

# Furality Devops

Water-Cooled

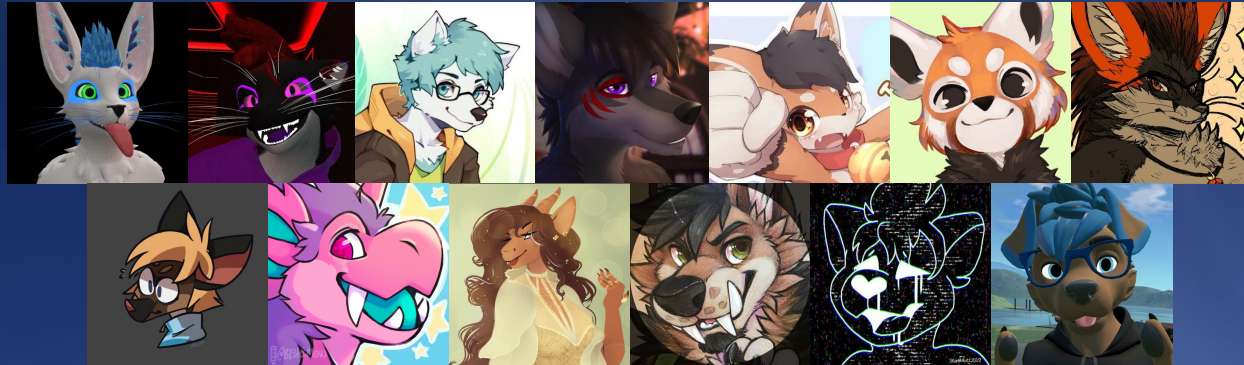
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# Intro

- DevOps does:
  - The website ([furality.org](http://furality.org))
  - The F.O.X. Portal ([furality.online](http://furality.online))
  - The API powering the convention
  - Servers for serving the above
  - Managing streaming infrastructure

# Team



- 13 members across 3 teams
  - Backend
  - Frontend
  - Infrastructure

# Furality Devops

Backend

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# Backend

- What exactly is Backend?
  - Build and create the behind the scenes systems that run the convention, from joining instances to the party system.
- Services and Tools:
  - F.O.X. API
  - F.O.X. Socks
  - F.O.X. Paws
  - Status
  - W.U.L.F.
  - G.O.O.S.E.

# Backend - F.O.X. API

- Handles all Attendee requests
  - Quick Join Requests
  - Invites
- Dealers Den API
  - Favorites and Location Tracking
- Convention Administration
  - Event Status Updates
  - Instance Creation and Tainting
- Role Based Access Control

# Backend

- F.O.X. Paws

- Instance Automation
- Invites
- RSVP and Auto Join System
- Auto Scaling and Instance Cycling
- Asynchronous Services (Discord, Airtable)
- Attendee Location System
  - Party and Friends use this!

# Backend

- F.O.X. Socks
  - Portal wide notification system
    - Invite Sent Notifications
    - Party Notifications
  - Live Instance Player Counts
  - Live Instance Statuses (Closing and Opening)

# Backend - Status (Grafana)

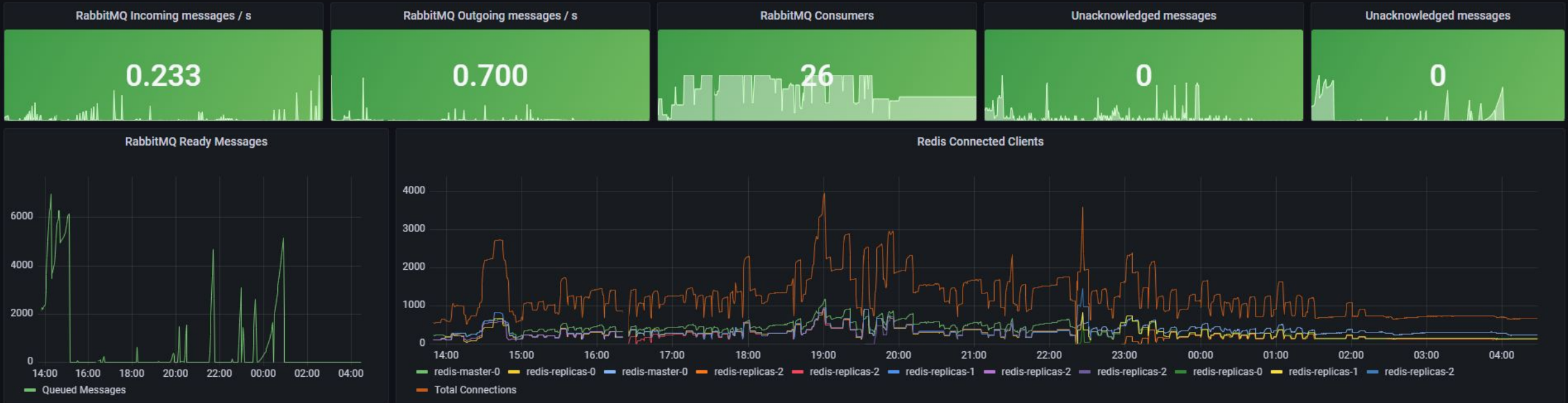
- Tracking F.O.X. API and Paws status
  - Requests per second
- Convention Administration Metrics
  - Registered Attendee Count
  - Attendee Location Heatmap
  - Event Status Tracker
- Alerts
  - Is everything on fire?

# Backend - Grafana

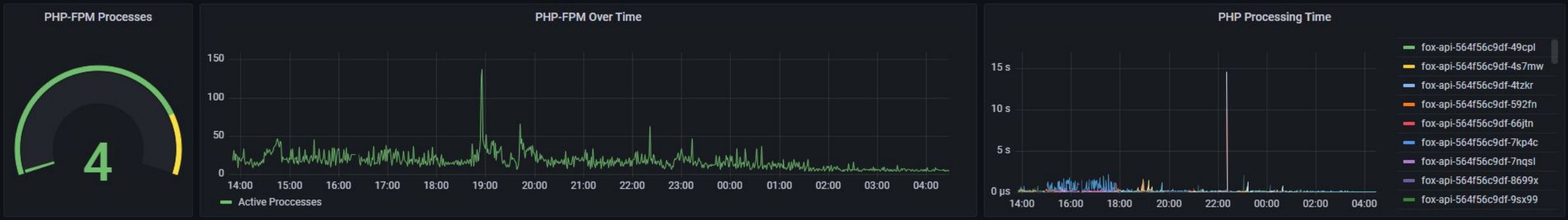


# Backend - Grafana

## Redis and RabbitMQ



## PHP



# Backend - W.U.L.F.

What you lookin for? (W.U.L.F.)

Primarily used out of convention or on our team page!

- Out of Convention
  - Up to date Team Page
  - HR Automation
  - Volunteer Page

# Backend - G.O.O.S.E.

General Observer of Suspicious Entities (G.O.O.S.E)

Primarily used during Convention for Administrative Actions.

Provides real-time, critical stats about attendees and the Furality worlds, to help our Attendee Services teams support the convention and attendees.

# Furality Devops

UX

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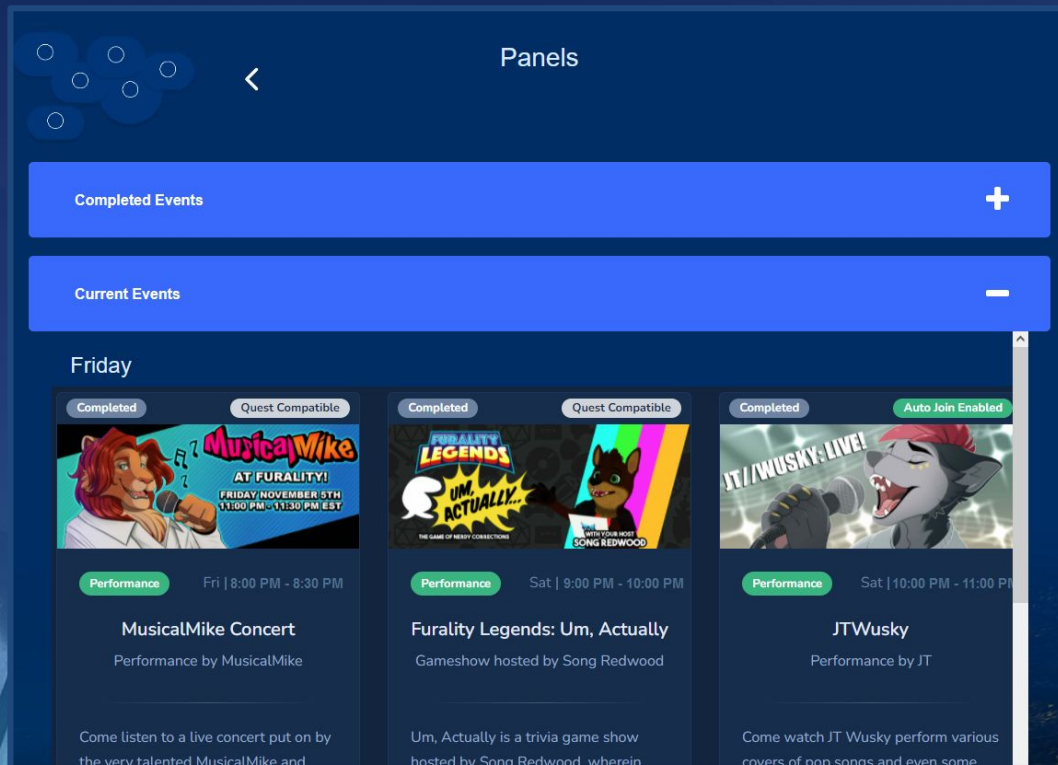
# UX

- What is UX?
  - User Experience Design
  - Also called Human-Centered Design, User-Centered Design
  - Designing solutions to people's problems
  - Making things easier to use
- What does a UX designer do?
  - Gather/process user feedback
  - Help determine which problems to solve
  - Design a solution to those problems
  - Test those solutions to get feedback (limited)

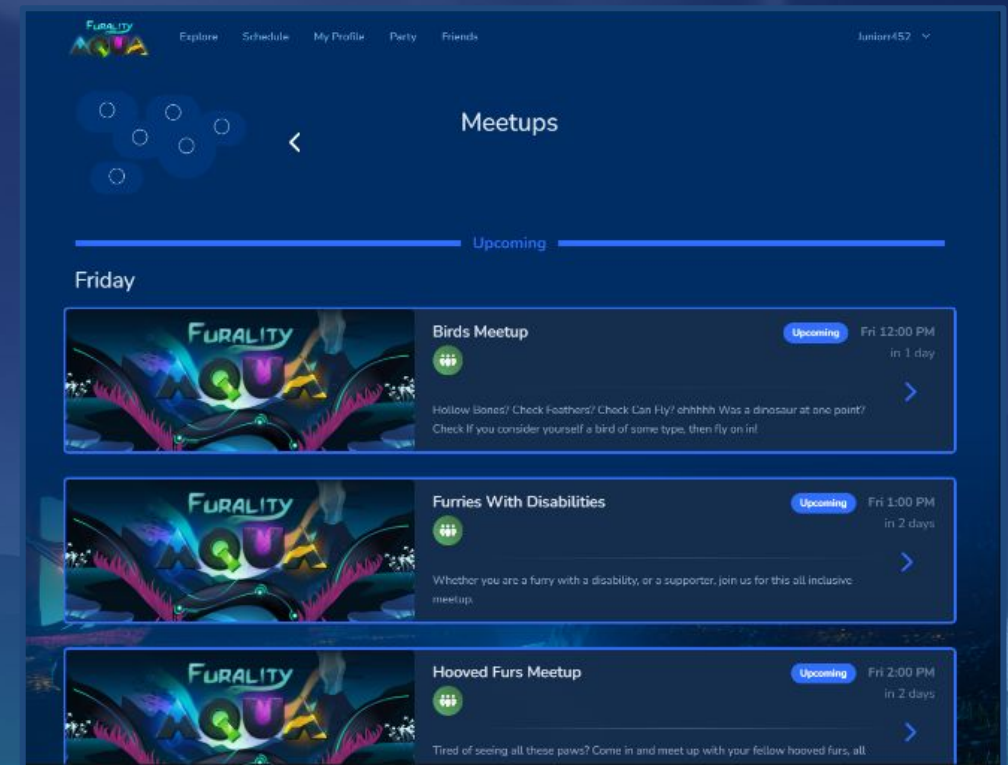
# UX

- UX at Furality
  - 2 UX Engineers (Shallie, Kayze)
  - Joined team recently
  - Focused on F.O.X. Portal design
  - Iterative feedback
- Problems to solve
  - Make Portal feel “cohesive”, better navigation
  - Make it easier to join worlds (clarify Quick Join)
  - Finding events “happening now”, less scrolling
  - Better integrate the Schedule view
  - Show “presence”, show where people are
  - Improve registration process (Mostly handled by devs)

## Prototype V1



## Final Version



# Furality Devops

Frontend

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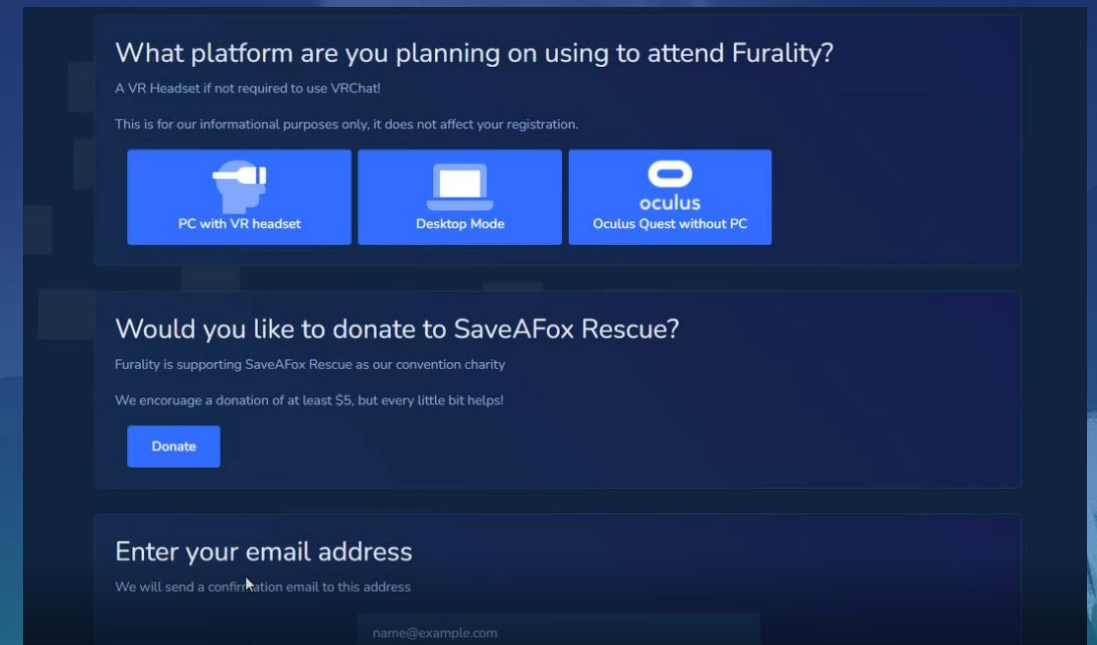
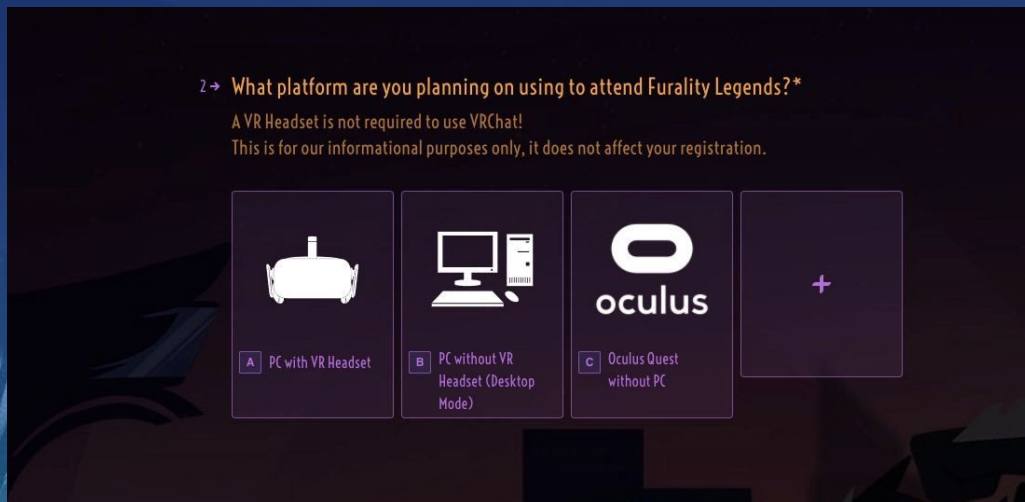
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# Frontend

- What is the Front End?
  - Everything you interact with the F.O.X. Portal is considered the Frontend (Buttons, Text, Instance Lists, Maps, .ect)
  - We utilize React and NextJS to dynamically display data on the Frontend
- What is React?
  - A popular Javascript Library for writing seamless web apps, with features and tools to display dynamic data to the users.

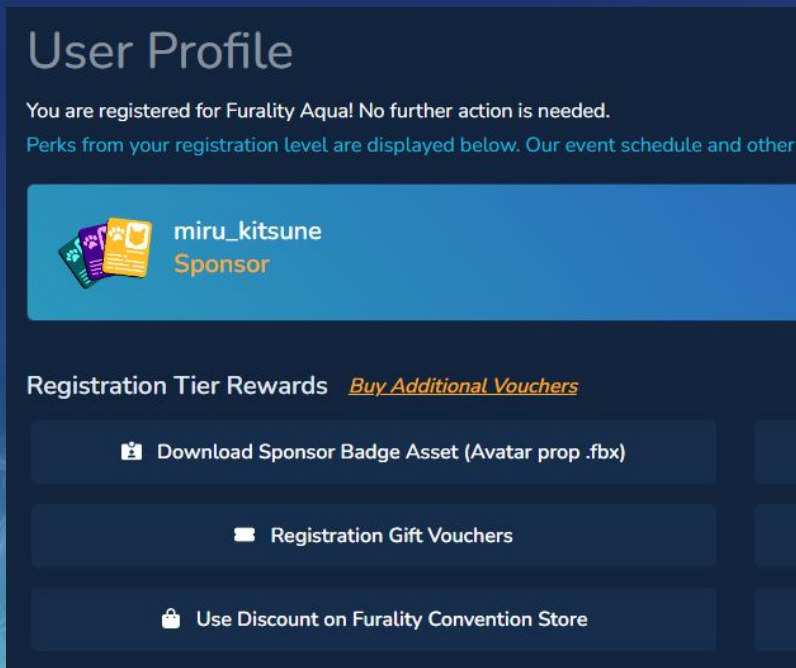
# Frontend - Registration!

- Before Fuality Aqua, registration was done via to Typeform (similar to google forms), which means there were multiple steps
- We have unified registration into the F.O.X. Portal, powered by React and the API server. This give us far better control to the UX and Forms, while keeping it all in one unified flow.



# Frontend - Internationalization

- We wanted to make the F.O.X. Portal feel like home for Attendees around the world, so we internationalized the portal into different languages
- This will be useful, especially within the Japanese VR Community attending Furity Aqua



# Frontend - Serverless!

- Before, the portal was hosted on a PHP server that processed all the requests in one unit (data processing, html files, assets. ect). This can be very expensive to run, and sometimes slow during heavy loads of traffic!
- Now, the Frontend F.O.X. portal is hosted on a serverless platform! Meaning the server only carries the javascript code to run the client, which means the F.O.X. Portal is fast to navigate, even when thousands of attendees are utilizing it!

# Furality Devops

Infrastructure

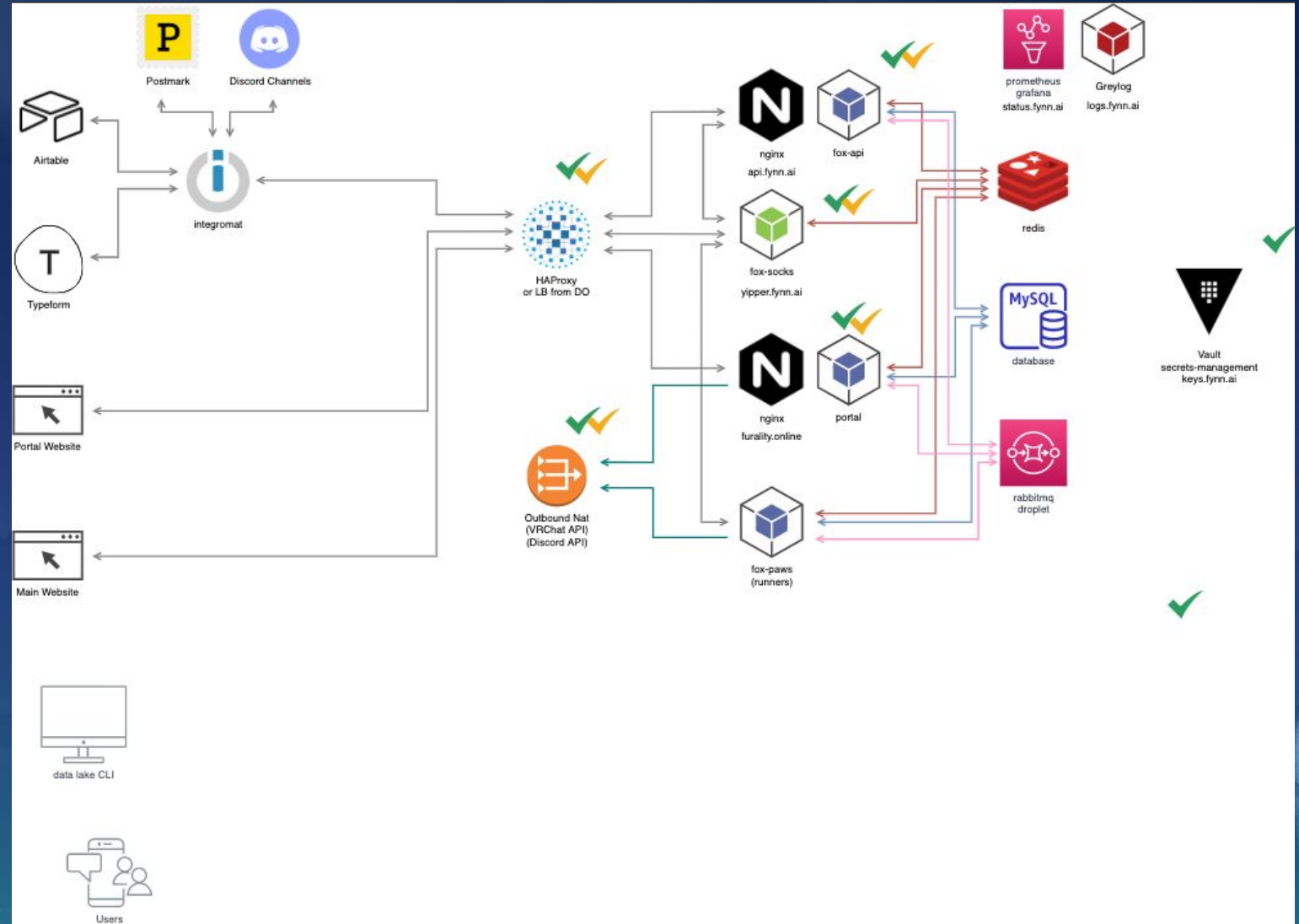
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# Infrastructure

Furality Legends

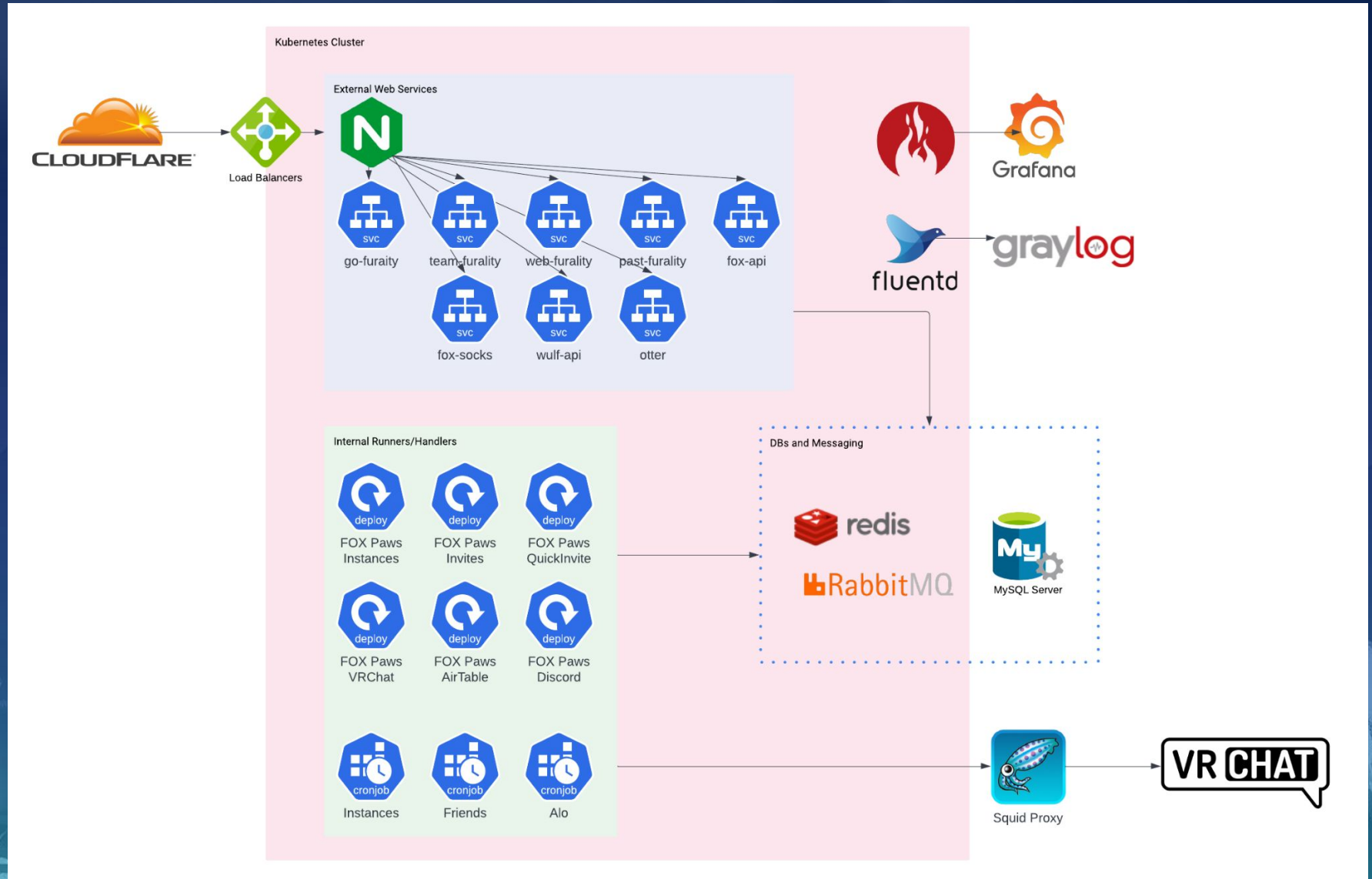
Ansible + Terraform



# Infrastructure

Furality Aqua

Terraform +  
Kubernetes



# Infrastructure

## Deployments(production)[18]

NAME↑	READY	UP-TO-DATE	AVAILABLE	AGE
fox-api	3/3	3	3	74d
fox-paw-airtable	1/1	1	1	47d
fox-paw-discord	2/2	2	2	47d
fox-paw-instance	8/8	8	8	47d
fox-paw-invite	8/8	8	8	2d13h
fox-paw-quickinvite	4/4	4	4	2d13h
fox-paw-vrchat	2/2	2	2	3d14h
fox-socks	4/4	4	4	21d
fulfillment-furality	1/1	1	1	115d
gearbot	1/1	1	1	129d
go-furality	1/1	1	1	98d
otter	1/1	1	1	123d
past-furality	1/1	1	1	119d
team-furality	1/1	1	1	119d
web-furality	1/1	1	1	98d
wulf-api	1/1	1	1	65d
yagpdb	1/1	1	1	128d

# Infrastructure

- Deploying (and creating!) tools for supporting development work
  - Otter
    - ensuring we stay declarative while shipping
  - Dutchie
    - private, always up to date API documentation
  - Various GitHub Actions
  - Tolgee & Matomo



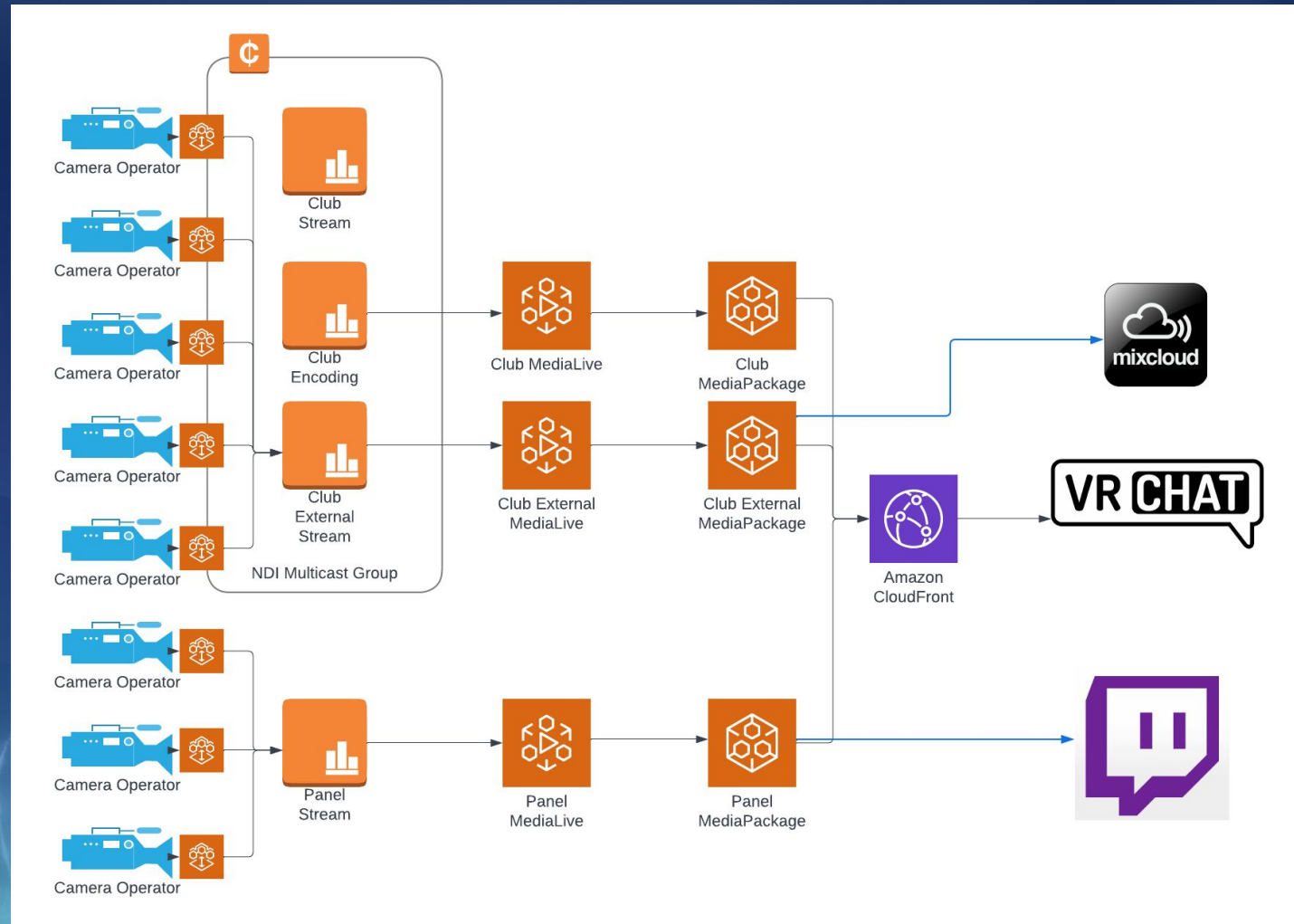
# Furality Devops

Streaming Infrastructure

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# Streaming Infrastructure



# Streaming Infrastructure

## Other Highlights

- All of our streaming infrastructure is in a CloudFormation stack
- Parsec on VMs
- All video from the convention archived in S3, as well as on the VMs

# Streaming Infrastructure

## Statistics:

- 40 CPU Cores (80 with Hyperthreading!)
- 140 GiB RAM
- 4 TB Storage
- 15 MediaConnect Cameras
- Day 1 of Furality Aqua
  - 41 TB of media streamed
  - 69% of traffic to US and Canada (Nice!)
  - 21% to Europe
  - 3% to Australia

# Furality Devops

Retrospective

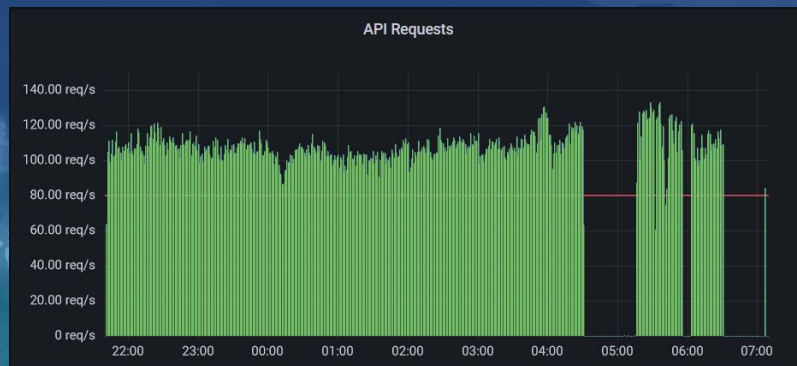
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# Retrospective

## High Notes

- Queues and Redis caching for runners made for a much smoother flow
- We actually tested this before con!  
Sustained load of 175 requests/second.



# Retrospective

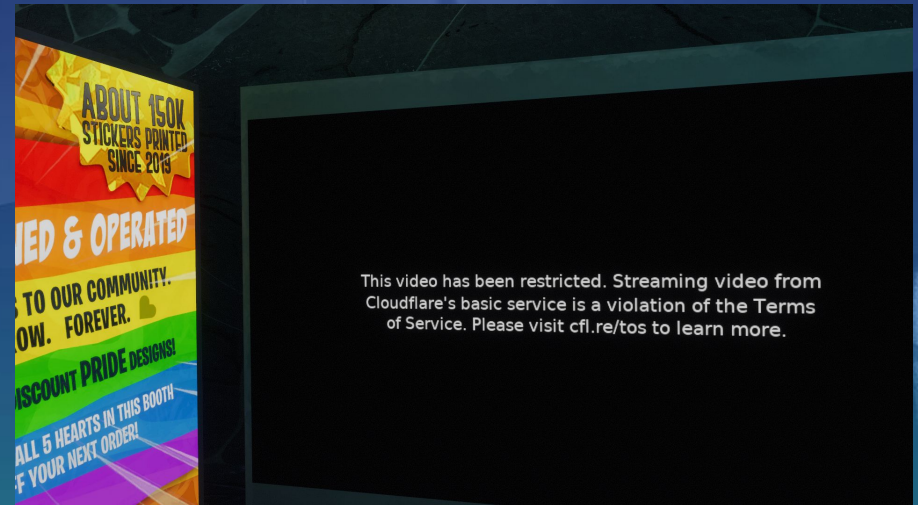
## High Notes

- API code stable one week before convention time.
  - This is the first Furality where we did not release any new backend features during the convention!
- Even with overhauling our whole stack, traffic flowed throughout the convention with very few user-facing issues.
- Everyone on the Devops team got to spend time in VR during the convention!

# Retrospective

## Low Notes

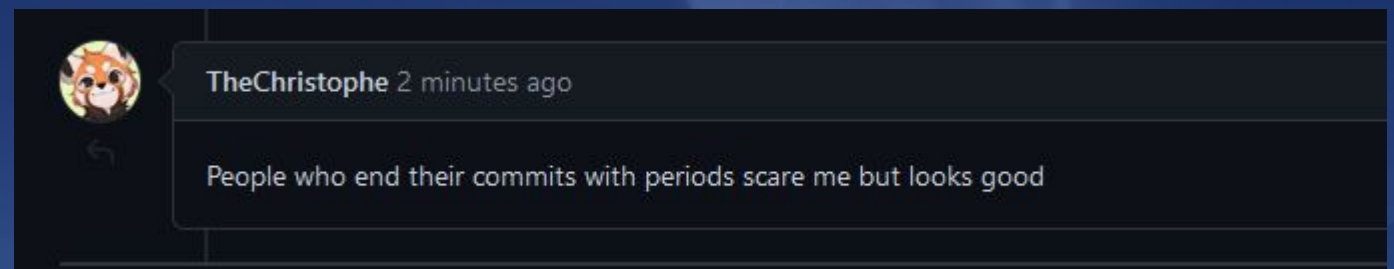
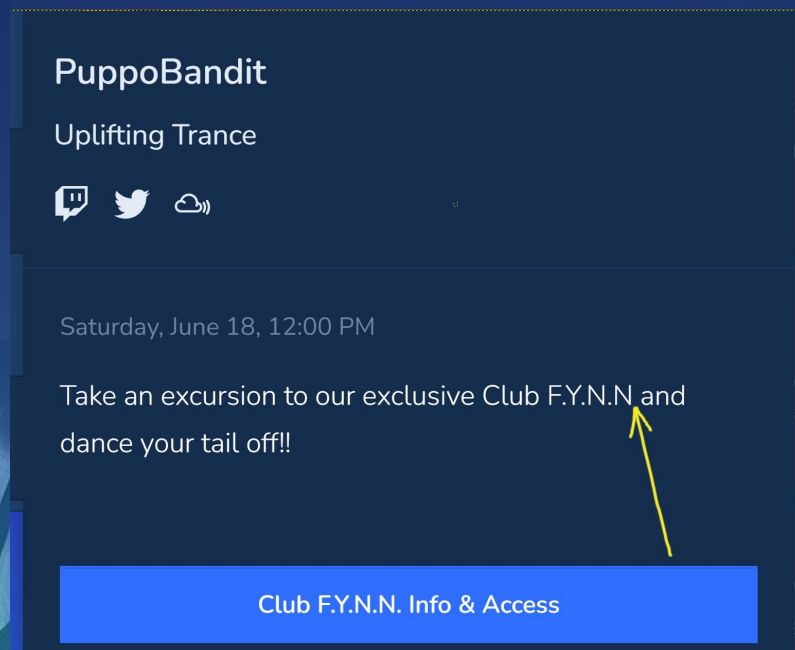
- Malformed responses from VRChat caused our runners to crash often.
- Our Dealers Den videos were accidentally put behind Cloudflare, which caused ugly errors in world.



# Retrospective

## Low Notes

- We're really bad with periods.



# Furality Devops

Q+A

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