Secure Scuttlebutt

Peer-to-peer Collaboration and Community Infrastructure

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LibrePlanet
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Me

@cel

Developer
git-ssb, patchfoo, sbotc

Using SSB since 2014
Efficient Reconciliation and Flow Control for Anti-Entropy Protocols

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ABSTRACT
The paper shows that anti-entropy protocols can process and be useful as fault-tolerant channels, and proposes a reconciliation mechanism for use with anti-entropy protocols.

Categories and Subject Descriptors: C.2 [Computer Communication Networks]: Network Architecture and Design - Communication Sub-Layer Protocols; C.4.6 [Computer Communication Networks]: Network Operations - Network management; D.1.3 [Programming Techniques]: Operating Systems - Generation management; D.1.6 [Operating Systems]: Reliability; D.4.5 [Operating Systems]: Monitoring and Analysis

Additional Key Words and Phrases: Epidemics, Anti-Entropy, Operating Systems

1. INTRODUCTION
Gossip protocols have emerged as an attractive way of replicating state maintenance in a distributed system. These protocols are designed to be replication and have been shown to be efficient in the face of host failures and message loss. The behavior of gossip protocols becomes logarithmic in the number of participating hosts, even limited by available bandwidth for transporting gossip data.

Gossip protocols are designed to be non-invasive and have an inherent trade-off between message complexity and reliability. This paper makes two contributions. First, it presents a new state reconciliation mechanism that is designed to overcome the limits of current gossip protocols and offers an efficient flow control scheme for gossip. Second, it proposes an integrated broadcast scheme that combines both approaches. We use a low-cost scheme to build and maintain broadcast trees embedded on a gossip-based overlay. The protocol sends the message payload preferably on tree branches but uses the remaining links of the gossip overlay for fast recovery and expedite tree healing. Experimental evaluation presented in the paper shows that our new strategy has a low overhead and that is able to support large number of faulty nodes while maintaining a high reliability.

I. Introduction
Many systems require highly scalable and reliable broadcast primitives. These primitives aim at ensuring that all correct participants receive all broadcast messages, even in the presence of network partitions or node failures.

This work was partially supported by project "P-SON: Probabilistically Structured Overlay Networks" (POS 051115/45) and by the University of Minho and the University of Lisbon.

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Epidemic Broadcast Trees

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Abstract
There is an inherent trade-off between epidemic and deterministic tree-based broadcast primitives. Tree-based approaches have a small message complexity in steady state but are very fragile in the presence of faults. Gossip, or epidemic, protocols have a higher message complexity that allows for much higher resilience.

This paper proposes an integrated broadcast scheme that combines both approaches. We use a low-cost scheme to build and maintain broadcast trees embedded on a gossip-based overlay. The protocol sends the message payload preferably on tree branches but uses the remaining links of the gossip overlay for fast recovery and expedite tree healing. Experimental evaluation presented in the paper shows that our new strategy has a low overhead and that is able to support large number of faulty nodes while maintaining a high reliability.

1. Introduction
Many systems require highly scalable and reliable broadcast primitives. These primitives aim at ensuring that all correct participants receive all broadcast messages, even in the presence of network partitions or node failures.

Group protocols have emerged as a highly scalable and versatile approach to implement reliable broadcast. Unfortunately, in steady-state, group protocols exhibit an excessive message overhead in order to ensure reliability with high probability. On the other hand, tree-based broadcast primitives have a small message complexity in steady-state, but they are very fragile in the presence of failures, lacking the needed resilience of epidemic protocols.

P2P, f2f, e2e

* This work was partially supported by project "P-SON: Probabilistically Structured Overlay Networks" (POS 051115/45) and by the University of Minho and the University of Lisbon.

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Cypherlinks

Message
%Oys+Dg6P0h8LvykiMTQW5L43iwuJpuv0IiVW5RZs9Cw=.sha256

Blob
&C93joU14xSFH3cVJM6ZZQdAr+WXIiDLIyUQDZ/y4qw=.sha256

Feed
@f/6sQ6d2CMxRUhLpspgGIu1DxDCwYD7DzFzPNr7u5AU=.ed25519
Message

{
  "key": "%8XKAub/+keTb0XU+eS1/r2+wDMfk0369fLJ57Re9Ku0=.sha256",
  "value": {
    "previous": "%0tpLhWn8nC1iA+thcZnVYt5Nm6OtUvkFXMuHdB9roS4=.sha256",
    "author": "@C3iYh/12s01uvKq1KcZXLFxSySz0kHxXN8rtNB5MGA=.ed25519",
    "sequence": 1359,
    "timestamp": 1506213306259,
    "hash": "sha256",
    "content": {
      "type": "post",
      "text": "hello world"
    },
    "signature": "Nz4WOuOMpXU2xXUgW+cGTLCiU1BCYiHQFWvyUnppq+YmwV1TZM5+FM12SAclA2BFgRdHyG6Y91DCXHJdMFiMAW==.sig.ed25519"
  }
}
Social graph

- Feeds that are visible in the user interface.
- Feeds that the user has explicitly followed.
- Feeds the client has seen mentioned but chosen not to fetch.
- Feeds the client fetches and stores messages from these feeds but does not show them to the user.

*Actual follow graphs are much more interconnected and messy.*

%rixf1ofcAtiz2/MKbzfc0GXYGBgFbrA4iuYRFHvMw8=.sha256
Pubs
Herm[i]es
Scuttlecamp 2
Monday, June 8, 2020 9:00 AM EDT

5-day gathering in a lush, rural village setting, where Blatts from around the world can gather to cultivate relationships, share food and language, and practice tending the peer-to-peer garden.

The gathering will be held in Moinho, a small village of approximately 300 residents in the Alto Paraiso municipality of Goiás, Brazil.

More info can be found in the event guide.
Patchbay

Thread

Chicken of the woods (Laetiporus sulphureus) season has officially begun for me.

This is the second time I've spotted this species while cycling along a road. The first time was roughly two years ago. We have a common area here in the village, which consists of some grassy fields surrounded by trees and includes a stream along one side. There's a road running beside the stream, which just so happens to be part of my route to the village center. I've gotten quite proficient at spotting mushrooms while moving (on bicycle or in a motor vehicle). I saw this one in the morning and returned to harvest and photograph just before sunset (a wee bit of secrecy goes a long way when you're foraging - don't tell the whole world!)

Oh yeah, and I was greeted by an owl when I went to harvest. Big bushy bugger plopped down onto the road ahead of me. Nice to see you, owl-san. You too, glyph-san.

These fungi are saprophages, sometimes acting as weak parasites. They produce a brown cubical not as a result of decomposing the pulp cellulose. I love how the fungus is hugging from the interface of bark and wood. There are far more trees along the trunk but not visible in these photos.

af: @glyph very nice story. basic q: do mushrooms provide any level of protein? ...

glyph: Thanks @af basic q: do mushrooms provide any level of protein? Yes, often in quite large amounts. Here's a paper on Lt: ...

kim: your foraging tales are the best @glyph ...

The Redundant Daily Redundant
a daily digest of what I've been reading

%RP5p5qBqjsW/5Ri68xGIcn58X3MiyinsqsblTHWbnM4=.sha256
### Patchbay apps

**Polls**

**Books**

- **The Left Hand of Darkness** by Ursula K. Le Guin
  - The Left Hand of Darkness tells the story of a lone human emissary to Winter, an alien world whose inhabitants can choose—end-change—_their_ gender. His goal is to facilitate Winter's inclusion in a growing intergalactic civilization. But to do so he...

- **Invisible: How Young Women with Serious Health Issues Navigate Work, Relationships, and the Pressure to Seem Just Fine** by Michele Lourdes
  - Though young women with serious illness tend to be seen as outliers, young female patients are in fact the primary demographic for many illnesses. They are also one of the most ignored groups in our medical system—a system where young women, especial...

- **Artemis** by Andy Weir
  - Artemis takes place in the late 2080s and is set in Artemis, the first and only city on the moon. It follows the life of porter and smuggler Jasmine "Jazz" Bashara as she gets caught up in a conspiracy for control of the city.
Patchbay apps 2

Chess
Incoming new release

So the rewrite of patchfox to the new mithril database will be a longer project than I anticipated. Because of that I’ll keep working on the svelte codebase as well as it is more complete and is already being used by people.

I was burning out a bit trying to rewrite things like crazy so that I could quickly migrate to the new codebase but doing things quickly and recklessly is what got me into the current messy version. I want to move the mithril version to move a bit more slower and carefully, but I also want people to keep using patchfox and receiving updates so this a shitty situation (not unlike python 2 and python 3 migration/overlap where both things were alive and diverting).

So before the Basel event is over, I’ll have a new release from the master branch.
Hi scuttlers,
Does anyone know the best ssb client (or maybe a comparison) for a small screen on a #raspberry I will be using their 7” touchscreen. This will be a "phone/camera/communicator" type thing. Installed is #Rasbian While this basically is a desktop, I'm hoping to use mostly just the touchscreen and virtual keyboard. So far I only have experience using #Patchwork but I'm wondering about other options as well.
Thanks!

You may want to check out @cel's #patchfoo. Regular install instructions are https://github.com/noffle/sailing-patchfoo. I tried searching my scuttleverse for a #git-ssb link to patchfoo but came up with nothing TT.
Oasis

Oasis 2.13.1

Oops. I don't think I've posted any releases since 2.8.0, but there have been tons of improvements to the app since then. Off the top of my head:

- Follow, unfollow, block, unblock
- More networking info and actions (including offline mode)
- Way faster private message rendering
- Works with Patchwork running in background (!)
- Sidebar navigation with cute emoji
- Very very basic internationalization (need help translating!)
- Removed strangers from main feed
- Add Extended and Topics views
- Add public viewer mode
- Fix 8 trillion bugs

If anyone wants to check it out, I'll include the install instructions below. There's also a public demo and a GitHub repository if you like.

Installation
SSB browser demo

Last 50 messages

1 week ago
"punkmonkey" posted in reply to

@trav: i don't have a cool hackerspace to show you but i work in philly. give me a ping if you want grab a bite while your in town. 😷 i can at least recommend good donuts!!

1 week ago
"bobbhausen" posted in reply to

@Joey Hess

someone might blunder thru them in the dark or something... a don't go here warning

A string of xmas lights?
Planetary
From GitHub to git-ssb
A guide to hacking together on the distributed web

If you’re curious about the distributed web, and the prospect of using git collaboratively without the central, closed-source point of origin, you came to the right place.

git-ssb is a great fit for just this. This guide tries to act as a transition aide for GitHub users into the world of git-ssb. It assumes rudimentary knowledge of GitHub. It will walk through:

1. understanding what "SSB" is.
2. installing scuttlebot -- the SSB peer server, and joining the network.
3. installing the git-ssb command and the git-ssb web interface.
4. walkthrough of using git-ssb to do common GitHub workflows (creating repos, making pull requests, merging pull requests, issues, etc.).
More apps

- Sunrise Social
- SurfCity
- ScuttleShell
- ssb-npm-registry
- ssb-viewer
- ssb-dns
- ssb-mutual
- yap
- mvd
- HackyArt

... 

scat (ssb-chat)

TickTack
%Z6f1k3+hlBkuKpG9a1tj1fFH.LJu6PxdQ03uJ2BnlR/8g4=, sha256

tale:net

Guild Lands
NhR8vBpAbNIQ5xhoV83HhucRzcSEKjY96g830d+QfWw=, sha256

ngx-ssb-client
Implementations

**Full:** Node.js, Go, Rust

**Partial:** C, Python, Java, Swift, Erlang

**Crypto:** C (libsodium)
Proposal HC16: Budget

Total: 85106 Euros

The percentage below have been obtained by averaging the suggestions of individual Council members, that is why we end up with cents. If someone would like to see what were the suggestions of Council members, message me and I will compile them for the records.

<table>
<thead>
<tr>
<th>Budget Item</th>
<th>Description</th>
<th>Amount (Euros)</th>
<th>% Total</th>
<th>Comm. Sugg.</th>
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<td>19236.31</td>
<td>22.60</td>
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<td>2707.92</td>
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Scuttlecamp
Diversity and Inclusion

SSB community Inspo

I’m also inspired by and actively learning from examples across sss and from the organising of Scuttlecamp, on how diversity and inclusivity were prioritized and fostered.

Main examples being:

- asking and prompting us all on Who would you like to welcome to ScuttleCamp?

  In my experience, to support diversity and enrich everyone’s experience, you have to go the extra mile to reach out. I believe there are some awesome people in the Scuttleverse who may not come unless we proactively invite them and offer extra support (financial or otherwise).

- reserved tickets for scuttle camp to support diversity + inclusion as a priority

  transparency in Diversity / Inclusion updates

  @sliden homicide: What’s not immediately visible right now is the makeup of who is attending (the gathering is ok, but it’s out of sync with who is currently registered). Here’s an anonymised breakdown of the humyns (NOTE we did ask people registering about e.g. gender, so these numbers may be off)

- actively tagging and nudging people here!

  I can thank these people, for their OG initiative, support and nudges, for really making me feel invited, valued, and wanting to be sticking around here. :laughing:

  Plus there’s so many more examples of various people who’ve supported me personally, or/and had interests in diversity + personally willing to support, had engaged positively or called out toxicity, and taken the initiatives to make inclusion a priority.

That’s what gives me lots of hope, that there’s an existing social layer of willingness. The number of people actively participated in the gender FLOSS thread was astounding.

FAQ

Why can’t @glyph + @Luandro do this?

They’ve already taken on a massive role of organisation + care. They don’t have capacity to safely take this on as well

Wait is this just boring admin / handing out money?

Haha, no. This is people work (with a minor side of spreadsheets). We recorded some podcasts (part 1, part 2) about the personal impact this work has had on us. TL;DR it’s incredibly rewarding, has built lasting connections, and has led me to learn a lot about myself and the world. I cannot recommend it enough as an opportunity.

Is this hard?

It can be challenging. Remember you won’t be alone, you’ll have people who’ve done this work to help you get started, and to offer guidance and support. Hopefully we can get a couple of people to take this on so you’ll be doing it as a duo

Next step

If you’re keen / interested:

- put your hand up here, and mention @glyph / me

  Q35011: Ask a Q35011 <3
Principles stack

Harmony & Reflection

- Society
  - Inclusion
  - Pluralism

- Community
  - Independence
  - Subjectivity
  - Interdependence

- Technology
  - Local-first
  - Upgradability
  - Near Moderation
  - Multimodal Welcoming

- Environment
  - Independence
  - Efficiency
  - Abundance
Solarpunk

How urban agriculture is transforming Detroit

a city that can be both urban and rural.
Boats

Alchemist
#showmeyourcoffee

#foffee

%sHjosVsDkCpb2nH9KIXu9wr9T3wGMWtfrooQ8891Y14=.sha256

%7411jvQ9GqJyL2So3C5M18d61WGSsdoyoex+8aUQ+8=.sha256

%3dkhZpXrn1KfE/sJb/A+NYB1KhUZCGncgbYpVwzE6k=.sha256
Network graphs
Network activity graph

2015-08-05 - 2020-03-05

https://ssb.celehner.com/activity/
A Broadcast-Only Communication Model Based on Replicated Append-Only Logs

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Published research

Secure Scuttlebutt: An Identity-Centric Protocol for Subjective and Decentralized Applications

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Published research

This article is an editorial note submitted to CCR. It has NOT been peer reviewed.

Using middleware language, the communication primitive having the abstract syntax is derived from a combination of the input syntax and the set of operations defined for the data model. This primitive is then used to implement the communication protocol.

Figure 1: A perturbation triggered by a station A propagates as a solitary wave to all observers.

The purpose of this note is to take solitons as the inspiration for a communication model whose operation is best described in terms of an initial perturbation that propagates in a wave-like manner in all directions. Such a broadcast model shall obey the following three properties:

1. Each perturbation source has a globally unique identifier that is carried with each perturbation it triggers.
2. The perturbation source can be a solitary wave that is carried with each perturbation it triggers.
3. All observers receive perturbations coming from a specific source in the same order.

Using middleware language, the communication primitive having the abstract syntax is derived from a combination of the input syntax and the set of operations defined for the data model. This primitive is then used to implement the communication protocol.

This is an action that indicates a change in the state of the world, which may be observable or not. When a change is observable, it is called a perturbation, and it is propagated to all other stations in the network.

Figure 1: SSBD (Secure Scuttlebutt) is a novel peer-to-peer versioning protocol and architecture for social apps. In this paper we describe SSBD's features and its operation as well as the rationale behind the design. We also provide a comparison with Named Data Networking (NDN). In order to achieve secure content-centric networking, we propose to utilize a larger exploration of the design space for information-centric networking (ICN) by formulating an identity-centric approach. We finally discuss SSBD's limitations and evolution opportunities.

This is a project that aims to improve the security of data sharing in social networks. The project is being developed by a team of researchers at the University of Basel, Switzerland. The project is called Secure Scuttlebutt (SSBD) and it has been in development since 2014. The project has undergone several iterations of protocol development and implementation. SSBD has become a stable service for over 10,000 users offering them rich media community applications with strong cryptographic protection and end-to-end encryption and metadata privacy leading researchers to publish peer-review articles.

Selective Complete Log Replication

Selective Complete Log Replication (SCLR) relies on the core insight that each participant is only interested in a subset of the global data pool, it is feasible to locally store all the data a participant is interested in. To partition the data pool, all data is associated with the identity that produced it. Participants select their slices of the data pool by specifying the set of identities whose data they care about. This creates a "social graph" along whose edges data flows (Figure 1). Even as the overall system scales, the amount of data any single peer is interested in and thus that needs to store grows only polynomially.

Each participant can publish data to their single-writer, append-only log. This choice of data structures allows for efficient replication and verification of the integrity of received data. Replicating these larger slices of the data pool comes with an unusual set of trade-offs, discussed thoroughly in the paper. A replicated log forms a solid foundation for implementing many classes of applications.

Subjective Reader

Because replication in SSBD is selective and driven by a peer's social graph, different end devices will have access to different slices of log.
Other initiatives

Faerie rings

Faerie ring mitosis

Coming out of scuttle camp and with the last faerie ring coming up, it feels like the right time to sprung new rings.

Brief description

For those unfamiliar with the concept, here's a brief description of the concept:

- it's a p2p
- a call once a for a 2.2 moments
- everyone has to bid when stating in
- there's a host (they change)
- makes sure everyone gets to speak

the rest of the format can grow to fit the group, perhaps things like

- a sharing question
- which offers
- do you have something you'd like to get help with / to offer ?

Example

This description is taken from [seed hosts](https://mruniverse.org/2020/seed-hosts.html), where you can read more about it.

Organizing this

Seed hosts

Within the past changes with times, it's good if the first host is someone who is in the current faerie ring or has experience with similar things, so the new ring will be a good start. Tagging the people in the current ring, but others could step up.

- [Mikey](https://mruniverse.org/2020/mikey.html)
- [Piet](https://mruniverse.org/2020/piet.html)
- [Songyi](https://mruniverse.org/2020/songyi.html)
- [mu](https://mruniverse.org/2020/mu.html)
- [Gunnar](https://mruniverse.org/2020/gunnar.html)
- [Isak](https://mruniverse.org/2020/isak.html)

If you're interested in either role please comment below. If you could be up for being a seed host please indicate so.

Community Infrastructure

Learning Group

crypto-mutual-aid

Community Infrastructure Learning Group

crypto

I'd like to try a small mutual aid experiment. This is an idea that has always been intriguing having grown up in an area where mutual aid networks are fairly prevalent and roaming around [crypto-mutual-aid](https://mruniverse.org/2020/crypto-mutual-aid.html), the idea always resonated with me especially during times of being un-insured/un-insurable.

The focus is on focusing on solving an affordable need. As a result I've decided to be titled by being a small, that is to say we don't have the intent to provide any kind of direct cash or financial aid and instead focus on solving a need for people who don't have the ability to get help.

This is all require fairly low financial input from others that might be able to do a small part towards alleviating stressful financial situations. I don't know exactly what the right amount should be for a monthly payment, but something south of USD 100 is what I think and it proposes using cryptocurrency since it might make experimentation a bit easier than a bank.

[community infrastructure](https://mruniverse.org/2020/community-infrastructure.html)
Protocol Guide

https://ssbc.github.io/scuttlebutt-protocol-guide/

%YkIPtiAe4Vhc4YjeYJ1MPMsdxE2soNyQjzgqj+41XNo=.sha256
Future

- Organizations
- Grants
- Planetary
- Deletion, partial replication

Private groups

this module isn’t done, and is standing on a bunch of pull-requests which need merging, and specs which need testing. Pull request #4 is very much in progress.

Check out how easy this code is going to be:

```javascript
server.private2.group.create('waynes world', (err, data) => {
    const { groupId } = data
    const content = {
        type: 'announce',
        text: 'summer has arrived in wellington!',
        recps: [groupId]
    }
    server.publish(content, (err, msg) => {
        server.get({ id: msg.key, private: true, meta: true }, (err, msg) => {
            console.log(msg.value.content)
        })
    })
})
```
Links and further resources

https://scuttlebutt.nz/

https://scuttlebot.io/
https://ssbc.github.io/scuttlebot/
https://modules.scuttlebutt.nz/
https://opencollective.com/secure-scuttlebutt-consortium/
Thanks


%gtKiSW6Es1gXh/DphgmyMNjVr9f7D/8Ro6wPyBxfSI=.sha256