

Plan B's /net: An adaptative file system for networks

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Roadmap

- Computing environments
- Plan B
- Name spaces
- /net
- Problems
- Lessons

Computing environments

Heterogeneous transient resources

- Different implementations
- Different interfaces
- Different properties
- More than one at a time
- Come and go

Computing environments (cntd)

Networks

- Used to access (talk to) services
- But...
 - different interfaces (addressing, semantics)
 - with different bandwidths, latencies, ...
 - many at a time
- ⇒ Applications (or system) get complex.

Plan B

Built for changing distributed environments

- No connections
- No binding (open banned).
- Single names for multiple instances
- Dynamic mounting for network resources
- Per application mount table (customizable).

Plan B (cntd.)

Example

```
: import any /usr/nemo!Dgsyc /usr/nemo
: import -b any /usr/nemo /usr/nemo
: ns
...
  /usr/nemo: nautilus!fs!/usr/nemo
  /usr/nemo: aquamar!fs!/usr/nemo
: cp /usr/nemo/doc/slides.mf /b/printer
```

Name spaces

Tool to detect resources and adapt.

- One per application.
- Ordered prefix table.
- Order fixed at programming time.
- Dynamic (automatic) mounts.

Name spaces (cntd.)

Constraints

- Used to narrow resolutions.
- Resolved once per system call (no binding!).
- Just syntax: users give meaning.
- Example:

```
: cp slides.mf!N% /b/printer!N%  
: cp slides.mf!Nether /b/printer
```


Plan B's /net

Interface to the network

- One file system per network
- A single interface (abstract).
- Users select by programming the name space

Plan B's /net (cntd.)

Naming as a tool

`/net/machine!svc`

`/net/any!svc`

`/net/local.N!svc`

Plan B's /net (cntd.)

Semantics

- No connections (user's view)
- No addresses
- Multiple networks at /net
- Dynamically mounted
- Constraints can narrow the search

Problems

AFAIK

- Resolving each time(?)
- Low-level access (fixed)
- Failover to other network
 - Letting the user know
 - Reliability (constraints?)

Lessons

Connections are evil

Names have power

Plan

Hosted version available

Porting to native ongoing

A Plan 9 file system?

<http://plan9.escet.urjc.es/who/nemo/Plan-B.html>