



Cloudflare Outage 2025

How One File Took Down 16% of the Internet

Geeks Club1

 December 10, 2025

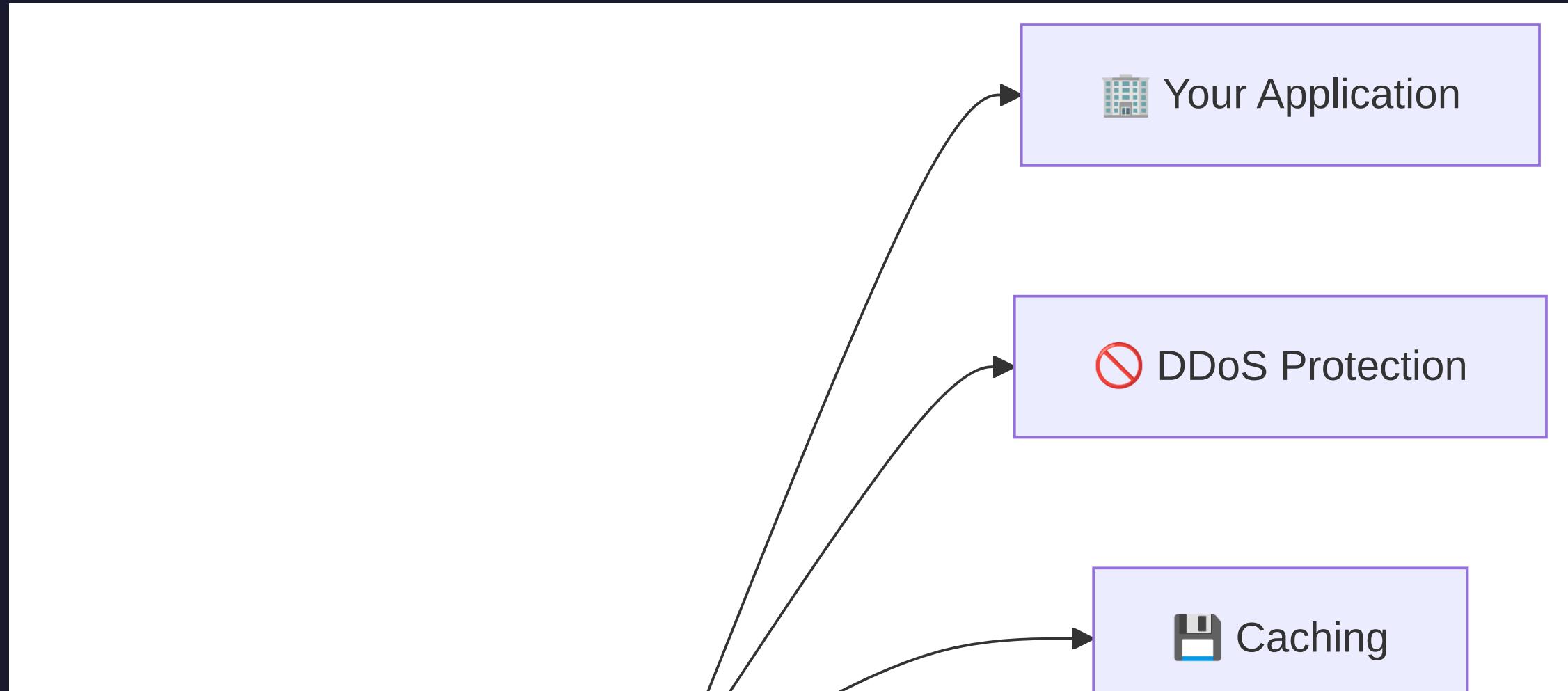


Agenda

1.  **Why is Cloudflare important?**
2.  **What happened?** - Outage Timeline
3.  **Technical Analysis** - ClickHouse, Rust, unwrap()
4.  **Confusing Factors** - Why they thought it was a DDoS attack
5.  **Conclusions and Remedial Actions**
6.  **Comment** - What do we learn from this?

What is Cloudflare?

Middleware between the client and your application





Cloudflare Scale

~16% of all internet traffic A small green globe icon.

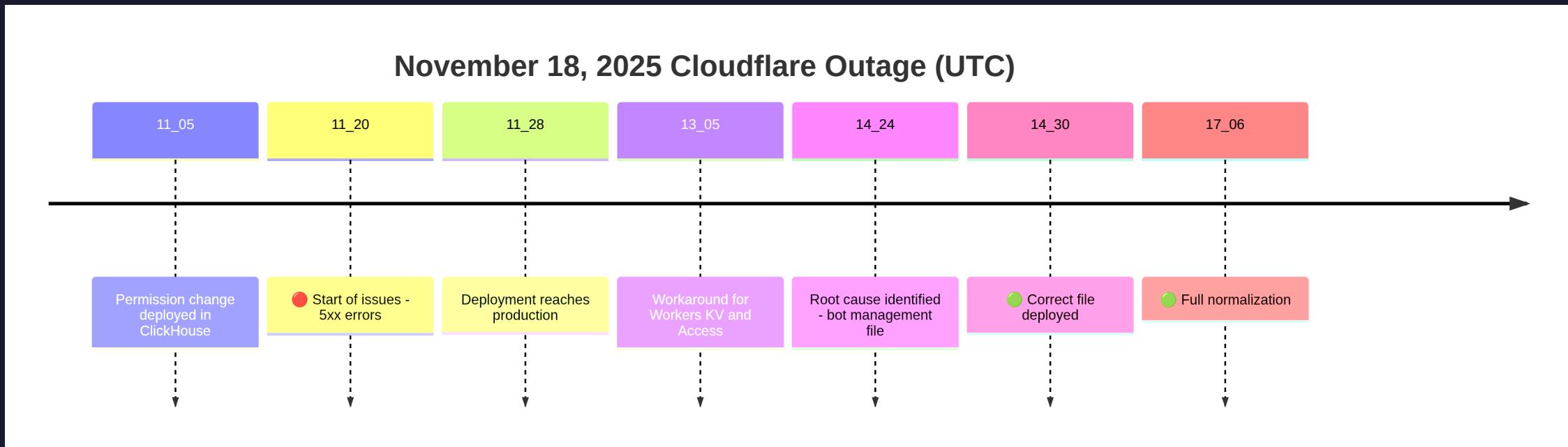
| Every sixth request on the internet goes through Cloudflare

Known users:

Category	Companies
Technology	Mozilla, Microsoft Azure, Office 365, IBM
E-commerce	Nike, H&M, Shopify
Social	Reddit, Digital Ocean



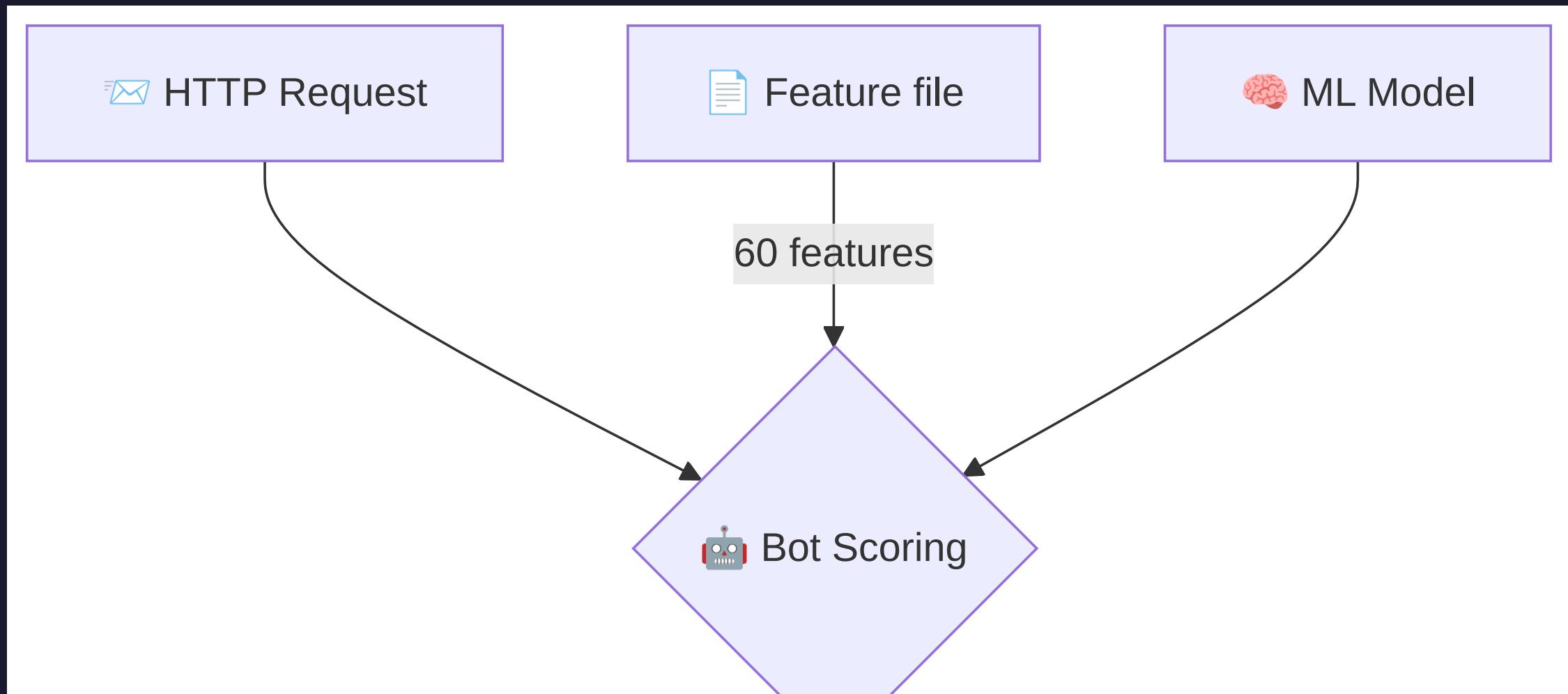
Outage Timeline





Bot Management - Source of the Problem

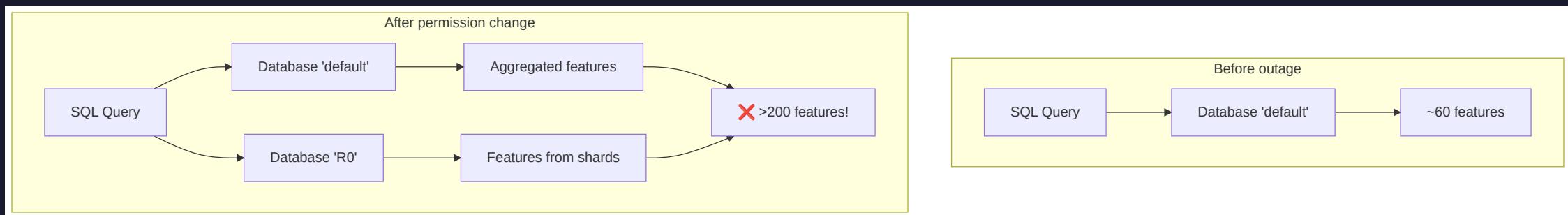
How does bot scoring work?





ClickHouse Architecture

Databases and shards



🔍 Query without database discriminator

```
SELECT
    name,
    type
FROM system.columns
WHERE
    table = 'http_requests_features'
ORDER BY name;
```

⚠ Problem:

- No `WHERE database = 'default'`
- After permission change → both databases visible
- **60 features × 2 = 120+ features**



Rust and fatal `unwrap()`

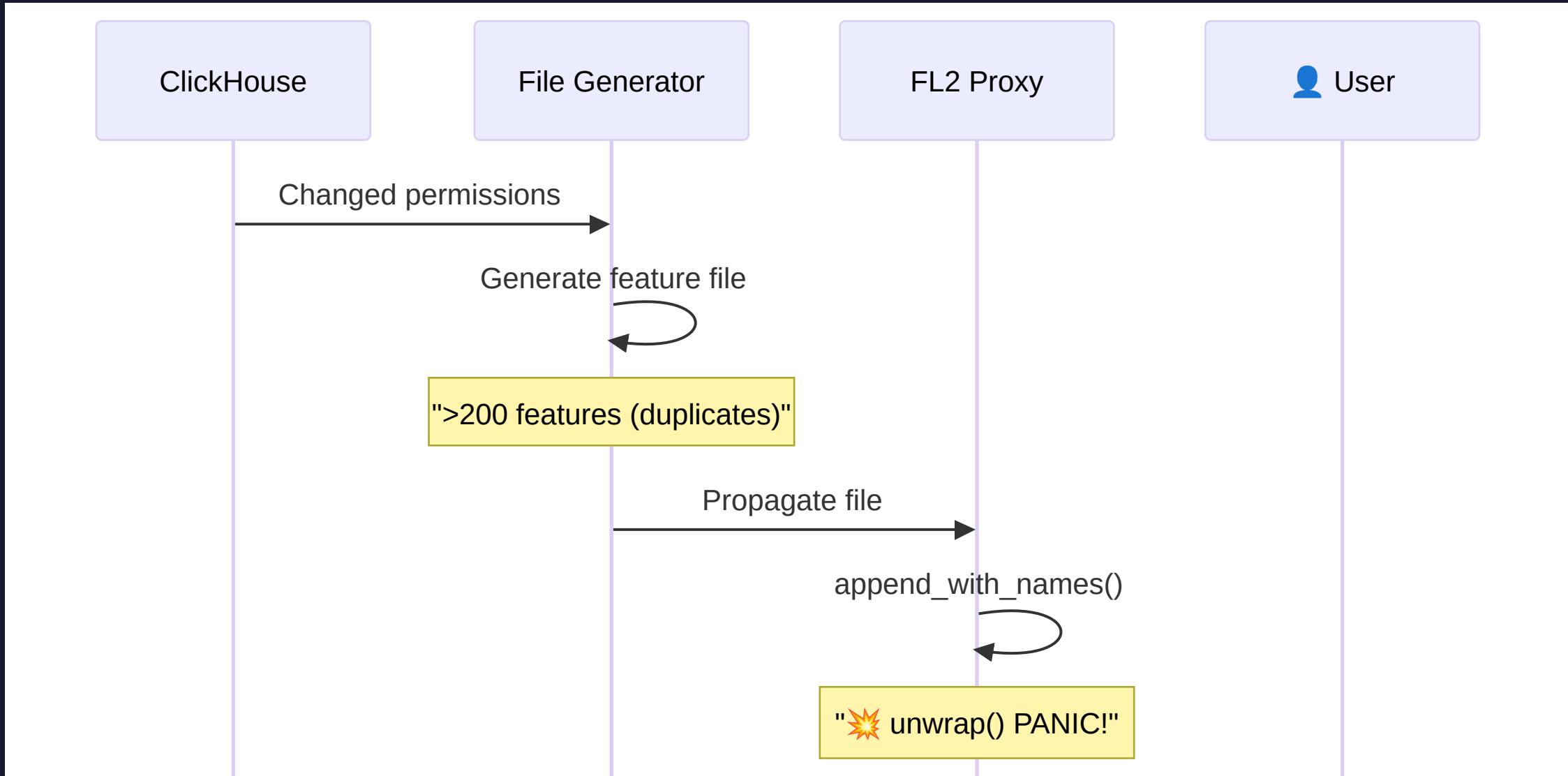
```
// Simplified code that caused panic
fn load_features(config: &Config) -> Features {
    let features = append_with_names(&config)
        .unwrap(); // ⚡ BOOM!

    features
}
```

Memory preallocation problem:

- **Limit:** 200 features (safety buffer)
- **Expected:** ~60 features
- **Received:** >200 features (duplicates)
- **Result:** `Result::unwrap()` on `Err` → **PANIC** 💀

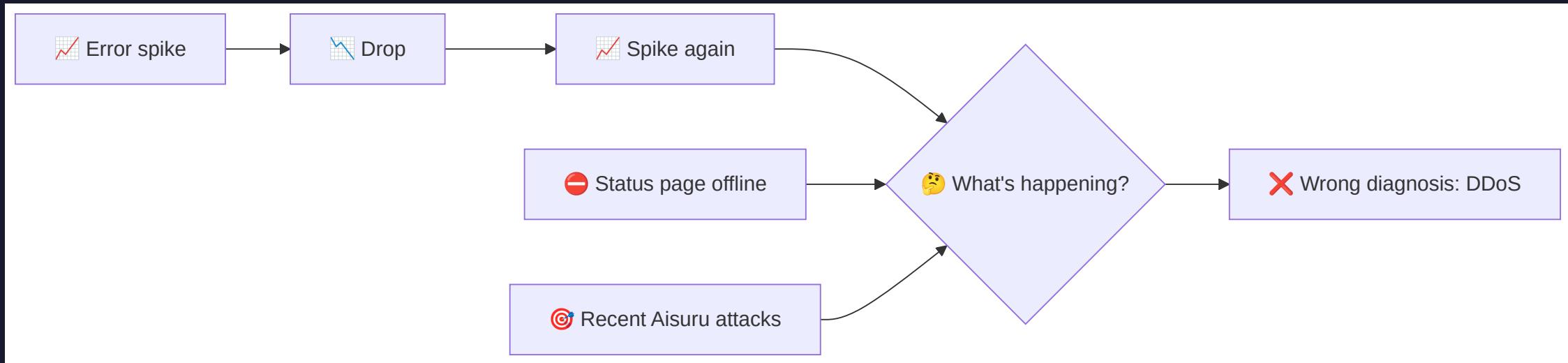
★ Outage Mechanism





Confusing Factors

Why did they think it was a DDoS attack?



Unusual behavior:

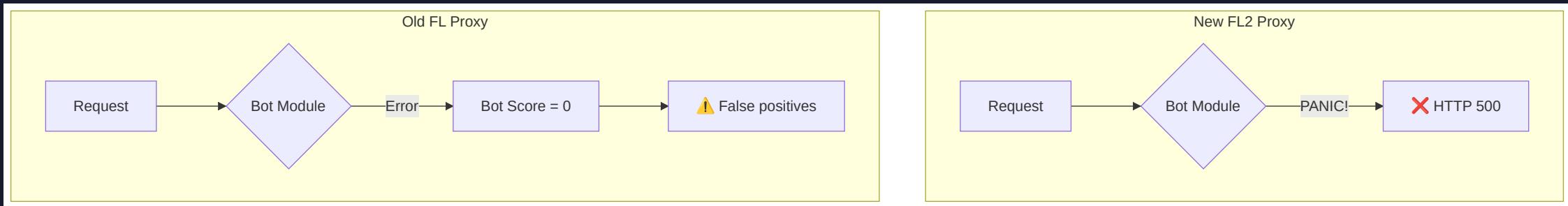
- Fluctuations: old nodes had correct cache
- Status page (independent infra) also offline → **coincidence!**



Impact on Services

Service	Impact
CDN / Security	HTTP 5xx for all clients
Turnstile	Complete failure
Workers KV	Increased error rate
Dashboard	Unable to log in
Access	Authentication errors
Email Security	Reduced spam detection

🔧 FL vs FL2 - Different Impact



FL2: Hard 500 errors

FL: Everything = "not-bot" → blocking rule issues



Cloudflare Remedial Actions

Official list:

1. **Hardening** of internal configuration (like user data)
2. **Kill-switches** - global function switches
3. **Core dumps** - cannot overload the system
4. **Review failure modes** of all proxy modules

"Today's outage was the most serious incident since 2019"

— Matthew Prince, CEO



Our Technical Conclusions

What could have been done better?

```
let features = append_with_names(&config).unwrap_or_default();
if features.len() > 200 {
    log::warn!("Retrieved {} features, exceeded limit 200.", features.len());
    features.truncate(200);
}
// ✓ Continue with features
```

Instead of:

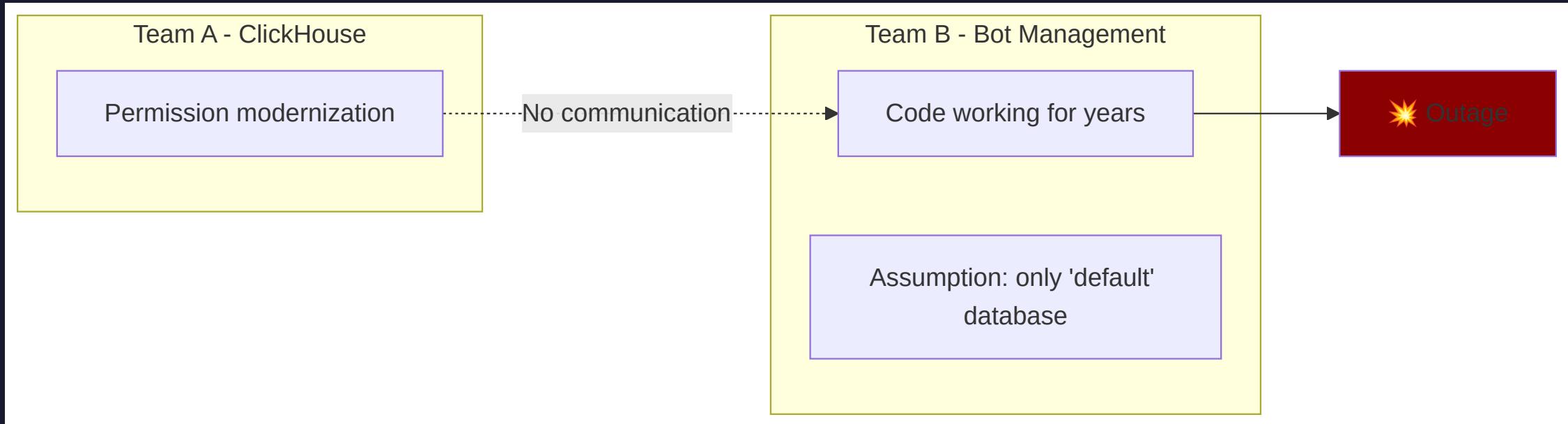
```
.unwrap() // ✗ PANIC!
```

Should be:

```
.unwrap_or_else(|e| { log::error!("{}", e); defaults() })
```



Organizational Problem



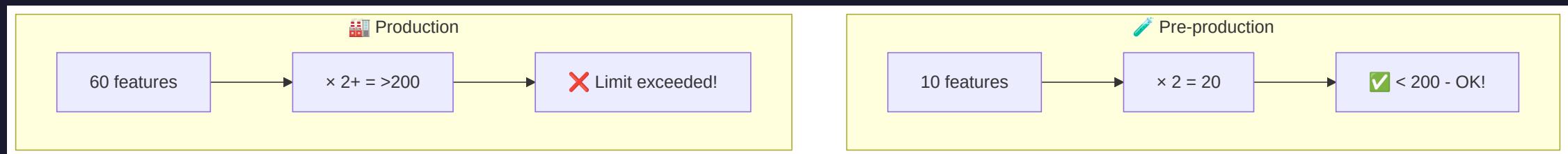
🎯 Key problem:

Change in one place → explosion in another



What about the test environment?

Possible explanation:



Production scale \neq Test scale



Key Lessons

1 Defensive Programming

| Never trust that inputs will be correct

2 Graceful Degradation

| System should work limited, not crash

3 Inter-team Communication

| Changes in one system can affect others

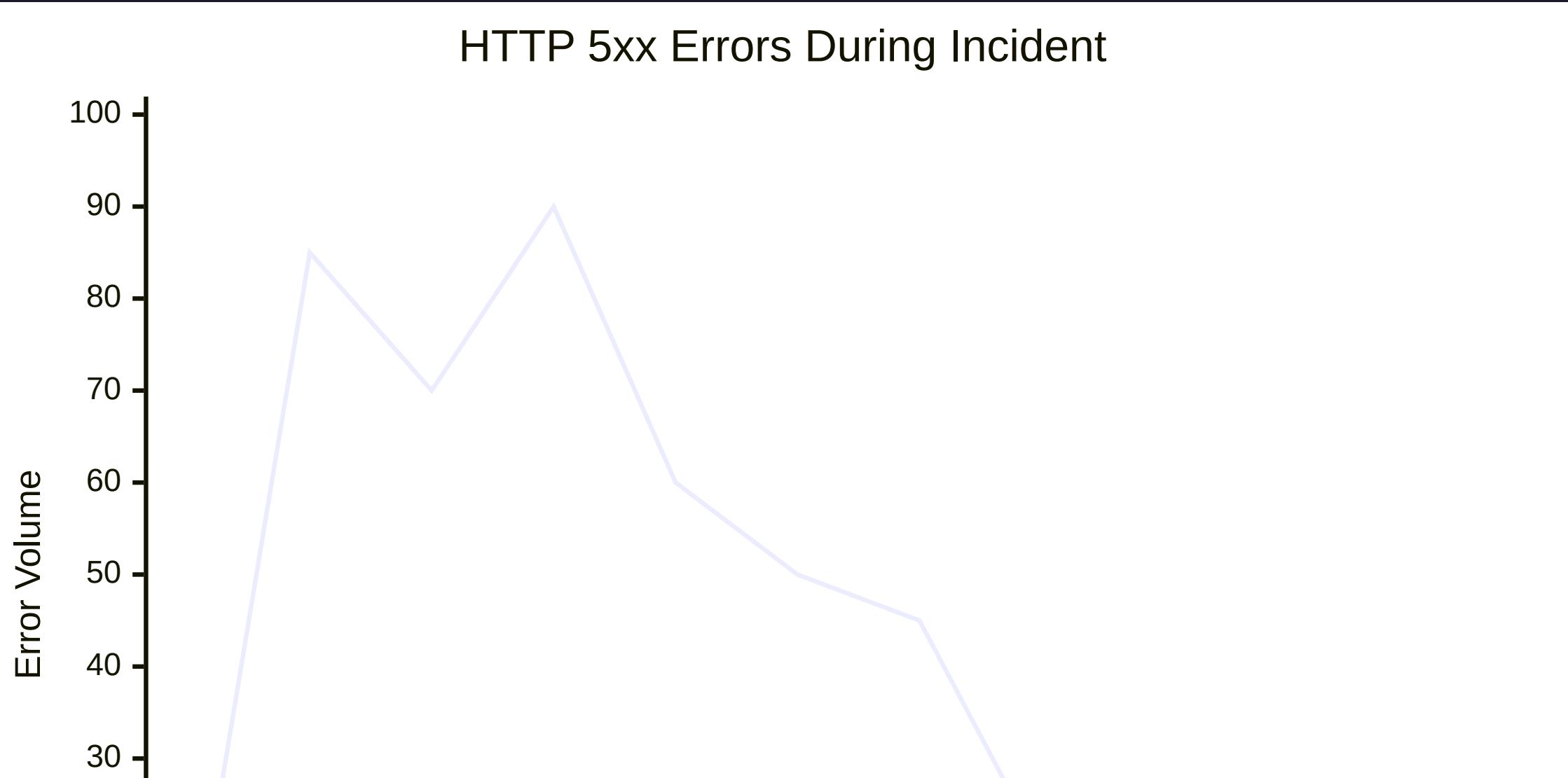
4 Production-scale Testing

| Pre-prod must reflect reality



Outage Visualization

HTTP 5xx Errors During Incident





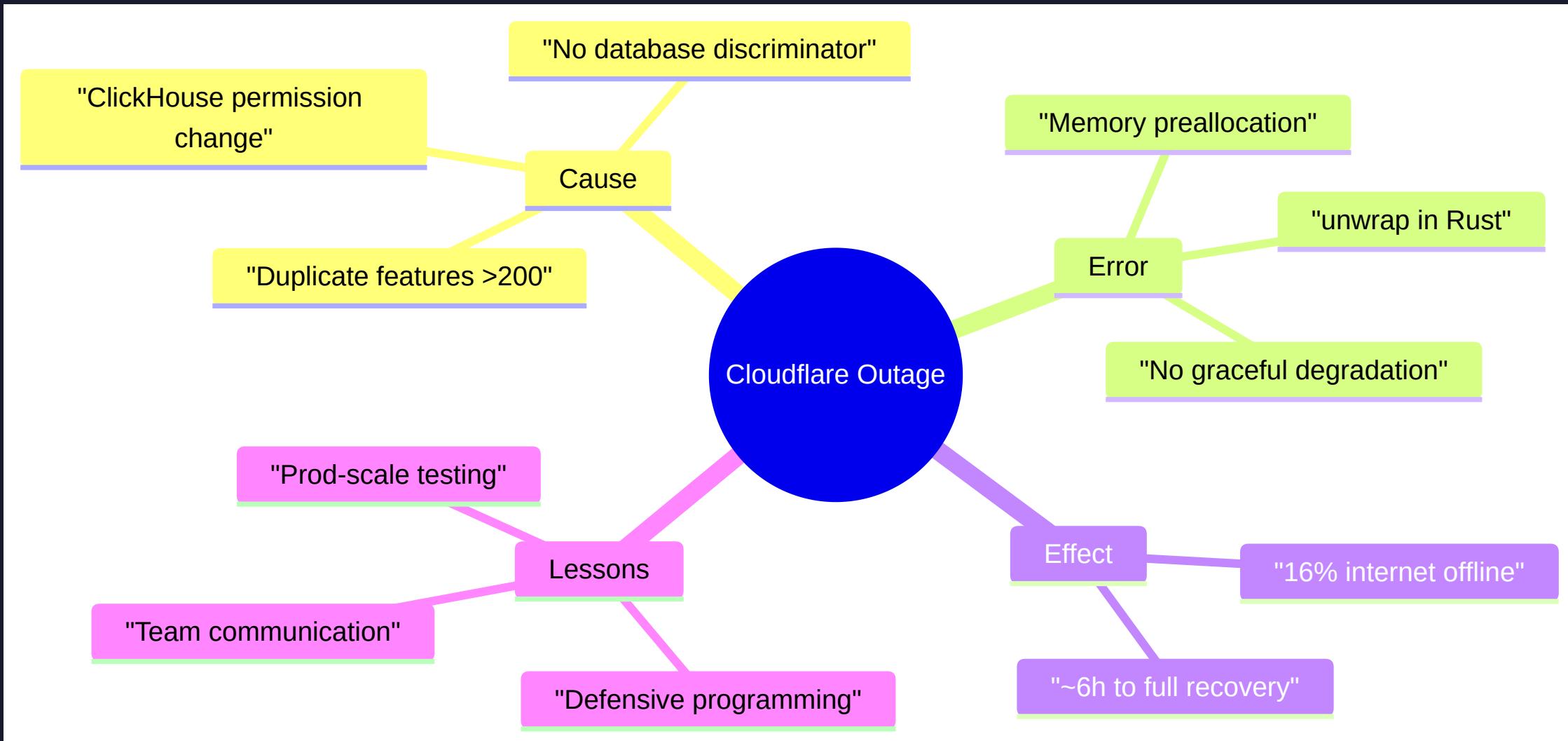
For Discussion

Questions for the team:

1. 🔎 **Do we have similar "hidden dependencies" in our systems?**
2. 🦀 **How do we handle errors** in critical code paths?
3. 📊 **Do our test environments** reflect production scale?
4. 💡 **How quickly will we detect** an outage before users?
5. 📝 **Do we do post-mortems** and are they public?



Summary





Sources

Official Post-Mortem:

🔗 blog.cloudflare.com/18-november-2025-outage

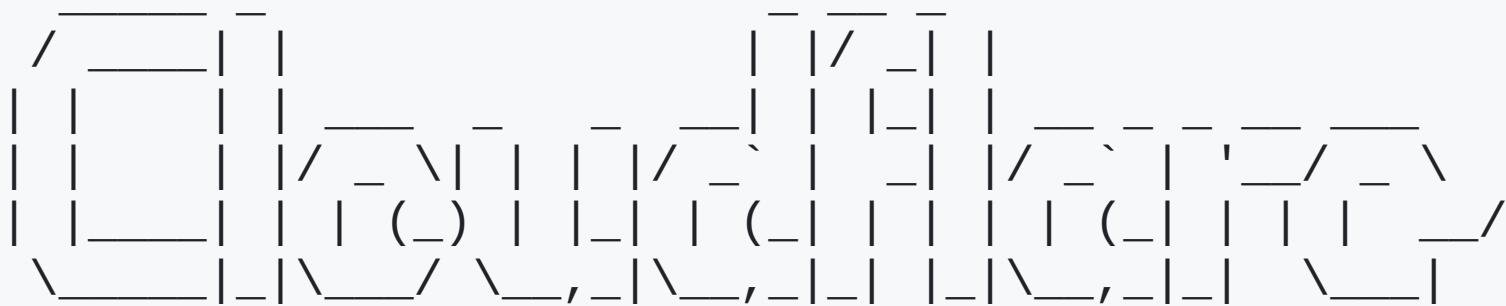
Video:

🎬 [IT News #25 - DevMentors](#)



Thank You!

Questions?



🛡️ Post-Mortem 18.11.2025 🛡️

Contact: granica.lukasz@gmail.com