].val.str_val.len, _v[1].val.str_val.s,
                          serverid,
                          dbk_node_hostname.len, dbk_node_hostname.s,
                          unique_string.len, unique_string.s,
                          VERSION, NAME);
    amqp_mb.bytes = messagebody;

    if (!amqp_basic_publish(rmq->conn, rmq->channel, ..., amqp_mb)) {
        goto error;
    }
```

```c
    while (body_received < body_target) {
        if (dbk_rmq_wait_for_data(rmq->conn) < 0 ) {
            goto error;
        }
        memcpy(body + body_received, frame.payload.body_fragment.bytes,
                frame.payload.body_fragment.len);
        body_received += frame.payload.body_fragment.len;
        if (body_received != body_target) {
            goto error;
        }
    }
    body[body_received] = '\0';

    db1_res_t* db_res = dbk_creds_build_result(body, _c, _nc);
    *_r = db_res;

    return 0;
}
```

What next
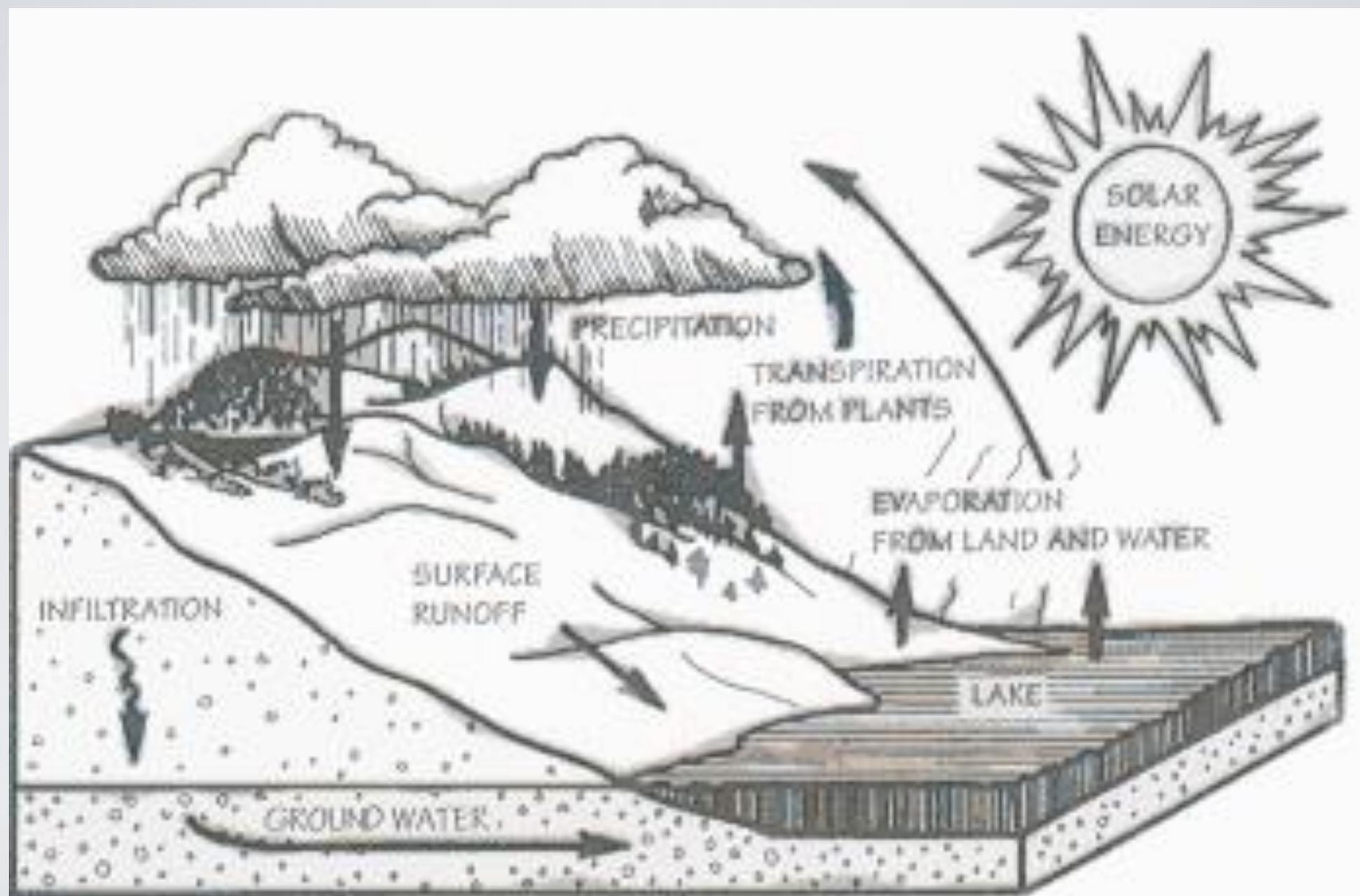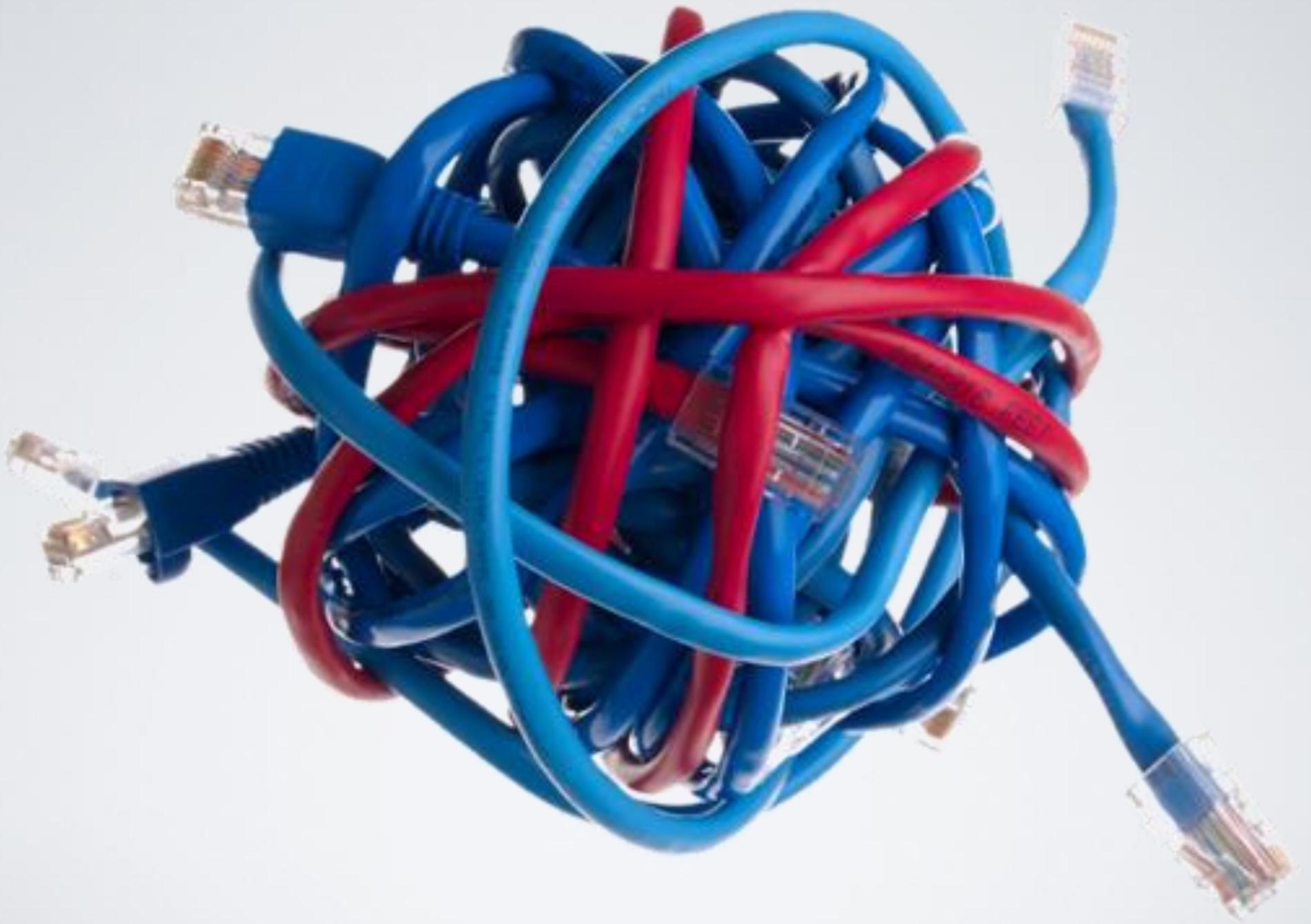
github.com/2600hz   2600hz.com

KAZOO
California, San Francisco
June 2-4

FreeSWITCH
Wisconsin, Milwaukee
June 23-25