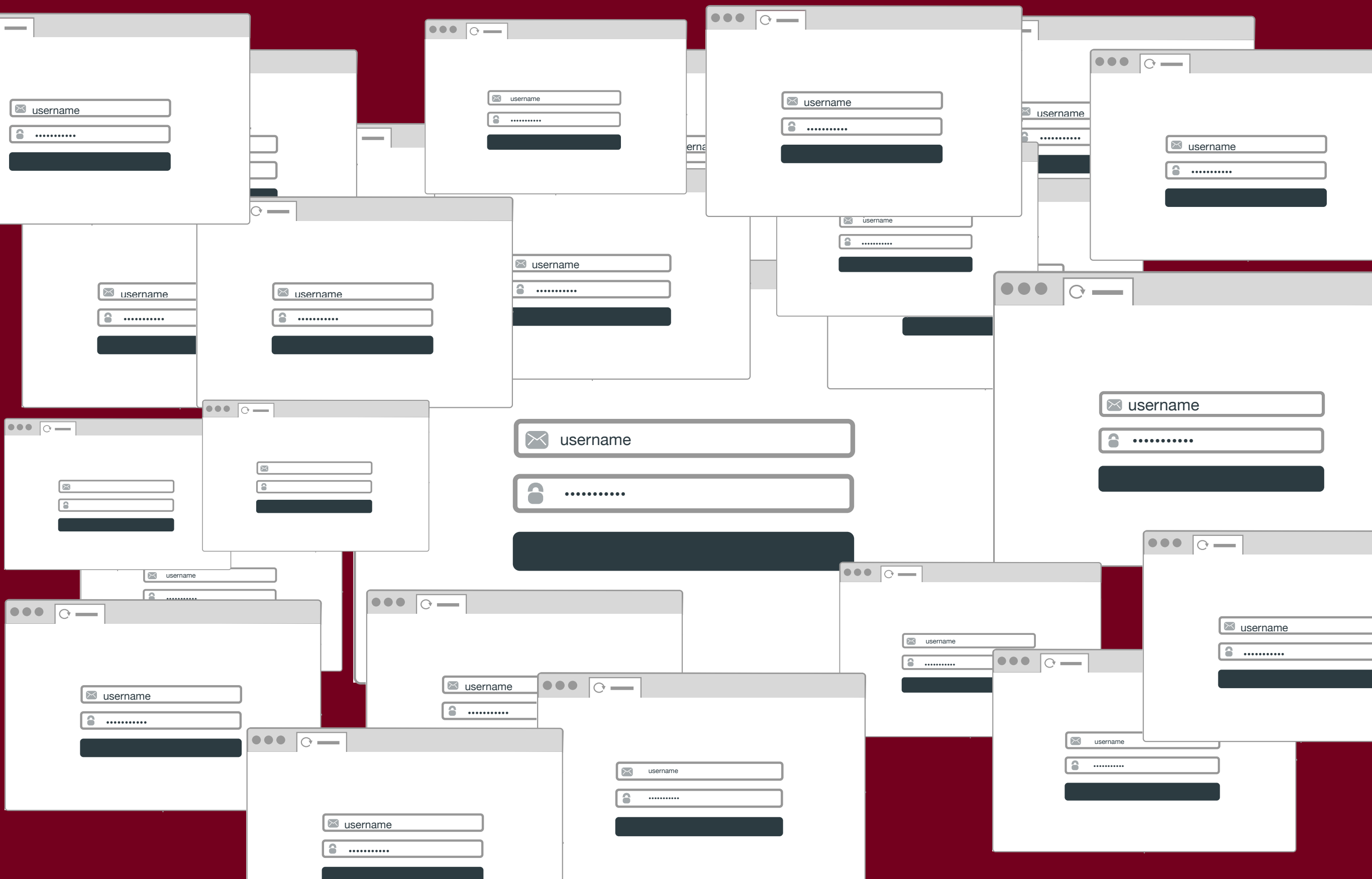


# THE INTERNET

# IN THE BEGINNING...

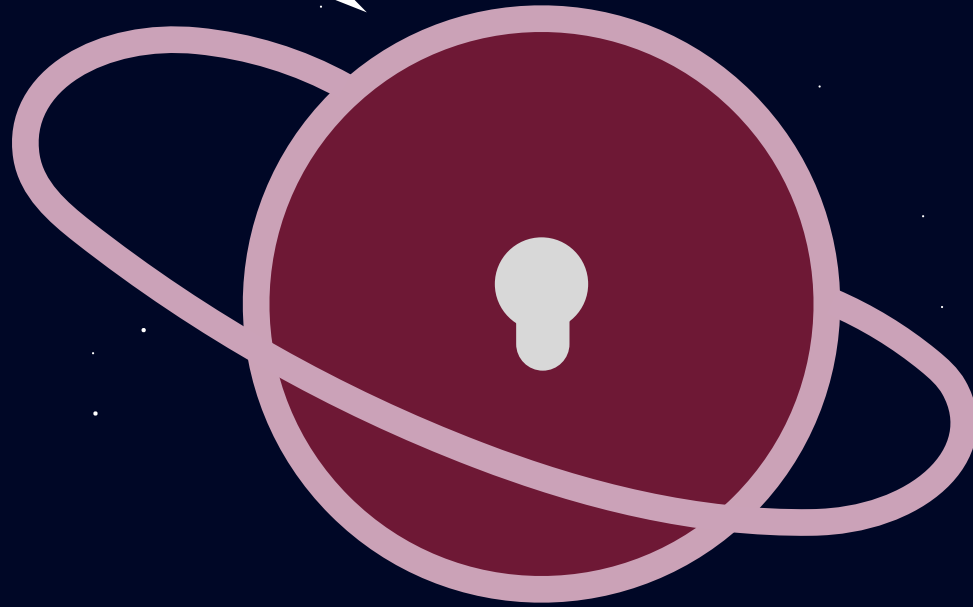
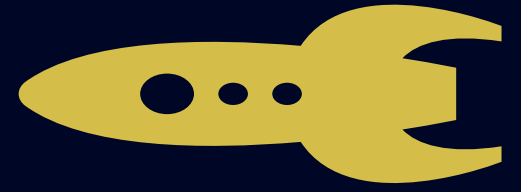


THE INTERNET

IN THE BEGINNING...

eyJhbGciOiJIUzI1NiIsInR5cCI6IkpXVC  
J9.eyJhcHBfbWV0YWRhdGEiOnsiYXV0aG9  
yaXphdGlubiI6eyJyb2xlcyl6WyJhZG1pb  
iIsImVkaXRvciJdfX19.4IKFHH33EXWseN  
jNIRO4-u5I1SlJOLyibG20qPA4Djs

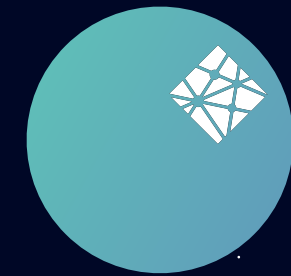
?????????  
?????????  
?????????



# *Authentication for the RFID of us*

Divya Sasidharan

· works here



netlify

**DON'T  
PANIC**

WHY DOES IT MATTER?

INTRODUCTION

SECURITY

STRATEGIES

AUTHENTICATION

DON'T PANIC

INTRODUCTION

AUTHENTICATION

INTRODUCTION

SECURITY

STRATEGIES

AUTHENTICATION

DON'T PANIC

WHO

WHAT

WHY

WHERE

WHEN

HOW

INTRODUCTION

AUTHENTICATION

WHY DOES IT MATTER?



**WHY DOES IT MATTER?**

AUTHENTICATION

WHY DOES IT MATTER?

AUTHENTICATION

WHY DOES IT MATTER?





CHARACTERISTICS

HISTORY

HOW TO HAVE FUN WITH

HOW TO NOT CONFUSE YOURSELF

WHAT TO AVOID

AUTHENTICATION

# AUTHORIZATION

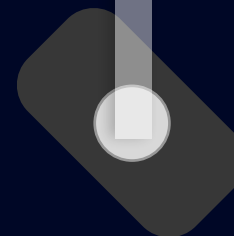
AUTHENTICATION

AUTHORIZATION

AUTHENTICATION

AUTHORIZATION

User Authenticated:  
Hitchhiker

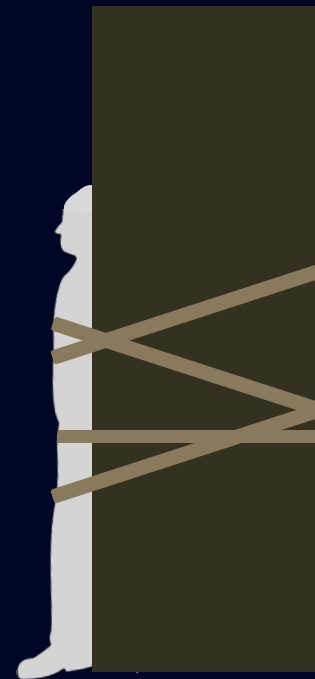


AUTHENTICATION

AUTHORIZATION



ERROR:  
Hitchhiker NOT AUTHORIZED



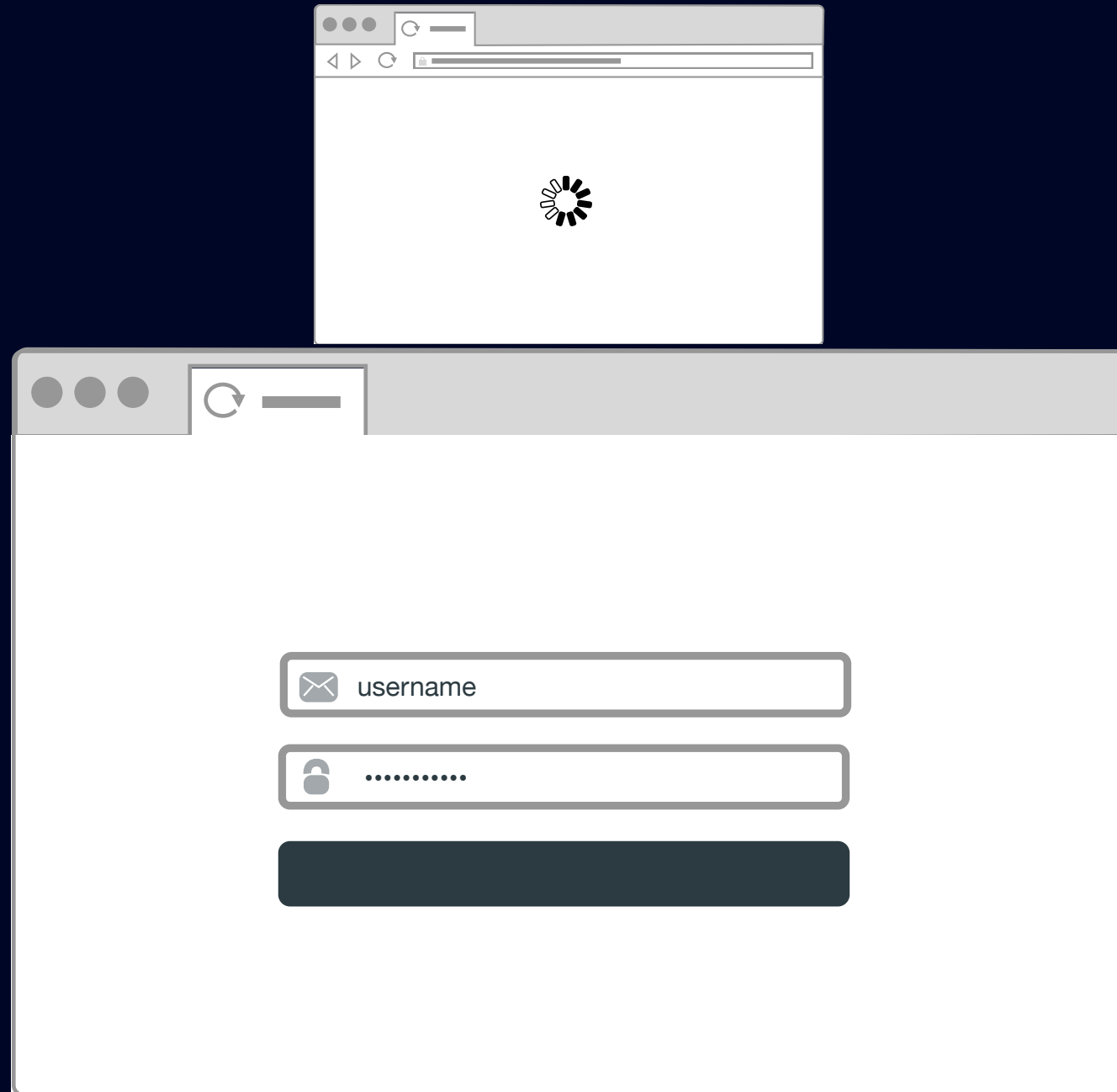


AUTHENTICATION

AUTHORIZATION

HOW IT WORKS

AUTHENTICATION



Username: FPrefect  
Password: thisisn0t@dri11

1

2

RlByZWZ1Y3Q6dGhpc2lzbjB0QGRya  
TEx



```
Basic: Password@drill
```

```
Authorization: Basic  
RlByZWZlY3Q6dGhpc2lzbjB0  
QGRyaTEy
```

3

4

```
{  
  "id": "89765-1",  
  "role": "hitchhiker",  
  "email": "ford@infinidim.com",  
  ...  
}
```



Authorization: Basic  
RlByZWZlY3Q6dGhpc2lzbjB0  
QGRyaTEy

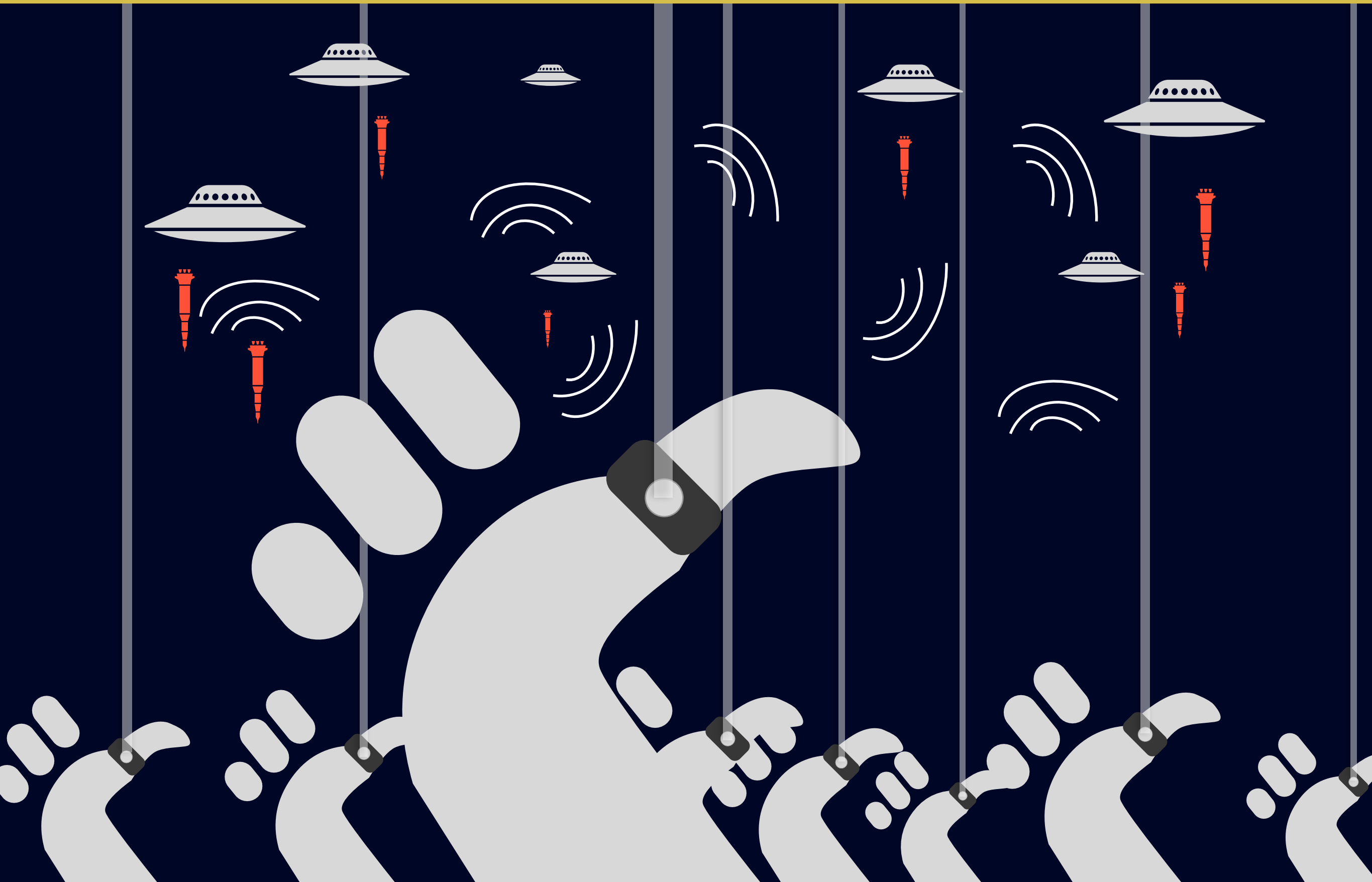
```
{  
  "id": "89765-1",  
  "role": "hitchhiker",  
  "email": "ford@infinidim.com",  
  ...  
}
```



AUTHENTICATION

HOW IT WORKS

BASIC AUTH







Username: FPrefect  
Password: thisisn0t@dri11

1

2

```
set-  
cookie:hiker="SESSION_ID;  
path=/; Secure; HttpOnly;  
SameSite"
```



```
cookie: "hiker=XHTGubdsnHFJ  
KHHJGFJHGKHhgjgJHNJGHGJHjs  
ddsBHJGGFJKHtcbjBUY"
```

3

4

```
{  
  "id": "89765-1",  
  "role": "hitchhiker",  
  "email": "ford@infinidim.com",  
  ...  
}
```



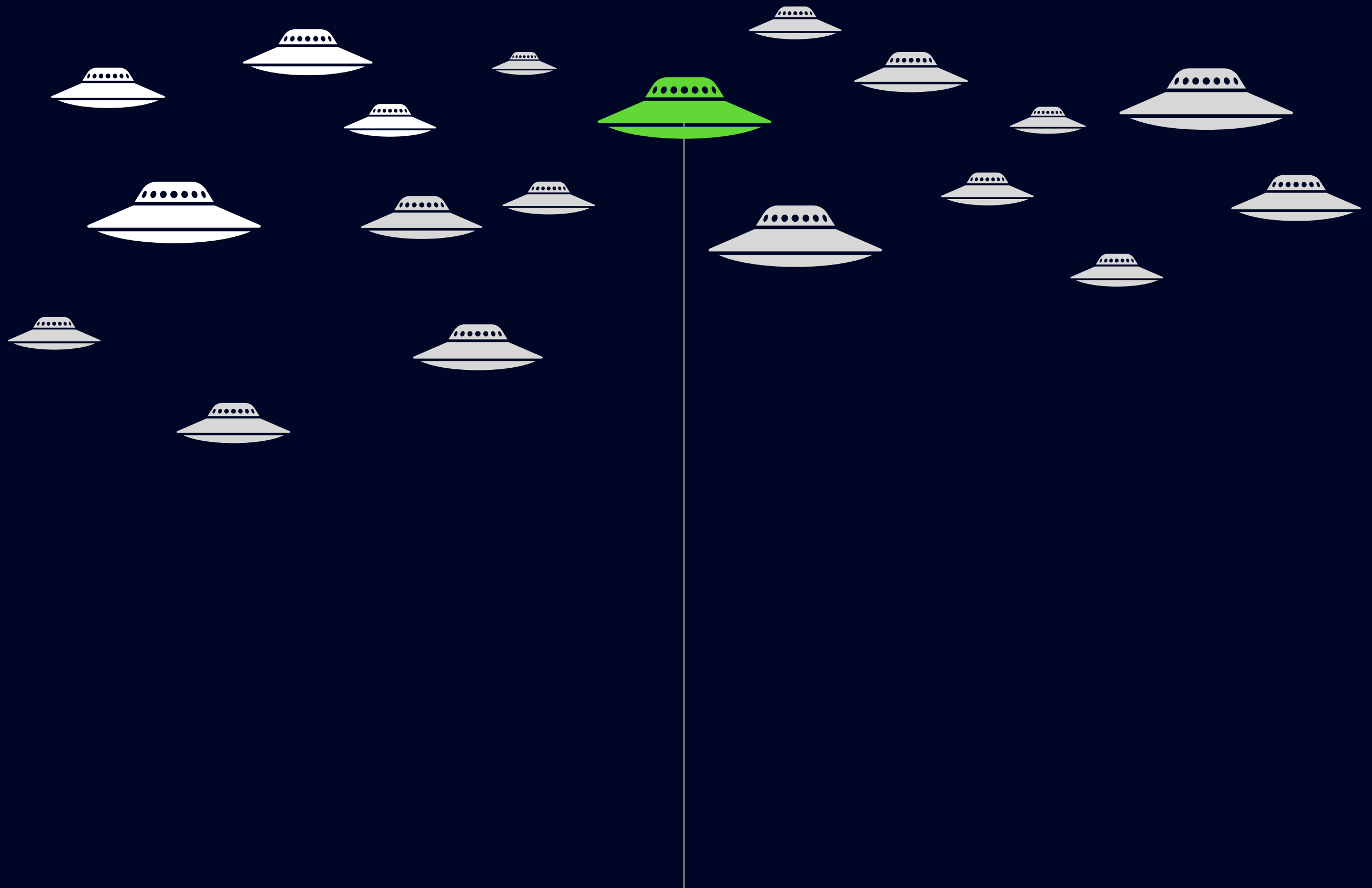
AUTHENTICATION



HOW IT WORKS



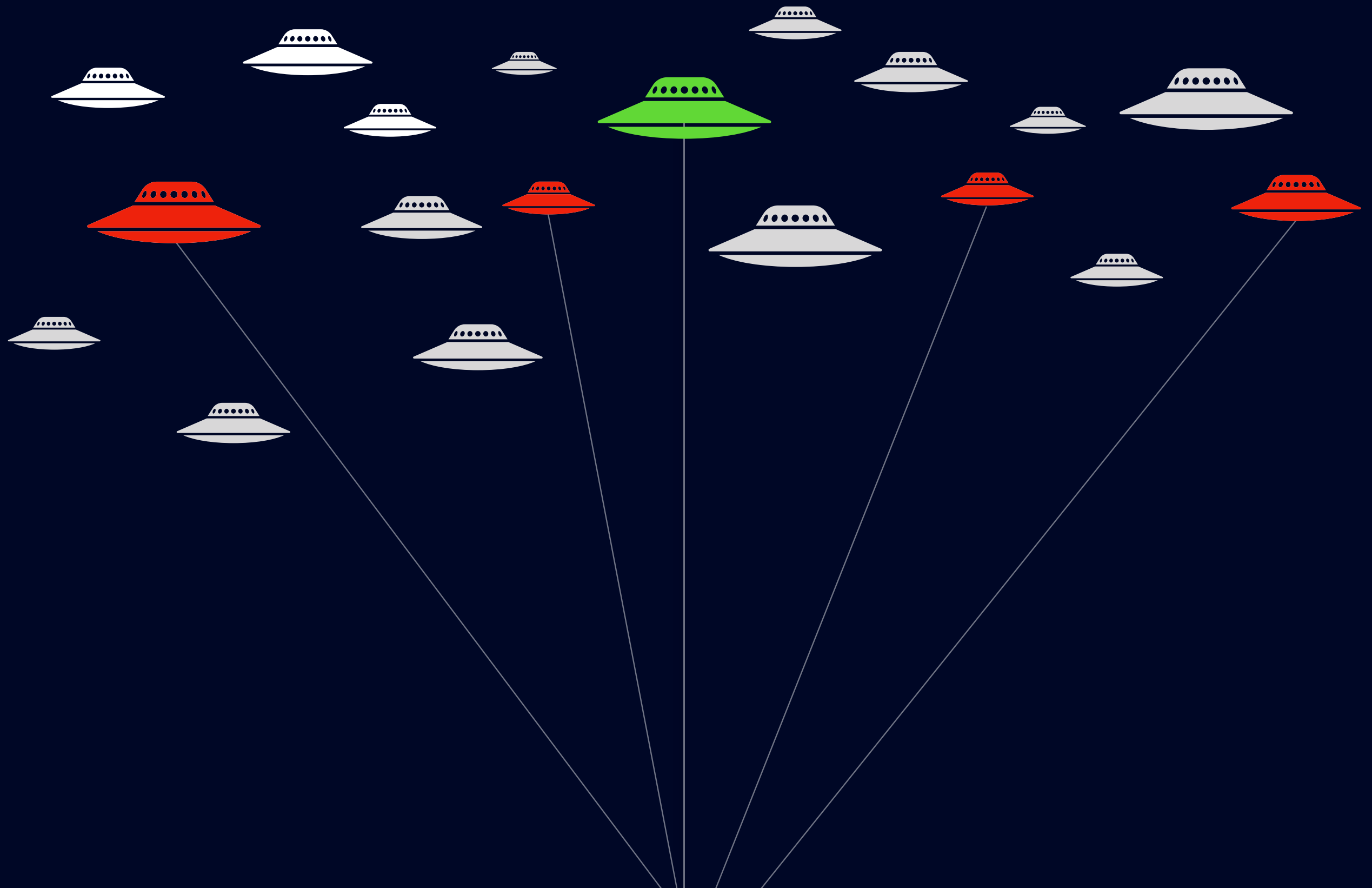
SESSION BASED AUTH



AUTHENTICATION

HOW IT WORKS

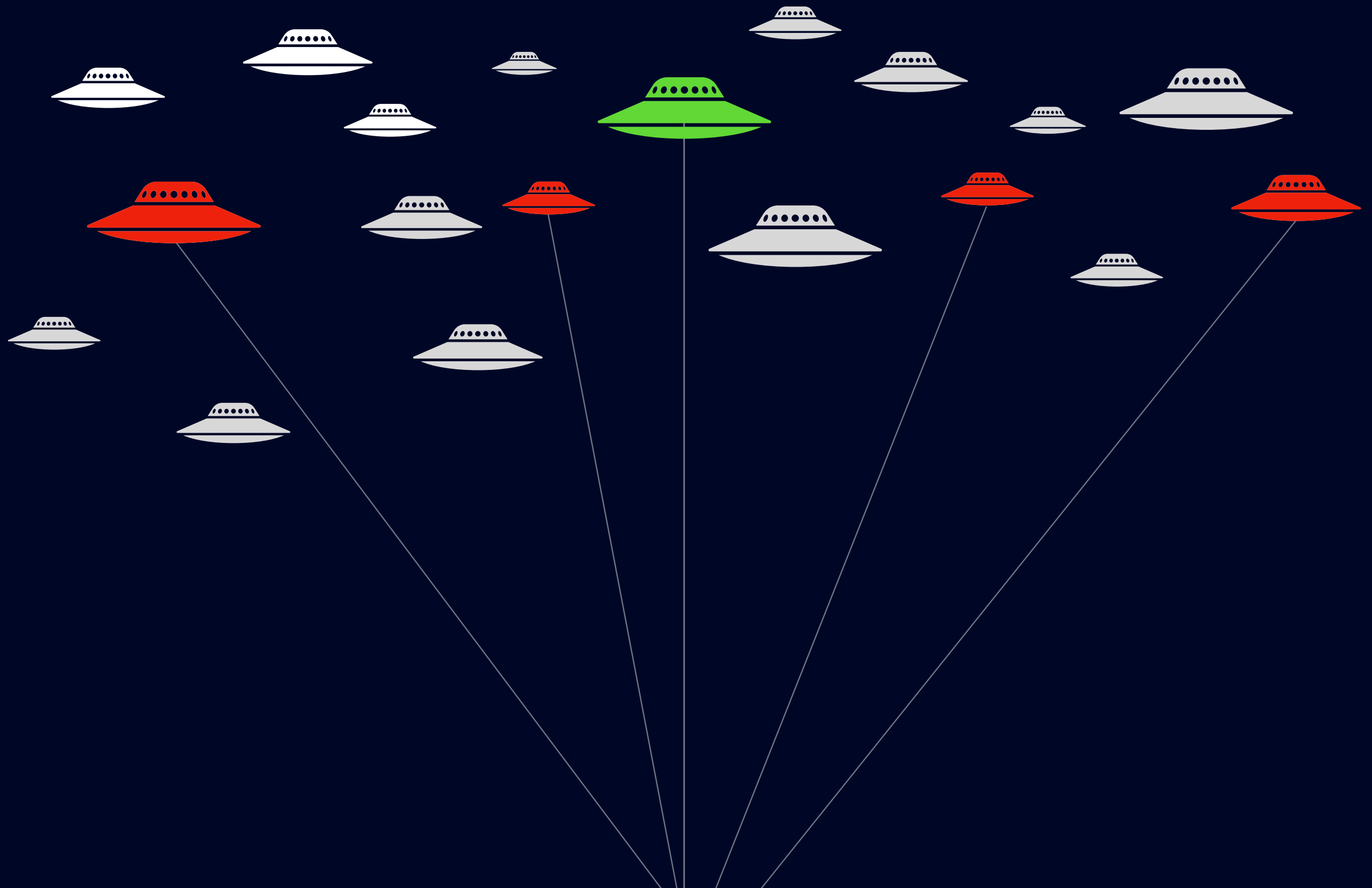
SESSION BASED AUTH



AUTHENTICATION

HOW IT WORKS

SESSION BASED AUTH

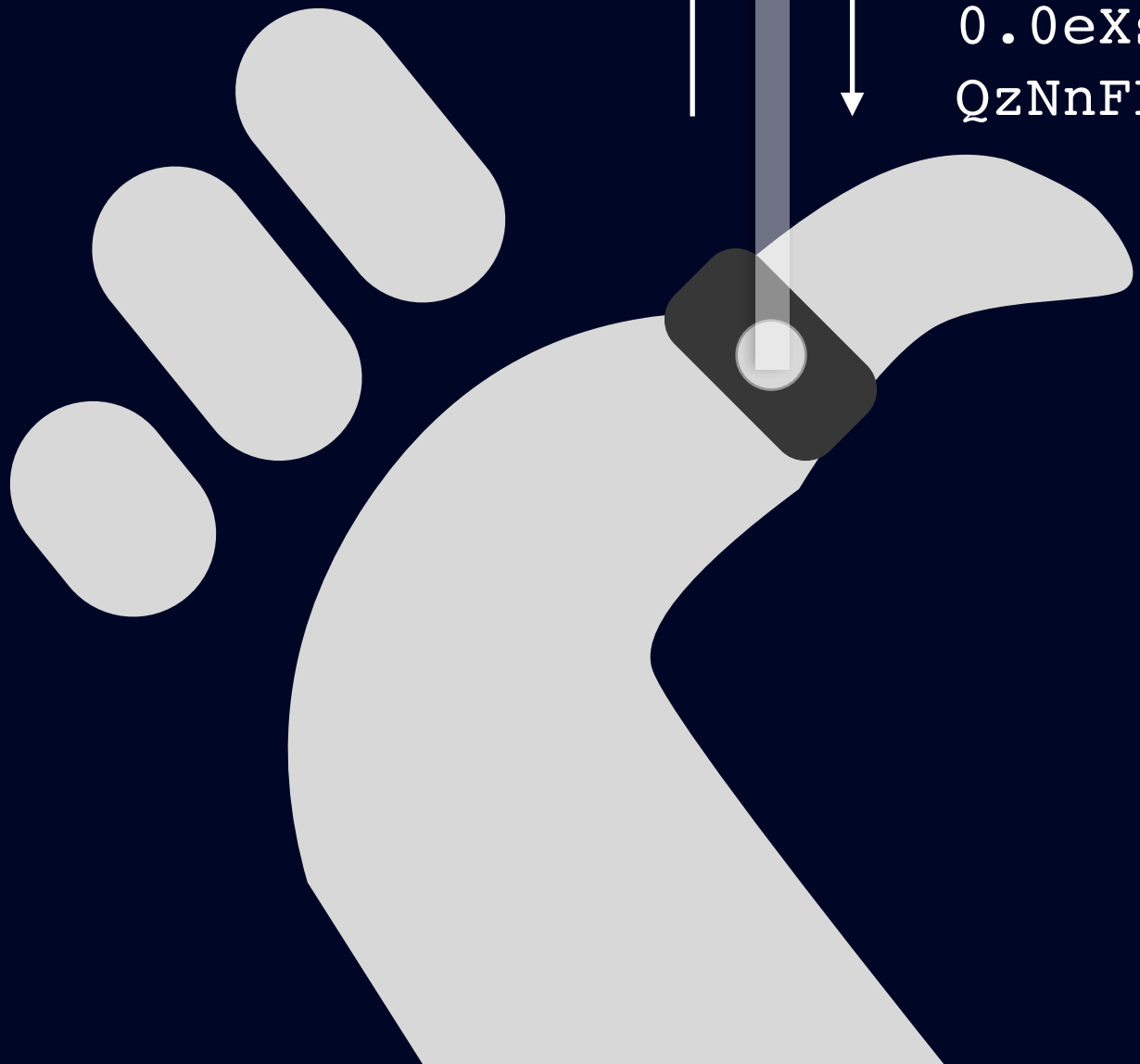


Username: FPrefect  
Password: thisisn0t@dri11

1

```
eyJhbGciOiJIUzI1NiIsInR5cCI6I
kpXVCJ9.eyJ1IjoiRm9yZCBQc
mVmZWN0Iiwic3ViIjoiazm9yZEBpbm
ZpbmlkaW0uY29tIiwiaWF0IjoxNTE
2MjM5MDIyLCJhcHBfbWV0YWRhdGEi
OnsiYXV0aG9yaXphdGlubiI6eyJyb
2x1cyI6WyJqb3VybmFsaXN0I119fX
0.0eXsZauX7hjEB9oGjx7cg6LdyU8
QzNnFFS7tevWnqCA
```

2



Authorization: Bearer  
 eyJhbGciOiJIUzI1NiIsInR5cGU6IjY9Lm9yZCBQcmVmZWN0Iiwic3ViIjoiaW9mZm9yZEBpbmZpbmlkaW0uY291bnR5IiwiaWF0IjoiMj01NjY0MjUzIn0

3

4

```
{
  "id": "89765-1",
  "role": "hitchhiker",
  "email": "ford@infinidim.com",
  ...
}
```



JWT

AUTHENTICATION

HOW IT WORKS

TOKEN BASED AUTH





signature

eyJhbGciOiJIUzI1NiIsInR5cCI6IkpXVCJ9

.eyJ1YXV1IjoiaW9yZCBQcmVmZW50IiwiaWF0Ijoi

3ViIjoiaW9yZEBpbmZpbmIkaW0uY29tIiwiaWF0Ijoi

aWF0IjoiaW9yZEBpbmZpbmIkaW0uY29tIiwiaWF0Ijoi

hdGEi0nsiYXV0aG9yaXphdGlvbiI6eyJyb2

xlcyl6WyJqb3VybmFsaXN0I19fX0.0eXsZ

auX7hjEB9oGjx7cg6LdyU8QzNnFFS7tevwN

qCA

```
{
  "alg": "HS256",
  "typ": "JWT"
},
{
  "name": "Ford Prefect",
  "sub": "ford@infinidim.com",
  "exp": "1577836800",
  "app_metadata": {
    "authorization": {
      "roles": [ "journalist" ]
    }
  }
},
{
```

header

```
{  
  "alg": "HS256", RS256  
  "typ": "JWT"  
},  
{  
  "name": "Ford Prefect",  
  "sub": "ford@infinidim.com",  
  "exp": "1577836800",  
  "app_metadata": {  
    "authorization": {  
      "roles": [ "journalist" ]  
    }  
  },  
},  
}
```

header

```
{
  "alg": "HS256",
  "typ": "JWT"
},
{
  "name": "Ford Prefect",
  "sub": "ford@infinidim.com",
  "exp": "1577836800",
  "app_metadata": {
    "authorization": {
      "roles": [ "journalist" ]
    }
  }
},
{
```

header

```
{
  "alg": "HS256",
  "typ": "JWT"
}
{
  "name": "Ford Prefect",
  "sub": "ford@infinidim.com",
  "exp": "1577836800",
  "app_metadata": {
    "authorization": {
      "roles": [ "journalist" ]
    }
  }
},
}
```

payload

```
    "app_metadata": {
      "authorization": {
        "roles": [ "journalist" ]
      }
    },
  },
  {
    HMACSHA256(
      base64UrlEncode(header) + "." + signature
      base64UrlEncode(payload),
      a-256-bit-super-secret-secret)
  }
```





AUTHENTICATION



TOKEN BASED AUTH



JWT



CHARACTERISTICS

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AUTHENTICATION

TOKEN BASED AUTH

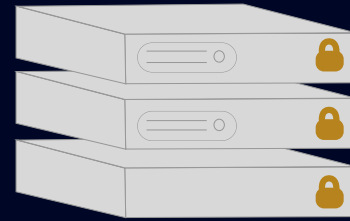


AUTHENTICATION

TOKEN BASED AUTH

IMPLEMENTATION

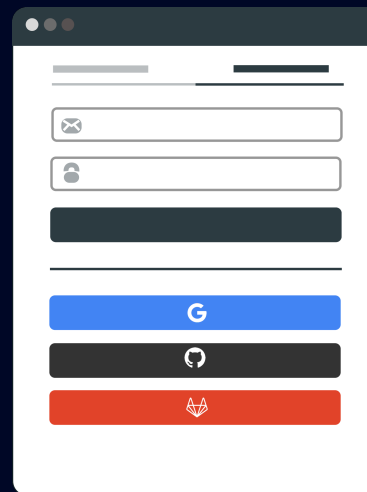
DEMO



Auth Server

Username: FPrefect  
Password: thisisn0t@dri11

eyJhbGciOiJIUzI1NiIsInR5cCI6IkpXbzI1NiJ9.eyJ1IjoiOTUyMzQ1IiwiaWF0IjoiMTUyMzQ1In0.dgergeJGhg9HV...



Authorization: Bearer  
eyJhbGciOiJIUzI1NiIsInR5cCI6IkpXbzI1NiJ9.eyJ1IjoiOTUyMzQ1IiwiaWF0IjoiMTUyMzQ1In0.dgergeJGhg9HV...

```
{  
  "id": "89765-1",  
  "role": "hitchhiker",  
  ...  
}
```



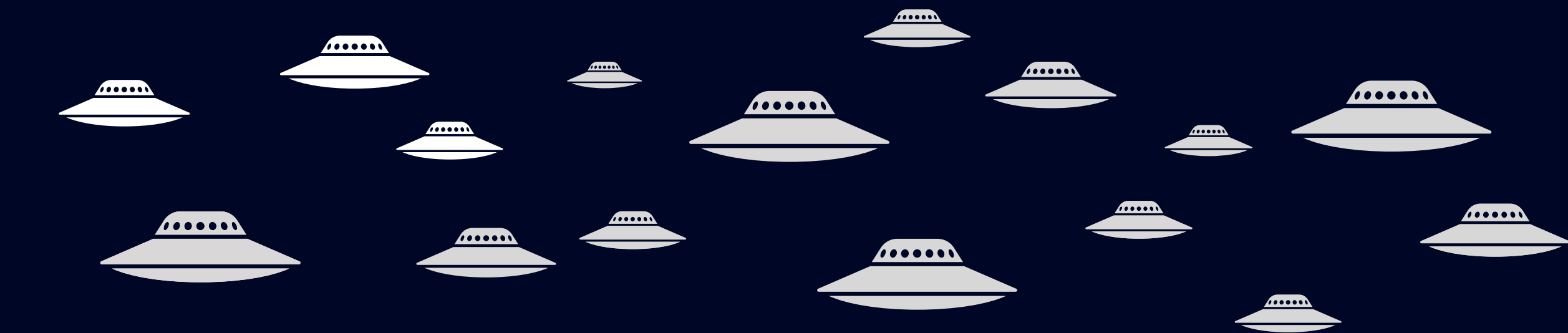
Resource Server



AUTHENTICATION

TOKEN BASED AUTH

IMPLEMENTATION



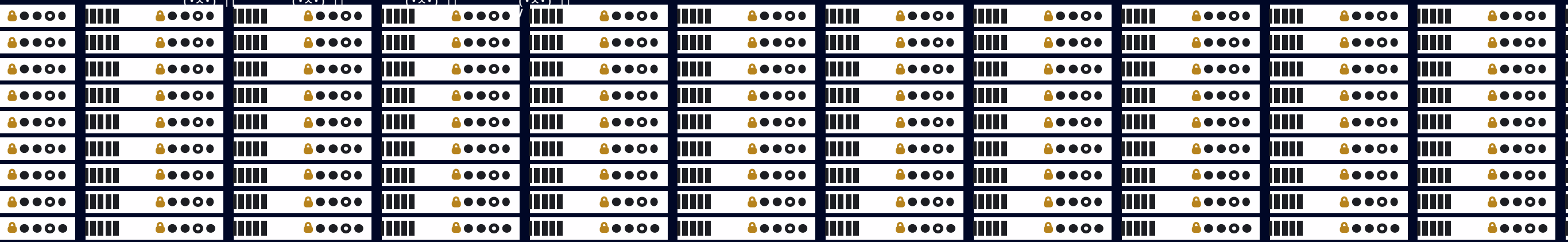
# *Authentication with Functions as a Service*

THERE ARE STILL SERVERS IN SERVERLESS

THERE ARE STILL SERVERS IN SERVERLESS

THERE ARE STILL SERVERS IN SERVERLESS

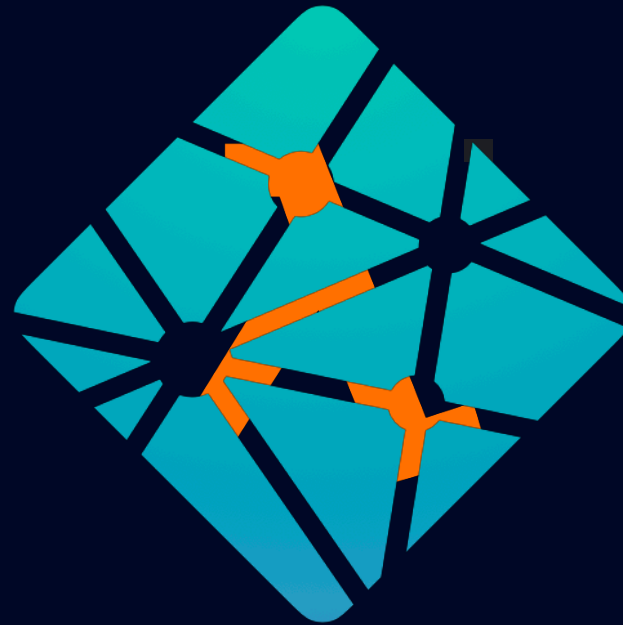
THERE ARE STILL SERVERS IN SERVERLESS



AUTHENTICATION

TOKEN BASED AUTH

IMPLEMENTATION





AUTHENTICATION

TOKEN BASED AUTH

IMPLEMENTATION

*MYAWESOMESITE*.netlify.com/.netlify/functions/jwt

```
1 const jwt = require("jsonwebtoken");
2 const uuidv4 = require("uuid/v4");
3 const axios = require("axios");
4
5 exports.handler = function(event, context, callback) {
6   const getExpiryDate = () => {
7     const exp = Math.floor(Date.now() / 1000) + 60 * 60;
8     // const expReadable = new Date(exp);
9     return exp;
10  };
11  const generateJWT = (exp, claims, roles, secret) =>
12    jwt.sign(
13      {
14        exp,
15        app_metadata: {
16          user_id: uuidv4(),
17          authorization: { roles }
18        },
19        user_metadata: claims
20      },
21      secret
22    );
23  const parsedBody = JSON.parse(event.body);
24  const { claims, roles, secret } = parsedBody;
25
```

```
5 exports.handler = function(event, context, callback) {
6   const getExpiryDate = () => {
7     const exp = Math.floor(Date.now() / 1000) + 60 * 60;
8     // const expReadable = new Date(exp);
9     return exp;
10  };
11  const generateJWT = (exp, claims, roles, secret) =>
12    jwt.sign(
13      {
14        exp,
15        app_metadata: {
16          user_id: uuidv4(),
17          authorization: { roles }
18        },
19        user_metadata: claims
20      },
21      secret
22    );
23  const parsedBody = JSON.parse(event.body);
24  const { claims, roles, secret } = parsedBody;
25
26  const expiry = getExpiryDate();
27  const token = generateJWT(expiry, claims, roles, secret);
28
29  const response = {
```

```
23 const parsedBody = JSON.parse(event.body);
24 const { claims, roles, secret } = parsedBody;
25
26 const expiry = getExpiryDate();
27 const token = generateJWT(expiry, claims, roles, secret);
28
29 const response = {
30   jwt: token,
31 };
32
33 callback(null, {
34   statusCode: 200,
35   body: JSON.stringify(response)
36 });
37 };
```

```
6  const getExpiryDate = () => {
7
8    // const expReadable = new Date(exp);
9    return exp;
10 };
11 const generateJWT = (exp, claims, roles, secret) =>
12   jwt.sign(
13     {
14       exp,
15       app_metadata: {
16         user_id: uuidv4(),
17         authorization: { roles }
18       },
19       user_metadata: claims
20     },
21     secret
22   );
23 const parsedBody = JSON.parse(event.body);
24 const { claims, roles, secret } = parsedBody;
25
26 const expiry = getExpiryDate();
27 const token = generateJWT(expiry, claims, roles, secret);
28
29 const response = {
30   jwt: token,
```

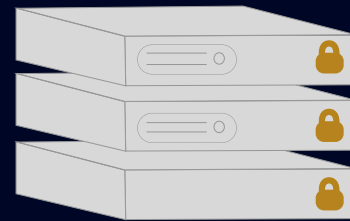
```
6  const getExpiryDate = () => {
7    const exp = Math.floor(Date.now() / 1000) + 60 * 60;
8    // const expReadable = new Date(exp);
9    return exp;
10 };
11 const generateJWT = (exp, claims, roles, secret) =>
12   jwt.sign(
13     {
14       exp,
15       app_metadata: {
16         user_id: uuidv4(),
17         authorization: { roles }
18       },
19       user_metadata: claims
20     },
21     secret
22   );
23 const parsedBody = JSON.parse(event.body);
24 const { claims, roles, secret } = parsedBody;
25
26 const expiry = getExpiryDate();
27 const token = generateJWT(expiry, claims, roles, secret);
28
29 const response = {
30   jwt: token,
```

```
23  const parsedBody = JSON.parse(event.body);
24  const { claims, roles, secret } = parsedBody;
25
26  const expiry = getExpiryDate();
27  const token = generateJWT(expiry, claims, roles, secret);
28
29  const response = {
30    jwt: token,
31  };
32
33  callback(null, {
34    statusCode: 200,
35    body: JSON.stringify(response)
36  });
37  };
```

```
1 fetch("/.netlify/functions/jwt").then(res => {
2   fetch("/.netlify/functions/super-secret-function", {
3     method: "POST",
4     headers: {
5       "Authorization": `Bearer ${res.jwt}`
6     },
7     body: JSON.stringify({
8       text: someDataIWanttoPost
9     })
10  })
11 })
```





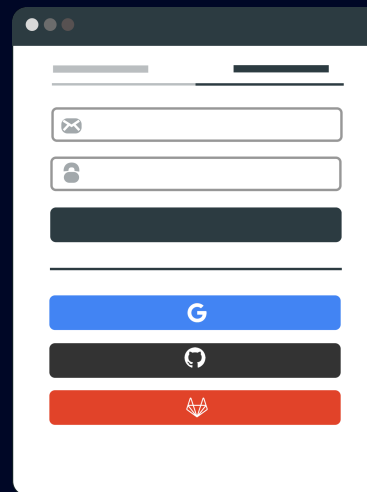


Auth Server

Username: FPrefect  
Password: thisisn0t@drill



```
set-  
cookie:hiker="eyJhbGciOiJ  
9.sfsfweHsefw9.dgergeJGh  
g9HV...; path=/; Secure;  
HttpOnly; SameSite"
```



```
cookie:"hiker=XHTGubdsnH  
FJKHHJGFJHGKhhggJHNJGHG  
JHjsddsBHJGGFJKhtcbjBUY"
```



```
{  
  "id": "89765-1",  
  "role": "hitchhiker",  
  ...  
}
```



Resource Server

```
1 const jwt = require("jsonwebtoken");
2 const uuidv4 = require("uuid/v4");
3 const cookie = require("cookie");
4 const axios = require("axios");
5
6 exports.handler = function(event, context, callback) {
7   const getExpiryDate = () => {
8     const exp = Math.floor(Date.now() / 1000) + 60 * 60;
9     // const expReadable = new Date(exp);
10    return exp;
11  };
12  const generateJWT = (exp, claims, roles, secret) =>
13    jwt.sign(
14      {
15        exp,
16        app_metadata: {
17          user_id: uuidv4(),
18          authorization: { roles }
19        },
20        user_metadata: claims
21      },
22      secret
23    );
24  const parsedBody = JSON.parse(event.body);
25  const { claims, roles, secret } = parsedBody;
```

```
27  const expiry = getExpiryDate();
28  const token = generateJWT(expiry, claims, roles, secret);
29
30  const netlifyCookie = cookie.serialize("nf_jwt", token, {
31    secure: true,
32    path: "/",
33    expires: new Date(expiry.toString())
34  });
35
36  const response = {
37    jwt: token,
38    exp: expiry
39  };
40
41  callback(null, {
42    statusCode: 200,
43    headers: {
44      "Set-Cookie": netlifyCookie,
45      "Cache-Control": "no-cache"
46    },
47    body: JSON.stringify(response)
48  });
49  };
50
51
52
```

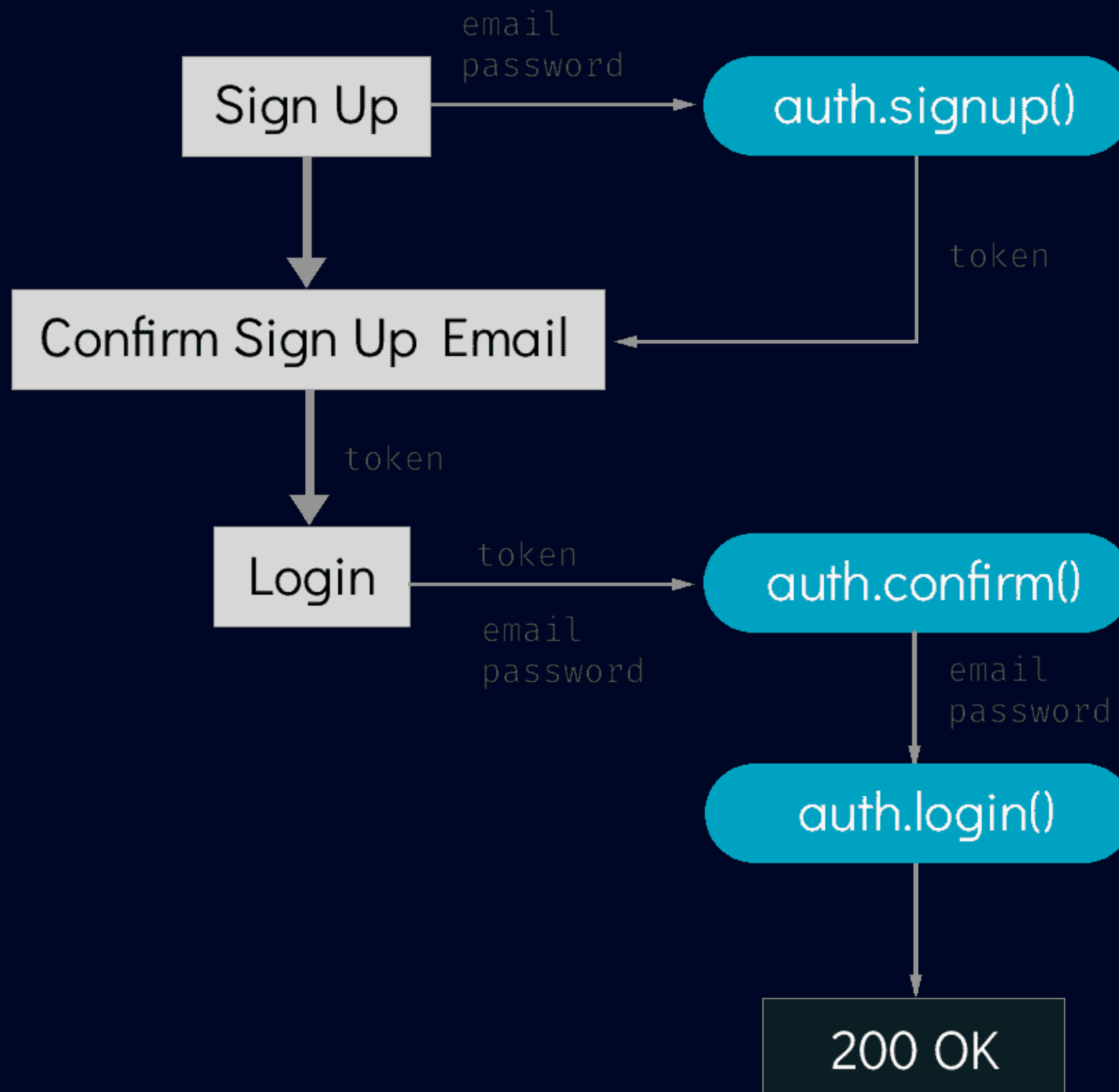
```
27  const expiry = getExpiryDate();
28  const token = generateJWT(expiry, claims, roles, secret);
29
30  const netlifyCookie = cookie.serialize("nf_jwt", token, {
31    secure: true,
32    path: "/",
33    expires: new Date(expiry.toString())
34  });
35
36  const response = {
37    jwt: token,
38    exp: expiry
39  };
40
41  callback(null, {
42    statusCode: 200,
43    headers: {
44      "Set-Cookie": netlifyCookie,
45      "Cache-Control": "no-cache"
46    },
47    body: JSON.stringify(response)
48  });
49  };
50
51
52
```

AUTHENTICATION

TOKEN BASED AUTH

IMPLEMENTATION

DEMO



```
JS auth.js x [refresh] [full screen] [menu]  
  
export const state = { ... }  
  
export const mutations = { ... }  
  
export const actions = { ... }  
  
export const getters = { ... }
```

**src/state/auth.js**



```
1 import GoTrue from "gotrue-js";
2 import axios from "axios";
3
4 const auth = new GoTrue({
5   APIUrl: "https://chipie.netlify.com/.netlify/identity",
6   audience: "",
7   setCookie: false
8 });
9
10
11 export const state = {
12   currentUser: getSavedState("auth.currentUser"),
13   loading: false,
14   token: null,
15   notifications: []
16 };
17
18 export const mutations = {
19   SET_CURRENT_USER(state, value) {
20     state.currentUser = value;
21     saveState("auth.currentUser", value);
22   },
23   TOGGLE_LOAD(state) {
24     state.loading = !state.loading;
25   }
26 }
```

```
1 import GoTrue from "gotrue-js";
2 import axios from "axios";
3
4 const auth = new GoTrue({
5   APIUrl: "https://chipie.netlify.com/.netlify/identity",
6   audience: "",
7   setCookie: false
8 });
9
10
11 export const state = {
12   currentUser: getSavedState("auth.currentUser"),
13   loading: false,
14   token: null,
15   notifications: []
16 };
17
18 export const mutations = {
19   SET_CURRENT_USER(state, value) {
20     state.currentUser = value;
21     saveState("auth.currentUser", value);
22   },
23   TOGGLE_LOAD(state) {
24     state.loading = !state.loading;
25   }
26 }
```

```
31
32 export const actions = {
33   init() {
34     localStorage.removeItem("auth.currentUser");
35   },
36   validate({ commit, state }) {
37     if (!state.currentUser) return Promise.resolve(null);
38     const user = auth.currentUser();
39     commit("SET_CURRENT_USER", user);
40     return user;
41   },
42   attemptLogin({ commit, dispatch }, credentials) {
43     return new Promise((resolve, reject) => {
44       dispatch("attemptConfirmation", credentials).then(() => {
45         auth
46           .login(credentials.email, credentials.password)
47           .then(response => {
48             resolve(response);
49             commit("SET_CURRENT_USER", response);
50           })
51           .catch(error => {
52             reject(error.json);
53           });
54       });
55     });
56   },
```

```
31
32 export const actions = {
33   init() {
34     localStorage.removeItem("auth.currentUser");
35   },
36   validate({ commit, state }) {
37     if (!state.currentUser) return Promise.resolve(null);
38     const user = auth.currentUser();
39     commit("SET_CURRENT_USER", user);
40     return user;
41   },
42   attemptLogin({ commit, dispatch }, credentials) {
43     return new Promise((resolve, reject) => {
44       dispatch("attemptConfirmation", credentials).then(() => {
45         auth
46           .login(credentials.email, credentials.password)
47           .then(response => {
48             resolve(response);
49             commit("SET_CURRENT_USER", response);
50           })
51           .catch(error => {
52             reject(error.json);
53           });
54       });
55     });
56   },

```

```
16 export const mutations = {
17   SET_CURRENT_USER(state, value) {
18     state.currentUser = value;
19     saveState("auth.currentUser", value);
20   },
21   TOGGLE_LOAD(state) {
22     state.loading = !state.loading;
23   }
24 };
25
26 export const getters = {
27   isLoggedIn(state) {
28     return !!state.currentUser;
29   }
30 };
31
32 export const actions = {
33   init() {
34     localStorage.removeItem("auth.currentUser");
35   },
36   validate({ commit, state }) {
37     if (!state.currentUser) return Promise.resolve(null);
38     const user = auth.currentUser();
39     commit("SET_CURRENT_USER", user);
40     return user;
41   }
42 }
```

```
1 <template>
2   <div class="login-screen">
3     <div class="account-login">
4       <form @submit.prevent="login()">
5         <label>
6           <span>Email:</span>
7           <input
8             type="text"
9             placeholder="name"
10            v-model="loginCreds.email"
11          />
12        </label>
13        <label>
14          <span>Password:</span>
15          <input
16            type="password"
17            placeholder="password"
18            v-model="loginCreds.password"
19          />
20        </label>
21        <button type="submit" class="account-button">Login</button>
22      </form>
23    </div>
24  </div>
25 </template>
```

```
1 <template>
2   <div class="login-screen">
3     <div class="account-login">
4       <form @submit.prevent="login()">
5         <label>
6           <span>Email:</span>
7           <input
8             type="text"
9             placeholder="name"
10            v-model="loginCreds.email"
11          />
12         </label>
13         <label>
14           <span>Password:</span>
15           <input
16             type="password"
17             placeholder="password"
18            v-model="loginCreds.password"
19          />
20         </label>
21         <button type="submit" class="account-button">Login</button>
22       </form>
23     </div>
24   </div>
25 </template>
```

```
27 <script>
28 import { mapActions } from "vuex";
29
30 export default {
31   name: "LoginAccount",
32   data() {
33     return {
34       isNewUser: true,
35       loginCreds: {
36         email: null,
37         password: null
38       }
39     },
40   },
41   methods: {
42     ...mapActions("auth", ["attemptLogin"]),
43     transferToDashboard() {
44       this.$router.push(this.$route.query.redirect || "/");
45     },
46     login() {
47       let token = decodeURIComponent(window.location.search)
48         .substring(1)
49         .split("confirmation_token=")[1];
50       this.attemptLogin({ token, ...this.loginCreds })
51         .then(res => {
52           this.transferToDashboard();

```



```
39     }
40   },
41   methods: {
42     ...mapActions("auth", ["attemptLogin"]),
43     transferToDashboard() {
44       this.$router.push(this.$route.query.redirect || "/");
45     },
46     login() {
47       let token = decodeURIComponent(window.location.search)
48         .substring(1)
49         .split("confirmation_token=")[1];
50       this.attemptLogin({ token, ...this.loginCreds })
51         .then(res => {
52           this.transferToDashboard();
53         })
54         .catch(err => {
55           console.log(err);
56         });
57     },
58   }
59 }
60 </script>
61
62
63
```

```
39     }
40 },
41 methods: {
42     ...mapActions("auth", ["attemptLogin"]),
43     transferToDashboard() {
44         this.$router.push(this.$route.query.redirect || "/");
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50         this.attemptLogin({ token, ...this.loginCreds })
51             .then(res => {
52                 this.transferToDashboard();
53                 console.log(res);
54             })
55             .catch(err => {
56                 console.log(err);
57             });
58     },
59 }
60 }
61 </script>
62
63
```

AUTHENTICATION



HOW IT WORKS



IMPLEMENTATION



AUTHENTICATION



HOW IT WORKS



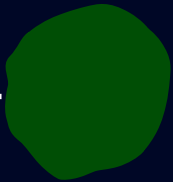
IMPLEMENTATION



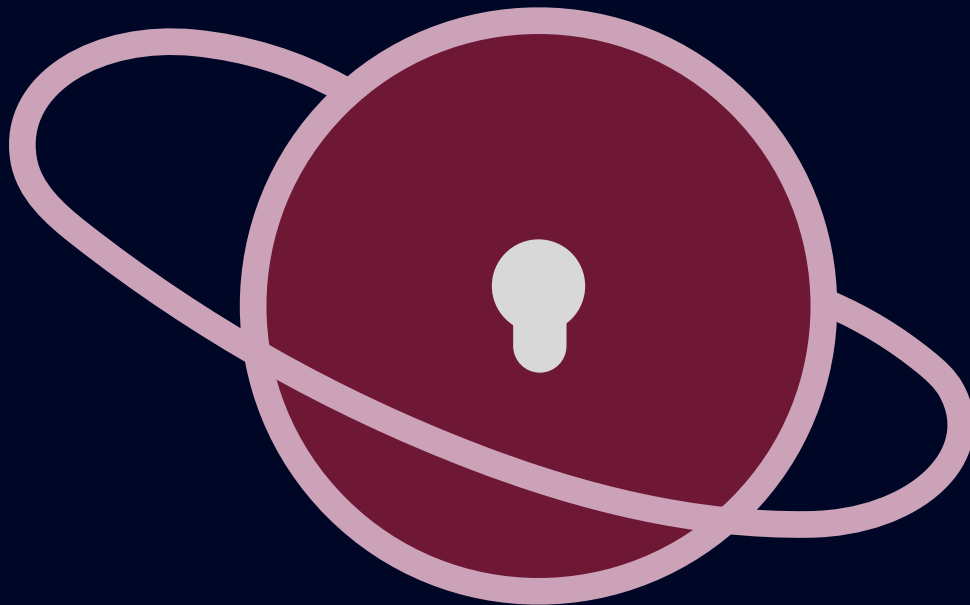
AUTHENTICATION

DON'T ROLL YOUR OWN

Passwordless



MFA



SSO

Centralized Auth

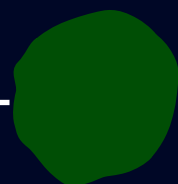


Social Login

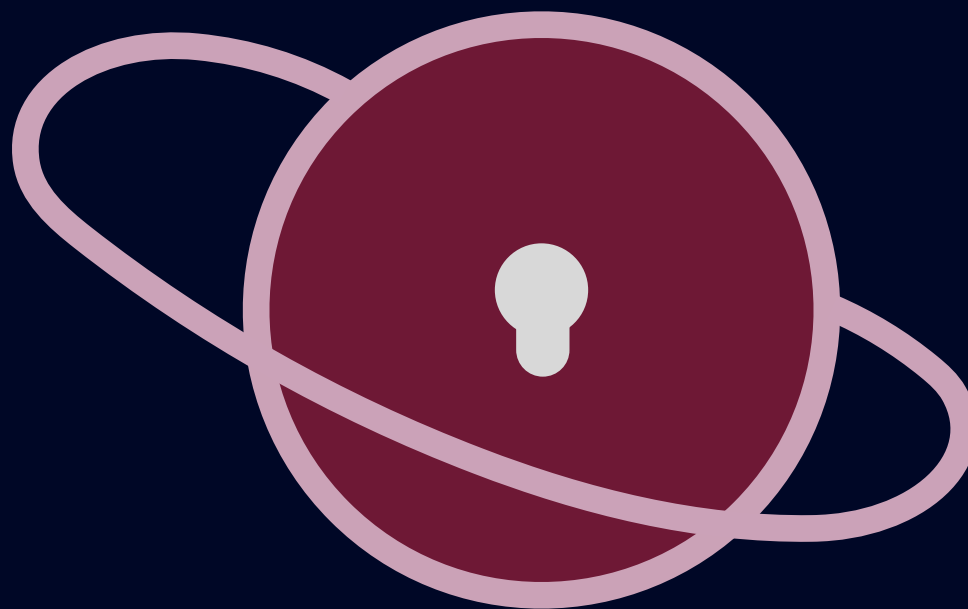
AUTHENTICATION

DON'T ROLL YOUR OWN

Passwordless



MFA



SSO

Centralized Auth



Social Login

## Roll your own JWT

code: <https://github.com/shortdiv/jwt-generate>

example: <https://login-to-gated-site.netlify.com/>

## Identity Example

code: <https://github.com/shortdiv/gotruejs-in-vue>

example: <https://netlify-gotrue-in-vue.netlify.com/>

*So Long and Thanks for  
All the Auth!!!*