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Aim : An online learning platform named offers a variety of courses to students. To protect students' personal information and course materials, requires users to log in before accessing their courses. The platform uses IBM Cloud App ID for managing user authentication and authorization.

13.1: To ensure a smooth user experience, wants users to stay logged in while studying without frequent re-authentication prompts. Since access tokens have a short expiration time (e.g., 15 minutes), the platform uses refresh tokens to generate new access tokens when the original token expires, allowing users to stay logged in and access resources seamlessly. Demonstrate how the refresh token can be used to regenerate the access token without any need to login again.

13.2: As part of enhancing authentication for your application, set up an on IBM Cloud to connect external user repositories to your IBM Cloud account. This will allow users to log in with their organization's credentials, enabling seamless access without needing individual account invites. Create a new and configure it and finally test the configuration by logging in using a user from the external directory to ensure that authentication works as expected.

Steps and Screenshots :

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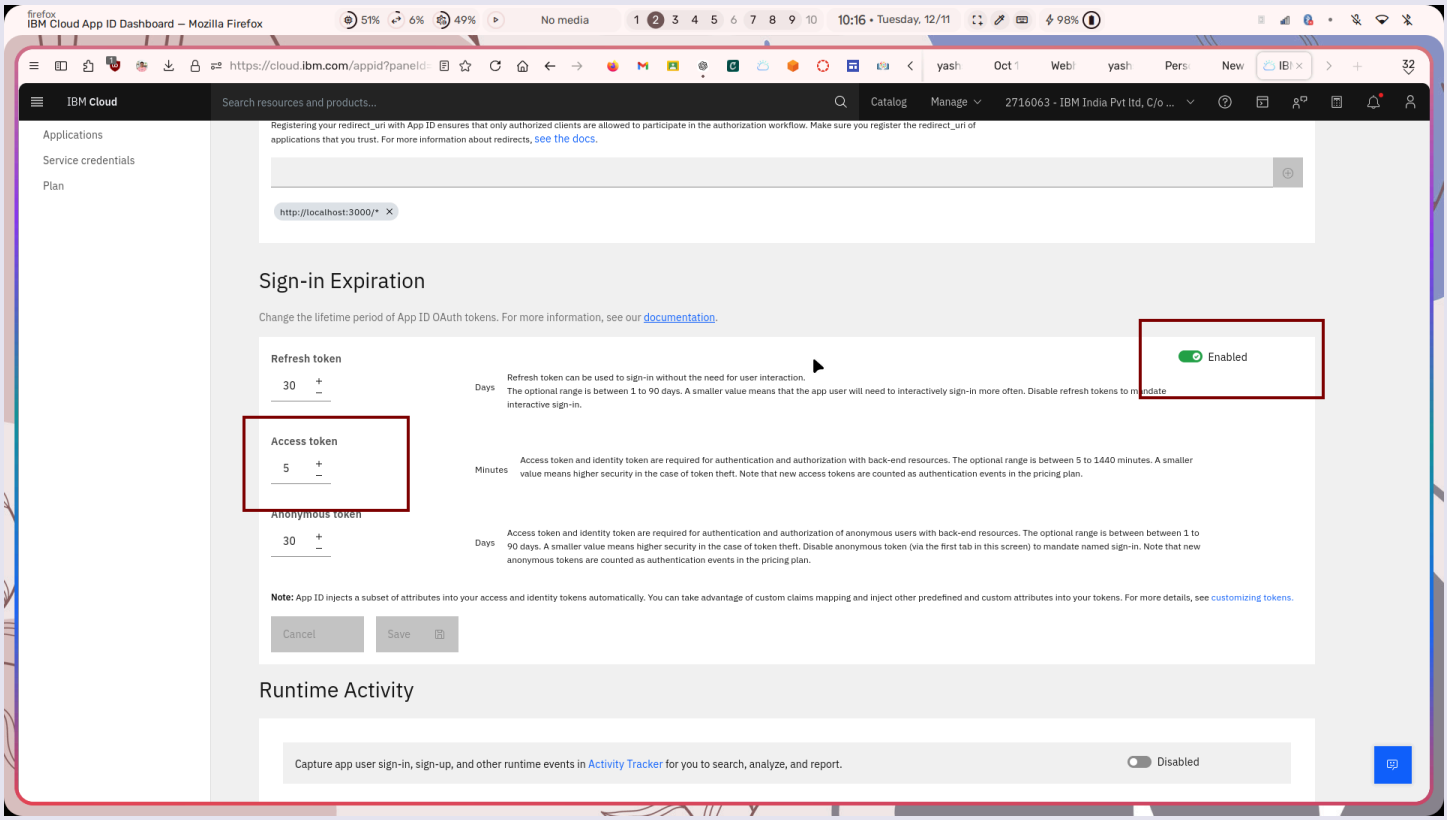
1. Turn on Refresh Token settings for AppID instance and set minimum duration of Access Token



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2. Use previous code of practical 11 to access the node app after logging into AppID, which return access, identity, refresh tokens in console after login, copy them

Code :

```
const express = require('express');
const session = require('express-session');
const passport = require('passport');
const WebAppStrategy = require('ibmcloud-appid').WebAppStrategy;
const app = express();
var port = 3000;
app.use(session({
   secret: '123456',
   resave: true,
   saveUninitialized: true
}));
app.use(passport.initialize());
app.use(passport.session());


passport.serializeUser((user, cb) => cb(null, user));
passport.deserializeUser((user, cb) => cb(null, user));

passport.use(new WebAppStrategy({
   tenantId: "",
```

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```
    clientId: "",
    secret: "",
    oauthServerUrl:
"https://au-syd.appid.cloud.ibm.com/oauth/v4/",
    redirectUri: "http://localhost:3000/appid/callback"
}));



app.get('/appid/login',
passport.authenticate(WebAppStrategy.STRATEGY_NAME, {
    successRedirect: '/',
    forceLogin: true
}));

//
// Handle callback
app.get('/appid/callback',
passport.authenticate(WebAppStrategy.STRATEGY_NAME, {
keepSessionInfo: true }));
//app.use(passport.authenticate(WebAppStrategy.STRATEGY_NAME));
app.use('/api', (req, res, next) => {
    if (req.user) {
        next();
    } else {
```

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```
        res.status(401).send("Unauthorized");
    }
});

app.get('/api/user', (req, res) => {
    //console.log(res);
    console.log(req.session[WebAppStrategy.AUTH_CONTEXT]);
    res.json({
        user: {
            name: req.user.name
        }
    });

});


app.get("/appid/logout", function (req, res) {
    req.logout(function (err) {
        if (err) { console.log(err); }
        res.redirect("/");
    });
});
```

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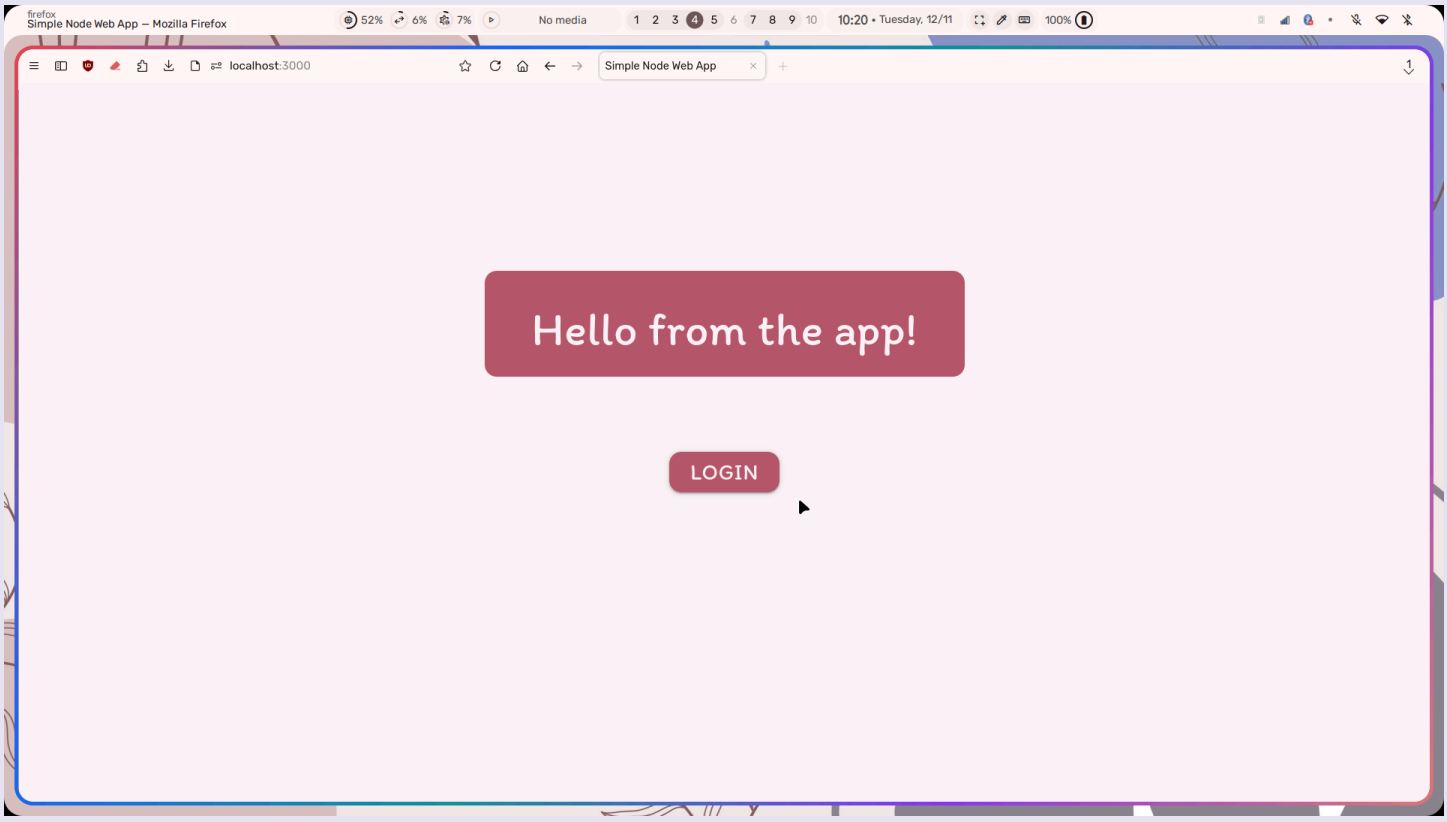
```
// Serve static resources

app.use(express.static('./public'));
app.listen(port);
```



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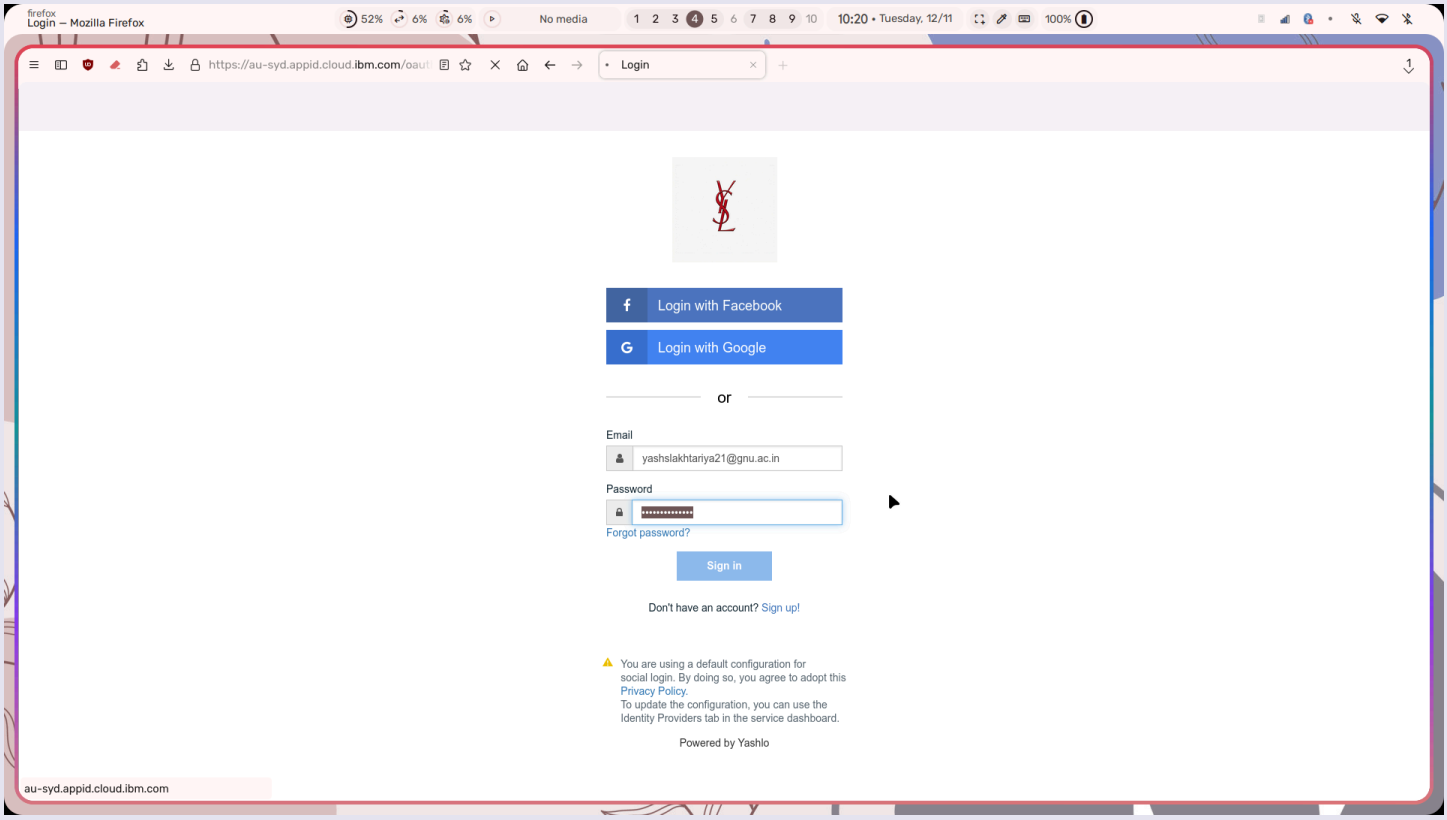

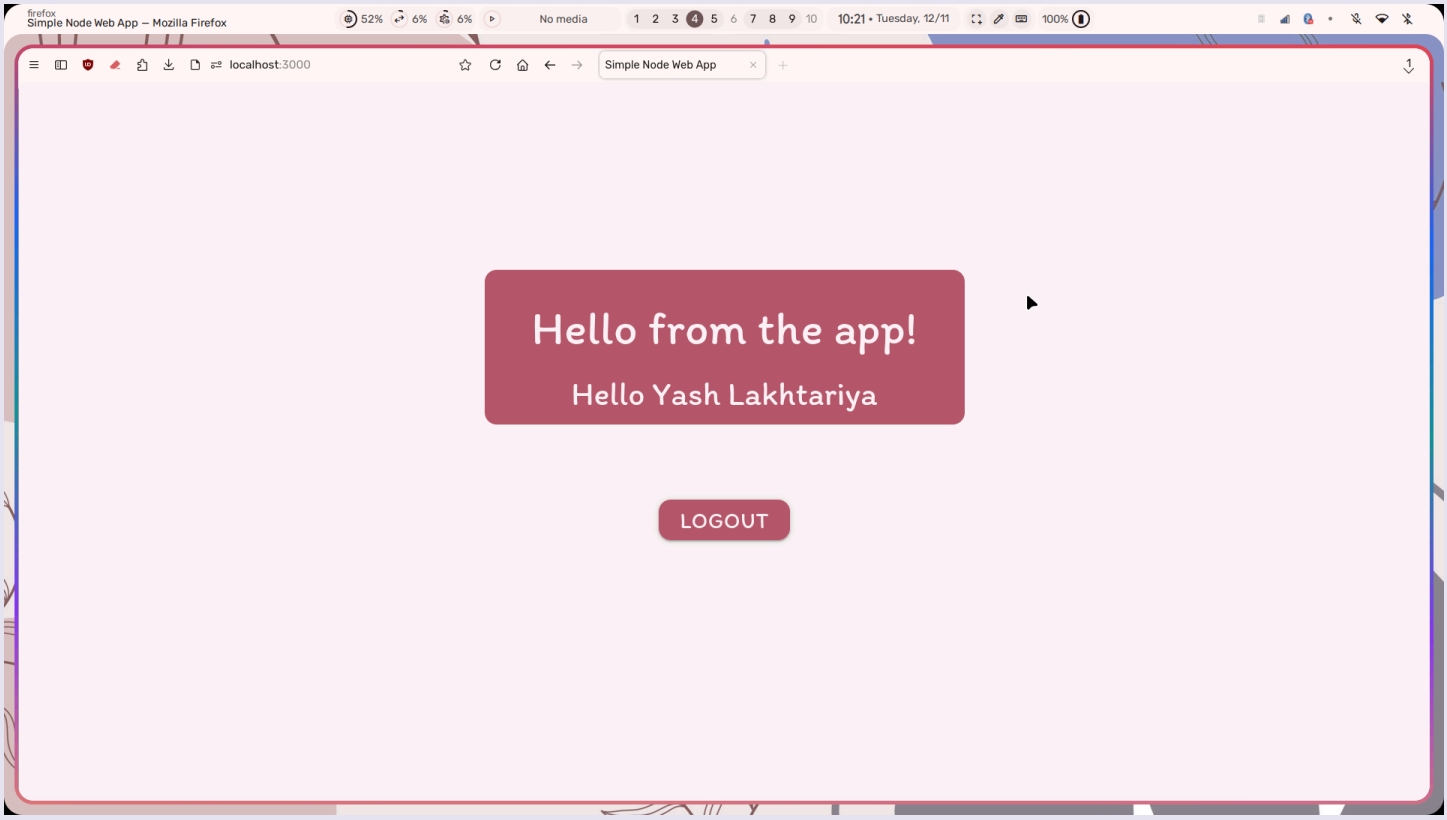

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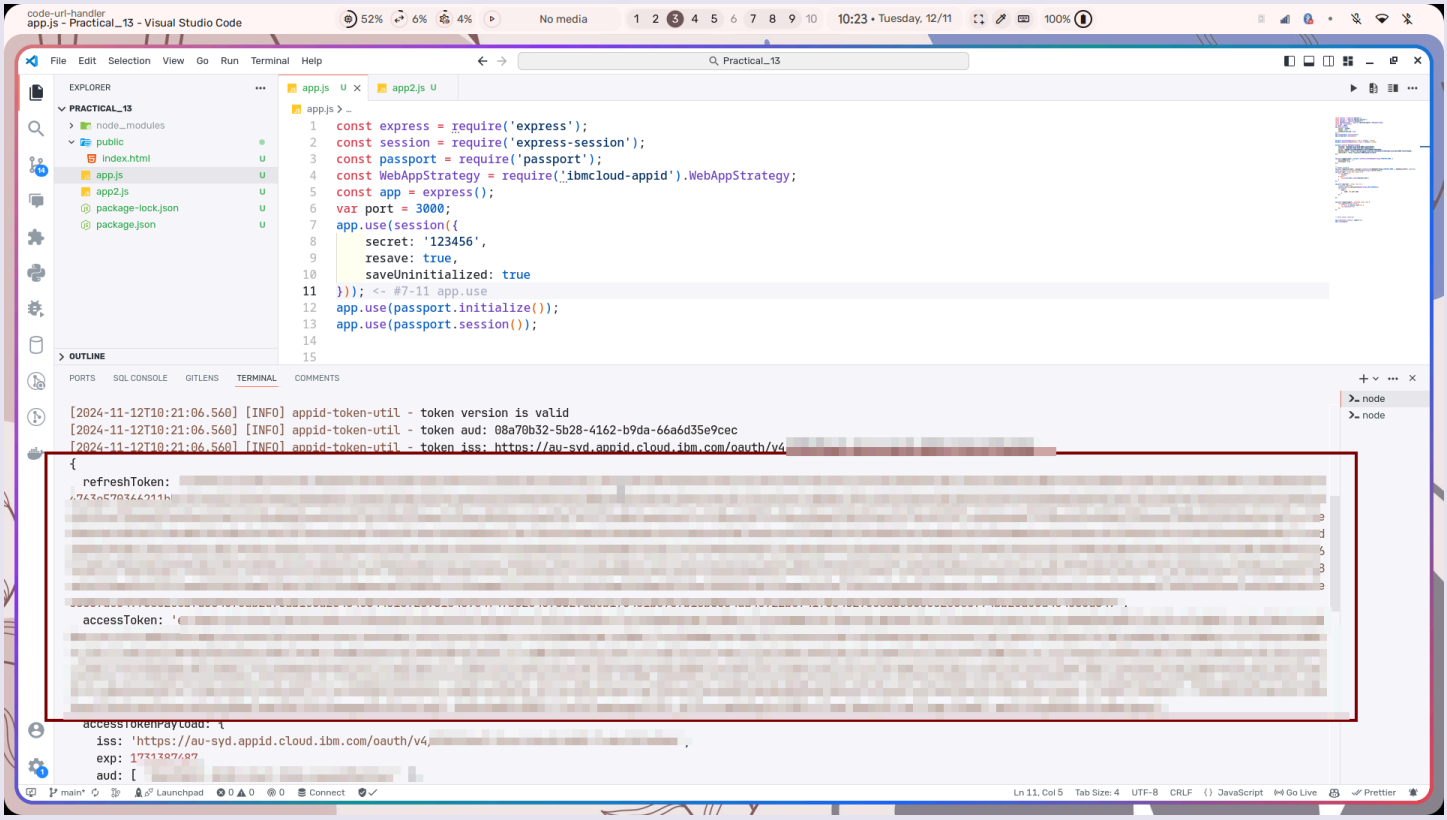

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3. Run another code to use WebApp Strategy to access data using access token copied above

Code :

```
const express = require('express');
const passport = require('passport');
const APIStrategy = require('ibmcloud-appid').APIStrategy;
const app = express();
app.use(passport.initialize());
passport.use(new APIStrategy({
   oauthServerUrl:
"https://au-syd.appid.cloud.ibm.com/oauth/v4/",
}));

// Protect the whole app
app.use(passport.authenticate(APIStrategy.STRATEGY_NAME, {
   session: false
}));

// The /api/data API used to retrieve protected data
app.get('/api/data', (req, res) => {
   res.json({
       data: 'Kem cho? Maja maja ne?'
   });
});
```

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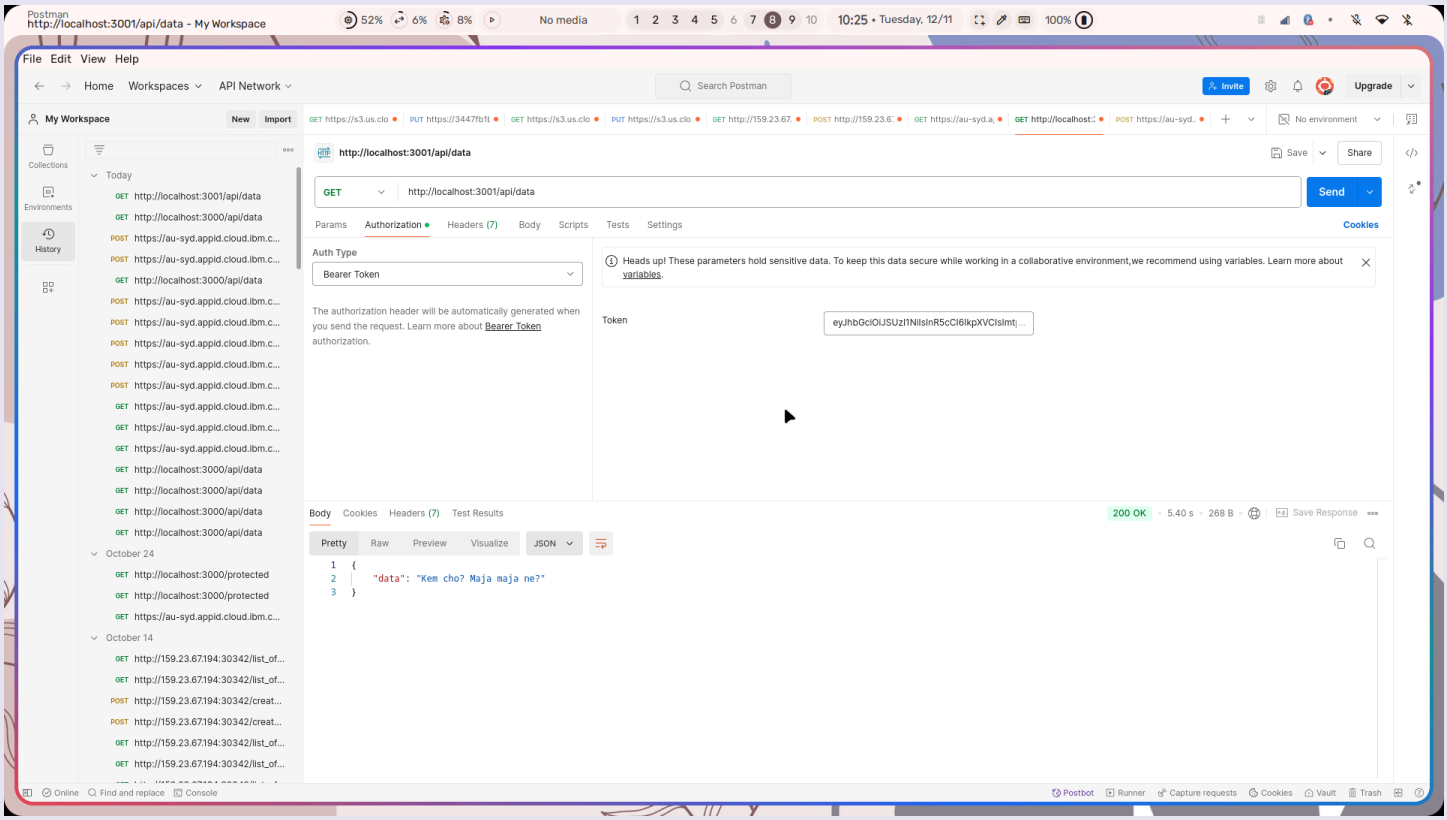
```
app.listen(3001, () => {
    console.log('Listening on http://localhost:3001');
});
```



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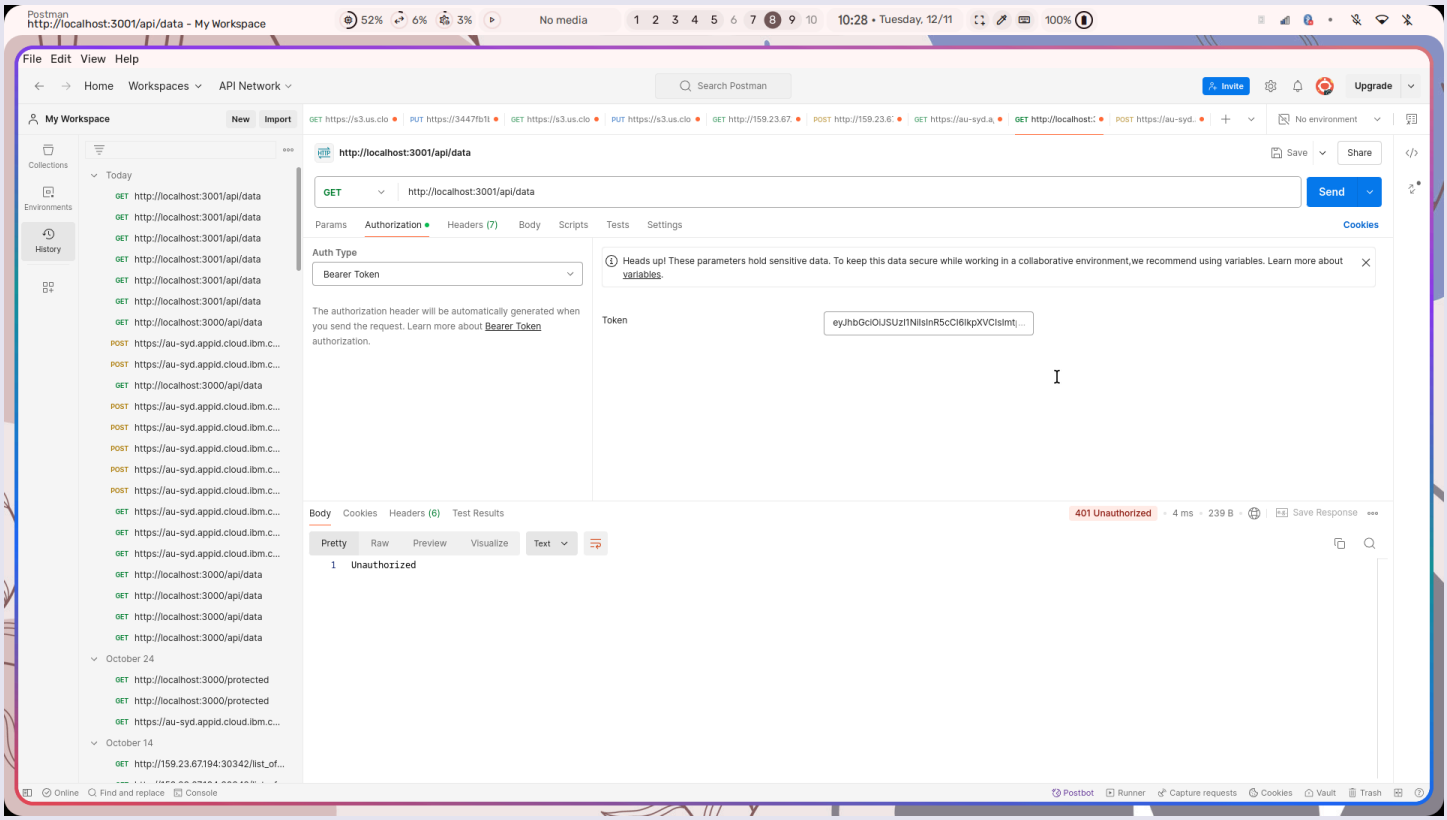
4. Now, after specified duration, the request will fail due to access token being expired



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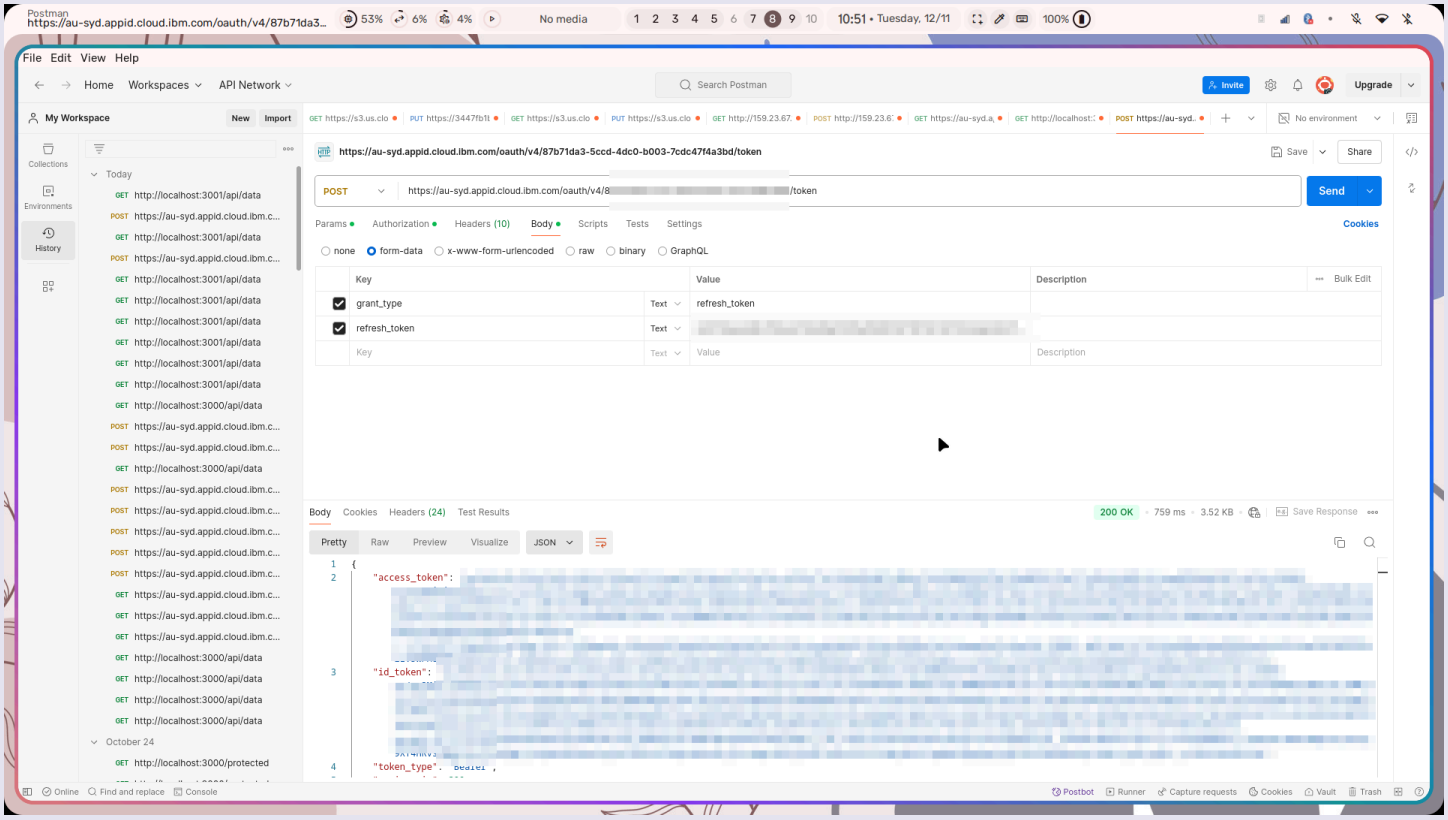
5. Now, to get access token again without logging in again, the refresh token can be used to regenerate it.

```
Request : POST
API endpoint : <oAuthURL>/token

Body : (type form data)
grant_type : refresh_token
refresh_token : <refresh_token>
```



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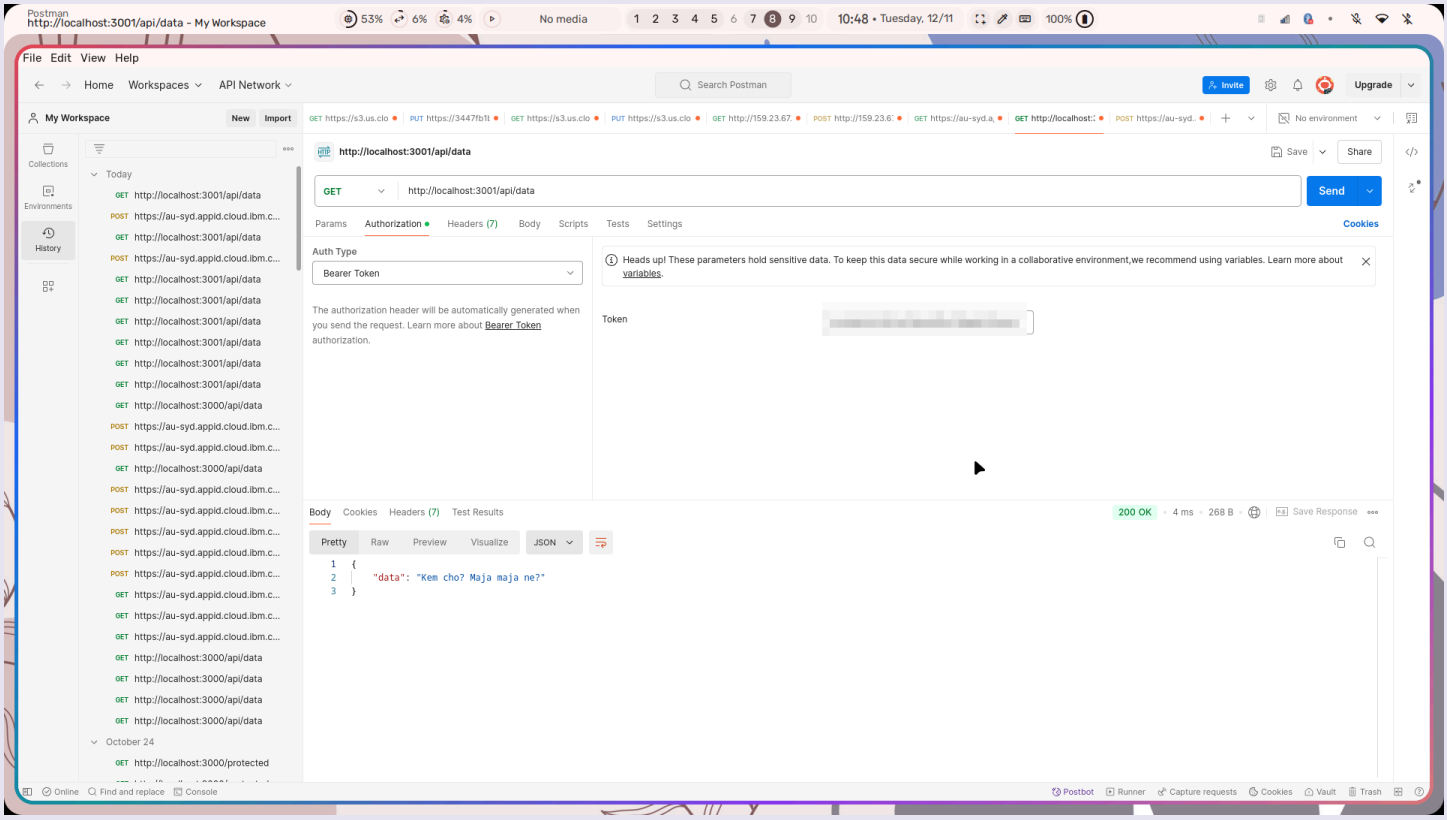

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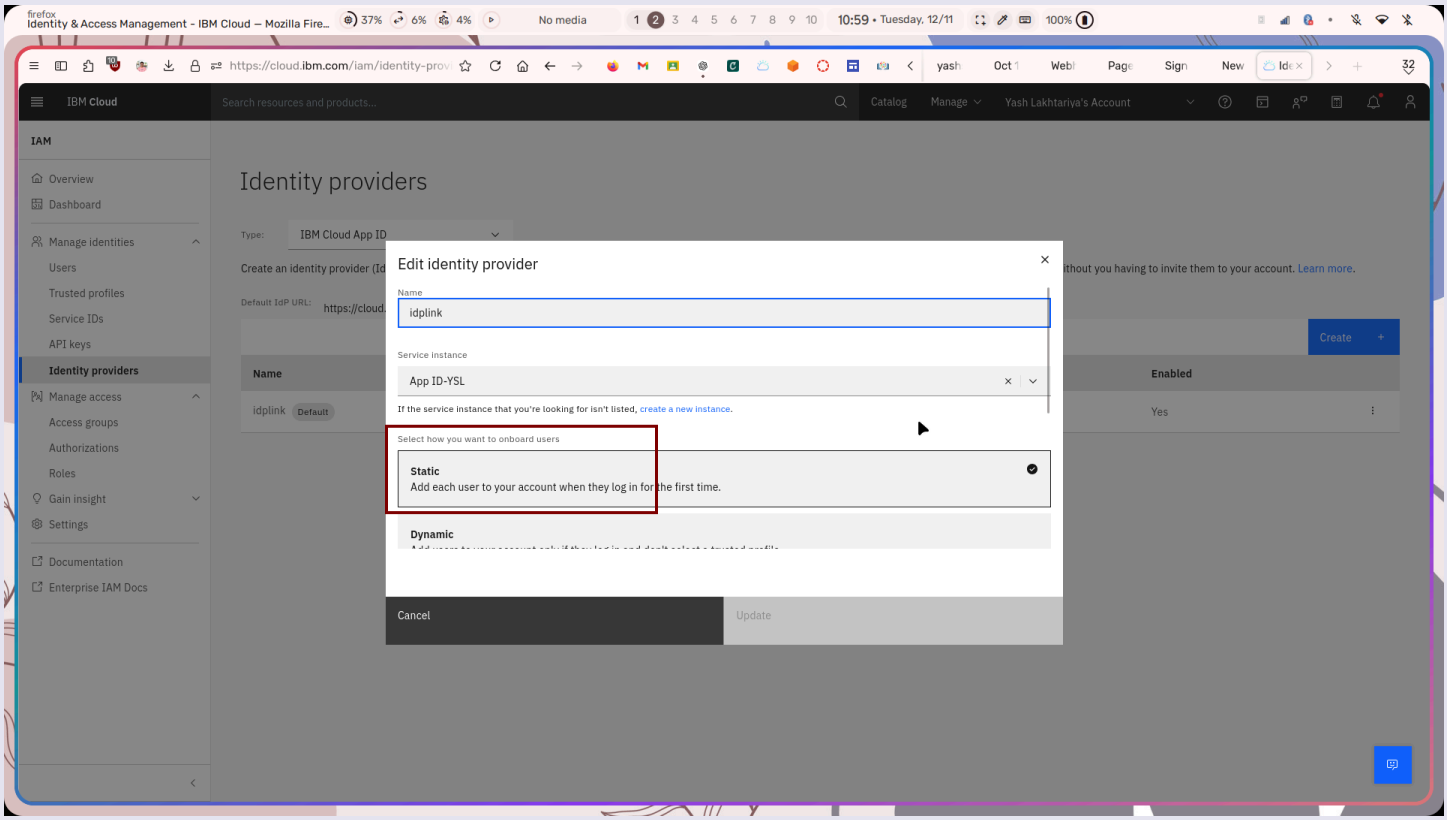
6. For reliable access using IAM, we can use identity provider link to automate adding IAM users on their signup and first login (access to resources must be specified explicitly for that user, it just allows to login)



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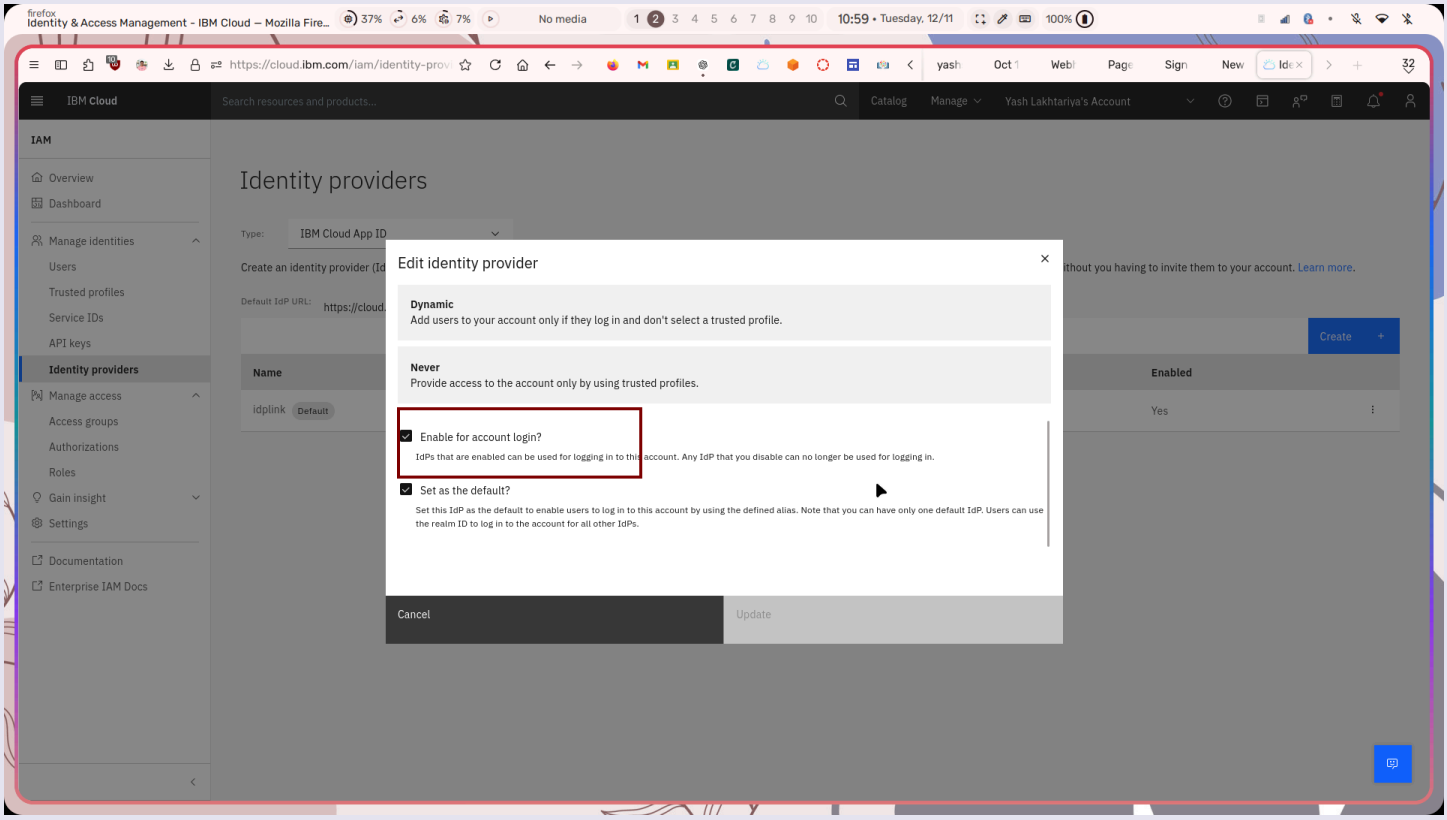

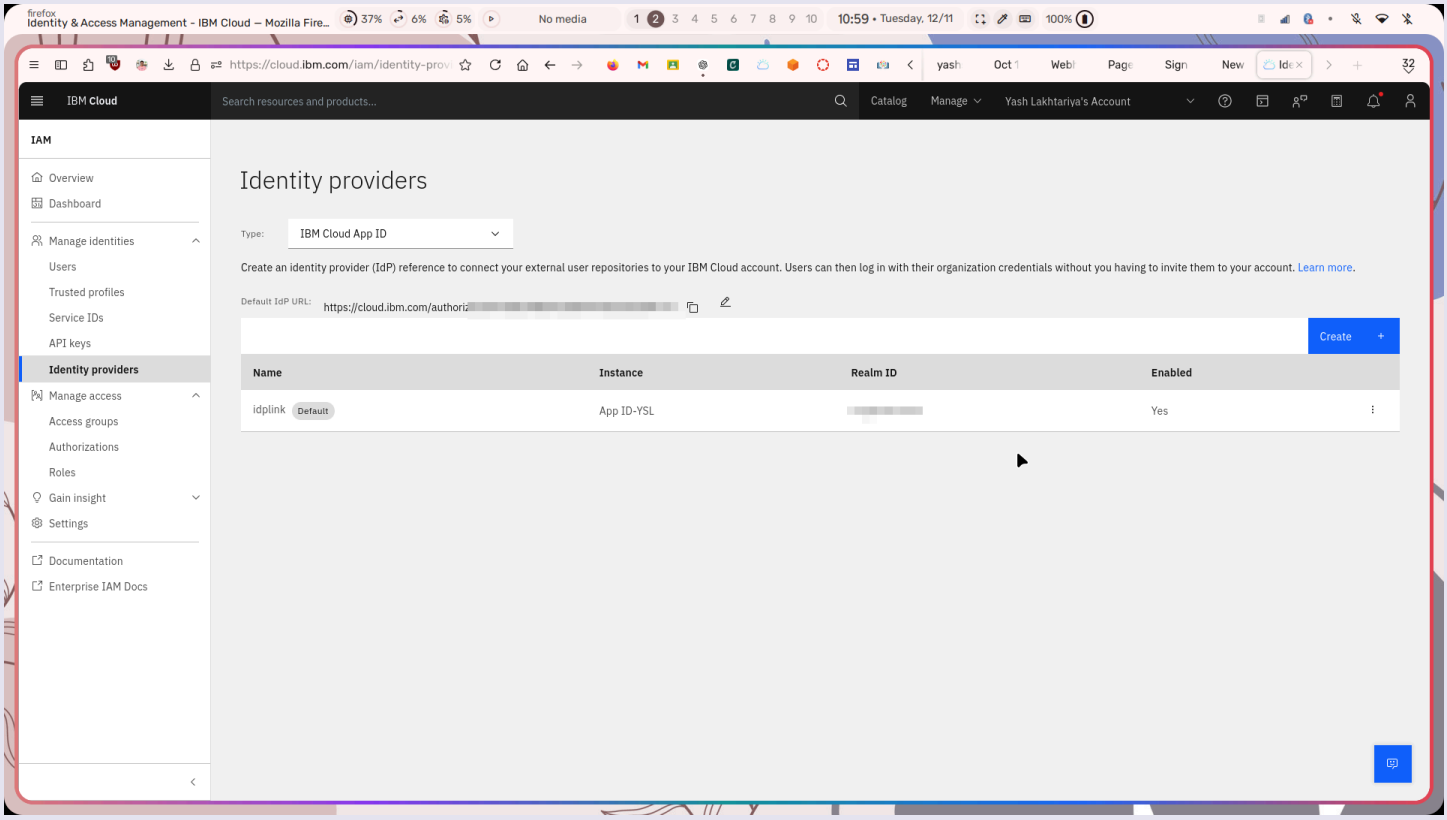

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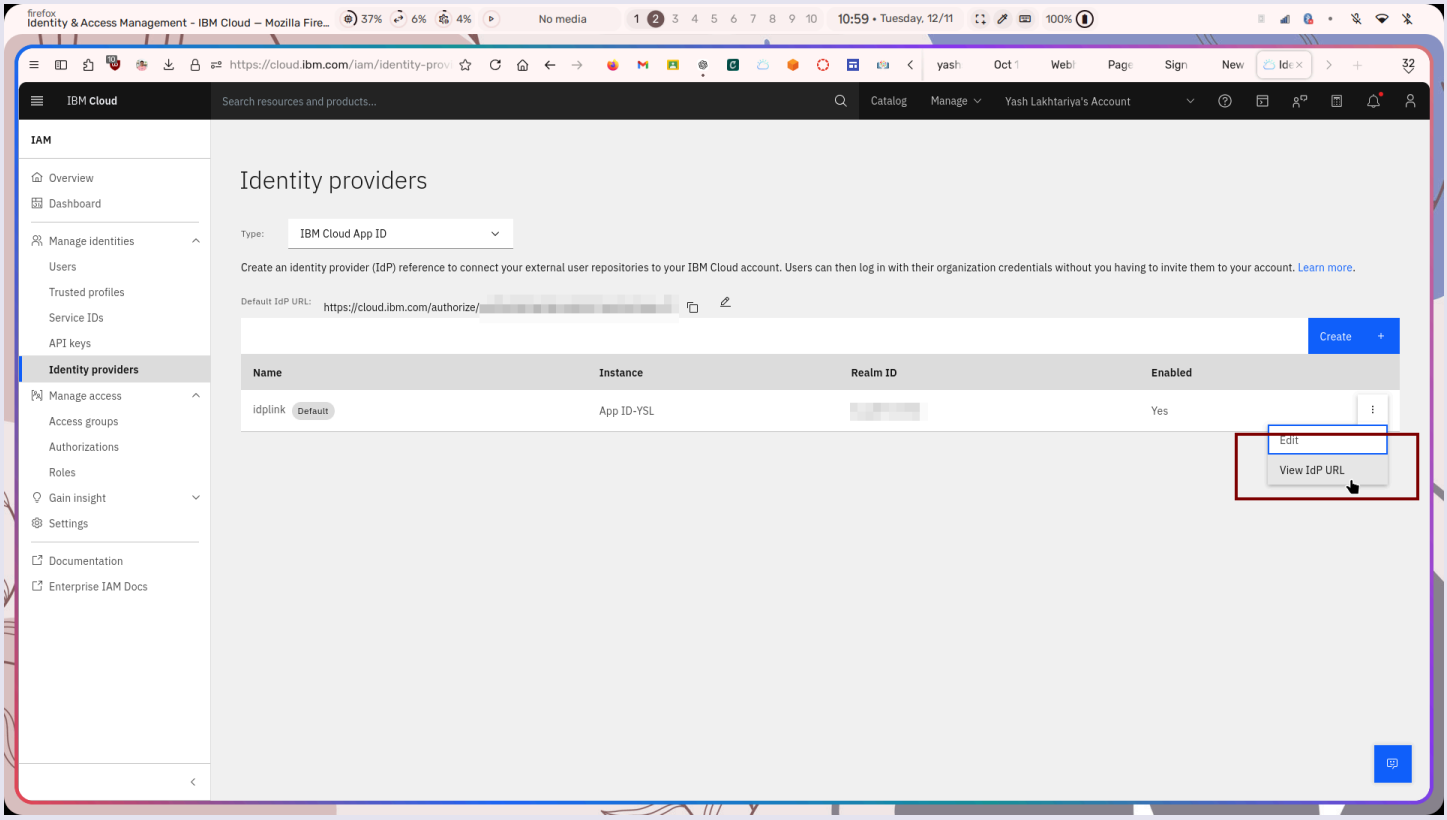

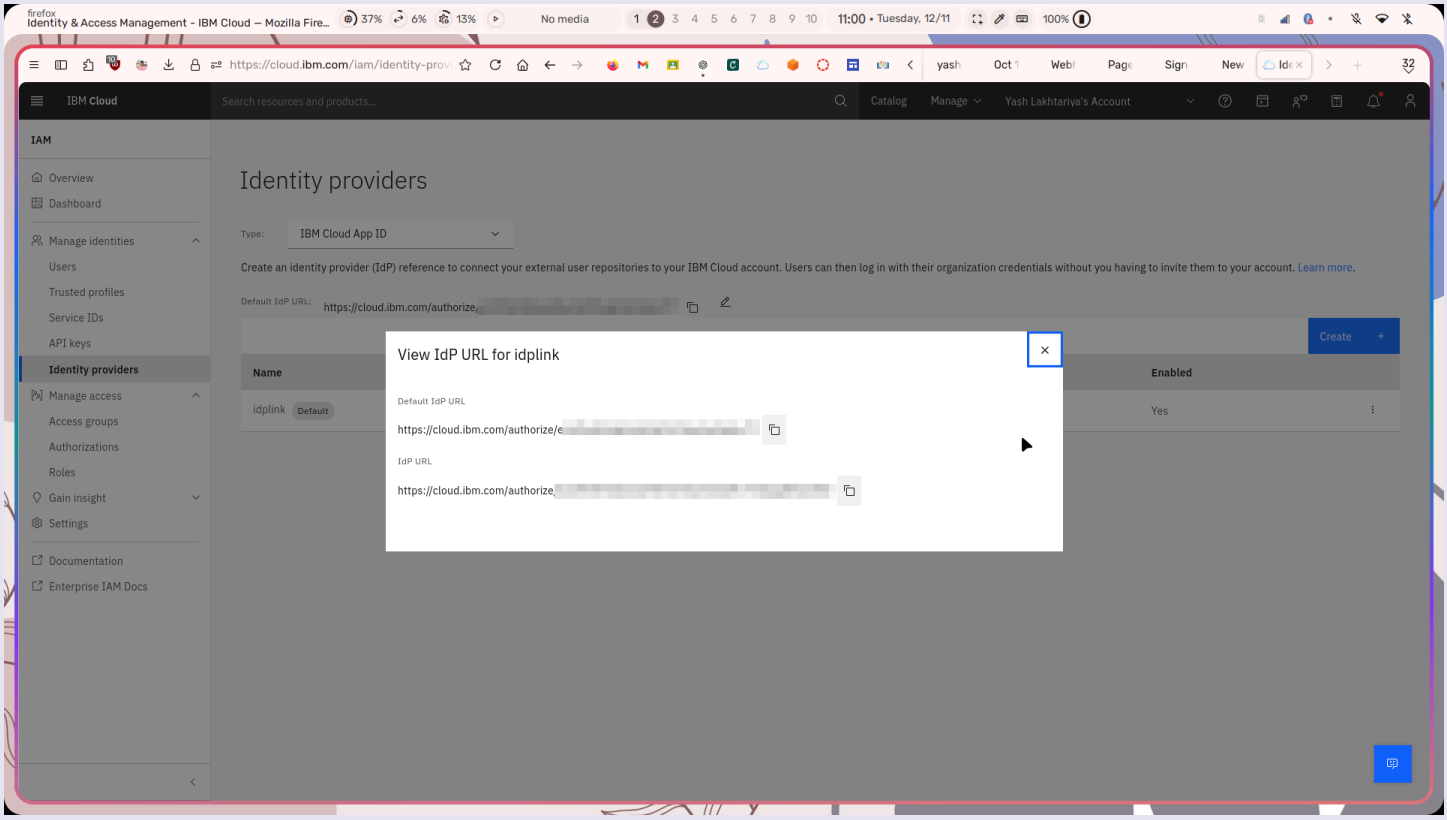

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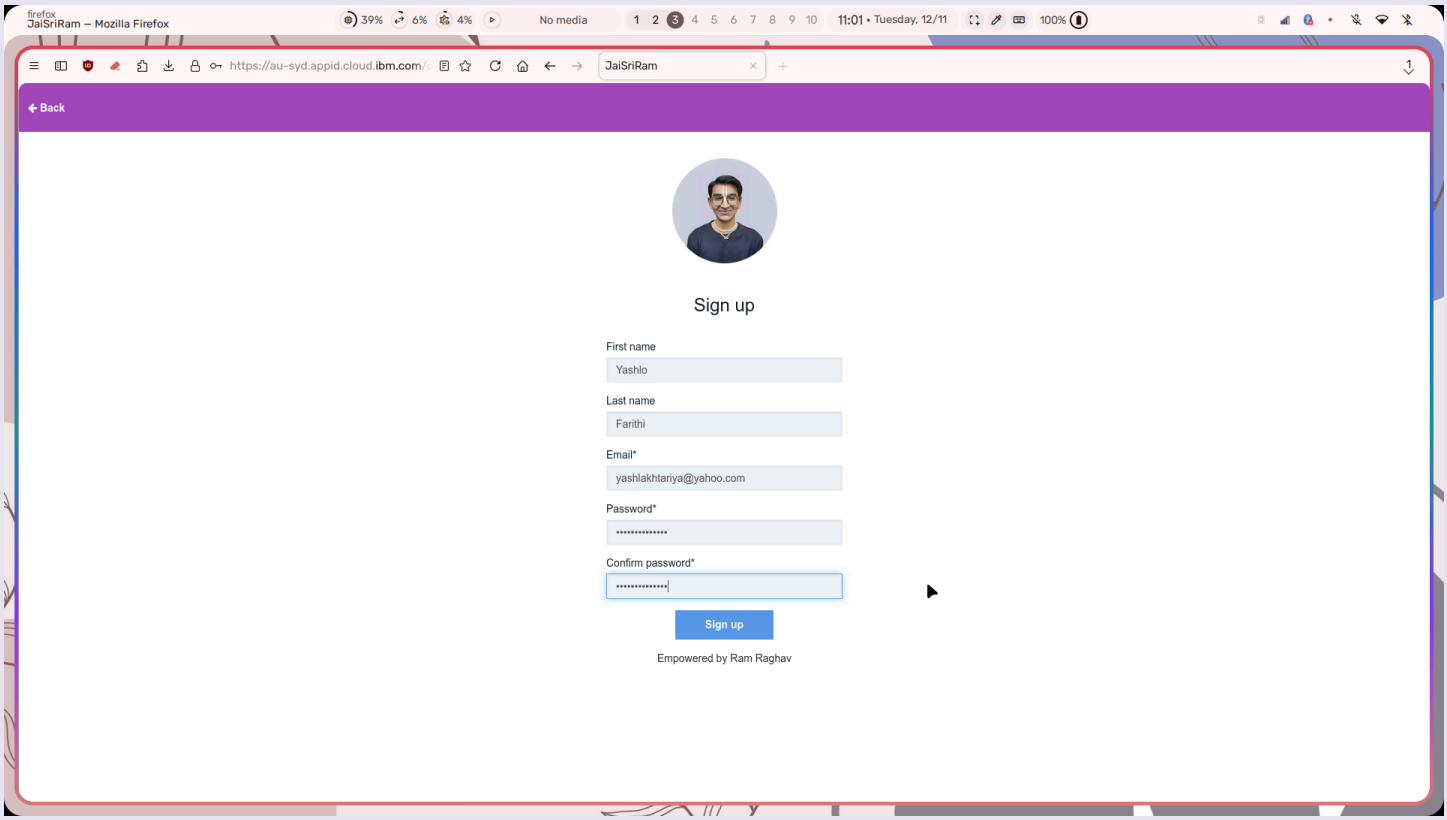
7. Open this link or share with anyone to add user on signup and first login using AppID provider



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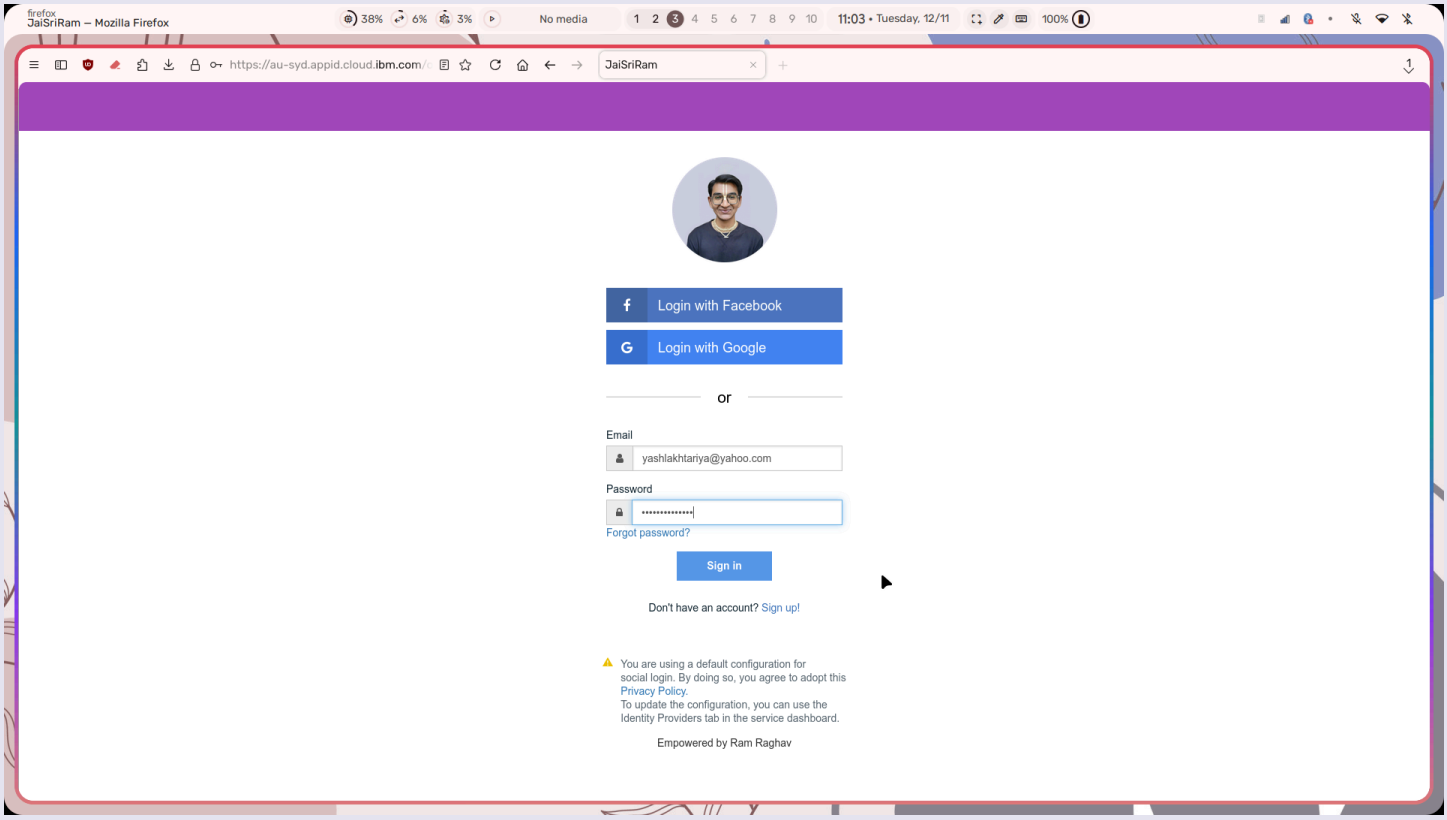

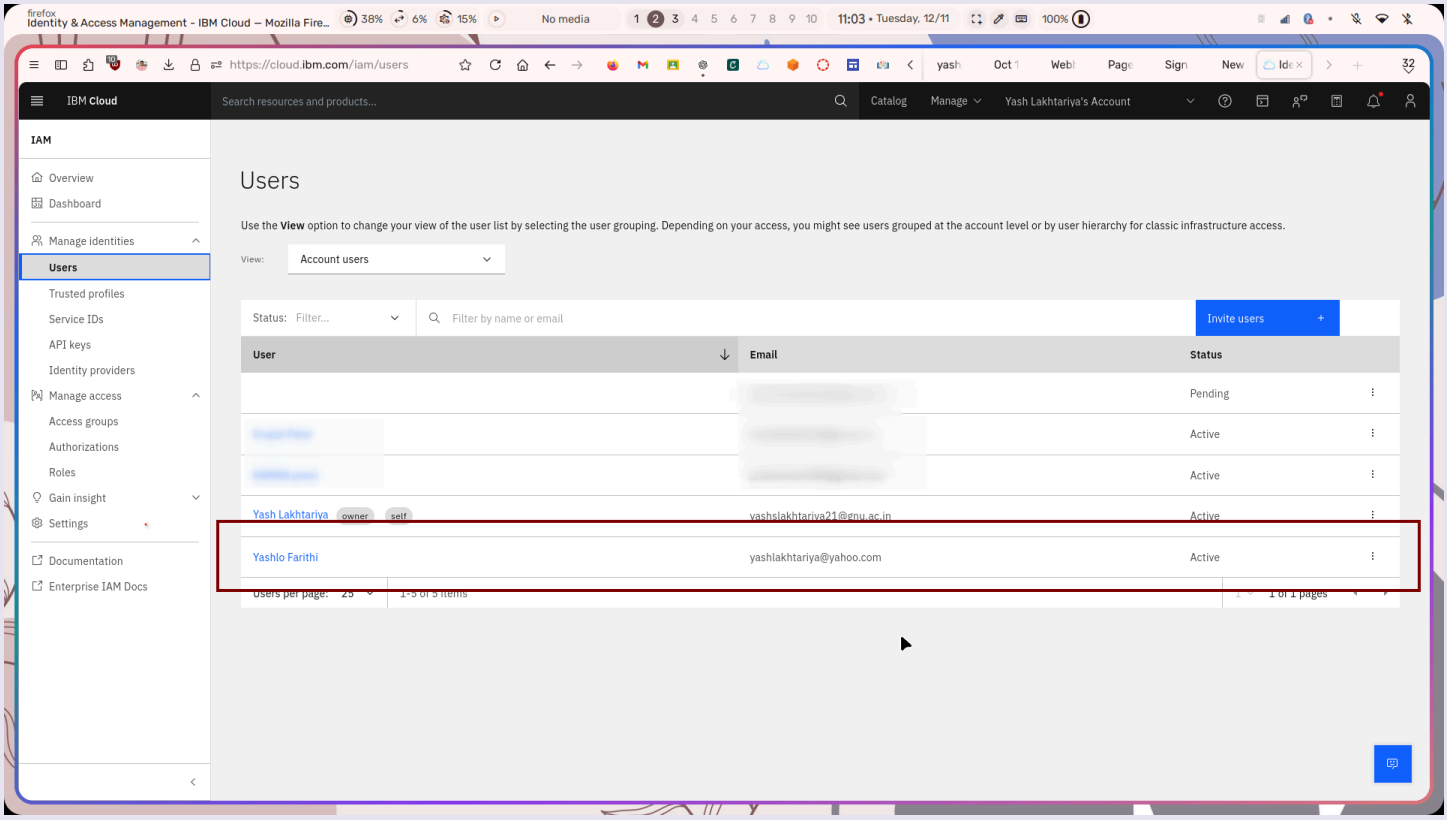

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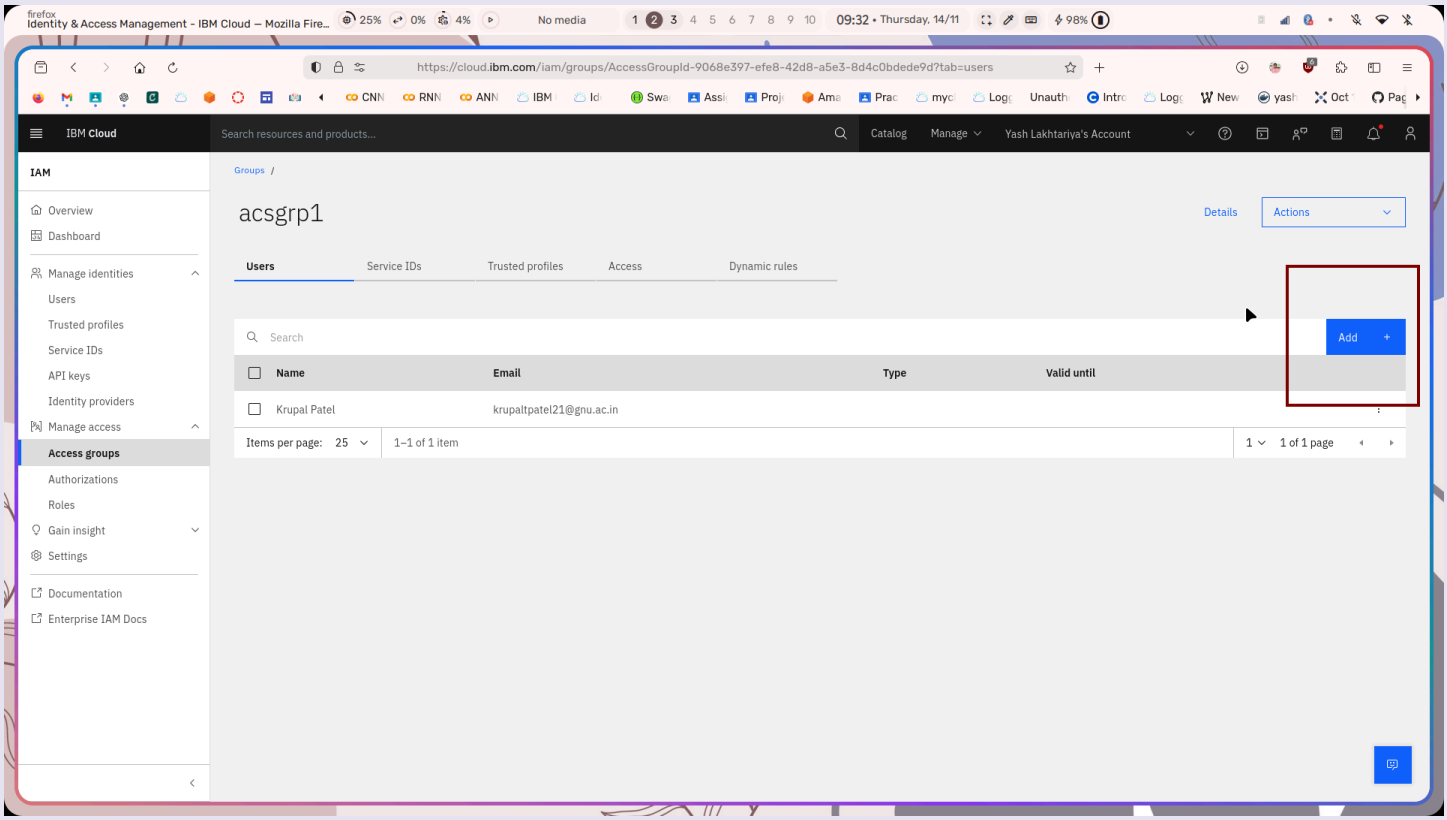
8. Assign access to user or group as personal preferences and check if the resources are accessible or not



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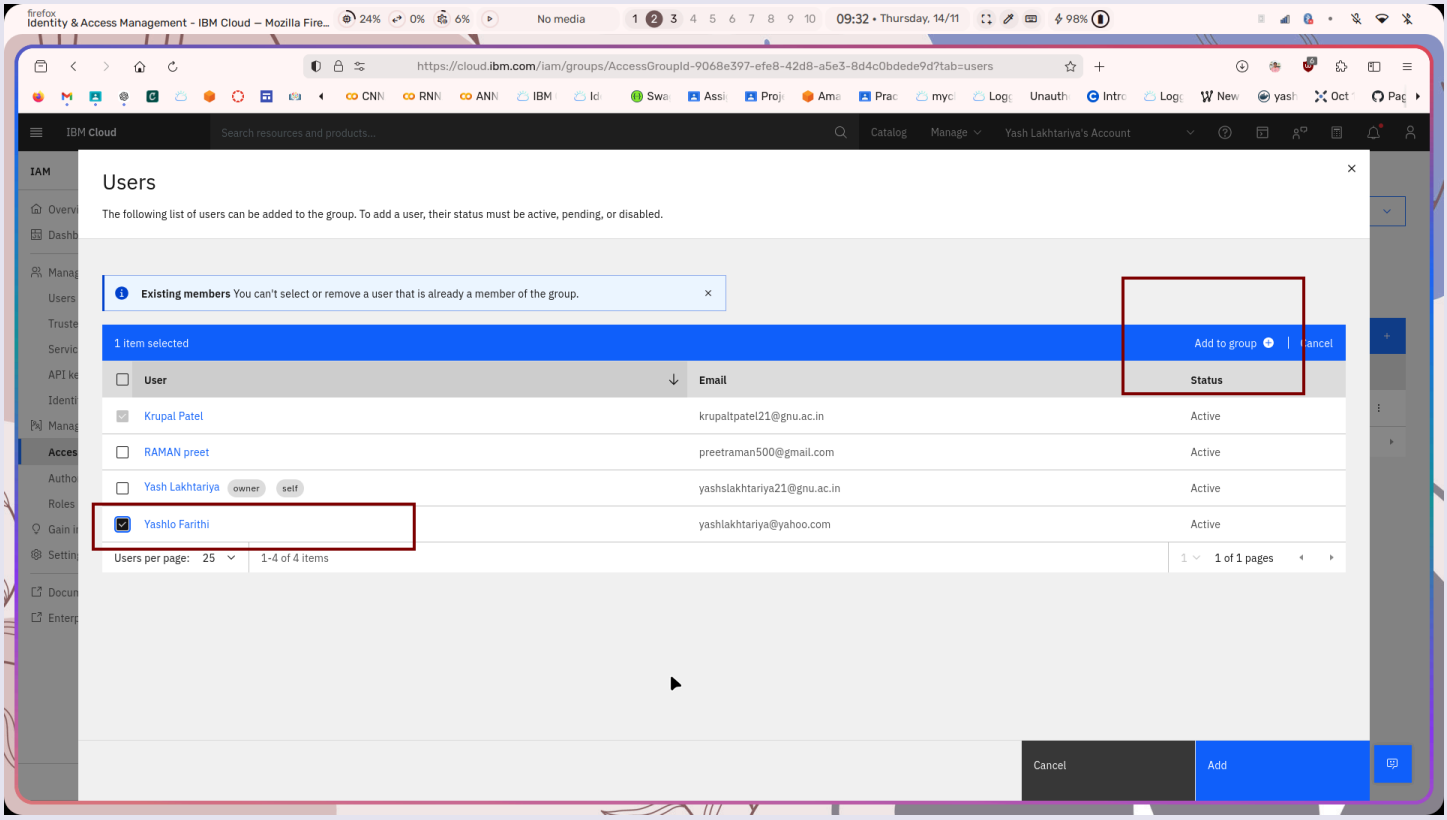

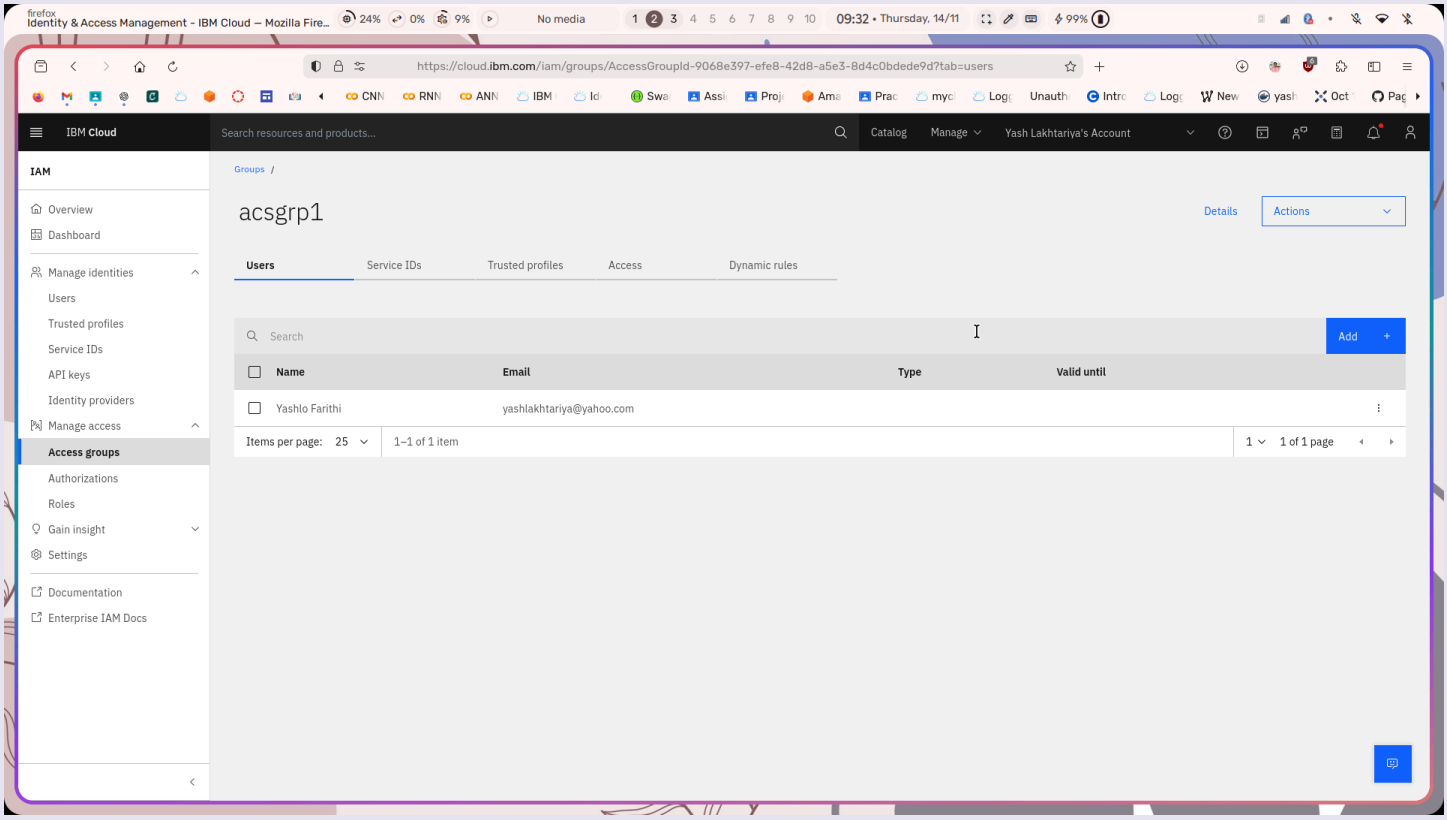

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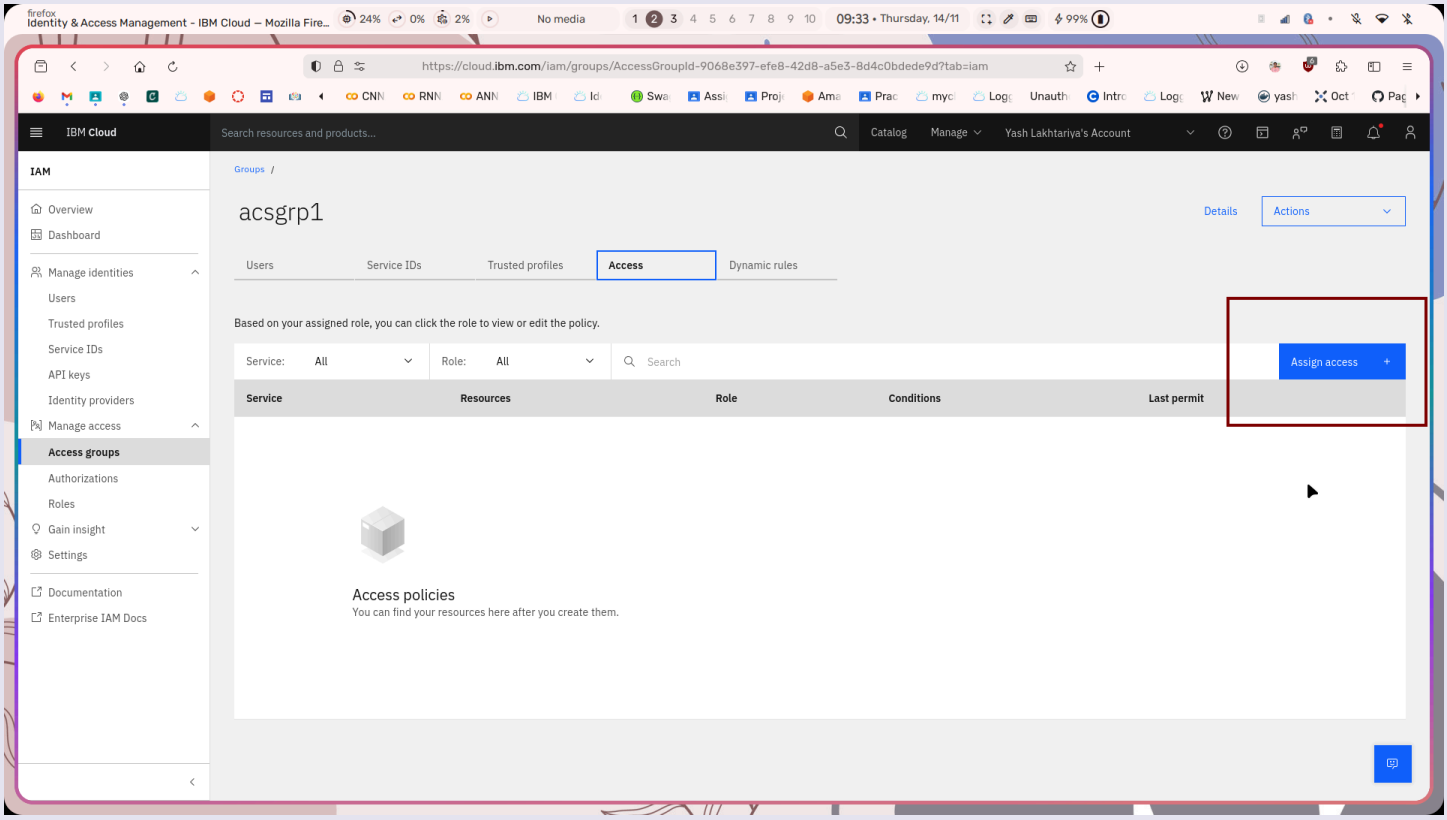

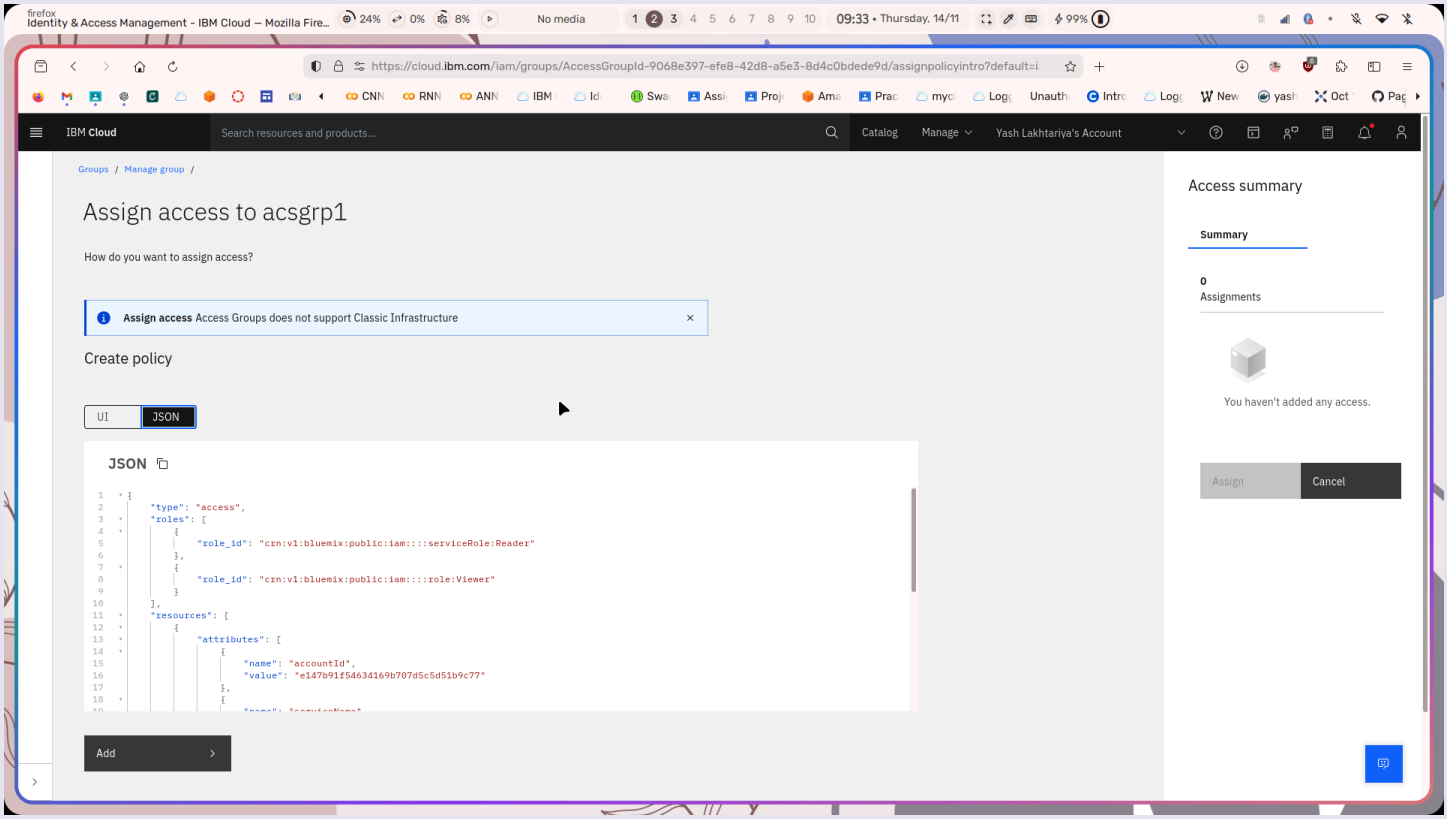
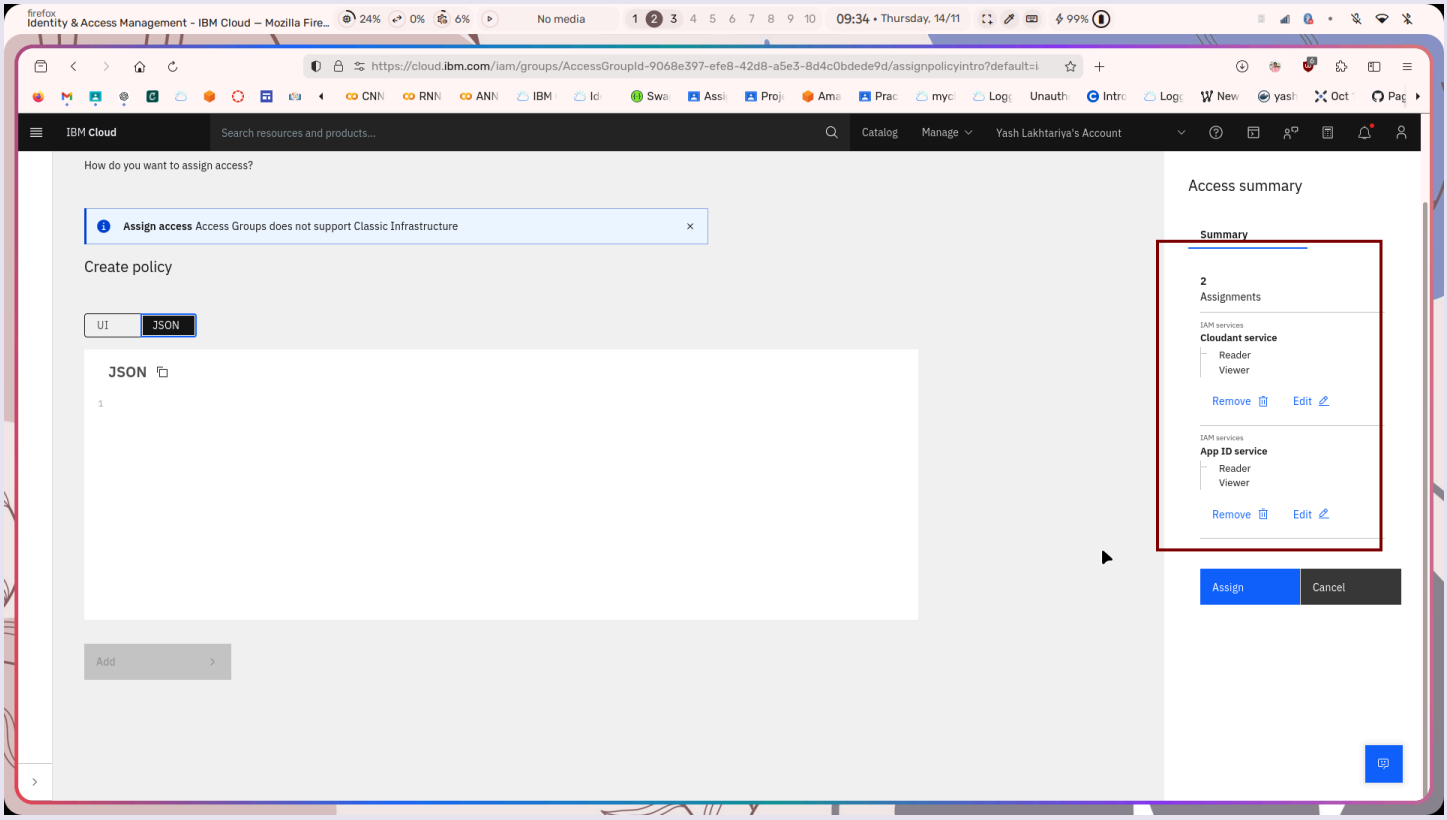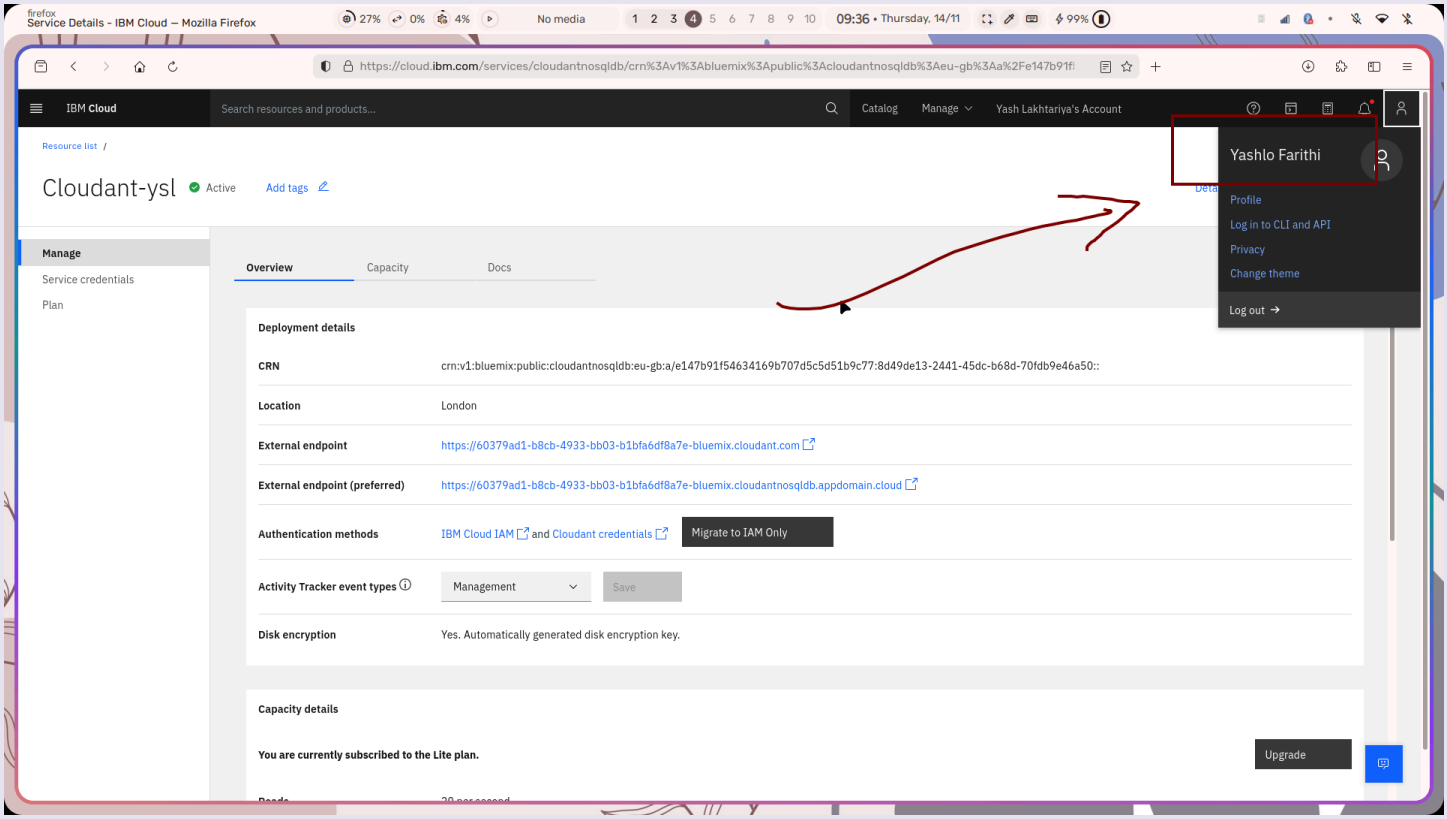
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