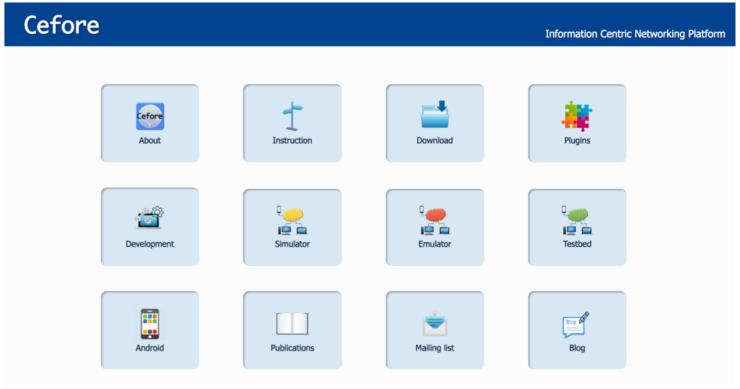
IETF Hackathon: <Cefore>

IETF 104
23-24 March, 2019
Prague

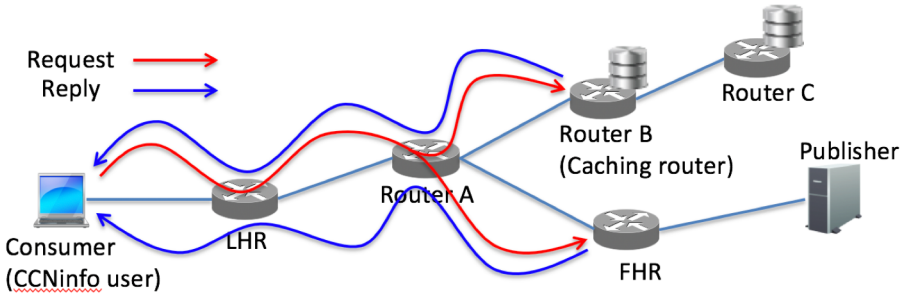
Cefore Projects: IETF104 Hackathon

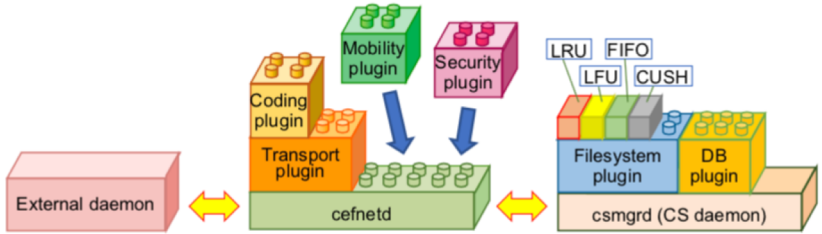
- ICNRG
- Cefore: Open-source software enabling Content-Centric Networking (CCN)
  - https://cefore.net
- Objective: Enhancing Cefore functions
  - extensible forwarding engine that implements CCNx message handling
  - in-network cache management, etc.
  - Reference:
    - https://tools.ietf.org/html/draft-irtf-icnrg-ccnxmessages
    - https://tools.ietf.org/html/draft-irtf-icnrg-ccnxsemantics



Hackathon Goals

- Implementing/Testing
  - CCNinfo
    - discover information about the network topology and in-network cache (https://tools.ietf.org/html/draft-irtf-icnrg-ccninfo)
  - Transport plugin for network coding
    - in coordination with in-network caching
    - to achieve higher performance (https://tools.ietf.org/html/draft-irtf-nwcrg-nwc-ccn-reqs)
  - Cefpyco(CEFore PYthon COmpact package)
    - Enable easier and faster application development
- Achievements
  - Built he basic functions and the framework
  - Enhanced Cefpyco to specify optional TLV header





C language

```c
#include <stdio.h>
#include <stdlib.h>
#include <unistd.h>
#include <ctype.h>
#include <cefore/cef_define.h>
#include <cefore/cef_client.h>
#include <cefore/cef_frame.h>
#include <cefore/cef_log.h>

int main(int argc, char *argv[]) {
    CefT_Client_Handle fhdl;
    CefT_Interest_TLVs params_i;
    int res;
    cef_log_init ("cefpyco");
    cef_frame_init();
    res = cef_client_init(port_num, conf_path);
    if (res < 0) return -1;
    fhdl = cef_client_connect();
    if (fhdl < 1) return -1;
        memset(&params_i, 0, sizeof(CefT_Interest_TLVs));
    res = cef_frame_conversion_uri_to_name("ccn:/test", params_i.name);
    if (res < 0) return -1; // Failed to convert URI to name.;
    params_i.name_len = res;
    params_i.hoplimit = 32;
    params_i.opt.lifetime_f = 1;
    params_i.opt.lifetime = 4000ull; /* 4 seconds */
    params_i.opt.symbolic_f = CefC_T_OPT_REGULAR;
    params_i.chunk_num_f = 1;
    params_i.chunk_num   = 0;
    cef_client_interest_input(fhdl, &params_i);
    if (fhdl > 0) cef_client_close(fhdl);
    return 0;
}
```

Send Interests

33steps→
4steps

Cefpyco

```python
import cefpyco

with cefpyco.create_handle() as h:
    h.send_interest("ccn:/test", 0)
```

Wrap Up

Team members:

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Ruidong Li*
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*First timers @ IETF/Hackathon:

Cefore Link:
https://cefore.net