

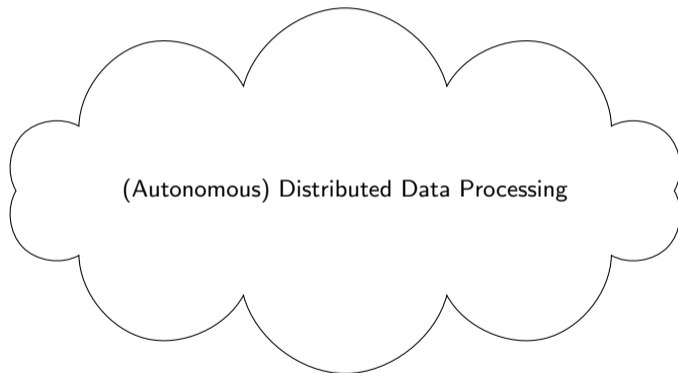
CloudBus — Session Control for Open Network Services

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Melbourne Linux Users Group

What is the Problem?



What is the Problem?

What have we tried?

- ▶ MapReduce
- ▶ Dryad
- ▶ Spark
- ▶ Hadoop
- ▶ Storm
- ▶ and on...
- ▶ and on...
- ▶ and on...
- ▶ Docker
- ▶ Kubernetes
- ▶ OpenWhisk
- ▶ OpenFaas
- ▶ KNative
- ▶ and on...
- ▶ and on...
- ▶ and on...

What is the Problem?

Has any of it actually worked?

What is the Problem?

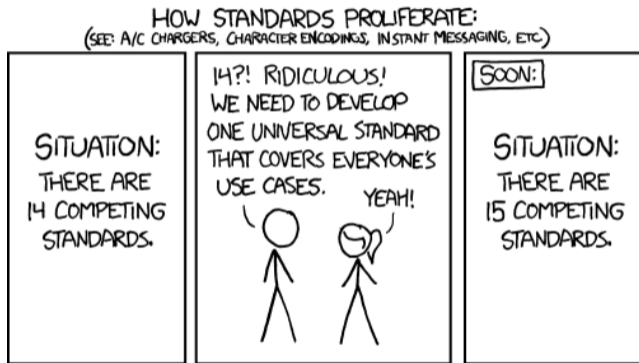


Figure: Courtesy of XKCD. (<https://xkcd.com/927/>)

Proposal — CloudBus

Session-Layer Protocol for Stream Control and Request Routing

Resource management for large-scale distributed data processing suffers from a variety of performance problems associated with heterogeneity and time-variation, chief among them

Proposal — CloudBus

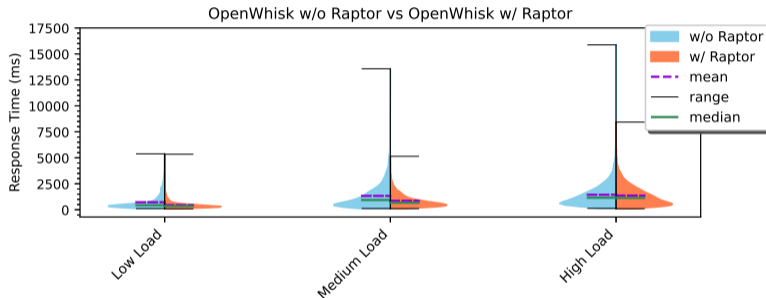


Figure: Clever request routing can dramatically reduce response times and simultaneously improve application availability and reliability. (<https://arxiv.org/abs/2403.16457>)

Proposal — CloudBus

What do we need to generalize this?

- ▶ Session-layer control protocol for routing application data streams.
- ▶ Distributed proxy agents that can act on behalf of users.

Proposal — CloudBus

Has anyone done this before? (hint: yes)

- ▶ SIP (Session Initiation Protocol)

A robust and easily extensible open-source implementation of IMS would invalidate many of my points...

Proposal — CloudBus

Why don't we use SIP in every IT network?

- ▶ Protocol design suffers from telco corpospeak. (*not cool*, nobody under the age of 50 wants to read about using a telephone to *talk to people*).
- ▶ Protocol design also appears to suffer a bit from *Conway's law* (The design of a system mirrors the communication structure of the organization that made it).
- ▶ A minimal working example of a SIP stack has too many—pieces. (P-CSCF, I-CSCF, S-CSCF...)

What will Cloudbus look like?

The Wishlist

- ▶ Everything is an I/O redirectable stream.
- ▶ Extensible (*Hackable*)
- ▶ *Free*
- ▶ goes fast...

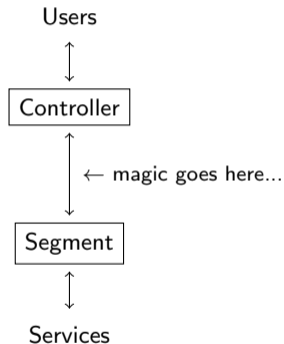


Figure: Minimum Working Example

Looking for Group

- ▶ **Users:** Hobbyists, Enthusiasts, Homelabs, Professionals — Wishlist:
 - ▶ **Working Examples:**
 - ▶ Messaging
 - ▶ IRC
 - ▶ Presence
 - ▶ Media Server
- ▶ **Users/Developers:** Documentation — Wishlist:
 - ▶ Working examples.
- ▶ **Developers:** Modern C++ (all C++17 or newer ooh—aaah), protocol design (ewww nasty...)

Looking for Group

<https://github.com/kcexn/cloudbus>