

CryptMSG

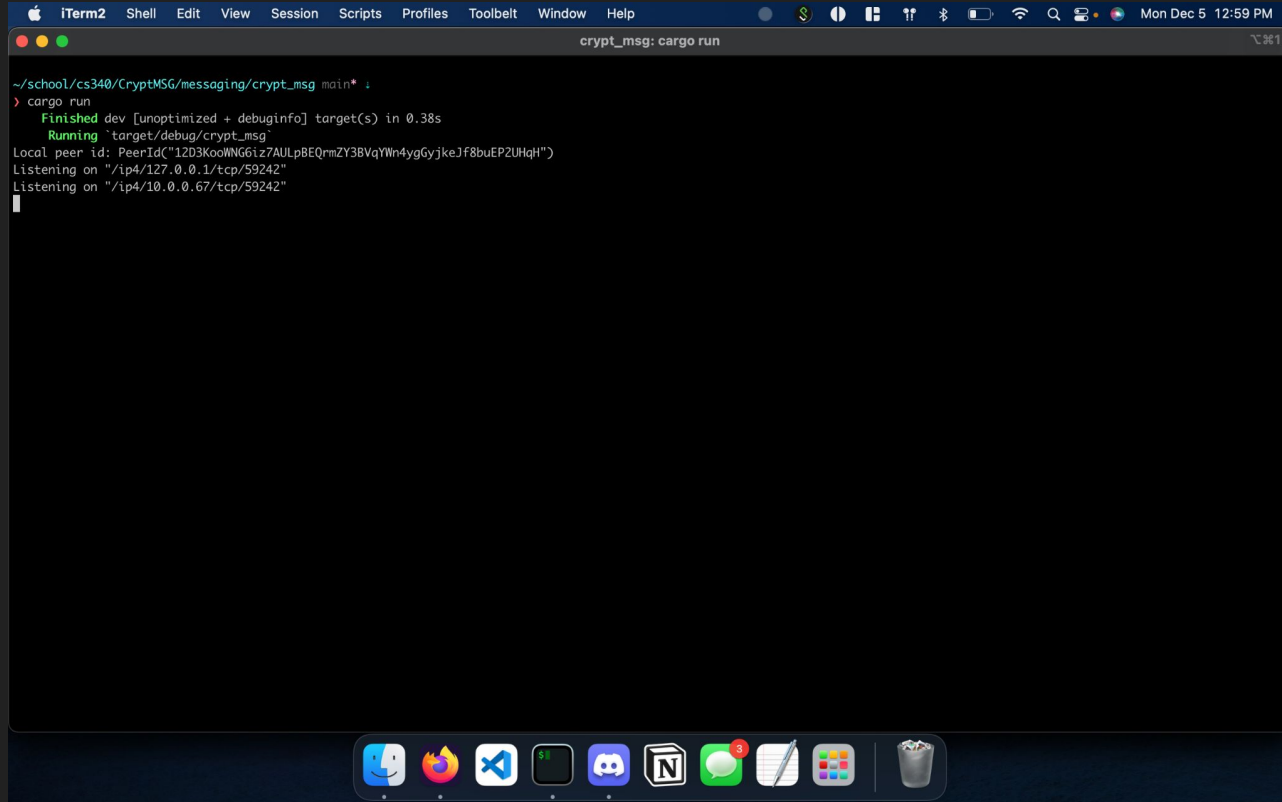
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Our Process

We set to create a secure messaging service, and we tried many different methods:

- Peer to Peer
 - Using the libp2p library implemented in Rust
 - Attempted to use the Rocket framework (a backend framework for Rust)
- Firebase
 - Was able to implement end-to-end encrypted messaging using the Firebase framework
 - This is a framework to help developers scale applications by providing APIs for things such as user authentication and database services
- React
 - SCSS front end styling

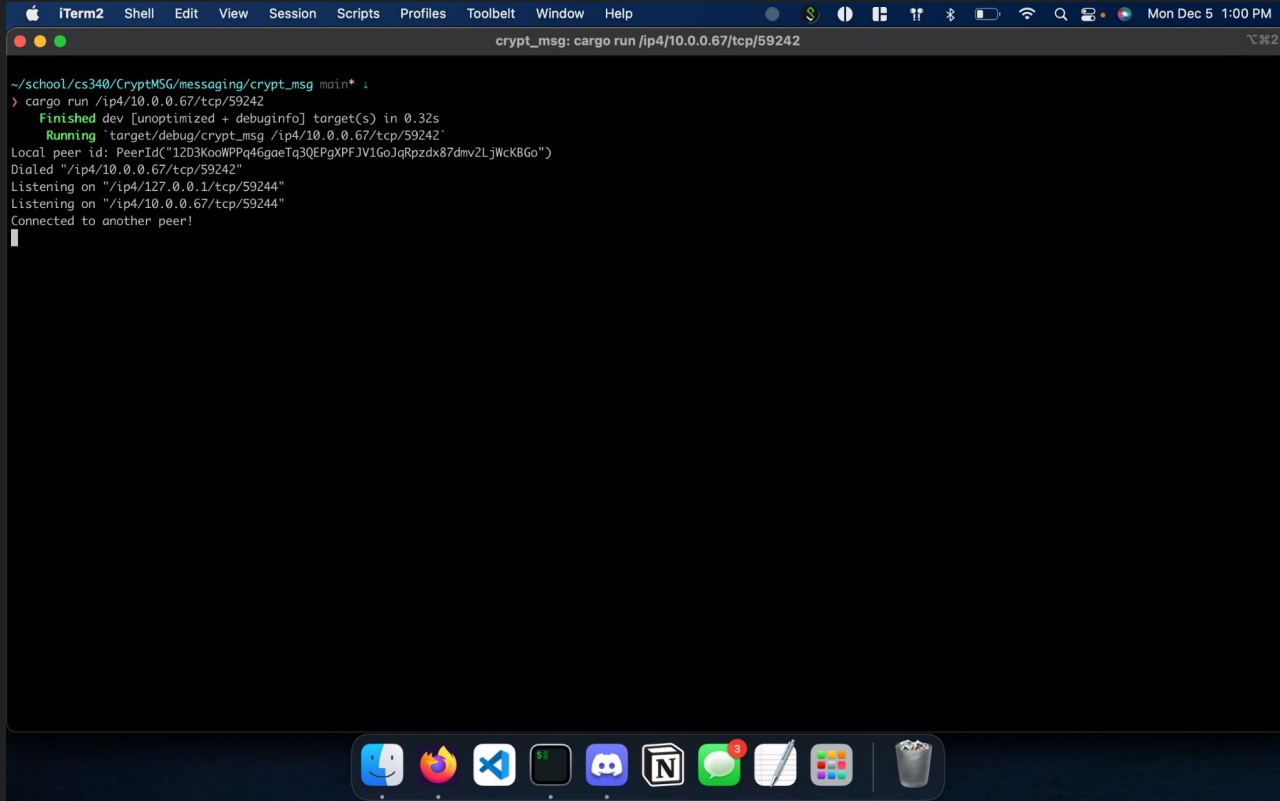
Peer to Peer Functionality



The screenshot shows a macOS terminal window titled "crypt_msg: cargo run". The terminal output displays the execution of a Rust program. It starts with the command `cargo run`, which finishes building the target in 0.38s and then runs it. The program outputs the local peer ID and the listening addresses for both IPv4 and IPv6.

```
~/school/cs340/CryptMSG/messaging/crypt_msg main*  
> cargo run  
Finished dev [unoptimized + debuginfo] target(s) in 0.38s  
Running `target/debug/crypt_msg`  
Local peer id: PeerId("12D3KoolNNG6iz7AULp8EQrmZY3BVqYWn4ygGyjkeJf8buEP2UHqH")  
Listening on "/ip4/127.0.0.1/tcp/59242"  
Listening on "/ip4/10.0.0.67/tcp/59242"
```

Peer to Peer Functionality

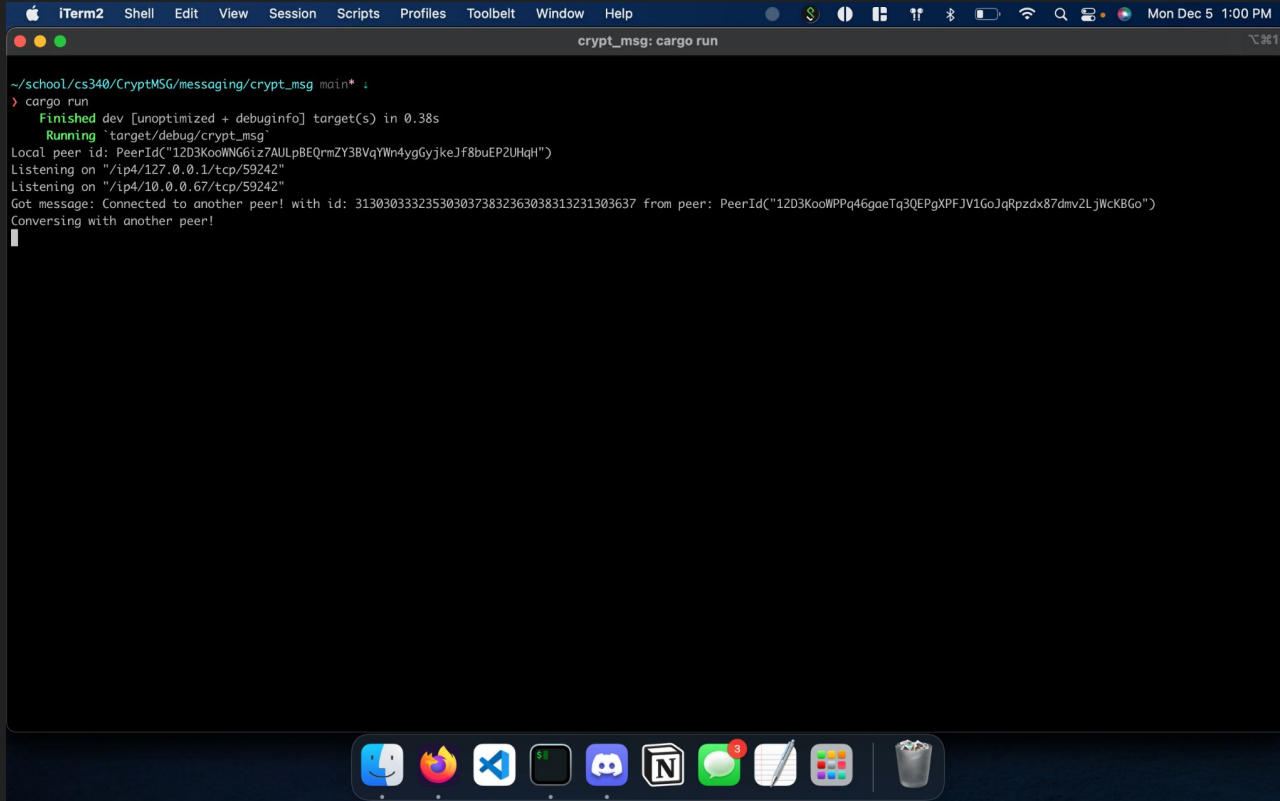


The screenshot shows a macOS terminal window titled "iTerm2" with a menu bar (Shell, Edit, View, Session, Scripts, Profiles, Toolbelt, Window, Help) and a status bar (Mon Dec 5 1:00 PM). The terminal's title bar also displays the command being run: "crypt_msg: cargo run /ip4/10.0.0.67/tcp/59242". The terminal output shows the following sequence of events:

```
~/school/cs340/CryptMSG/messaging/crypt_msg main*  
> cargo run /ip4/10.0.0.67/tcp/59242  
Finished dev [unoptimized + debuginfo] target(s) in 0.32s  
Running `target/debug/crypt_msg /ip4/10.0.0.67/tcp/59242`  
Local peer id: PeerId("12D3KooWPPq46gaeTq3QEPgXPfJV1GoJqRpzdx87dmv2LjWcKBGo")  
Dialed "/ip4/10.0.0.67/tcp/59242"  
Listening on "/ip4/127.0.0.1/tcp/59244"  
Listening on "/ip4/10.0.0.67/tcp/59244"  
Connected to another peer!
```

The terminal window has a dark theme and a macOS-style dock at the bottom with icons for various applications including Telegram, Firefox, Visual Studio Code, a terminal icon, Discord, a Notepad icon, Messages (with a red notification badge), a calendar icon, and a trash can.

Peer to Peer Functionality



The screenshot shows a macOS terminal window titled "crypt_msg: cargo run". The terminal output displays the execution of a Rust program. It starts with the command `cargo run`, which finishes in 0.38s. The program then runs, displaying the local peer ID: `PeerId("12D3KooNNG6iz7AULp8EQrmZY3BVqYWn4ygGyjkeJf8buEP2UHqh")`. It then listens on `/ip4/127.0.0.1/tcp/59242` and `/ip4/10.0.0.67/tcp/59242`. A message is received from another peer with ID `3130303332353030373832363038313231303637` from peer `PeerId("12D3KooWPPq46gaeTq3QEPgXPFJV1GoJqRpzdx87dmv2LjWcKBGo")`. The program then enters a loop, converting with another peer.

```
~/school/cs340/CryptMSG/messaging/crypt_msg main*  
> cargo run  
    Finished dev [unoptimized + debuginfo] target(s) in 0.38s  
    Running `target/debug/crypt_msg`  
Local peer id: PeerId("12D3KooNNG6iz7AULp8EQrmZY3BVqYWn4ygGyjkeJf8buEP2UHqh")  
Listening on "/ip4/127.0.0.1/tcp/59242"  
Listening on "/ip4/10.0.0.67/tcp/59242"  
Got message: Connected to another peer! with id: 3130303332353030373832363038313231303637 from peer: PeerId("12D3KooWPPq46gaeTq3QEPgXPFJV1GoJqRpzdx87dmv2LjWcKBGo")  
Conversing with another peer!  
┆
```

Rocket

```
Configured for debug
>> address: 127.0.0.1
>> port: 8080
>> workers: 16
>> ident: Rocket
>> lsdts: bytes = 8MiB, data-form = 2MiB, file = 1MiB, form = 32KiB, json = 1MiB, msgpack = 1MiB, string = 8MiB
>> temp_dir: C:\Users\terml\AppData\Local\temp\
>> http2: true
>> keep-alive: 5s
>> tls: disabled
>> shutdown: ctrlc = true, force = true, grace = 2s, mercy = 3s
>> log_level: normal
>> cli_colors: true
```

```
Routes:
>> (events) GET /events
>> (post) POST /message
>> (FileServer: build) GET /*path..> [10]
```

```
Failings:
>> Shield (lifthoff, response, singleton)
```

```
Shield
>> x-content-type-options: nosniff
>> x-frame-options: SAMEORIGIN
>> Permissions-Policy: interest-cohort=()
```

Rocket has launched from http://127.0.0.1:8080

```
GET / text/html
>> Matched: (FileServer: build) GET /*path..> [10]
>> Outcome: Success
>> Response succeeded.
```

```
GET /static/js/main.2ba727a0.js application/signed-exchange
>> Matched: (FileServer: build) GET /*path..> [10]
```

```
GET /static/css/main.493b0ac.css text/css
>> Matched: (FileServer: build) GET /*path..> [10]
```

```
GET /static/css/main.493b0ac.css application/signed-exchange.
>> Matched: (FileServer: build) GET /*path..> [10]
>> Outcome: Success
>> Outcome: Success
>> Response succeeded.
```

```
GET /favicon.ico application/signed-exchange:
>> Matched: (FileServer: build) GET /*path..> [10]
>> Outcome: Success
>> Response succeeded.
```

```
GET /events text/event-stream:
>> Matched: (events) GET /events
>> Outcome: Success
```

```
GET /main.css json
>> Matched: (FileServer: build) GET /*path..> [10]
>> Outcome: Success
>> Response succeeded.
```

```
GET /img192.png image/avif
>> Matched: (FileServer: build) GET /*path..> [10]
```

CryptMSG

Chatroom ID:

Please enter chatroom id:

Settings

```
GET / text/html
>> Matched: (FileServer: build) GET /*path..> [10]
>> Outcome: Success
>> Response succeeded.
GET /static/css/main.493b0ac.css text/css
>> Matched: (FileServer: build) GET /*path..> [10]
>> Outcome: Success
GET /static/js/main.2ba727a0.js:
>> Response succeeded.
>> Matched: (FileServer: build) GET /*path..> [10]
>> Outcome: Success
>> Response succeeded.
GET /events text/event-stream:
>> Matched: (events) GET /events
>> Outcome: Success
GET /main.css json
>> Matched: (FileServer: build) GET /*path..> [10]
>> Outcome: Success
>> Response succeeded.
GET /img192.png image/avif
>> Matched: (FileServer: build) GET /*path..> [10]
>> Outcome: Success
>> Response succeeded.
POST /message application/json:
>> Matched: (post) POST /message
content! "asdfhello"
>> Outcome: Success
>> Response succeeded.
POST /message application/json:
>> Matched: (post) POST /message
content! "asdfhello"
>> Outcome: Success
>> Response succeeded.
```

CryptMSG

Welcome

Auth0 → Firebase

The screenshot shows the Auth0 Users management page. On the left is a sidebar with navigation options: Getting Started, Activity (EARLY), Applications, Authentication, Organizations, User Management (selected), Users, Roles, Branding, Security, Actions, Auth Pipeline, Monitoring, Marketplace, Extensions, and Settings. The main content area is titled 'Users' and includes a '+ Create User' button. Below the title is a description: 'An easy to use UI to help administrators manage user identities including password resets, creating and provisioning, blocking and deleting users. Learn more →'. There is a search bar with the text 'Search for users' and a dropdown menu set to 'Search by User'. Below this is a table of users.


Name	Connection	Logins	Latest Login
dylan.b.lewis@gmail.com dylan.b.lewis@gmail.com	Username-Password-Authenti...	3	16 hours ago
rileycrockett@gmail.com rileycrockett@gmail.com	Username-Password-Authenti...	13	16 hours ago
Riley Crockett rileycrockett@gmail.com	google-oauth2	36	16 hours ago
Jacob Hawkins jhawki41@vois.utk.edu	Username-Password-Authenti...	4	17 hours ago
r.alex.austinfam@gmail.com r.alex.austinfam@gmail.com	Username-Password-Authenti...	5	2 days ago
Riley Crockett rcrocket6@vois.utk.edu	google-oauth2	1	2 days ago



Demo slides

CryptMSG

Register

 Add Avatar:

You have an account already? [Login](#)

CryptMSG

Login

Don't have an account? [Register](#)



Find a user

What's up bro



Sarah

How is your morning?



yo



Rex

In my book, experience outranks everything



jacobhawkins

yo



Maddox

hope all is well



user

yeah that sounds good



Alex

hows the wife



Margot Robbie

pls respond

