

libuafs

The coolest OpenAFS library you've never heard of

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What is libuafs?

- libuafs runs in userspace
- libuafs replaces the OpenAFS kernel module and afsd
- libuafs is not new
- libuafs lives in `src/afs/UKERNEL/` and `src/libuafs/`
 - and inside `#ifdef UKERNEL`

Why should I care about libuafs?

- Easier/better client debugging (sometimes)
- No system hangs / panics
- Application integration
- Multiple clients per machine
 - root access not required

Disadvantages

- libuafs is slow
- libuafs lacks features (currently)
 - but we do all filesystem ops
- Requires AFS-aware applications
 - or something like FUSE
- Transient clients may make file servers sad

libuafs users (applications)

- Web browser plugins
 - `afs://acm.uiuc.edu/mirrors/...`
- Filedrawers-like applications
- Whatever you want!



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libuafs users (FUSE)

FUSE

- Filesystem in Userspace
- Regular AFS access, but no hangs/panics
- Possibly greater OS compatibility
 - virtualization (e.g. solaris zones lofs mount)
- Currently no 'fs' support
- Included as of 1.5.74
 - `./configure --enable-fuse-client (src/afsd/afsd.fuse)`
 - Debian packages exist thanks to Russ

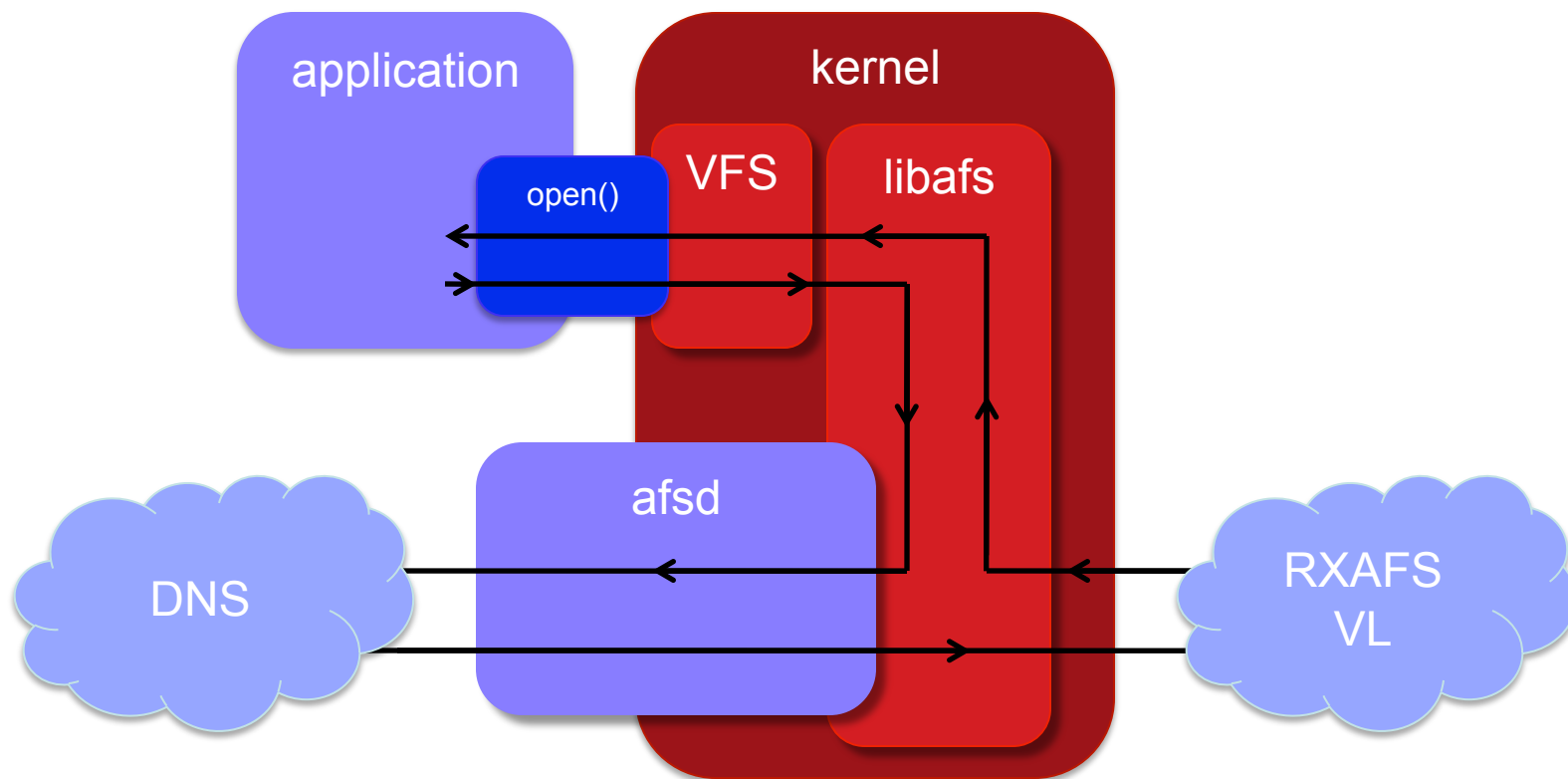
libuafs users (testing)

- Automated (useful) OpenAFS tests are hard
 - 1 client, 1 server; not useful
- libuafs allows N 'real' clients on 1 machine
 - not quite like afsio/afscp; host tracking bugs
- No net synchronization, just IPC
- Has already been used 'for real'



What is libuafs, *really*?

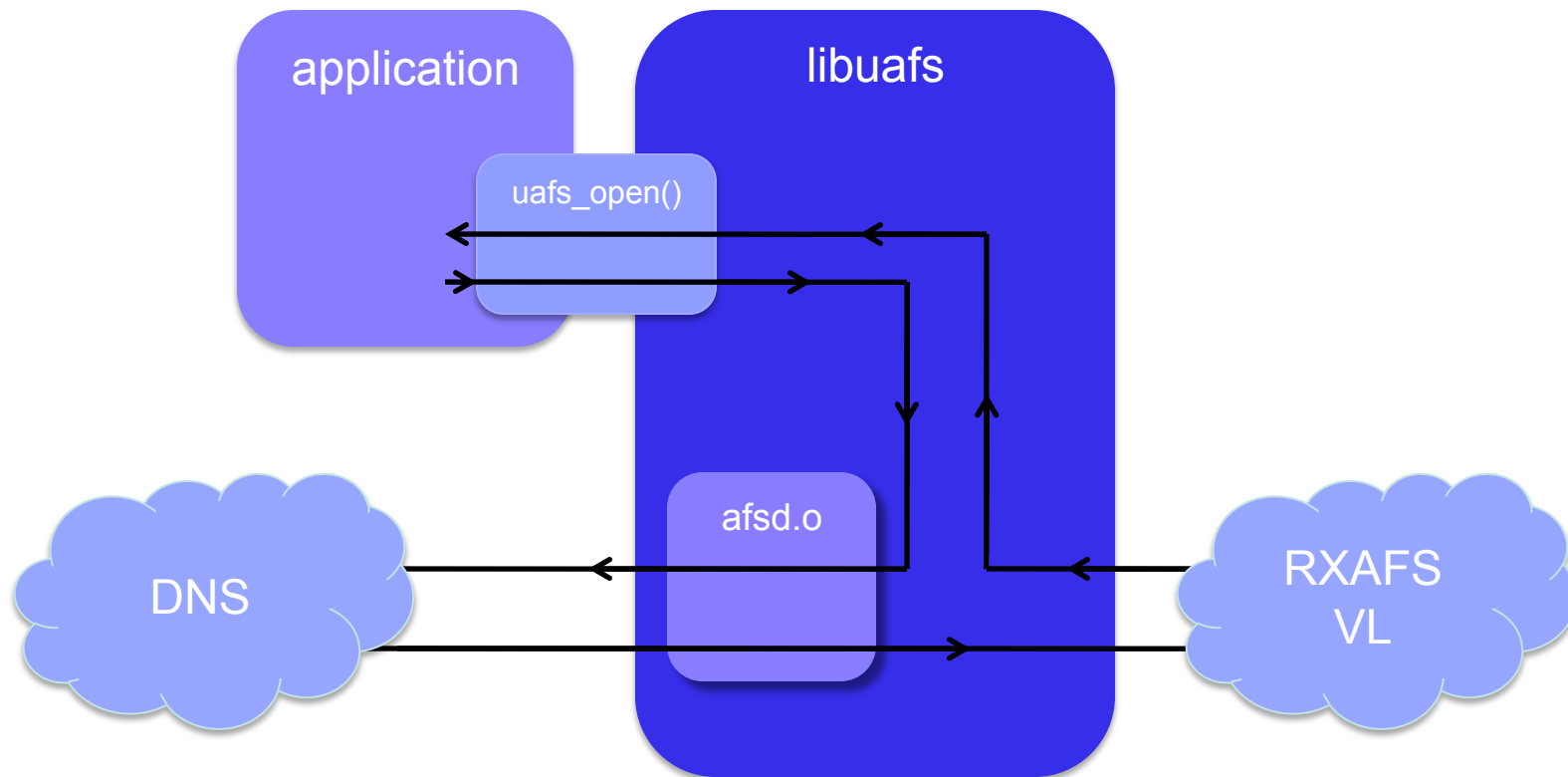
A quick refresher on the kernel client:





What is libuafs, *really*?

libuafs equivalent:



How do I use this nifty library?

- libuafs itself is just C
 - perl via AFS::ukernel
 - bindings to other languages forthcoming
- Configuration via afsd-compatible switches
 - e.g. "-afbdb -fakestat-all"
- Take POSIX, prefix with uafs_
 - uafs_open(), uafs_read(), uafs_close(), etc



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How do I use this nifty library?

Examples!

libuafs for C

```
#include <afs_usrops.h>

/* ... */

const char *uafs_argv[] = {"my_prog", "-afbdb", "-fakestat-all", NULL};
code = uafs_Setup("/afs");
code = uafs_ParseArgs(3, uafs_argv);
code = uafs_Run();

/* ... */

path = "/afs/sinenomine.net/user/adeason/public/hello";
fd = uafs_open(path, O_RDONLY, 0770);

code = uafs_read(fd, buf, sizeof(buf));
code = uafs_close(fd);

/* ... */

uafs_Shutdown();

/* ... */
```

AFS::ukernel for perl

```
use AFS::ukernel;

# ...

$code = AFS::ukernel::uafs_Setup("/afs");
$code = AFS::ukernel::uafs_ParseArgs("-afsdb -fakestat");
$code = AFS::ukernel::uafs_Run();

# ...

$path = "/afs/sinenomine.net/user/adeason/public/hello";
$fd = AFS::ukernel::uafs_open($path, POSIX::O_RDONLY, 0770);

($code, $str) = AFS::ukernel::uafs_read($fd, 4096);
$code = AFS::ukernel::uafs_close($fd);

# ...

AFS::ukernel::uafs_Shutdown();

# ...
```

Demo!

Thanks!

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