



There could be a misconfiguration in the system

or a service outage. We track these errors

automatically, but if the problem persists feel

free to contact us.

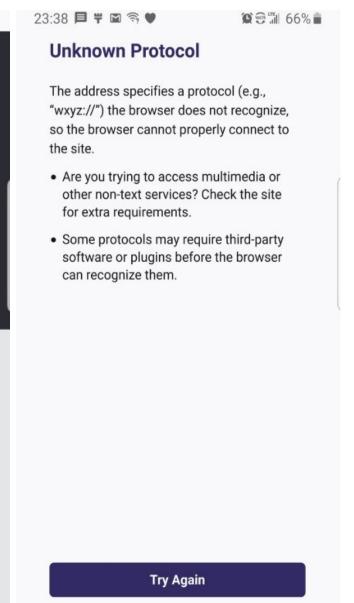
Please try again.

auth0.com

0

111

2nd Factor Authentication





## What went wrong?

- Product roll out foreshadowed disaster
  - Last build happened just two days before caucus
  - De facto beta-testing was happening on caucus day
    - Over a hundred defect reports on caucus day
- So what were the problems?
  - Functional
    - Logging in (from certain phone devices)
    - Faulty data (sometimes partial data sent)
  - Non-functional
    - Performance (inordinate delays in data reporting)
    - Security (unencrypted data sent over open network)

## Why did it happen?

- So why did it happen?
  - No details released because "other caucuses may use similar apps" (Worried that hackers will take advantage of flaws)
- But what has been filtering out ...
  - Lack of stress testing (stressing system with peak expected load)
  - Lack of penetration testing
  - Lack of acceptance (beta) testing by end users
- Why haven't these problems been brought to light?
  - Party insisted on "security through obscurity"
     (The bogus idea that talking too much about the app will alert hackers)
  - Department of Homeland Security offered to audit but party refused

## Weakest Link is the Human Link ...

- Managers disallowed volunteers to bring phones
  - But phones were required for the two factor authentication
  - Volunteers had to pass around a single iPad to authenticate
- Many election managers didn't know how to use spreadsheets
  - Had to take photos of paper worksheets and send by email
  - Sometimes photos were taken sideways and people had to crane their necks (Of course, they didn't know how to rotate photos either)
- Lesson: User training is an important part of software delivery